GEOSUPPORT SYSTEM

User Programming Guide

SOFTWARE VERSION 17.2

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Contents

Overview of the *User Programming Guide*

This document, the *Geosupport System User Programming Guide* (UPG), contains the detailed technical information necessary for users to design and develop their own application programs that access Geosupport, as well as to use GBAT. (The use of GOAT and the AIMZ transaction requires no programming skills and they are not documented herein.) The UPG serves as a comprehensive set of technical specifications for the Geosupport System, and can be incorporated into procurement documents issued by city agencies soliciting consulting services for application design and development.

The contents of the UPG are as follows.

- Chapter I is a general overview of the system, its purposes, features, means of access and the broad outlines of its architecture.

- Chapter II is an introduction to the Geosupport API, describing in general terms its components and the user programming required to utilize it. (Chapter VIII discusses the usage of the API in greater detail.)

- Chapter III covers street name processing and in particular describes important user-controllable features of Geosupport's street name standardizing routine.

- Chapter IV discusses Geosupport's system of numeric street codes, a feature that is relevant principally for applications that must retrieve data from user files by geographic location.

- Chapters V through VII discuss in detail the types of geographic locations that Geosupport can process and the functions that process them:

    - Chapter V discusses address and non-addressable place name processing and Functions 1, 1A, 1B, 1E, and AP.

    - Chapter VI discusses tax lot and building processing and Functions 1A &1B (aspects not covered in Chapter V), BL and BN.

    - Chapter VII discusses street configuration processing and Functions 2, 3, 3C and 3S.

- Chapter VIII describes in detail the application program coding and JCL required to use the Geosupport API

- Chapter IX discusses GBAT, Geosupport's standalone batch utility program.

- Appendix 1 contains summary reference information for each Geosupport function, including a brief description of the function and reference to relevant sections of the UPG.

- Appendix 2 contains layouts of the Geosupport API Mainframe-Specific Work Areas (MSWs).

- Appendix 3 is a data item dictionary, containing descriptions of the formats and contents of all of the data items that appear in the work area.

- Appendix 4 is a comprehensive table of Geosupport Return Codes, Reason Codes and Messages.

- Appendix 5 contains listings of the MSW Geosupport COPY files for all of the programming languages supported by the Geosupport COPY feature. (This important feature is discussed in Chapter VIII.)

- Appendix 6 describes the procedures that users should follow to report Geosupport System problems and to provide feedback to GSS of rejected input data that the user is unable to resolve.

- Appendix 7 is a list of the data centers where Geosupport is installed.

- Appendix 8 contains sample user programs written in various programming languages together with sample JCL.

- Appendix 9 contains reference tables for setting up GBAT jobs.

- Appendix 10 contains sample GBAT jobs.

- Appendix 11 contains a set of guidelines for user application design.

- Appendix 12 contains a description of Character-Only Work Areas (COWs) and how to use them.

- Appendix 13 contains layouts of the Character-Only Work Areas (COWs).

- Appendix 14 contains listings of the COW Geosupport COPY files for all of the programming languages supported by the Geosupport COPY feature. (This important feature is discussed in Chapter VIII.)

- Appendix 15 describes where the 2010 Census Geography was incorporated into the Version 11.0 Geosupport System. The appendix includes tables describing the offsets of the data and the field names in the COPYLIBs

- Appendix 16 contains a description of the history and significance of the Neighborhood Tabulation Areas.

- Appendix 17 contains additional TPAD information, including error processing and error message handling.

- The Glossary contains definitions of special terms and acronyms

Appendices 1 through 5, together with Appendices 13 and 14 (for COW Work Areas), collectively can serve as a quick reference guide for experienced Geosupport users.

Note: Since the geography of New York City is constantly growing and changing, any examples mentioned in this document may, occasionally, function differently from the way they are described. The examples will, in any case, illustrate the concept being discussed.

SUMMARY OF CHANGES AND NEW FEATURES

The updates listed below indicate changes and new features since the last release of the *User Programming Guide* (written for Software Version 16.4 and dated November, 2016.) Some of the changes and features are described elsewhere in the UPG; other changes are mentioned only in this summary to make users aware of items such as general improvements or items displayed by GOAT.

Note: Entries in this summary which begin with '**(COW Only)**' describe changes and features which are available only for applications that use the Character-Only Work Areas (COWs). Character-Only Work Areas are described in Appendix 12. To take advantage of the full functionality of Geosupport, it is recommended that applications be written using the Character-Only Work Areas (COWs).

Character-Only Work Areas (COWs), as the name implies, contain character fields only. The Geosupport work areas that have long been in use are called the **Mainframe-Specific Work Areas (MSWs)**. Typically, MSWs contain some fields that are in a format which is unique to IBM mainframes. COWs were introduced as an essential part of a long-term effort to port the Geosupport System to other platforms, e.g. the Desktop, the Internet (web version of GOAT) and as a Microsoft Office VSTO add-in (GeoExcel). For a detailed description of the COWs, see Appendix 12.

Work Area 1 and Work Area 2 are often referred to, in this document, as **WA1** and **WA2**, respectively.

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- **(COW Only) UNIT Support – GBAT and GOAT – Input and Output**
  The following utilities now support the UNIT field as input and output to Functions 1 and 1E.
  Note: This support is in addition to previously announced support of Functions 1A and 1B.
    - Mainframe GBAT
    - Mainframe GOAT

CHAPTER I: SYSTEM OVERVIEW

I.1 Introduction

The Geosupport System is an integrated system of software and data files that processes New York City geographic locations. Input locations can be accepted in various forms, including addresses, place names, street intersections, blockfaces, street stretches and property parcels (tax lots). Geosupport standardizes and validates the input location and provides related geographic information, such as the community district, census tract and census block, ZIP code, tax block and tax lot, police precinct, cross streets, City Council district and spatial coordinates. In addition, Geosupport provides user-written applications with the means to retrieve data from the user's own files by geographic location in a consistent manner.

The Geosupport System was developed and is maintained as a service to all agencies of the City of New York by the staff of the Geographic Systems Section (GSS) of the Department of City Planning's Information Technology Division. GSS has been enhancing the Geosupport software and updating the system's data files continually since the system's introduction in 1983.

This document, the *Geosupport System User Programming Guide*, is a comprehensive technical description of the system and how to access it. The document is intended to be read primarily by technical users such as computer application designers, software analysts and programmers. Knowledge of IBM mainframe application programming is assumed.

Geosupport is installed on IBM mainframes at the city computer centers listed in Appendix 7, where it is used by most city agencies as an integral component of many of their major data processing applications. An employee of each computer center's custodial agency, generally a systems programmer, has been designated as the <u>Geosupport System Administrator</u> (GSA) for that computer center. The GSA is responsible for installing or coordinating the installation of new Geosupport file releases and software versions received from GSS. At some computer centers, the GSA makes certain customizing modifications to Geosupport during installation, such as changing the data set names (DSNs) of Geosupport files to conform to local file naming conventions. The GSA is also the first responder for users encountering system-related Geosupport problems, and interacts with GSS staff as needed to resolve such problems. However, the GSA is not necessarily familiar with Geosupport from a user application perspective, and is not responsible for assisting users with application-related problems or design issues.

In general, Geosupport is accessible without restriction to anyone having a valid account at any of the computer centers where it is installed; no special passwords or security procedures are required beyond the normal data center logon procedures. In addition to running on IBM (and IBM-compatible) mainframes, GSS has developed Geosupport Desktop Edition for running in the Windows environment. There are also several methods by which Geosupport running on a city mainframe can be accessed by applications running on other hardware platforms, including 3270 emulation and access through the city's Intranet. Geosupport is also available via GeoX, Linux, .net and Java. This User Programming Guide can be used when programming in any of these environments. Also, those who are writing a PC application for the Desktop Edition should also read the *UPG Supplement*.

For many user applications, only a subset of Geosupport's functions, features and data items are relevant. In addition, many Geosupport options have defaults which are appropriate for most applications. Thus, even though Geosupport is a large-scale, multi-feature system, the user effort required to design an application to access it is often relatively modest.

Geosupport has an Application Programming Interface (API) that enables it to be accessed directly from a user-written batch or CICS application program. (Geosupport cannot be run in the VM environment.) The Geosupport API supports application programs written in any programming language that can issue a standard IBM external program call. COBOL, PL/1, the various types of IBM mainframe assembler languages (hereafter referred to generically as 'Assembler'), NATURAL and C are five such languages. In addition, Geosupport has one batch and two interactive 'stand-alone' utility programs that enable users to satisfy many geographic processing needs without having to write custom application programs.

The ability of user-written applications to access Geosupport via its API enables users to avoid the burden of duplicating complex, specialized geographic processing routines within their own applications. The Geosupport API affords users total design control of their own applications, with their own input and output files, printed reports and screen formats; users develop those applications in their conventional data processing environments, using the programming languages they deem best suited to those applications.

The Geosupport batch utility program is called the Geosupport Batch Address Translator (GBAT). GBAT requires no user programming; to run GBAT, the user simply sets up a batch job containing JCL and GBAT control records. There are two Geosupport interactive utility programs, both of them CICS transactions. The principal interactive utility is called the Geographic Online Address Translator (GOAT), which provides general inquiry capabilities for almost all Geosupport functions. There is also a specialized interactive utility called Address / Intersection Map Zones (AIMZ), which displays a set of map identification numbers corresponding to an input address or intersection.

I.2 System Functionality

The output information that Geosupport provides consists of geographic information only. Geosupport does not provide, for example, population or crime statistics, housing data, building code violations, property ownership etc. Such data are available from the U.S. Bureau of the Census, city agencies and other sources. Geosupport can facilitate matching many such statistical and administrative databases with user data containing individual locations, by associating those locations with district identifiers needed for such matching, such as census tract, ZIP code or tax block.

Geosupport processes New York City geography only, and is highly customized for that geography. For example, Geosupport can recognize and process many alternative names, spelling variants and partial names of New York City streets; the various address number formats that occur in the city; both old and new addresses on streets that have been renumbered; unique addressing schemes that exist in certain neighborhoods; and many other idiosyncrasies of New York City's geography.

Geosupport is organized into more than a dozen distinct functions that can be accessed by the user. Section I.4 contains a brief overview of Geosupport's suite of functions. The typical function accepts as input geographic locations of a particular type, such as addresses, street intersections or tax lots, and provides some or all of the following services, depending on the function and on calling options chosen:

- Geosupport standardizes and encodes components of the user input data. Specifically, it reformats input street names and input address numbers into standard formats, a process called 'normalizing', and it provides numeric street codes corresponding to input street names.

- Geosupport validates the input data. The nature of the validation performed depends on the function requested and the type of call made. Validation of geographic data is a particularly powerful tool in the interactive environment, where it can help applications to trap keying errors and street name misspellings at the point of initial data entry when such errors are most easily rectified.

- Geosupport geocodes the input data. That is, it outputs a predefined set of 'higher-level' geographic information associated with the input location, such as the community district, ZIP code, police precinct, cross streets.

- Geosupport enables consistent retrieval of user application data by geographic location. That is, it supports the ability of user applications to search (for inquiry or updating) or match their own data files by geographic location in a way that is independent of possible variations in referring to locations.

The nature of each application determines the combination of these services that is relevant. For example, some applications need only to validate geographic locations, not to obtain any of the output information that Geosupport provides. The fourth type of service, support for geographic retrieval consistency, is relevant only for applications that retrieve or match data from their own files by geographic location (as distinct from Geosupport's retrieval of data from its internal files). For those applications, geographic retrieval consistency is a critical issue. The next section contains a discussion of geographic retrieval consistency in general terms. Later chapters of this document contain detailed discussions of this topic.

I.3 Introduction to Geographic Retrieval Consistency

In applications that retrieve data from an application file by geographic location or match two application files by geographic location, the consistency of that retrieval or matching is a critical consideration that arises when processing any type of location that can be specified in more than one way. For example, consistency is a consideration for any type of location involving streets (such as addresses, intersections and street segments), since many streets have alternative names and many street names have spelling variants. The goal is to enable applications to retrieve records independently of which street name spelling was used when the record was created and which one is used at retrieval time. Similarly, consistency is a consideration when retrieving building-level data by address, since many buildings have more than one address. It is a consideration when retrieving data for street intersections, since many intersections (e.g., three-way intersections) can be specified using more than one pair of streets.

The achievement of retrieval consistency can greatly improve an application's 'hit' rate on geographic searches into the application's own files. Moreover, it enables applications to identify and consolidate multiple records for the same location effectively. These advantages can have a significant impact on the efficiency of a city operation. For example, an application can use this capability to generate a single work order for dispatching personnel to handle multiple repairs, inspections or other transactions for the same location.

Of the services that Geosupport provides, its use to achieve geographic retrieval consistency involves the most extensive integration of Geosupport in the design of the user application. Geosupport provides such support by returning certain data items which an application can store in its file during record creation and use as part of a geographic retrieval key. An example is an item called the five-digit street code, which applications can use to achieve consistent retrieval of data by those types of geographic locations that are specified in terms of streets. This is briefly discussed below, and is explained in detail in later chapters.

Within Geosupport, a set of numeric street codes has been assigned to represent New York City's street names. A full street code is a ten-digit item that, together with a borough identifier, corresponds to a specific spelling of a specific name for a specific street in that borough. The first five digits of the ten-digit street code are collectively called the five-digit street code. Ten-digit street codes are assigned in such a way that alternative names and spelling variants of the same street have the same five-digit street code. As a result, applications can achieve consistent retrieval or matching of application data by any type of geographic location that involves streets by using five-digit street codes instead of street names as part of the retrieval key. For the convenience of users, for all functions that involve street input except Function 1N and the display functions (Functions D, DG and DN), applications have the option to provide input streets to Geosupport in the form of either street names or street codes. Street codes are discussed in greater detail in Chapter IV.

I.4 The Geosupport Function Suite

This section contains a brief introduction to the Geosupport function suite. Each Geosupport function is identified by a one- or two-character function code. The function suite consists of location-processing functions (Functions 1, 1A, 1B, 1E, 2, 3, 3C, 3S, AP[1],BL and BN), display functions (Functions D, DG and DN) and miscellaneous functions (Functions 1N, BB and BF). Table I-2 lists the currently implemented functions. Note that Functions 1B and AP are COW[2] functions only.

Each location-processing function processes input geographic locations of a particular type. For each type of location, there is an appropriate set of data items that collectively define such locations. Table I-1 lists the various types of geographic locations, the data items required to specify them, and examples. The location-processing functions can be sub-classified into address-processing functions, street-configuration-processing functions and ID-processing functions:

- The address-processing functions are Functions 1, 1A, 1B, 1E and AP. There are also Extended versions of four of the functions, viz. Function 1 Extended, Function 1A Extended, Function 1E Extended, Function AP Extended . Function 1B is a combination of Function 1E Extended and Function 1A Extended. Except for Function AP, the address-processing functions process conventional addresses, Addressable Place Names (APs) and Non-Addressable Place Names (NAPs). Function AP processes conventional addresses only.

- The street-configuration-processing functions are Functions 2, 3, 3C and 3S. There are also Extended versions of two of the functions, viz. Function 3 Extended and Function 3C Extended. All these street-configuration-processing functions process geographic locations that are defined in terms of one, two or three streets, such as street intersections, intersection names, blockfaces and street stretches. Note that Function 2 is also an ID-processing function (see below).

- The ID-processing functions are Functions BL, BN, and COW Function 2. There are also Extended versions of these functions, viz. Function BL Extended and Function BN Extended and the Wide version of Function 2, viz. Function 2W. These functions process locations defined in terms of identifying numbers, namely, tax lot identifiers in the case of Function BL, Building Identification Numbers (BINs) in the case of Function BN and Node ID in the case of Function 2. Tax lot identifiers and BINs are discussed in detail in Chapter VI. Node IDs are discussed in Chapter VII. Note that Function 2 is also a street-configuration-processing function (see above).

In general, anything that applies to a basic Geosupport Function will also apply to the Extended Version

[1] Note that 'AP' is the acronym for the function AP (Address Point). It is also the acronym for Addressable Place Name and Atomic Polygon. The acronym's meaning should be clear by its usage. It will be spelled out as needed.
[2] Character-Only Work Area (COW). See Appendix 12.

<u>of that function and other variations (e.g. Long Work Area or Auxiliary Segments) as well</u>. For example, anything that is true of Function 1 will also be true of Function 1 Extended. In our discussion of the various functions, for simplicity, we will often refer only to the basic function, but the information will apply also to the Extended function and other variations.

The address-processing functions differ from each other with respect to the output data that they provide and the nature of the validation processing that they perform. In general, the type of validation processing a Geosupport function performs is related to the geographic level of the output data. Thus the processing for Functions 1, 1E (and the 1E portion of Function 1B, see below), validates only whether the input address falls within an address range for an entire blockface, but it does not validate whether the input address is itself specifically valid. Function AP and Function 1A (and the Function 1A portion of Function 1B, see below), on the other hand, do validate whether the input address is (or could be) a valid address for a specific building. The return of a Building Identification Number (BIN) from Function AP and Function 1A will verify the existence of a building at the given address.

There are some users of Geosupport who process addresses by making two Geosupport calls (one call to Function 1 or 1E and another call to Function 1A). In response to requests by users, Function 1B was developed in order to allow users to retrieve blockface information (which is available with Function 1 or 1E) and Property Level information (which is available with Function 1A) in one Geosupport call. Function 1B combines Function 1E Extended with Function 1A Extended. The input requires borough (or ZIP code), address number if needed, and street name or street code. Function 1B retrieves the tax lot and building information from the PAD (Property Address Directory; data is at the property parcel level) file based on the input (Function 1A-type processing). The blockface and political data are then retrieved from the GRID (Geographic Reference Integrated Dictionary; data is at the centerline level) and the Election files (Function 1E-type processing) for the address set by the building level information.

The display functions do not themselves directly 'display' anything, but they provide street names and/or address numbers in formats suitable for applications to display on screens, reports, mailing labels etc.

In Table I-1, the word 'street' refers to either a street name or a street code. In the examples in Table I-1, street names rather than street codes are used. (Note: the examples are formatted for reader comprehension, and would not be accepted by Geosupport as shown. Specifically, they contain borough names rather than the borough codes that Geosupport requires, and they contain English words and phrases such as 'intersection of' and 'between' that Geosupport does not recognize.)

<u>Table I-1: Types of Geographic Locations Processed</u>

<u>Type of Location</u>	**<u>Input Items Required to Specify Location,</u>** ***<u>Example</u>***
Address	Borough (or ZIP code) + address number + street: *Bronx, 307 East Tremont Avenue*
Non-Addressable Place Name	Borough (or ZIP code) + place name: *Manhattan, Carnegie Hall*
Addressable Place Name	Borough (or ZIP code) + address number + place name: *Manhattan, 2 Penn Plaza*

Table I-1: Types of Geographic Locations Processed

Type of Location	**Input Items Required to Specify Location,** *Example*
Street Intersection	Borough + two intersecting streets: *Brooklyn, intersection of Flatbush Avenue and Atlantic Avenue* OR (if a pair of streets has two points of intersection), Borough + two intersecting streets + compass direction: *Queens, east intersection of Alderton Street and Cromwell Crescent* OR Borough + Intersection Name: *Manhattan, Isaac Stern Place* OR Node ID: *0015376 (intersection of Broadway and Reade St, Manhattan)*
Street Segment	Borough + 'on' street + two consecutive cross streets: *Manhattan, Broadway between W 38th St and W 39th St*
Blockface	Borough + street segment + compass direction specifying side of street: *Manhattan, east side of Broadway between W 38th St and W 39th St*
Street Stretch	Borough + 'on' street + any two cross streets: *Manhattan, Broadway between W 38th St and W 54th St* OR (if either or both of the cross streets has two points of intersection with the 'on' street), Borough + 'on' street + two intersecting streets + compass direction(s): *Queens, Alderton Street between East intersection with Cromwell Crescent and intersection with 63rd Drive* OR Borough + 'on' street: *Manhattan, Broadway*
Tax Lot	Borough + tax block + tax lot: *Staten Island, Block 247 Lot 16*
Building	Building Identification Number (BIN): *5006708*

Table I-2 below lists all of the current Geosupport functions, indicating for each function the type of input geographic location processed, the geographic level of the output data, and a sample of output data items. The table does not include normalized street names, street codes and normalized address numbers among the sample output items listed; those items are always returned when the input involves street names and address numbers. Certain terms not defined until later have been included in Table I-2 for completeness.

Table I-2: List of Geosupport Functions

Function	Type of Input	Description of Output Data	Sample Output Items
1	Address or Non-Addressable Place Name	Blockface-related data	Cross streets, ZIP code, census tract and block, community district, police precinct, school district, health area, spatial coordinates COW Only: NTA, Police Patrol Borough
1A	Address or Non-Addressable Place Name	Property-related data	Tax block and lot identifiers, list of all buildings, addresses and street frontages of property, condo flag, spatial coords.
1B (COW Only)	Address or Non-Addressable Place Name	Combined Property and Blockface related data	See Function 1E below and Function 1A above (COW Only)
1E	Address or Non-Addressable Place Name	Blockface-related data	Same as Function 1 + political districts: Election, State Assembly and Senate, City Council, Congressional and Municipal Court Districts
1N	Street Name or Place Name	Normalized name, street code	
2	Street Intersection or Named Intersection or Node ID	Intersection-related data	Additional streets at intersection (other than input streets), census tract, community district, spatial coordinates COW Only: Some Political Geography
3	Street Segment	Segment-related data + data related to left and right blockfaces	Cross streets, left and right ZIP code, left and right census tract and block, left and right community district, node ID
3C	Blockface	Blockface-related data	Cross streets, ZIP code, census tract and block, community district, node ID
3S	Street Stretch	Street stretch-related data order along the stretch, approximate	Number of and list of intersections in distance in feet between intersections
AP (COW only)	Address	Property-related data of CSCL Address Point	BBL, BIN, Spatial coordinates of CSCL Address Point, Address Point ID
BB, BF	Character String	See right-hand column	Set of ten normalized street names in alphabetical order
BL	Tax Lot	Property-related data Same as Function 1A	
BN	Building	Property- and building-related data	Tax block and lot identifiers, list of all addresses of building, condo flag, spatial coordinates
D	5-Digit Street Code	Normalized 'primary' name of street	
DG	7-Digit Street Code	Normalized 'principal' name of local group	
DN	10-Digit Street Code	Normalized street name	

Function	**Type of Input**	**Description of Output Data**	**Sample Output Items**
HR	None – CICS GOAT	Geosupport Data Set Information	Creation date, Geosupport release cycle, number of records
N*	Street Name	Normalized street name	Name is normalized without a borough, therefore no consideration of validity.

As a mnemonic aid, Geosupport function codes have been chosen to be as descriptive as possible. For functions involving street input, the first character of the function code is numeric and indicates the number of input streets. (There is one exception, Function AP, which is described below). Thus, Functions 1, 1A, 1B and 1E process addresses and non-addressable place names, which are specified by a single input street or place; Function 2 processes intersections, which generally are specified by two input streets, a single intersection name, or a node ID. Functions 3, 3C and 3S process street segments, block faces and street stretches, respectively, all of which involve three input streets (an 'on' street and two cross streets), or, optionally, just an 'on 'street for Function 3S. The second character of the function code, if any, is often descriptive as well: the letter 'C' signifies that the function involves compass direction input; the letter 'S 'signifies street stretch input. Function AP is the one exception to the pattern described above: Function AP is a mnemonic for 'Address Point' and has one street address as input. The function codes of functions that do not involve street address input are abbreviations of descriptive terms for the functions: BB and BF are abbreviations for 'browse backward' and 'browse forward', BL for 'block/lot', BN for 'building number', and D, DG and DN for 'display', 'display group' and 'display name'.

I.5 Overview of System Architecture

The Geosupport System consists of two major components called the foreground component and the background component, as well as the utility programs GBAT, GOAT and AIMZ. The relationships among the foreground component, the background component and the user application program are described in this section and are illustrated in Figure I-1 below.

Both the foreground component and the background component consist of both software and files. Users access the foreground component either directly from user-written programs via Geosupport API calls, or indirectly via the utility programs, which in turn access the foreground component via the Geosupport API. The foreground component and the utility programs are installed on IBM mainframes at the city computer centers listed in Appendix 7. Users do not access the background component, and it is not described in this document beyond the brief remarks in this section.

The Foreground Component

The files of the foreground component contain the geographic data that the foreground software requires to process user requests. User programs never read the foreground files directly; they are read only by the Geosupport foreground software.

The foreground software processes the input data passed to it by a calling user program. It performs such tasks as standardizing input street names and house numbers, reading foreground files, and returning information retrieved from those files, or appropriate error codes and messages, to the user program.

The Background Component

The background component contains a set of interrelated base files of the city's geography. The background files are continually updated and validated by the GSS staff. The background software includes software for updating and validating the background files and software for generating new foreground files from the background files.

The background work takes place partly on an IBM mainframe at the centralized data center operated by the City of New York Department of Information Technology and Telecommunications (DoITT) and on PCs located at the Department of City Planning, and partly in an enterprise Geographic Information System (GIS) software environment running on DoITT's servers..

The background component, including GSS's GIS environment, is not accessible to users. To a user application, Geosupport appears to consist only of conventional data processing technology, and does not appear to include computer mapping capabilities. However, Geosupport, through its geocoding functionality, particularly its provision of spatial coordinates for an address, tax lot, or intersection, can facilitate the use of separate computer mapping or GIS software to display geographically-related user data graphically. In addition, many of GSS's background files are available in ESRI format for free download as part of our BYTES of the BIG APPLE™ product line which can be used in conjunction with a user's Geosupport output.

Foreground Component Updating: New File Releases

All of the foreground files are read-only files. They remain in production, unchanged, until GSS requests that DoITT replace them with a new set containing updated data. The set of foreground files in production at a particular time constitutes a release, and is identified by a release designator such as Release 15D. The first two characters of the release designator are the last two digits of the calendar year in which the release was deployed.

In the background component, GSS periodically performs a complex series of steps, called the Geosupport production cycle, to generate a new set of foreground files, quality assure those files, and deploy them for user access as a new Geosupport release.

Each new release is first implemented for user access on the DoITT mainframe. This is done in coordination with DoITT staff, who play an active role in migrating the files of the new release to all user-accessible CICS regions and the batch environment. After the new release is in production at DoITT for a brief testing period, GSS staff disseminate the new release to the other computer centers where Geosupport is installed. The Desktop Edition also becomes available shortly after the new release is in production on the DoITT mainframe.

For many applications, no special user action is required when a new release of Geosupport files is implemented; the application will continue to run as before. Of course, under the new release, Geosupport may respond differently to a particular set of input data than it had under previous releases. For example, it may return different output information for a given set of input data, it may accept input data that had previously been rejected, and it may reject input data that had previously been accepted.

In some applications in which data items obtained from Geosupport are stored in an application file, it may be appropriate for the user to update those stored items to reflect changes in each new Geosupport release. This is referred to as <u>resynchronizing</u> the user file with respect to the new Geosupport release. Resynchronizing is particularly important for applications that use Geosupport-provided items, such as street codes, in geographic retrieval keys. For such applications, the user should develop a resynchronization procedure, and should run that procedure each time a new release of Geosupport is implemented. Resynchronization is discussed further in Chapter IV.

<u>Foreground Component Updating: New Software Versions and Vestigial Features</u>

From time to time, GSS makes changes to the foreground software, to enhance the system or correct errors. The foreground software in production is identified by a version number, such as Version 13.1 etc. (Note that the foreground software is identified as a <u>version</u> while the foreground files are identified as a <u>release</u>.) On occasion, new foreground file releases and new foreground software versions are installed in production independently of one another, and therefore there is not a one-to-one correspondence between file releases and software versions. Typically, a file release and a software version are implemented simultaneously in what is referred to as a coordinated release.

Since the year 2013, the numbering scheme for a Software Version is yy.n, where ‘yy’ are the last two digits of the year and ‘n’ is the sequence number of the software version in that year, starting from ‘1’, e.g. Version 13.1. The numbering scheme for a Data Release is yy-x (or yyx), where ‘yy’ are the last two digits of the year and ‘x’ is the sequence letter of the data release in that year, starting from ‘A’, e.g. Release 15A).

It is a fundamental policy of GSS to strive to minimize the impact of Geosupport enhancements on existing applications. Whenever possible, enhancements are designed so that existing applications that do not require the new Geosupport feature need not be modified. In other words, enhancements are generally ‘transparent’ to existing applications. Although this is generally the policy of GSS, please see the SUMMARY OF CHANGES AND NEW FEATURES, at the beginning of this manual, for any item that could possibly affect your applications.

Over the years, numerous enhancements have been made to Geosupport, and virtually none of them have required existing applications to be modified or recompiled (except as necessary to take advantage of new features). As a consequence of this approach, Geosupport has a number of <u>vestigial</u> features. These are elements of the system, such as data items, work area formats, batch JCL, or entire functions that are still operational but are obsolete or have been superseded.

Vestigial features will continue to be supported for the most part, so that existing applications that use them will continue to run without modification. However, vestigial features will not be enhanced. Moreover, vestigial features have that status because of some shortcoming. <u>Users are strongly encouraged to update their existing applications to eliminate all usage of vestigial features. All new applications should be designed to avoid any usage of vestigial features.</u>

Vestigial features are mentioned in appropriate sections of this document, and are identified as such, but in many cases they are not documented in detail. An example of a vestigial feature is the erstwhile Function 2C (superseded by an enhancement to Function 2; discussed in Section VII.2).

<u>Character-Only Work Areas (COWs)</u>

COWs are an enhancement to Geosupport that was announced in Technical Bulletins in 2002. The

Character-Only Work Areas are discussed, specifically, in Appendices 12, 13 and 14, and, in general, throughout the entire document.

User Feedback of Rejects

Typically, some of the geographic locations passed to Geosupport by a user application will be rejected as invalid. A reject could be caused by invalid user input data, such as a misspelled street name or an invalid address; or it could be caused by a Geosupport problem, such as an error or omission in Geosupport's internal data. Users should examine their rejects, and should report those rejects that cannot be attributed to user-caused errors to GSS staff by emailing GSS_Feedback@planning.nyc.gov (for more information, see Appendix 6). In addition, users should report cases where Geosupport has accepted the input data but has returned output information that the user believes to be incorrect (for example, a ZIP code that is believed to be incorrect for a particular input address). GSS relies on feedback from users as an essential source of information for quality-assuring Geosupport's data and keeping the data up-to-date and accurate.

GSS researches feedback received from users and updates the Geosupport background files as appropriate. Such corrections become visible to user applications only after a new release of the foreground files reflecting the corrections is deployed for user access. A time lag of as much as several months is possible between the reporting of a reject to GSS and the appearance of the correction in the foreground component.

Figure I-1 below illustrates the basic architecture of the Geosupport System.

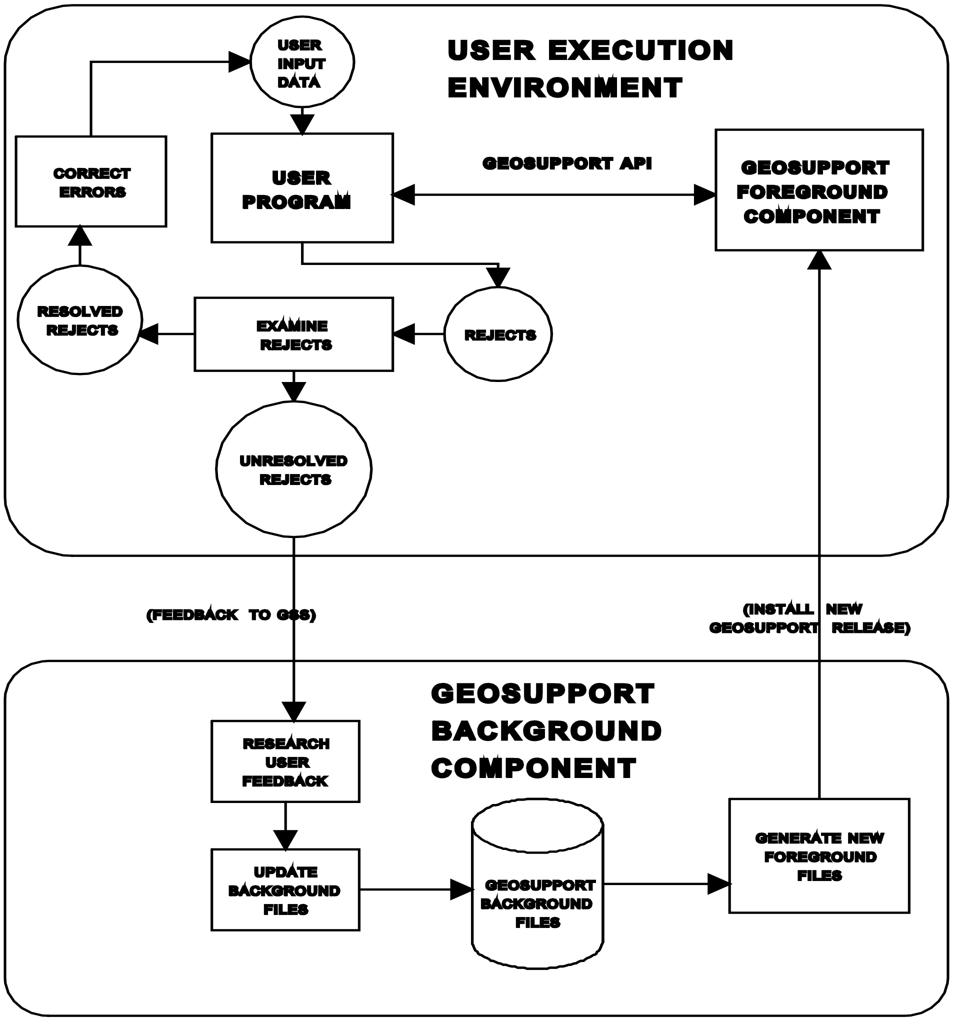


Figure I-1 Geosupport Architecture: Components and Producti Cycle

Please note the following elements depicted in Figure I-1:

- The interaction between the application program and the Geosupport foreground component via the Geosupport API

- The examination by the user of rejects and the feedback of unresolved rejects to GSS for research and possible background file updating

- The periodic generation (in the Background Component) of new releases of foreground files

CHAPTER II: INTRODUCTION TO THE GEOSUPPORT API

II.1 Introduction

This chapter presents an overview of the Geosupport Application Programming Interface (API), the mechanism through which a user-written application program interfaces directly with the Geosupport System. The basic architecture of the API, the user programming procedure required to utilize the API, and reject handling are described. The important distinction between one-work-area and two-work-area calls is discussed, and the long-work-area-2 option is described. The material in this chapter is general in nature. Chapter VIII discusses in detail the user programming statements and JCL required to utilize the API, and other chapters discuss application design issues specific to the various functions.

The Geosupport API consists of the following elements:

- A Geosupport load module called the <u>driver</u> that the user must link-edit into the application program. The driver serves as an intermediary between the user's application program and the Geosupport foreground software.

- One or two standard layout <u>work areas</u> that the user must include in the application program and that are used to pass data between the application program and Geosupport.

- <u>Programming statements</u> that the user codes in the application program utilizing the driver and work area(s) to interact with Geosupport.

With very few exceptions, the Geosupport API is identical in the batch and CICS environments. The principal exception is the name of the driver.

The driver has two principal purposes. It passes execution control from the user program to the Geosupport foreground software, which is external to the user program load module. The driver also passes addressability to the work areas (which are located within the user program) to the Geosupport foreground software, thereby enabling the foreground software to access those work areas.

User programs never read Geosupport's internal files directly. They are read only by the Geosupport foreground software, which returns data retrieved from those files to the calling user program in the work areas. In batch applications, the user JCL for the execute step must include DD statements for the load libraries that contain the Geosupport foreground software and data. Chapter VIII describes the JCL required for batch execution, and Appendix 8 contains examples.

Figure II-1, below, illustrates the elements of the Geosupport API as just described. The illustration assumes that the user program has a data file into which it writes information obtained from successful calls to Geosupport, and another file, printed report or screen display for handling rejects.

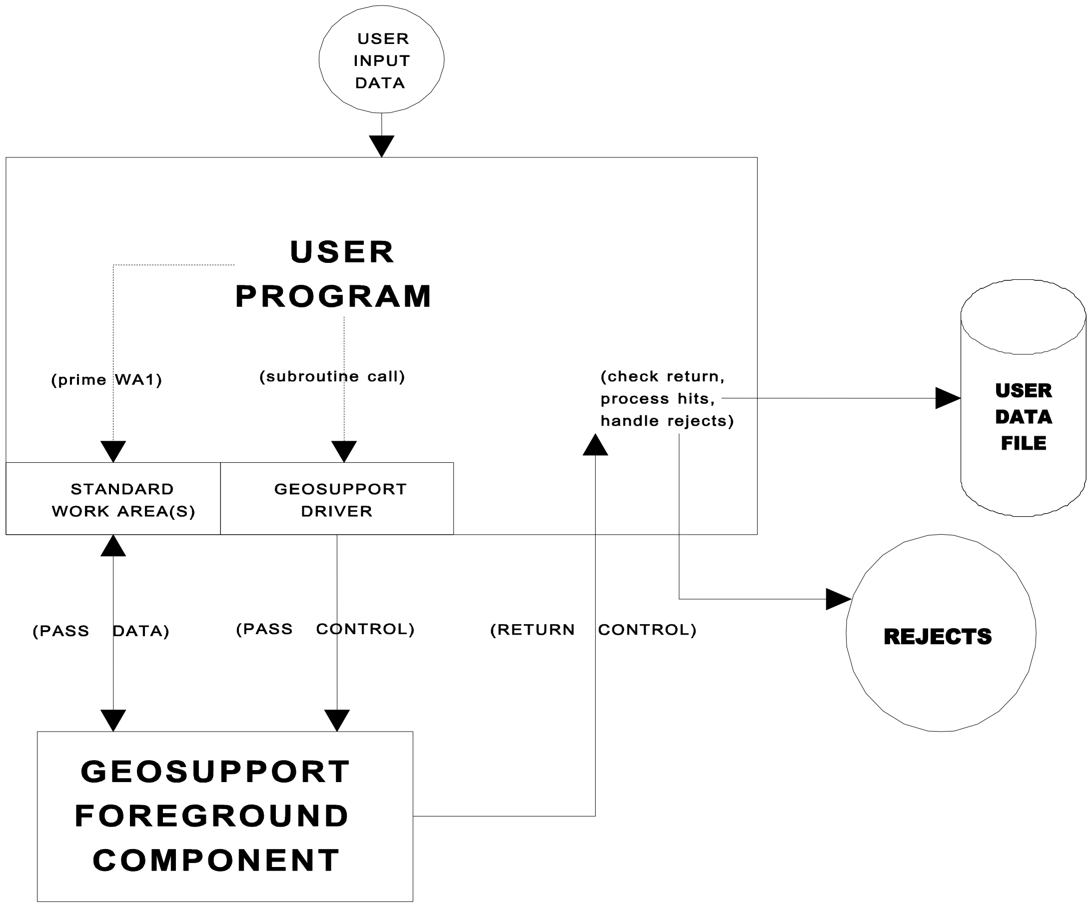


Figure II-1: The Geosupport API

When a user program issues a call to the driver, either one or two work areas are passed as parameters of the call. Work Area 1 (WA1) is always passed, and its length and layout are the same for all functions. Work Area 2 (WA2) may also be passed, depending on the Geosupport function being requested and the type of information needed by the user's application. The length and layout of WA2 are determined by the function and, for functions that have the ‘long Work Area 2 option’, by whether that option is specified. The distinction between one-work-area calls and two-work-area calls is discussed in Section II.4. The long Work Area 2 option is discussed in Section II.5. There is also the Auxiliary Segment option which is discussed in Section II.6 and the Extended Work Area 2 option which is discussed in Section II.7. The work areas may be Mainframe-Specific Work Areas (MSWs) or Character-Only Work areas (COWs). For a description of these formats see Appendix 12.

For the convenience of users whose programs are written in COBOL, IBM mainframe assembler, PL/1, C or NATURAL, Geosupport COPY libraries (copylibs) are maintained, containing source code layouts of each work area in each of those programming languages. The Geosupport COPY libraries are discussed in detail in Chapter VIII. The use of the Geosupport COPY libraries is optional but strongly recommended.

Note for CICS NATURAL Users: In order for Geosupport's CICS driver to pass control to the foreground component of Geosupport properly, it must know whether the calling user program is written in NATURAL. The driver determines this by examining a Geosupport table. This table contains a list of the transaction-IDs of CICS transactions that launch NATURAL programs that call Geosupport. If the transaction-ID of such a transaction is not in the table, the driver will mistakenly assume that the program calling Geosupport is not written in NATURAL, and the transaction will terminate abnormally when the program calls Geosupport.

At DoITT, the updating of the Geosupport NATURAL transaction-ID table is the responsibility of DoITT staff. Therefore, DoITT users who have new CICS applications written in NATURAL that are to access Geosupport must inform DoITT staff, who will enter the new transaction-ID into the table. CICS NATURAL users running at other computer centers should contact GSS.

II.2 Geosupport Return Codes and Reject Handling

Geosupport has an elaborate apparatus to support application problem-handling. There are three output fields in Work Area 1 that are used to inform calling applications of the outcome of each call to Geosupport. These fields are the Geosupport Return Code (GRC), the Reason Code and the Message. A comprehensive list of GRCs, Reason Codes and Messages is contained in Appendix 4.

The GRC is a two-byte character item into which Geosupport inserts a value before returning control to the calling application, as follows.

- A GRC value of '00' indicates unconditionally successful completion.
- A GRC value of '01' indicates a warning condition.
- A GRC value other than '00' or '01' signifies unsuccessful completion, or rejection, caused by either a system error or a user error.

Since Function 1B is a combination of two functions, viz. Functions 1A Extended and 1E Extended, a second set of GRC, Reason Code and Message field is defined in Work Area 1. This second set contains the GRC, Reason Code and Message for the Function 1A Extended portion of the Function 1B call. The original GRC, Reason Code and Message fields in Work Area 1 contain the GRC, Reason Code and Message from the Function 1E Extended portion of the Function 1B call. (It is entirely possible that Geosupport will find one set of information and not find the other. There can be an error code and message in the new GRC and Message fields indicating PAD data (Function 1A) has not been found, and a 00 or 01 GRC in the original Return Code field indicating Blockface (Function 1E) information has been found, or just the opposite.)

Warnings are conditionally successful completions. They alert the user to unusual aspects of the input or output data, or signify that Geosupport made an assumption about or modification to the input data. For example, Functions 1A, 1B and 1E issue a warning to alert the user that a required hyphen is missing from an input house number and that Geosupport has inserted the missing hyphen into the output normalized house number.

There are situations where user input data may result in multiple warning messages. In some cases, the warnings may be combined into a single message; however in other situations, it is not possible to combine the messages. When that happens, Geosupport attempts to select the warning message that would be most important. Based upon user feedback, the relative importance of the warning messages may be updated.

It is advisable for application designers to review the possible warnings that can be elicited by the functions their application will be calling (delineated in Appendix 4), and to determine whether there are types of warnings for which it would be appropriate to provide special handling routines. In some applications, it may be appropriate simply to display the messages that accompany warning returns, and otherwise to process warnings in the same fashion as unconditionally successful completions.

For all unconditionally successful completions, Geosupport returns values in the work area(s) for the full set of output data items that the given Geosupport function is designed to provide. (But see the note of caution regarding the return of values in work area output fields in Section II.4.) In the case of a warning, certain output fields may be 'empty' (blank, all zeros or otherwise devoid of information), depending on the nature of the warning. In the case of a rejection, almost all output fields are returned empty, but there will be values in the GRC and Message field.

Rejects can be caused either by a system error or a user error.

- System errors are problems that are not attributable to the user program or to the user input data, and therefore are beyond the user's control. Typical system errors are hardware errors, operating system errors and Geosupport software errors or data errors.

- User errors can occur when the user's program makes a call to Geosupport improperly, such as passing an invalid number of work areas; or when Geosupport considers the user's input data to be geographically or otherwise invalid, such as an invalid function code, an empty input field for which a value is mandatory, an invalid borough code, an invalid address.

For all warnings and rejects, the Message field contains an appropriate message. In addition, for all warnings and for some rejects, a value is returned in the Reason Code field, specifying more precisely the reason for the warning or rejection.

The user program should be designed so that, immediately upon receiving execution control back after a call to Geosupport, it examines the GRC (and the Reason Code, when relevant) to determine the outcome of the call, and takes appropriate action. (Note: the textual content of Geosupport messages is subject to revision without notice. Therefore, application developers should program rejection processing based on the value of the GRC and Reason Code rather than on the Message. Note also, that, in very rare instances a GRC may be retired and reused for a new message. If and when this happens, the Geosupport users will be notified of the change in advance so that appropriate adjustments can be made.)

In batch applications, appropriate actions for processing a warning or reject might include printing out the GRC, Reason Code and Message and/or writing the record to a reject file. In interactive applications, appropriate actions might include displaying the GRC, Reason Code and Message on the screen, and (for user errors, not system errors) giving the data entry operator an opportunity to correct the error and resubmit.

II.3 Geosupport API User Programming Procedure

A field in a Geosupport API work area into which the user program inserts a value to be passed to Geosupport is referred to as an input field of the work area (because it is an input datum to Geosupport). A field in a work area into which Geosupport inserts a value to be returned to the user program is called an output field. WA1 contains both input and output fields. WA2 contains output fields only.

The loading of values into WA1 input fields by the user program prior to issuing the call to the driver is referred to as priming WA1. The function being requested, determines which WA1 input fields must be primed, which are optional, and which are not used. One WA1 input field that is mandatory for all calls is the field for the function code. Combinations of other WA1 input fields, such as those for borough code, address number, street name and street code fields, collectively serve to specify a geographic location to be processed. Still other WA1 input fields are for specifying processing options, such as parameters that control how street names are normalized; most of those fields have default values and are optional.

It is essential that the user program clear WA1 to blanks before priming it, in order to eliminate any 'stray' data inadvertently lingering from a previous call. Various fields in the WA1 output area are initialized to blanks to help avoid extraneous data. If the call involves two work areas, however, WA2 need not be cleared by the user program before calling the driver, because Geosupport clears WA2 automatically.

After clearing WA1 to blanks, the user program primes WA1, and then issues a standard subroutine call to the driver, passing the work area(s) (more precisely, their memory addresses) as parameters of the call. (Note that a standard subroutine call is used to call the driver even in the CICS environment, rather than a CICS LINK.) The driver, in turn, passes execution control to Geosupport (more precisely, to the foreground component of Geosupport), which is external to the user program load module.

When Geosupport completes its processing for the given call, control is returned to the driver, which in turn returns control back to the user program. The user program can issue any number of calls to Geosupport during a single execution. Each call is an independent event, which Geosupport processes based entirely on the contents of WA1 passed in that call; Geosupport does not 'remember' previous calls.

The procedure that a user program would follow to call Geosupport via the API can be summarized as follows:

1) Clear WA1 to blanks.

2) Prime WA1. That is, move values to the appropriate input fields in WA1. The function code is always required; other required and optional input fields depend on the function, and are listed in Appendix 1.

3) Issue a standard subroutine call to the driver, passing as calling parameter(s) either WA1 only or both WA1 and WA2. The required calling statements are described in Sections VIII.3 and VIII.5. The distinction between one- and two-work-area calls is discussed in Section II.4.

4) Upon return of control to the user program, examine the GRC (and the Reason Code, if

appropriate) in WA1, and take appropriate action. A list of the GRCs and Reason Codes that can be produced by each function is in Appendix 4.
a. For Function 1B, examine both sets of GRC (and Reason Code, if appropriate) in WA1.

II.4 One-Work-Area and Two-Work-Area Calls

There are important distinctions between one-work-area and two-work-area calls. When a Geosupport function is called using one work area, Geosupport 'normalizes' certain input items, that is, it reformats them into a standard form. For each such input item that Geosupport successfully normalizes, there is a WA1 output field into which Geosupport inserts the item in normalized form. Normalizing includes such processing as right-justifying and zero-filling certain numeric input items (such as tax block and tax lot numbers), and providing fully spelled out borough names corresponding to input borough codes. Normalizing also encompasses performing complex algorithms to reformat street names and address numbers into standard formats.

After normalizing the appropriate input items, if the one-work-area call involves street name input items, Geosupport attempts to retrieve the street code corresponding to each input street name. If this is successful, each street code is returned in WA1. In summary, the processing Geosupport performs for a one-work-area call consists of normalization of the input data and the return of normalized values and street codes (if any) in WA1.

The processing performed for a two-work-area call includes all of the processing performed for a one-work-area call as well as certain additional processing. The nature of this additional processing depends on the Geosupport function. The additional processing generally consists of accessing Geosupport files in order to attempt to obtain certain geographic information associated with the input data. If the file access is successful, this geographic information is returned in WA2 (but see the cautionary note below). The process of associating higher level geographic information with an individual location is called geocoding, and the items of higher level information are called geocodes. Typical examples of geocodes returned by Geosupport in WA2 are community district, census tract, ZIP code and health area.

Caution: For a two-work-area call, a GRC of '00' or '01' signifies that Geosupport has accepted as valid the input geographic location specified by the user, but it does not guarantee that every item normally returned by the given function in WA2 contains a non-empty value. If a WA2 field is returned empty, this may or may not be erroneous. The field might be empty (blanks, zeros or otherwise devoid of information) because of an erroneous Geosupport data omission; this should be reported to GSS staff using the feedback procedures described in Appendix 6. However, the field might be empty intentionally and non-erroneously because the type of geographic area it represents does not completely cover the city. For example, there are certain non-residential areas of the city where the Department of Sanitation has not defined Collection Scheduling districts. When a two-work-area call results in a GRC of '00' or '01', it is the responsibility of the user program to determine whether the particular WA2 fields being used by the application are non-empty.

Except for system errors, the outcome of a call to Geosupport, as signified by the GRC, Reason Code and Message, concomitantly has significance with respect to the geographic validity of the input data. The type of validation performed depends on the function and on whether a one- or two-work-area call has been made. The validations performed in a two-work-area call to a function are always more extensive than those performed in a one-work-area call to the same function. To illustrate this, consider Function 2, which processes an intersection specified in terms of two streets (note that

Function 2 can also process intersections based on an intersection name or a node ID, but those inputs are not relevant to this example). In a one-work-area Function 2 call, if the two input streets were specified in the form of street names rather than street codes, Geosupport attempts to normalize the street names and obtain their street codes; success in doing so therefore validates that each input street name is recognizable to Geosupport as a valid name of a specific New York City street. However, the two input streets (names or codes) are processed independently of each other and are not treated as collectively defining a geographic location, in this case an intersection. In other words, when Function 2 is called using one work area, the existence of the intersection formed by the two input streets is not validated; the call will result in a GRC of '00' or '01' if both input street names are successfully normalized and recognized, regardless of whether the two streets intersect. In a two-work-area Function 2 call, on the other hand, Geosupport treats the two input streets as the intended specification of an intersection; an (unconditionally or conditionally) successful outcome validates the existence of this intersection, and if it is valid, Geosupport returns information about the intersection in WA2. For Geosupport functions in general, a one-work-area call validates only that the input items can be normalized and that input street names are recognizable to Geosupport, while a two-work-area call additionally provides some level of validation of the geographic location specified collectively by the input items. The specific validations performed in a two-work-area call to each Geosupport function are described in Chapters V through VII.

A two-work-area call causes Geosupport to access files additional to those accessed for a one-work-area call to the same function. Therefore, to maximize execution efficiency, when an application does not require the additional output data and/or validation processing that a two-work-area call provides, the application should issue a one-work-area call.

II.5 The Long Work-Area-2 Option

From time to time, GSS adds new output fields to a function's WA2. For example, in 2011, the WA2s of several functions were enhanced to include fields for the 2010 census tract and block. In general, when new output fields are added to a Geosupport work area, GSS utilizes existing filler space in the work area for those fields, if available. In that way, the basic layout of the work area remains the same, and existing users of that function who do not need to make use of the new items are not compelled to modify their applications.

If there is not enough filler space available in a function's WA2 to accommodate new fields, GSS introduces a 'long WA2 option' for that function, as described below. This approach enables new data items to be made available to applications that need them, without affecting existing applications that do not need them. The MSW functions that currently have the long WA2 option are Functions 1, 1E, 1A, BL and 3. The COW functions that currently have the long WA2 option are functions 1A and BL. The long WA2 option may be implemented for other functions in the future.

When issuing a two-work-area call to a function that has the long WA2 option, the application has the option to use either the 'regular WA2' (the work area layout that had already been in existence before the long WA2 option was introduced for that function), or the 'long WA2'. The application informs Geosupport that the long WA2 is being used by inserting an 'L' in a WA1 input field called the Long Work Area 2 Flag. When the long WA2 option is specified, it is the application's responsibility to pass a WA2 of the proper length to the Geosupport driver. If the application passes a blank in the Long WA2 Flag, the regular WA2 is used. Both the regular and long WA2s are documented in Appendix 2.

The MSW Function 3 exemplifies the role of the long WA2 option. MSW Function 3's regular WA2 is 200 bytes long, almost all of which was long ago allocated to specific fields, leaving little filler space available for new fields. At some point in the past, the necessity to add new fields for which no space was available in Function 3's regular WA2 impelled the introduction of the long WA2 option for Function 3. Function 3's long WA2 is 300 bytes long, and consists of the same 200 bytes of information that are returned in the regular WA2, followed by 100 additional bytes containing fields for several additional items that the regular WA2 was not designed to include, as well as ample filler space for future enhancements. Applications that existed prior to the introduction of the long WA2 option for Function 3, and that have no need of any of the fields returned in the last 100 bytes of the long WA2, are able to continue running properly without modification using the regular WA2.

II.6 The Auxiliary Segment Option (COW Only)

Similar to the 'long WA2 option', the 'auxiliary segment option' is available for COW Functions 3 and 3C. This option adds an additional 500 bytes to the COW WA2 output. This option allows the user to request that, in the special case of a record that actually encompasses more than one segment, Geosupport will return the Segment IDs of all the segments (up to 70).

II.7 The Extended Work Area 2 Option - via Mode Switch (COW Only)

To accommodate additional information from Geosupport, an Extended version of Work Area 2 has been defined for various functions. Users may request the Extended Work Area 2 by setting the Mode Switch in Work Area 1 to 'X'. This option is available only for COW Functions.

Users have expressed a desire to receive **Street Names along with Street Codes** when making Geosupport calls. In previous versions of Geosupport, Street Names (of cross streets, etc.) were not a part of Work Area 2. Users may request an Extended Work Area 2 for Functions 1, 1E, 1A, 3, 3C, BL and BN. These Extended Work Areas contain street names in addition to Street Codes. Users will no longer have to make separate D, DG, or DN Geosupport calls (or use the Cross Street Names Flag) to get the street names. In addition, new data will be returned (e.g. CSCL data) in the Extended Work Area 2, and space is reserved for additional new data as it becomes available. Users who think they may want to use this new data in the future should consider modifying their applications to request the Extended Work Area 2s with the Mode Switch. The street codes and street names that are returned by Extended functions typically are the Principal Street Name and 7-Digit Street Code. This typically gives the user the best name for the location being requested.

Users may request an Extended Work Area 2 for Functions 1, 1E, 1A, 3, 3C, BL and BN. The Extended Work Area 2 contains Street Names in addition to Street Codes. New data (e.g. CSCL data) is also contained in the Extended Work Area 2, and space is reserved for additional data as it becomes available. Users who want to use this new data should consider modifying their applications to request the Extended Work Area 2s with the Mode Switch. The street codes and street names that are returned by Extended functions typically are the Principal Street Name and 7-Digit Street Code. This usually gives the user the best name for the location being requested. Some other data that may be included in the Extended Work Areas are: Health Center District, NTA Name (Neighborhood Tabulation Area Name), and X-Y coordinates of 'From' Node and 'To' Node..

The Mode Switch is a one-byte field, in column 330 of the COW Work Area 1. The only valid values for the Mode Switch are "X" for Extended, and blank. The Extended Mode cannot be requested when the Long-Work-Area 2 option is requested. The Extended Mode can, however, be requested when the Auxiliary Segments are also requested. The Extended Work Area layouts for the various functions and options may be found in Appendix 13.

Note that when the Mode Switch is set to 'X", for Functions 1, 1E, 1A, 3, 3C, BL, and BN the functions may be referred to as Function 1 Extended, 1E Extended, 1A Extended, 3 Extended, 3C Extended, BL Extended, and BN Extended, respectively. The functions may also be referred to as 1X, 1EX, 1AX, 3X, 3CX, BLX, and BNX respectively.

The Mode Switch is supported by GBAT.

The COPYLIBs include new Work Area definitions for the Extended versions of WA2. In general, names of existing individual fields remain the same, except for the prefix, e.g. the prefix for COBOL Function 3 is PIWA2-FN3 and the prefix for COBOL Function 3 Extended is PIWA2-3X.

CHAPTER III: STREET NAME PROCESSING

III.1 Introduction

This chapter discusses Geosupport's street name processing in detail. (In this chapter, unless otherwise noted, the term 'street name' is used generically to encompass not only names of city streets, but also a wide variety of other New York City geographic feature names that Geosupport recognizes, including the names of some tunnels, bridges, rail lines, shorelines and geographic place names of various kinds.) The street name normalizing algorithm is briefly outlined. Two aspects of street name normalizing that are under user control, the selection of a street name normalization format and the Street Name Normalization Length Limit (SNL) parameter, are described. Other street name processing features that are described are partial street names, similar names, street name browsing, and selection of output street names for Character-Only Work Area calls . Certain non-street feature names, place names and 'pseudo-street names' that are recognized by Geosupport are also discussed in this chapter. The related topic of street codes is discussed in detail in Chapter IV.

It is important to note that New York City geographic names are meaningful only when the borough is identified, since features in different boroughs can have the same name. For example, all five boroughs have a street named BROADWAY. In general, the borough is identified via a borough code. For Functions 1, 1A, 1B, 1E and AP, the borough may also be identified via a ZIP code.

Applications pass up to three input streets to Geosupport in a single call, depending on the function being called. For most of the functions that accept street input, input streets are passed either in the form of street names or in the form of street codes. The exceptions are that Function 1N accepts street name input only, and the display functions, Functions D, DG and DN, accept street code input only.

Input streets are passed to Geosupport using as many as necessary of WA1's three input street name fields or its three input street code fields. Each WA1 input street name field is 32 bytes long. If there is more than one input street in a call, they must all be of the same type, either all names or all codes, not a combination of both types. If both street names and street codes are specified in WA1, for all functions other than D, DG, and DN, Geosupport processes the street names and ignores the street codes. For functions D, DG, and DN, the street names are ignored.

When street input is in the form of street names, before attempting to identify which New York City street an input name refers to, Geosupport attempts to 'normalize' the name by executing a systematic algorithm intended to produce a version of the name in a standardized format. If normalization is successful, Geosupport returns the normalized street name(s) to the user in as many as necessary of WA1's three output normalized street name fields. Geosupport's normalizing algorithm is designed so that users have considerable leeway in spelling input street names. For example, input names may contain commonly used abbreviations for words like avenue, street, boulevard, east, etc.

When Geosupport is able to normalize an input street name successfully, it uses the normalized name to read an internal Geosupport file in order to obtain the street code. Successful normalization followed by successful street code retrieval constitutes Geosupport System validation of the input street name, i.e. its identification or 'recognition' as the name of a specific New York City street. Note that successful normalization alone does not constitute validation of the input street name.

Geosupport's street name normalizing algorithm is highly customized for New York City. The algorithm is complex and a complete description of it is beyond the scope of this document. In any event, the algorithm is performed automatically, and users need to be aware primarily of two aspects that they can control. These are a parameter for controlling the maximum length of normalized street names, called the SNL; and a choice of two formats for normalizing street names, called the compact and sort formats. These features are described in detail in this chapter. For completeness of the discussion, and because some familiarity with the normalizing algorithm may aid the user in understanding possible causes of rejection, a summary description of the normalizing algorithm is also given in this chapter.

Function 1N. Function 1N can be used to normalize a street name and retrieve its street code, without having to specify a particular geographic location. Function 1N requires the input only of a borough code and a street name. The SNL parameter and the selection of a street name normalization format can be specified in a Function 1N call. Function 1N is called using Work Area 1 only.

III.2 Street Name Normalizing and the SNL Parameter

Street name normalizing is governed by a user-controllable parameter called the Street Name Normalization Length Limit (SNL), which sets an upper limit to the lengths of output normalized street names. The SNL feature is particularly useful in applications that have a restricted amount of space for the display of street names, such as when addresses must be visible through transparent envelope windows, or when a screen display or printed report line is crowded.

The user specifies an SNL value using the two-byte WA1 input SNL field. The permissible range of SNL values is 4 through 32, inclusive. The setting of an SNL value is optional. If the user specifies no SNL value, the default value of 32 is in effect for that call to Geosupport. Every call to Geosupport is an independent event, even within a single execution of a user program, so if an SNL value other than 32 is desired in a particular call, it must be explicitly specified in that call; Geosupport does not ‘remember’ an SNL value specified in a previous call.

Geosupport attempts to normalize each input street name in such a way that the result has a length in bytes that does not exceed the SNL value in effect. The SNL also governs the length of the normalized street name output returned by the display functions (Functions D, DG and DN). However, the SNL does not limit the lengths of input street names. Regardless of the SNL value, the maximum length of an input street name is 32 bytes, which is the length of the WA1 street name input fields.

The smaller the SNL value that the user specifies is, the more difficult it is for Geosupport to normalize input street names within that length limit, and therefore the greater the proportion of input street names that are likely to be rejected as not normalizable. Consequently, users who must limit the lengths of normalized street names should specify the largest possible SNL value that can satisfy the needs of their application. An SNL value of 32 (the default) insures that virtually all New York City street names can be normalized. It is recommended that in the design of new applications, 32 bytes be allocated for street name fields in files, programs, screens, reports and manual forms whenever possible.

The following is a simplified description of the street name normalizing algorithm:

- Parsing the input name: The normalizing algorithm logically separates the input name into ‘words’ delimited by blanks. Any sequences of consecutive blanks are consolidated to single

blanks. If any numeric characters (the digits '0' through '9') and non-numeric characters are adjacent to each other, they are separated by the insertion of blanks. For example, W2PLACE becomes W 2 PLACE.
To improve readability, normalization processing deletes any blanks that appear before and/or after a slash (/) or a dash (-) in a street name. The normalization process also does not generate any such blanks. In the case where there is a numeric before or after the slash or dash, the numeric is treated as alphabetic. For example, '`I - 25`' becomes '`I-25`' and `ABC / DEF` becomes `ABC/DEF`. See Section III.3 for a discussion of Street Name Sorting and how a numeric is normalized in a street name.

- Deleting ordinal suffixes: Numeric words in input street names are often expressed as ordinal numbers (integers formatted to specify order, consisting of numeric digits followed by ordinal suffixes, such as '1st', '2nd', '3rd', '4th'). The normalizing algorithm deletes the ordinal suffixes (the endings 'st', 'nd', 'rd' and 'th') from such words. For example, WEST 3RD STREET is converted to WEST 3 STREET. Note, however, that numeric words that are expressed alphabetically (such as WEST THIRD STREET) are not modified.

- Handling special characters: The normalizing algorithm deletes any periods (the character '.') at the ends of words. For example, ST. MARKS PLACE becomes ST MARKS PLACE. Any periods not at the ends of words are replaced by blanks, which will usually cause rejection. Special characters other than periods are left unaltered, and will cause rejection unless those special character(s) are specifically valid for the given street name. (Currently, the only special characters that appear in specific street names accepted by Geosupport are: ' (apostrophe), ((open parenthesis) and) (closed parenthesis), & (ampersand), / (forward slash) and – (dash or hyphen). . Currently, the only special characters that appear in specific street names accepted by Geosupport are: apostrophes, open and closed parentheses, ampersands, forward slashes, dashes and hyphens, viz, ' ( ) & / -. In general, if Geosupport accepts a street name with a special character, it will also accept that street name without the special character. For example, in Manhattan, both SAINT MARK'S PLACE and SAINT MARKS PLACE are accepted. In the Bronx, O'BRIEN AVENUE, OBRIEN AVENUE and O BRIEN AVENUE are all accepted. In Manhattan, BEN-GURION PLACE, BEN GURION PLACE and BENGURION PLACE are all accepted.

- Expanding and abbreviating standard words under SNL constraint: There are certain standard words that appear frequently in street names, either fully spelled out, such as EAST, AVENUE and BOULEVARD, or in the form of standard abbreviations, such as E, AV or AVE, and BL or BLVD, respectively. If the input name is shorter than the SNL value in effect, then to the extent permitted by that SNL value, the normalizing algorithm expands standard abbreviations to their full spellings. Conversely, if the input name is longer than the SNL value in effect, then the normalizing algorithm attempts to shorten the name to the extent required by that SNL value, by replacing fully spelled out standard words with standard abbreviations.

- Suppressing expansion in special cases: The normalizing algorithm recognizes certain special cases in which a character string normally treated as a standard abbreviation is not to be so treated, that is, is not to be expanded under any circumstances. For example, ST is expanded to STREET only when it occurs as the last word of the input name; this prevents the conversion, for example, of ST MARKS PLACE into STREET MARKS PLACE. Certain character strings that are treated as standard abbreviations in most street names are not so treated in specific street names; for example, the 'S' in the Brooklyn street name AVENUE S and in the Bronx street name S STREET is not expanded into SOUTH; the 'E' in the Manhattan street name

ABRAHAM E KAZAN STREET is not expanded into EAST; the ‘DR’ in the Manhattan street name DR MARTIN L KING JR BOULEVARD is not expanded into DRIVE.

<u>III.3 Street Name Sorting and Normalization Format Options</u>

Many applications display addresses or other types of geographic locations in their reports and online screens, including normalized street names obtained from Geosupport. Applications often sort their data by geographic location for display. However, street names that contain numeric characters do not sort appropriately when they have been normalized in the ‘conventional’ fashion. To solve this problem, Geosupport is able, at the user’s option, to normalize street names either into the conventional format, which is called the <u>compact format</u>, or into a format that is more suitable for sorting, called the <u>sort format</u>. The compact and sort formats differ only for street names that contain numeric characters. Such a street name contains, in the sort format, a number of ‘alignment’ blanks in front of the numeric digits in the street name, which serve to align the numeric digits for proper sorting. In the compact format, no alignment blanks are present. The presence or absence of the alignment blanks is the sole difference between a name that contains numeric characters normalized in the sort format and the same name normalized in the compact format. We illustrate by displaying, side by side, two sorted lists of a sample of Manhattan street names normalized in the two formats:

<u>SORTED LIST IN COMPACT FORMAT</u>	**<u>SORTED LIST IN SORT FORMAT</u>**
`EAST HOUSTON STREET`	`  5 AVENUE`
`EAST 1 STREET`	` 10 AVENUE`
`EAST 10 STREET`	`EAST    1 STREET`
`EAST 102 STREET`	`EAST    2 STREET`
`EAST 129 STREET`	`EAST    3 STREET`
`EAST 13 STREET`	`EAST    9 STREET`
`EAST 167 STREET`	`EAST   10 STREET`
`EAST 2 STREET`	`EAST   13 STREET`
`EAST 20 STREET`	`EAST   20 STREET`
`EAST 201 STREET`	`EAST   79 STREET`
`EAST 3 STREET`	`EAST  102 STREET`
`EAST 79 STREET`	`EAST  129 STREET`
`EAST 9 STREET`	`EAST  167 STREET`
`FULTON STREET`	`EAST  201 STREET`
`10 AVENUE`	`EAST HOUSTON STREET`
`5 AVENUE`	`FULTON STREET`

As this example illustrates, in the compact format, normalized street names do not sort appropriately. For example, EAST 10 STREET sorts in front of EAST 9 STREET, and 10 AVENUE sorts in front of 5 Avenue. In contrast, in the sort format, the presence of the alignment blanks causes street names containing numeric characters to sort appropriately. Notice that <u>the presence of the alignment blanks in the sort format, and their absence in the compact format, causes a change to the sort order of numeric street names not only relative to each other, but also relative to non-numeric street names.</u> For example, in the compact format, FULTON STREET sorts in front of street names that begin with a numeric character, such as 10 AVENUE, while in the sort format it sorts behind them. Similarly, in the compact format, EAST HOUSTON STREET sorts in front of the street names that start with the word EAST followed by a numeric word, while in the sort format, it sorts behind those street names.

Note that for purposes of this discussion, all samples of sort output assume the EBCDIC collating sequence.

<u>The sort format should always be used for street names that are to be sorted.</u> However, the sort format is not as well-suited for display purposes as the compact format, since the alignment blanks give the sort format an awkward appearance. In applications that must display data sorted by geographic location, sorting should be done using street names in the sort format, while street names should be displayed in the compact format. (This would, of course, necessitate the application making a second call to Geosupport for each name, to obtain the alternative format. Function 1N could be used for that purpose.)

<u>The sort format is the default format.</u> That is, Geosupport will normalize input street names into the sort format unless the user program specifically requests the compact format by placing a 'C' in the Street Name Normalization Format Flag field in WA1. Note that every Geosupport API call is an independent event: Geosupport does not 'remember' previous calls. Therefore, if repeated calls are being made within a single execution of an application program, and the user wishes all the input street names to be normalized into the compact format, a 'C' must be present in the flag during each call.

We now give a precise description of the sort format. First, note that New York City street names have numeric characters (the digits '0' through '9') in at most one word. If a street name has such a 'numeric word', that word consists only of a one-, two- or three-digit number, possibly followed by an ordinal suffix. (If there is an ordinal suffix, it is deleted during normalizing in either format.)

For street names that do not have a numeric word, the compact and sort formats are identical. For a street name that does have a numeric word, the two formats differ only in the fact that alignment blanks are present in the sort format and absent in the compact format. In forming the sort format, the normalizer inserts the required number of alignment blanks in front of the numeric characters, to form a <u>four-byte field</u> within which the numeric characters are right-justified and blank-filled. (The rationale for using four bytes for the normalized numeric word is explained below.) Thus, when normalizing street names that have a numeric word into the sort format, the normalizer inserts three blanks in front of a one-digit number, two blanks in front of a two-digit number and one blank in front of a three-digit number. The inserted alignment blanks are additional to the single word-separating blank between the numeric word and the preceding word in the street name, if any.

We illustrate with an example, using the dash character to represent blanks for clarity. The street name EAST--129 STREET is in sort format. The first blank between EAST and 129 (represented by the leftmost dash) is the word-separating blank always present (in either format) between any two consecutive words. The second blank is the alignment blank inserted only in the sort format to right-justify the three-digit number '129' within the four-byte field for the numeric word. EAST-129 STREET is the same street name in compact format; it has the single word-separating blank between the two words, but no blank inserted for alignment.

Note that the sort format is designed so that numeric words are normalized right-justified into a four-byte field, even though numeric words in New York City street names never have more than three digits. The purpose of the extra byte is to insure that non-numeric street names do not sort between street names with numeric words having fewer than three digits and those that have exactly three digits. The four-byte field assures this, since it causes the first position of the normalized numeric word always to be a blank.

The following example illustrates the advantage of using a four-byte field for normalizing the numeric word. Below we display two sorted lists of the same five street names. In the first list, the names have been normalized in Geosupport's actual sort format, using a four-byte field for the numeric word. In the other list, they have been normalized in a hypothetical sort format, using a three-byte field. In both lists, alignment blanks are represented by dashes, and word-separating blanks are represented by spaces.

Actual Sort Format With 4-Byte Numeric Word Field	Hypothetical Sort Format With 3-Byte Numeric Word Field
`EAST ---7 STREET`	`EAST --7 STREET`
`EAST --23 STREET`	`EAST -23 STREET`
`EAST -129 STREET`	`EAST HOUSTON STREET`
`EAST -203 STREET`	`EAST 129 STREET`
`EAST HOUSTON STREET`	`EAST 203 STREET`

In this example, all of the street names are identical in their first five positions, with the fifth position being a word-separating blank. In the four-byte list, all the numeric names have a blank in the sixth position (the first position of the four-byte numeric field), and therefore have sorted ahead of the one non-numeric name, which has an 'H' in that position. In the three-byte list, the numeric names containing fewer than three digits have a blank in the sixth position, the non-numeric name has an 'H' there, and the numeric names containing three digits have a numeric character (a '1' or a '2') in the sixth position. Since the sort sequence of these characters is blank, 'H', '1', '2', the result of sorting with a three-byte numeric field is the undesirable separation of the numeric names by the non-numeric name.

III.4 Partial Street Names

It is a common informal practice to refer to streets using partial versions of 'full' street names. For example, the intersection of Nassau Street and Broad Street in Manhattan might be specified as the intersection of "'Nassau Street and Broad". To accommodate this practice, Geosupport is designed to accept such partial street names as input street names whenever feasible. In this section, a precise definition and some examples of partial street names are given, and the circumstances under which Geosupport accepts a partial street name as an input street name are described.

A partial street name is a character string that is not itself a valid 'full' street name, and that is formed from a valid full street name by deleting one or more entire words from the end of the full street name. Note that, according to this definition, forming a partial street name involves the deletion of words only from the end of a full street name, not from the beginning or middle, and the deletion only of entire words, not portions of words. The following examples illustrate the definition.

- READE is a Manhattan partial street name for the valid Manhattan full street name READE STREET. READE STRE and READ are not partial street names, since they are formed by deleting portions of words rather than entire words.

- Both KATHARINE and KATHARINE HEPBURN are Manhattan partial street names for the valid Manhattan full street name KATHARINE HEPBURN PLACE, which exists on East 49 Street between Second Avenue and Third Avenue.

- PARK AVENUE is not considered a Manhattan partial street name, because it is a valid Manhattan full street name in its own right, even though it can be formed by deleting the last word from a valid Manhattan full street name, PARK AVENUE SOUTH.

- PARK is a Manhattan partial street name that can be formed from several valid Manhattan full street names, including PARK AVENUE, PARK AVENUE SOUTH, PARK ROW and PARK PLACE.

Geosupport accepts a partial street name as an input street name only if it <u>unambiguously</u> represents (i.e., if it can be formed <u>only</u> from) a single valid full street name in the specified input borough. If a partial street name can be formed from more than one full street name in the given borough, it is ambiguous and Geosupport rejects it. A partial street name cannot also be a front-truncated street name. Consider the following examples:

- Several valid Manhattan full street names begin with the word PARK, as noted above. Therefore PARK is an ambiguous partial street name, and Geosupport does not accept it as an input street name for Manhattan. Similarly, two valid Manhattan full street names begin with the word YORK, namely YORK AVENUE and YORK STREET. Therefore, YORK is an ambiguous partial street name, and Geosupport does not accept it as an input street name for Manhattan.

- There is only one Manhattan street name that begins with the word READE, namely READE STREET. Therefore, Geosupport accepts the partial street name READE as a Manhattan input street name unambiguously representing the Manhattan full street name READE STREET.

- Geosupport accepts both KATHARINE and KATHARINE HEPBURN as Manhattan input street names, since they are unambiguous partial street names for the Manhattan full street name KATHARINE HEPBURN PLACE.

- A partial street name cannot also be a front-truncated street name. For example, 65 STREET in Manhattan would seem to be a partial street name of 65 STREET TRANSVERSE, but it is also a front-truncated street name of EAST 65 STREET and WEST 65 STREET. Geosupport accepts 65 STREET as a front-truncated street name, but not as a partial street name. If 65 STREET is not successful as a front-truncated street name, 65 STREET TRANSVERSE will appear in the list of Similar Names, e.g. Function 1, 80 65 STREET in Manhattan.

- Some partial street names are accepted as input street names in some boroughs but not in others. For example, Geosupport accepts BROAD as an unambiguous partial street name for BROAD STREET in Manhattan and in Staten Island. However, in Queens, BROAD is rejected as an ambiguous partial street name, since it can be formed from a number of different valid full Queens street names, including BROAD STREET and BROAD CHANNEL. In the Bronx and Brooklyn, BROAD is not a partial street name at all, and is rejected accordingly, since in those boroughs there are no full street names that begin with the word BROAD.

Note: Since street names may be added or deleted with each Geosupport release, the acceptability of partial street names may also change.

Partial Street names and SNL: If a partial street name is accepted as an input street name, Geosupport returns the normalized version of the corresponding full street name in the WA1 output street name field, provided that the length of the normalized full street name does not exceed the SNL value that is in effect. If the length of the normalized full street name does exceed the SNL value in effect, Geosupport attempts to normalize the partial street name to fit within the SNL value; if that is successful, the normalized partial street name is returned in WA1. If neither the normalized full street name nor the normalized partial street name fits, Geosupport rejects the input as a street name that cannot be normalized within the SNL value in effect. If the SNL value in effect is 32 (the default value), it is certain that the normalized full street name will fit.

The following example illustrates the effect that varying the SNL value can have on street name normalizing. Suppose the input street name is CHAMBERS and the borough is specified as Manhattan. In this borough, CHAMBERS is accepted as an unambiguous partial street name for the full street name CHAMBERS STREET. If the SNL value in effect is 15 or greater, the output normalized street name is returned as CHAMBERS STREET. If the SNL is between 11 and 14 inclusive, the output street name is returned as CHAMBERS ST (the result of normalizing the full street name CHAMBERS STREET with an SNL of 11, 12, 13, or 14). If the SNL is between 8 and 10 inclusive, the partial street name CHAMBERS is returned. If the SNL is smaller than 8, the input is rejected as a street name that cannot be normalized within the current SNL value.

Optimizing the choice of partial street names: In order to allow users to have partial street names accepted as much as possible, Geosupport will not consider roadbed street names when processing generic calls. Roadbed street names will be considered *only* when processing roadbed calls. As an example, if a user inputs 1830 'A C P' for a generic call in Manhattan, 'A C P' will be accepted as a partial street name for A C P Boulevard. However, if the user inputs a Roadbed Request, 'A C P' will not be recognized because of similar roadbed names.

In addition, since Non-Addressable Place Names (NAPs) and Addressable Place Names (APs) are not valid for Function 2, 3, 3C or 3S calls, Geosupport does not consider them when attempting to resolve an input partial street name; this too allows more partial street names to be recognized.

III.5 The Similar Names Feature

Geosupport has a 'similar names' feature that applications can utilize when handling Geosupport rejection of input street names. The feature consists of returning to the application a list of up to ten valid street names from the specified input borough that Geosupport deems to be 'similar' to the rejected input street name. Similar names are always full (not partial) street names, normalized in sort format. Applications can be designed to display the similar names whenever there are any, to aid the data entry operator in correcting rejected input names.

Whenever an input street name is rejected, if there is at least one valid full street name in the specified input borough that Geosupport deems to be similar to the rejected name, Geosupport takes the following actions:

- A list of the similar names, up to a maximum of ten, is returned in the List of Street Names field in WA1.

- The Geosupport Return Code value is 'EE'. The Reason Code value is a number from 1 to 9 or the letter 'A', indicating the number of similar names that are in the List of Street Names. (The value 'A' indicates that there are 10 similar names.)

- An appropriate message is returned in the WA1 Message field.

- The number of similar names that are in the list is returned in the WA1 field Number of Street Names in List.

If there is exactly one similar name, the message explicitly indicates that name. For example, if the input is the invalid Manhattan name DUFFEY SQUARE, there is a single similar name, DUFFY SQUARE. The message in this case would be:

> 'DUFFEY SQUARE' NOT RECOGNIZED. IS IT 'DUFFY SQUARE'?

If there is more than one similar name, then the message indicates the number of similar names but does not contain the similar names themselves. For example, the invalid Staten Island name ABBNER ROAD has three similar names. The message in this case would be:

> 'ABBNER ROAD' NOT RECOGNIZED. THERE ARE 003 SIMILAR NAMES.

To utilize the similar names feature, the user might program the application as follows.

- Whenever a call to Geosupport generates the GRC value 'EE', indicating rejection of an input street name and the existence of similar names, the application displays the Geosupport message (and/or the application's own message) and the similar names. (When there is exactly one similar name, the Geosupport message already contains the similar name.)

- The application then offers the data entry operator an opportunity to correct the input name, either by selecting one of the similar names (for example, by allowing the operator to use the cursor and the Enter key to make the selection) or by keying in a new name. If the operator has selected a similar name, the application moves it to the WA1 input street name field, overlaying the original input name, while leaving the rest of the WA1 input fields unmodified. The application then issues a second Geosupport call.

Designing the application to allow the operator to select a similar name from the list lessens the need for the operator to handle street name rejects by key-entering new street name spellings, thus increasing the operator's productivity and eliminating the possibility of new key-stroke errors.

<u>Applications should never be designed to replace a rejected input name with a Geosupport-provided similar name in an automatic fashion, even when there is exactly one similar name</u>. The similar names that Geosupport provides are merely possibilities for the intended input street name, and it may well be that none of them is the intended input street name. Human judgment should always be exercised when deciding whether to use a similar name.

To optimize the contents of the similar names list that is returned to the user's application, Geosupport takes the following steps:

- Geosupport only returns names that could be used in the specified function call. For example, since Non-Addressable Place Names, Addressable Place Names and Business Improvement

Districts (BID) are not valid for Functions 2, 3, 3C and 3S, they will not be included in the similar names list for those functions .

Also, roadbed street names are valid only when the Roadbed Request Switch is turned on. Roadbed street names will therefore not be included in the similar names list unless the Roadbed Request Switch is on. For example, in Brooklyn, if the input street name is 'OCEAN PARTKAY' and the Roadbed Request Switch is on, names such as OCEAN PARKWAY NORTHBOUND ROADBED will be included in the similar names list; however, if the Roadbed Request Switch is off, the roadbed street name will not be included.,

- The similar names list will include only one spelling variation per locally valid street name (or 7-digit street code). For example, in Manhattan, if the input street name is 'ADAM', the similar names list will include only 'ADAM C POWELL BOULEVARD' and not the four other valid variations of that street name. The spelling variation selected is the first one encountered based upon sort sequence, which means it may or may not be the principal street name.

Although users need not be concerned with the criteria that Geosupport uses to generate similar names, the general criteria are listed here. A valid full street name is deemed 'similar' to an invalid input street name if it is in the specified input borough and any of the following conditions holds:

(A) The valid full street name is at least as long as the input street name, and the two names are identical for the length of the input street name.

> For example, in Manhattan, the valid full street names YORK AVENUE and YORK STREET would be deemed similar to the invalid name YORK. (YORK is invalid because it is an ambiguous partial street name.)

or

(B) There are no valid full street names in the specified borough that satisfy criterion (A), and the input street name begins with a compass direction word (NORTH, SOUTH, EAST or WEST) followed by a blank, and the input street name and the given valid full street name are identical up to and including the first three bytes following that blank.

> For example, in Manhattan, consider the invalid input name EAST HOUSTIN STREET, which is 12 bytes long. For this name, there are no valid full Manhattan street names that satisfy criterion (A). That is, there are no valid full Manhattan street names that are longer than 12 bytes such that the first 12 bytes consist of the character string EAST HOUSTIN STREET. However, this input name begins with a compass direction word, EAST, and there is a valid full street name, EAST HOUSTON STREET, that is identical to EAST HOUSTIN STREET through the third byte following the blank after the word EAST (i.e., they are identical in their first eight bytes, consisting of the string 'EAST HOU'). Therefore, by criterion (B), EAST HOUSTON STREET is deemed similar to EAST HOUSTIN STREET.

or

(C) There are no valid full street names in the specified borough that satisfy criterion (A) or criterion (B), and at least the initial three bytes of the input street name and the given valid full street name are identical. The overall process is to keep looking for a match while dropping off characters from the end of the input street name. The streets must match on at least the first three bytes of the input street name to be considered a similar name for this criterion. The actual algorithm is somewhat complex and a complete description of it is beyond the scope of this document.

As an example, in Manhattan, if the input street name is BROADWAY TERRACH, then BROADWAY TERRACE will appear first in the list of similar names. Other street names beginning with BROADWAY will also appear in the list. Since BROADWAY TERRACE matches the most letters in the input street name, it appears first. The algorithm will typically insert the name with more matches at the beginning of the list.

As another example, in Staten Island, each of the valid street names ABBEY ROAD, ABBOTT STREET and ABBY PLACE will be deemed similar to ABBNER ROAD since they all begin with the same three bytes, namely, ABB.

or

(D) The input street name contains numeric characters, and the input street name is identical to the valid street name up to and including the first numeric word.

For example, in Manhattan, the valid street name 8 AVENUE is deemed similar to the invalid name 8 PLACE. In Brooklyn, the valid street names BRIGHTON 6 COURT and BRIGHTON 6 STREET are both deemed similar to the invalid name BRIGHTON 6 AVENUE.

or

(E) In the boroughs of the Bronx and Manhattan only, the input street name is a <u>front-truncated street name</u>. A front-truncated street name is one for which all of the following are true:

(E1) The input street name can be transformed into the valid street name by adding the word EAST or WEST to the front of the input street name.

(E2) The input street name has at least two words.

(E3) The first word of the input street name is not END, RIVER, SIDE, ST or STREET.

(E4) The last word of the input street name is not EXTENSION.

The set of criteria in (E) is designed to reflect the common practice to specify street names of Bronx and Manhattan streets that begin with the word EAST or WEST without that first word. These street names are referred to as front-truncated street names. For example, the intersection of Broadway and West 42 Street in Manhattan is often expressed informally as “the intersection of Broadway and 42 Street”; pursuant to criteria (E), Geosupport generates EAST 42 STREET and WEST 42 STREET as similar names for the invalid Manhattan street name 42 STREET. Similarly, EAST HOUSTON STREET and WEST HOUSTON STREET are generated as similar names for the invalid Manhattan street name HOUSTON STREET. Criteria (E2) through (E4) filter out certain special cases where it is not customary to drop the first word EAST or WEST. For example, Criterion (E2) prevents the invalid Bronx input street name AVENUE from generating as similar names the valid Bronx street names EAST AVENUE and WEST AVENUE; Criterion (E3) prevents the invalid Manhattan street names END AVENUE, RIVER DRIVE and

SIDE HIGHWAY from generating as similar names EAST END AVENUE and WEST END AVENUE, EAST RIVER DRIVE, and WEST SIDE HIGHWAY, respectively.

Note that, if the input street name is the invalid Manhattan name 7 STREET, then 7 AVENUE and 7 AVENUE SOUTH are similar names by virtue of criterion (D), and EAST 7 STREET is a similar name by virtue of (E), but WEST 7 STREET is not a similar name, since it is not itself a valid Manhattan street name.

The similar names are returned in the List of Street Names sorted in alphabetical order, except that any front-truncated street names (i.e. similar names that satisfy criteria (E)) are listed first.

III.6 Unconventional Geographic Feature Names

In addition to conventional street names, Geosupport recognizes the following other types of geographic names: the names of ‘paper streets’; the names of some non-street features; addressable and non-addressable place names; pseudo-street names; and intersection names. ‘Recognizing’ a name means that a street code has been assigned to that name and Geosupport accepts the name as valid input. The various types of unconventional names are discussed below, and there are further details on their processing in subsequent chapters.

Paper Streets

A paper street is a street that is legally ‘mapped’ (designated as a street on the official City Map) but that does not exist physically. The city ‘maps’ paper streets with the intention of constructing them, but there is no certainty that a particular paper street will be built. Indeed, some paper streets have been mapped and then eventually de-mapped without ever having been built.

Geosupport recognizes the names of paper streets, but it does not recognize geographic locations (addresses, intersections etc.) along a paper street. In addition to streets that are paper streets in their entirety, there are some streets that have both portions that exist physically and portions that exist only ‘on paper’; for such a street, Geosupport recognizes geographic locations only within the portion that exists physically.

Non-Street Features

In the category of non-street features, as of this writing, Geosupport recognizes only the names of some railroad tracks and shorelines. Eventually, Geosupport will be enhanced to recognize the names of other non-street geographic features in New York City, including all railroad tracks and shorelines. Non-street features do not have addresses, but names of non-street features that are recognizable to Geosupport can serve as street name input to describe geographic locations other than addresses, such as intersections, street segments and street stretches.

Addressable Place Names

Addressable place names are the names of 'places', generally major individual buildings or building complexes, that can be combined with address numbers to form valid New York City addresses. Such places are not streets but their names serve the same role as do ordinary street names in forming addresses that Geosupport will recognize. An example in Manhattan that Geosupport recognizes is PENN PLAZA, a cluster of commercial buildings in the vicinity of Pennsylvania Station. For example, 1 PENN PLAZA, 2 PENN PLAZA and 7 PENN PLAZA are all valid Manhattan addresses, recognized by the U.S. Postal Service and by Geosupport's address processing functions. Other examples of addressable place names recognized by Geosupport are: in Manhattan, NEW YORK PLAZA, WASHINGTON SQUARE VILLAGE, GOVERNORS ISLAND and CONFUCIUS PLAZA; in Brooklyn, ALBEE SQUARE, METROTECH and FORT HAMILTON MANOR.

Non-Addressable Place Names (NAPs)

Non-Addressable Place names (NAPs) are names of buildings or other geographic features that typically are not combined with an address number to form a valid address. See discussion of Support of Non-Addressable Place Names (NAPs) with Address Numbers below) Note that a building that has a NAP may or may not also have a conventional street address; it is the place name that is non-addressable, not necessarily the place itself. For example, the EMPIRE STATE BUILDING can be identified both by its name, which is a NAP, and by its conventional street address (i.e. 350 Fifth Avenue). CITY HALL in Manhattan and YANKEE STADIUM in the Bronx are examples of NAPs referring to buildings that do not have conventional street addresses.

Typical geographic features that have NAPs include named buildings, stadiums, arenas, hospitals, housing projects, military complexes, museums, universities, theaters, airports, parks, zoos, marinas and islands. Geographic features that have NAPs are classified as either simplexes, complexes or constituent entities of a complex.

- A simplex is a "stand-alone" named geographic feature, that is, a feature that has a NAP and is not a complex or a constituent entity of a complex. Examples in Manhattan: EMPIRE STATE BUILDING, CARNEGIE HALL, BRYANT PARK.

- A complex is a group of related geographically identifiable features at one site. A geographically identifiable feature is a feature that has an address, a NAP and/or a Building Identification Number (BIN). (BINs are discussed in detail in Section VI.3.) Examples of Manhattan complexes: LINCOLN CENTER, JEFFERSON HOUSES, CITY COLLEGE.

- A constituent entity of a complex is a building or other geographically identifiable feature that is part of a complex. A constituent entity may be identified by a NAP or by a conventional street address. Examples in Manhattan: AVERY FISHER HALL (a constituent entity of LINCOLN CENTER identified by NAP); CITY COLL SHEPARD HALL (a constituent entity of CITY COLLEGE identified by NAP); 259 CONVENT AVE (a conventional street address which identifies CITY COLL SHEPARD HALL).

NAPs are accepted as input data by Function 1N and by the address-processing functions (Functions 1, 1A, 1B and 1E, but not Function AP.). *Currently, these functions accept a limited set of NAPs (including only some of the examples in this section). Additional NAPs are being added over time.* Support of NAPs that have address numbers is described below. For further details on NAPs, see Section IV.7.

Support of Non-Addressable Place Names (NAPs) with address numbers

Warning: Some users may need to modify their input NAP data to get expected results (see below).

There are some Non-Addressable Place Names (NAPs) in New York City that either actually have addresses associated with them – often in a location that differs from the NAP itself – or are commonly treated as addressable. An example in Manhattan is the NAP called '**Bryant Park**'. A building exists near Bryant Park with its own NAP of One Bryant Park which is often treated by users as if it had the address **'1 Bryant Park'**. Another example, in Brooklyn, is the NAP called '**Grand Army Plaza**'. A cooperative now exists near Grand Army Plaza, and its address is '**1 Grand Army Plaza**'. Geosupport supports as input the special case of a NAP that has an address number. (Releases of Geosupport prior to Version 13.2 ignored any address number that was entered as input with a NAP.)

In order to support this type of address (i.e. a NAP with an address number), Geosupport does not automatically ignore an address number that is submitted as input with a NAP. Geosupport ignores the input address number only if the address does not exist. In general, this does not affect the user's output since users typically do not enter an address number with a NAP. Note, however, if a user submits an address number (by accident or intentionally), the resulting output may be different from submitting the NAP without the address number, because, for example, '**1 Bryant Park**' will be recognized as a specific building, not as the park called '**Bryant Park**'. The results will be identical to a NAP without an address number if the address number submitted does not exist. For example, **'34 Bryant Park'** does not exist; the address number (viz. '34') will be ignored in that situation and the information for **'Bryant Park'** will be returned. Geosupport issues a warning to users that the input address number is ignored.(Though this will not be apparent in GBAT if the option to treat warning messages as rejects is not selected).

Note to users who enter a 'dummy' address number with a NAP intentionally:
It may be necessary for these users to modify their input data. These users typically run applications that do not allow the data to have a blank address number, even for a NAP. The input is submitted with a 'dummy' address number. To ensure that Geosupport returns information about the NAP (and not a specific building that is now being supported), the users should ***use '9999' as the dummy address number***. In all probability, the '9999' address will not exist. When the '9999' address does not exist, Geosupport will ignore the '9999' and treat it as blanks. Geosupport will then give results as if the NAP was entered without the address number.

Pseudo-Street Names

Pseudo-street names are special 'invented' names that in certain circumstances Geosupport accepts as valid input street names, as described in Sections V.2, VII.2 and VII.3. Three sets of pseudo-street names are:

DEAD END and its aliases DEADEND, DEAD END STREET, CUL DE SAC and CULDESAC

CITY LIMIT and its aliases CITY LIMITS and CITY LINE

BEND and its alias BENDING POINT

DEAD END and BEND, and their aliases, are valid in all five boroughs. CITY LIMIT and its aliases are valid in all boroughs except Brooklyn. These pseudo-street names may not be used to specify addresses, but they may be used to specify street intersections, and to specify the cross streets (but not the ‘on’ street) in other types of street configurations.

Duplicate Address Pseudo-Street Names (DAPSs): Another type of pseudo-street name that Geosupport recognizes, for certain addresses only, is Duplicate Address Pseudo-Street Names (DAPSs). DAPSs are used with Geosupport’s duplicate address processing feature (discussed in detail in Section V.6). New York City has a small number of duplicate addresses, which are not data errors in Geosupport files, but are situations where an address is valid in reality at two different locations on the same street. DAPSs provide a means for a user to specify unambiguously a particular instance of a duplicate address. The user may also provide ZIP Code input to enable Geosupport to recognize which duplicate street name should be used.

An example of a street that has duplicate addresses is Hillside Avenue in Queens. A portion of Hillside Avenue in the Bellerose neighborhood has some of the same addresses as does another portion of Hillside Avenue in the Douglaston neighborhood. To make it possible to process these addresses, the DAPSs HILLSIDE AVENUE BELLEROSE and HILLSIDE AVENUE DOUGLASTON have been created. Similar DAPSs have been created for each city street that has duplicate addresses. In general, DAPSs are formed by augmenting the conventional name of the street with a neighborhood name.

An example of using ZIP Code input in a duplicate address situation follows. If 239-02 Hillside Avenue in Queens, with a ZIP Code set to 11426 is provided as input to Function 1, 1A, 1B, 1E or AP, Geosupport will determine that HILLSIDE AVENUE BELLEROSE should be used. If the ZIP Code provided had been 11363, Geosupport would determine that HILLSIDE AVENUE DOUGLASTON should be used. This processing will occur even if the borough code has been provided as well.

Geosupport accepts DAPSs as valid input only for certain addresses on streets that have duplicate addresses, as explained in Section V.6.

If a DAPS is supplied as input to a Function 2, 3, 3C or 3S call, the associated neighborhood name (a.k.a. town name in Queens) will be stripped off to provide a valid street name for these calls. A warning message (Reason Code W) will be issued. For example, if the input to a Function 2 call is “Hillside Avenue Douglaston”, the word “Douglaston” will be removed and the street name “Hillside Avenue” will be used.

Intersection Names

Certain street intersections in New York City have intersection names which can serve as an alternative way to identify such locations in addition to the conventional means of reference using the names of two intersecting streets. For example, ISAAC STERN PLACE is an intersection name for the intersection of West 57 Street and 7 Avenue in Manhattan. On the other hand, TIMES SQUARE is not an intersection name, because it refers to an area encompassing several intersections rather than a single street intersection. Official intersection names are designated by the City Council, and informal intersection names develop over time through local customary usage.

Geosupport accepts the input of a limited set of intersection names. Intersection names may not be used to specify addresses (Functions 1, 1A, 1B, 1E, or AP), but they may be used to specify street intersections (Function 2), and to specify a cross street (but not the 'on' street) in other types of street configurations (Functions 3, 3C or 3S).

III.7 Street Name Browsing and Functions BB and BF

Functions BB ("browse backward") and BF ("browse forward") enable users to include interactive street name browsing functionality in their CICS applications. These functions may be used to assist data entry staff in determining valid spellings of street names that were rejected or the spelling of which is unknown to the staff. Functions BB and BF are supported in both the CICS and batch environments and are called using one work area.

A sequence of repeated calls to Functions BB and/or BF will browse backwards and/or forwards in alphabetical order through a list of all the valid normalized street names in a given borough. Each call to one of these functions returns up to ten names in alphabetical order. A call returns fewer than ten names if there are fewer than ten names remaining in the given borough in the given browse direction. When fewer than ten names are returned, a warning is issued. The starting point of the browse is determined by the value of the input character string.

Both Function BB and Function BF process an input borough code and character string, which are passed in the WA1 input Borough Code 1 and Street Name 1 fields, respectively. The input character string can be from one to 32 bytes long.

In addition, when issuing a **COW** Function BB or BF call, a user may request that either all street names, only primary street names, or only principal street names be returned. The request is made via the **Browse Flag**. If this flag is set to **P**, then only primary street names are returned. If this flag is set to **F**, then only principal street names are returned. Any other value causes an error message to be generated. When the principal street names are requested, the primary street names will also be returned since all primary street names are also principal street names. For more information on Primary (P) and Principal (F) street names, please refer to sections IV.5 and IV.6.

The list of output normalized street names in alphabetical order is returned in the WA1 output field List of Street Names. The number of names returned is returned in packed decimal format in the MSW WA1 output field Number of Street Names in List. In COW WA1 output, the Number of Street Codes and Street Names in List is returned in character format.

The List of Street Names is a 320-byte WA1 output field containing ten 32-byte sub-fields or 'slots' for normalized street names. Let us call these sub-fields Namefield1 through Namefield10. (Do not confuse Namefield1 with the WA1 input street name field called Street Name 1.) Each output normalized street name is returned left-justified and blank-filled within its sub-field. When fewer than ten names are returned, the unused slots are left blank.

Function BF returns up to ten names for the given input borough, in alphabetical order, starting with the alphabetically first normalized name that is equal to or greater than the input character string. If the input string itself is a normalized name, it is returned in Namefield1, followed by the other returned names in Namefield2, Namefield3 etc., if any. Otherwise, the first name alphabetically greater than the input string for the given borough, if any, is returned in Namefield1, followed by the other returned names, if any.

Function BB works similarly but the list of up to ten names it returns ends with the alphabetically first name greater than or equal to the input string. Notice that, for a given input character string, there is an overlap of one name between the sets of names returned by Functions BB and BF.

If Function BB or BF returns ten names (in sub-fields Namefield1 through Namefield10) and the user wishes to continue the browse, additional browse function calls may be issued. For Function BF, prior to the subsequent call, the user primes the WA1 input field called Street Name 1 with the street name that was returned in Namefield10. For Function BB, prior to the subsequent call, the user primes the WA1 input field called Street Name 1 with the street name that was returned in Namefield1.

III.8 Selection of Output Street Names (COW only)

For COW Function calls, the Browse Flag allows users to request the return of **primary** or **principal** output street names and street codes (for Functions 1, 1A, 1B, 1E, 1N, 2, 3, 3C and AP). The Browse Flag also allows users to request the return of **preferred** output street names and street codes (for Functions 1, 1A, 1B. 1E, 2, 3, 3C and AP).

Setting the Browse Flag to **P** will cause the output street name(s) and code(s) that are returned to the user to be the **primary** name of the input street names or codes.

Setting the flag to **F** will cause the **principal** name and street code of the input street name to be returned to the user.

For Functions 1, 1A, 1B, 1E, 2, 3, 3C and AP when the Geosupport call involves two work areas, the Browse Flag may also be set to **R**. Setting the flag to **R** will cause the **preferred** name and street code of the input street name to be returned to the user. For all of these functions except Functions 1E, the principal Department of City Planning (DCP) preferred street name and code will be returned in the output section of Work Area 1. For Function 1E, the principal Board of Elections (BOE) preferred street name and code will be returned to the user. If the user supplies a value of **R** for Function 1N, it is rejected with a GRC of 79. Preferred Street Names are described in more detail in Section IV.6.

Below is a sample where the Browse Flag causes Geosupport to return different street names.
The example is in Manhattan, in the portion of 7 AVENUE (north of Central Park) where ADAM C POWELL BOULEVARD is the Principal Street Name.
The input address is: 2019 A C POWELL BLVD

Function	Browse Flag	Output Street Name
1 (or 1A or 1B)	Blank	A C POWELL BOULEVARD
1 (or 1A or 1B)	P	7 AVENUE
1 (or 1A or 1B)	F	ADAM CLAYTON POWELL JR BOULEVARD
1 (or 1A or 1B)	R	ADAM CLAYTON POWELL JR BOULEVARD
1E	Blank	A C POWELL BOULEVARD
1E	P	7 AVENUE
1E	F	ADAM CLAYTON POWELL JR BOULEVARD
1E	R	7 AVENUE

Note that the Board of Elections (Function 1E) prefers a different street name from the Department of City Planning.

The Selection of Output Street Names feature is available only with the Character-Only Work Areas (COWs). For more information on Primary (P) and Principal (F) street names, please refer to sections IV.5 and IV.6.

CHAPTER IV: STREET CODES

IV.1 Introduction: Street Codes and Geographic Retrieval Consistency

This chapter discusses street codes, a set of numeric codes assigned in the Geosupport System to the city's street names and the names of certain non-street geographic features, place names, pseudo-street names and intersection names (see Section III.6). (In this chapter, except where otherwise stated, the terms 'street' and 'street name' refer to any geographic feature or feature name that has a Geosupport street code assigned to it.) Geosupport's street code feature provides critical support for many types of applications.

The primary purposes of the street code feature are:

- To enable applications to retrieve or match data from their own files by geographic location in a consistent manner: (See Section I.3 for a general discussion of the concept of geographic retrieval consistency.) Some streets have more than one name, and some street names have alternative spellings. Therefore, for applications that must retrieve data by types of geographic locations that are defined in terms of streets, such as addresses and intersections, the consistency of the retrieval is an important design consideration. For example, suppose a record is created in an application file for the Manhattan address 1204 SIXTH AVENUE. It is desirable that the application be able later to retrieve this record whether the user specifies the input address at retrieval time as 1204 SIXTH AVENUE, 1204 6 AVENUE or 1204 AVENUE OF THE AMERICAS. To achieve such consistency, Geosupport five-digit street codes rather than street names should be used in the retrieval key, as explained in this chapter.

- To obtain 'preferred' street names: For streets that have more than one name, the street name that is most appropriate to use for display purposes (such as on application screens, reports and mailing labels) may vary along the street. Street codes can be used to obtain location-specific 'preferred' street names for display, as explained in Section IV.6.

Secondary purposes of the street code feature are:

- To improve execution efficiency via street code input: There is an optional feature in which applications can pass input streets to Geosupport in the form of street codes rather than street names. This feature is useful when processing an application file that already contains street codes retained from a previous pass through Geosupport. The use of this feature can increase the execution efficiency of batch applications by sometimes allowing Geosupport to circumvent street name normalization and street code retrieval processing.

- To save application disk storage space: Storing street codes, instead of street names, in an application file saves application disk storage space. In many applications, however, doing so would necessitate increased programming and increased execution time overhead to make additional Geosupport calls to obtain street names for display. Note, however, that with Extended Work Areas, many of the functions return both street codes and street names, thus additional programming is not needed.

The use of Geosupport street codes in an application does complicate the design and development of the application. It also adds a maintenance burden to the application, since street codes stored in an application file must be periodically resynchronized to reflect street code assignment changes effectuated in new Geosupport releases. In view of this overhead, the secondary purposes listed above are not likely by themselves to justify incorporating the use of street codes in an application.

IV.2 Street Name Relationships: Aliases and Locally Valid Street Names

GSS assigns street codes in a way that encodes certain information about street names. Specifically, a portion of the street code signifies whether an alias relationship exists between two street names; and a portion of the street code signifies whether a street name is only locally valid. These aspects of street code assignment can have implications for application design.

Two normalized street names are called aliases of each other if they are either alternative names of the same street (such as SIXTH AVENUE and AVENUE OF THE AMERICAS in Manhattan) or any portion thereof, or are spelling variants of the same street name (such as SIXTH AVENUE and 6 AVENUE, or MAC DOUGAL STREET, MACDOUGAL STREET and MCDOUGAL STREET). Geosupport is designed to recognize all commonly accepted street name aliases, and through the structure of its street code assignments, to identify whether two street names are aliases for the same street.

Locally valid street names are street names that are only valid 'locally', that is, for a portion of a street. Almost all streets that have locally valid street names also have at least one name that is valid for the entire street. An example is Seventh Avenue in Manhattan, which has the following names:

- The names 7 AVENUE and SEVENTH AVENUE are valid for the entire street.
- POWELL BOULEVARD and various aliases (ADAM CLAYTON POWELL JR BOULEVARD, A C POWELL BOULEVARD etc.) are valid only for the portion of the street north of Central Park.
- FASHION AVENUE is valid only for a portion of the street in the Garment District.
- SAINT VINCENTS SQUARE and ST VINCENTS SQUARE are valid only for a small stretch of the street in the vicinity of the former Saint Vincent's Hospital.

All of the above names are aliases of each other, since they are all names for the same street or a portion thereof. The names in the first set are valid for the entire length of the street; the other names are only valid locally. Notice that two street names can be considered aliases of each other even if there are no locations at which both names are valid. For example, FASHION AVENUE and SAINT VINCENTS SQUARE are aliases, even though there is no location where both names are valid.

IV.3 Five-Digit and Ten-Digit Street Codes

To each normalized spelling of a full street name within a borough, a ten-digit number called the ten-digit street code (10SC) is assigned. Partial street names (see Section III.4) are assigned the same 10SC values as the full streets names from which they were generated.

A 10SC value is meaningful only within a borough, and is generally preceded by a borough code to form an eleven-digit item called the borough and ten-digit street code (B10SC). If two street names in different boroughs happen to have the same 10SC value, that does not signify any relationship between those streets. **Streets in two different boroughs are always considered to be different streets,** even if the two streets have the same name, and even if they form a single physically continuous street running across the borough boundary. For example, Atlantic Avenue crosses the Brooklyn-Queens border. Geosupport treats the Brooklyn and Queens portions of Atlantic Avenue as two different streets, each with its own B10SC value (‘31343001010’ and ‘42889001010’, respectively).

The first five digits of the 10SC are called the five-digit street code (5SC). The 5SC has a fundamental significance: **the 5SC values of two street names in a borough are identical if and only if those names are aliases for the same street**. Positions six through ten of the 10SC are discussed in Section IV.5.

Like the 10SC, the 5SC is meaningful only when accompanied by a borough code; when concatenated, the borough code and 5SC form a six-byte item called the borough and five-digit street code (B5SC). The B5SC simply consists of the first six bytes of the B10SC. For MSWs only, Geosupport sometimes represents the B5SC as a four-byte packed decimal item, referred to as the packed borough and five-digit street code (PB5SC).

Conceptually, a B10SC value represents a particular (normalized) spelling of a particular name for a street within a borough, while a B5SC value represents the street itself and is shared by all the street’s aliases. Consider the following examples of Manhattan street names, grouped by street, i.e. by five-digit street code. (Note: ‘1’ is the borough code for Manhattan.)

(Normalized) Street Name	B10SC =	B +	5SC +	Remainder of 10SC
5 AVENUE	11041001010	1	10410	01010
FIFTH AVENUE	11041001020	1	10410	01020
MUSEUM MILE	11041002010	1	10410	02010
6 AVENUE	11051001010	1	10510	01010
SIXTH AVENUE	11051001040	1	10510	01040
AVENUE OF THE AMERICAS	11051001030	1	10510	01030
7 AVENUE	11061004010	1	10610	04010
SEVENTH AVENUE	11061004020	1	10610	04020
FASHION AVENUE	11061002010	1	10610	02010
POWELL BOULEVARD	11061001080	1	10610	01080
A C POWELL BOULEVARD	11061001010	1	10610	01010
7 AVENUE SOUTH	11071001010	1	10710	01010
SEVENTH AVENUE SOUTH	11071001020	1	10710	01020
EAST 21 STREET	11741001010	1	17410	01010
EAST 21	11741001010	1	17410	01010
WEST 21 STREET	13419001010	1	34190	01010
WEST 21	13419001010	1	34190	01010

The above example illustrates several aspects of street code assignment. Notice that alias names of the same street have the same B5SC value. Notice that EAST 21 STREET and WEST 21 STREET have different B5SC values, which amounts to treating them as names of two different streets (as indeed they must be treated, since they have address numbers in common). Similarly, 7 AVENUE and 7 AVENUE SOUTH are treated as two different streets. Notice that partial street names have the same B10SC's as the full names from which they were generated, such as EAST 21 and EAST 21 STREET.

By using B5SC's in the retrieval key instead of street names, applications can achieve consistent retrieval or matching of application data by types of locations involving streets. We outline below how an application might be designed for consistent retrieval or matching by address, which requires a retrieval key consisting of a B5SC and a normalized address number (discussed in Section V.2). When the type of location being retrieved involves more than one street, such as intersections, the key would be designed to contain a B5SC field for each street.

- <u>At record creation time:</u> During the initial creation of a record in the application file, the application calls Geosupport to obtain the B5SC corresponding to the input street name, as well as the normalized form of the input address number. The application uses these items to form a geographic retrieval key, which it stores in the new application record. Two files that contain such a key can be matched directly on the key, resulting in a match that will be consistent, i.e. independent of the use of street name aliases.

- <u>At retrieval time:</u> When retrieving data from the application file by address, the application again calls Geosupport, obtaining the B5SC and normalized address number corresponding to the input street name and address number. The application formats these items into a search key, and reads the application file using this key. The use of the B5SC in the key instead of the street name allows the retrieval to be consistent, i.e. independent of which alias for the street is passed as input.

Geosupport has three <u>display functions</u>, Functions D, DG and DN, which can be used to obtain street names for display in application screens, reports, mailing labels etc. These functions process five-, seven- and ten-digit street code input, respectively . (Note: seven-digit street codes are discussed in Section IV.5). Section IV.6 discusses the display functions.

<u>IV.4 Resynchronization of Street Codes Stored in User Files</u>

When designing an application in which street codes, either B5SCs or Bl0SCs, are stored in an application file, the user must consider the important issue of resynchronizing those street codes with respect to new Geosupport releases. This issue arises because it is sometimes necessary for the GSS staff to change the B5SC value (and therefore also the Bl0SC value) that is assigned to a street name. This would be necessary if they determine that two street names that currently have different B5SC values (signifying that they are names of two different streets) are in reality aliases for the same street and therefore must be made to have the same B5SC value. Conversely, the GSS staff might determine that two names that currently have the same B5SC value are actually names of two different streets, and therefore must be made to have different B5SC values. Both of these types of problems can be rectified only if the B5SC value, and therefore the B10SC value, assigned to one or more street names is changed.

Whenever a new Geosupport release is implemented that includes any changes to street codes assigned to street names, it is essential for users to make the corresponding changes to all occurrences of those street codes stored in application files. This street code 'resynchronization' should be timed to be as simultaneous as possible with the implementation of the new Geosupport release. User failure to resynchronize the street codes stored in an application file for each new Geosupport release could have serious negative consequences for the application. Geographic searches in the application file in which the street code is used as part of the retrieval key might fail to retrieve some application records or might retrieve inappropriate ones. Matching of records within an application file or between files by geographic location could fail, or could result in an erroneous match. Also, the display functions D, DG and DN could return inappropriate street names for some street code values.

Prior to the implementation of each new Geosupport release, a Street Name/Street Code Change Bulletin is sent to known Geosupport users[3] listing the street code changes being made in the new release. Also, as part of each release, a Geosupport file called the Street Code Change File (SCCF) is created and made accessible to users. If an application file contains B10SCs, the user can utilize the SCCF to develop an automated batch resynchronization procedure. Of course, when the stored B10SCs are updated, that also updates the B5SCs that comprise the first six bytes of the B10SCs. (If for some reason there is a separate B5SC field in the application file in addition to a B10SC field, the B5SC field must be overlaid with the new value using the first six bytes of the new B10SC value.) Resynchronizing stored B10SCs using the SCCF is the optimal resynchronization method. Users are strongly urged, when designing new applications in which street codes are to be stored in application files, to design those files so they contain B10SCs, either in addition to or instead of street names, and to write a batch street code resynchronization program that uses the SCCF.

In existing applications in which B10SCs are not currently stored in the application file, we recommend that the file be enhanced to contain B10SCs, enabling a resynchronization procedure that uses the SCCF to be developed. If the file currently contains street names, B10SCs can be inserted into it easily using Function 1N (discussed in Section III.2). If only B5SCs are currently stored in the file, not street names, a more difficult one-time effort would be required to insert B10SCs into the file; the methodology for doing this would be similar to the resynchronization procedure using B5SCs described below. For application files that do not currently contain B10SCs and cannot be enhanced to contain them, the SCCF cannot be used to resynchronize the B5SCs, and other resynchronization methods must be used.

The various methods for resynchronization are discussed below. It is the user's responsibility to develop a street code resynchronization procedure for each application file in which street codes are stored, and to run that procedure as soon as possible after each new Geosupport release is placed into production.

Resynchronization procedure using B5SCs

When only B5SCs are stored in the application file, not the original input street names nor B10SCs, it is not possible to develop a fully automated procedure to resynchronize those B5SCs. Instead, records in the application file that are affected by street code changes (as listed in the Street Name/Street Code Change Bulletin) must be found and individually examined and updated. This is because of the inherent ambiguity of a B5SC value, which can be associated with more than one street name. Specifically, it is possible that two or more street names that had the same B5SC value prior to the new Geosupport release no longer have the same value in the new release. When this occurs, the user cannot resynchronize the old B5SC value mechanically, but must determine, for each occurrence of the old B5SC value in the application file, which street name that occurrence represents

[3] To be added to this list, please send a request to GSS_Feedback.nyc.gov

in order to determine what the new B5SC value should be for that occurrence. In order to make that determination, the user would have to individually research each record containing such a B5SC value, using any information that could help to pinpoint the location and thus to determine whether the B5SC value should be changed and what the new value should be. Such information as an address, cross streets, a ZIP code, a community district or other district identifier, or tax block and tax lot identifiers could be helpful for this purpose. Because this procedure is not automatic, it is the least desirable method.

Resynchronization procedure using street names

If the application file contains the original input street names in addition to B5SCs, then the user can develop a fully automated batch procedure for resynchronizing the B5SCs, albeit a less than optimal one, as follows. The user can write a batch program that calls Function 1N to obtain, for each original input street name, the B5SC value currently (in the new Geosupport release) assigned to that name. The program would process every record in the application file, automatically replacing the B5SC value already stored in each record with the current B5SC value obtained from Function 1N. The program would have to provide for handling any Function 1N rejects, that is, street names that are no longer valid in the new Geosupport release.

Resynchronization procedure using B10SCs

Using stored street names to resynchronize B5SCs is preferable to using just the B5SCs themselves, because the former method can be automated while the latter cannot. Nevertheless, the former method is highly inefficient, because it necessitates processing every record in the application file, even though in each Geosupport release only a tiny portion (if any) of the city's street names have street code assignment changes.

Storing B10SCs in the application file, and using the SCCF to resynchronize them, is the optimal approach to street code resynchronization. The ambiguity intrinsic to B5SCs does not exist for B10SCs. Since every B10SC value is assigned to a single street name only, stored B10SCs can be resynchronized by automatically replacing every occurrence of each changed B10SC value with the proper new value, with no research required to determine the latter.

GSS creates a new release of the SCCF as part of each new Geosupport release. The following DD statement gives users batch access to the SCCF:

```
//ANYDDNM  DD  DSN=A030.STREET.SCCF,DISP=SHR
```

The SCCF is a sequential file with 80-byte records. The SCCF has a single header record containing file identification information, followed by a set of data records. The layouts of the header and data records are as follows:

Street Code Change File (SCCF) Record Layouts

SCCF Header Record

Field	Size	Positions	Comments
Header constant	42	1 - 42	Literal constant: `'GEOSUPPORT SYSTEM FOREGROUND HEADER RECORD'`
DDNAME of File	8	43 - 50	Literal constant: `'SCCF    '`
Geosupport Release Identifier	4	51 - 54	e.g. `'15B '` (4th byte is generally blank)
Date of File Creation	6	55 - 60	yymmdd format
Filler	20	61 - 80	

SCCF Data Records

Field	Size	Positions
Old B10SC	11	1 - 11
Filler	5	12 - 16
New B10SC	11	17 - 27
Filler	5	28 - 32
Borough Code	1	33
Filler	1	34
Street Name	32	35 - 66
Filler	14	67 - 80

(The fields Borough Code and Street Name are in the SCCF records for informational purposes only and are not needed for synchronization.)

In an application file containing stored B10SCs, the first six bytes of the B10SC field (or fields, if the geographic location represented in the record involves more than one street, such as records for intersections) constitute the B5SC field, which could be defined as part of a key for consistent geographic retrieval; therefore, a separate B5SC field would not be needed for that purpose. The full B10SC field could also itself be defined as a direct access key, for use by the resynchronization program.

The resynchronization program would read the SCCF sequentially. For each SCCF record, the program would read the application file directly using the old B10SC value in the SCCF record as the search key. All occurrences of this B10SC value found in the application file would be replaced by the new B10SC value from the SCCF record. (Note: most application files contain multiple records for the same street. Hence, if the application file is a VSAM file, in most applications, the B10SC field(s) must be defined as an alternate key(s), not as the primary key, since several records could have the same key values. In addition, since the resynchronization program modifies a key value, the UPGRADE option should be specified in the DEFINE ALTERNATE INDEX component of the

IDCAMS control file. Similar considerations might apply for other types of direct access files.)

Summary of Street Code Resynchronization

The resynchronization of street codes stored in an application file is an important issue for application design. If the application must retrieve records by geographic location, it is necessary to use B5SCs in the retrieval key in order to make the retrieval geographically consistent, and therefore B5SCs must be stored in the application file. Since the street codes that are assigned to some street names can be changed in new Geosupport releases, these stored B5SCs (and/or stored B10SCs, if any) must be synchronized to reflect these changes. However, as we have seen, the synchronization of B5SCs cannot be fully automated unless either the originally entered street names or the B10SCs corresponding to those names are stored in the record.

Resynchronization using street names is inefficient, since every street name in the application file would have to be processed. The best alternative to achieve resynchronization efficiency is to store B10SCs in the application file. In that case, the first six bytes of the B10SC field, which is the B5SC, could be defined as part of a geographic retrieval key. For resynchronization, the full B10SC could be used in conjunction with the Street Code Change File (SCCF). The user could develop a highly efficient procedure in which only those application records containing B10SC values that are in SCCF records, i.e., that have been changed in the new Geosupport release, would be accessed and updated.

In view of the above considerations, the following design guidelines are strongly recommended with respect to resynchronizing street codes stored in application files:

- When an application is being designed in which there will be a file to which consistent street-related geographic access is required, then the file should be designed to contain B10SCs obtained from Geosupport.

- Application programs that access the file geographically should be written to use the first six bytes of the B10SC field, which constitute the B5SC, in the geographic retrieval key. In existing application files that contain B5SCs but not B10SCs, the B5SC field should be enhanced into a B10SC field. The B5SC portion of the B10SC should continue to be used for geographic retrieval. The entire B10SC field should be defined as a direct access key, to support efficient automated street code resynchronization.

- The user should develop a batch procedure to resynchronize the B10SCs stored in the file, using the SCCF. An optimal procedure would access directly those records in the application file that contain B10SCs for which there are changes in the new Geosupport release (i.e., for which SCCF records exist). The user should run this procedure routinely whenever a new Geosupport release is implemented.

IV.5 Seven-Digit Street Codes: Local Street Name Validity, Local Group Codes

This section discusses local street name validity, the phenomenon that some street names are valid for only a portion of the street. (In fact, there are even a few New York City streets that do not have a single street name that is valid for the street's full length.) A street that illustrates the phenomenon of local street name validity is Seventh Avenue in Manhattan. The names 7 AVENUE and SEVENTH AVENUE are valid for the full length of the street. The name ADAM C POWELL BOULEVARD and its various spelling variants (POWELL BOULEVARD, A C POWELL BOULEVARD etc.) are valid only for the portion of the street north of Central Park. The name FASHION AVENUE is valid in the Garment District. The names SAINT VINCENTS SQUARE and ST VINCENTS SQUARE are valid for a portion of the street in the vicinity of the former Saint Vincent's Hospital.

All of the Geosupport functions that accept street name input, except for Function 1N, perform local street name validation, which verifies whether the input street name is specifically valid for the input location, and if it is not valid, returns up to four aliases of the invalid name that are valid for the given location. Local street name validation is performed automatically when a two-work-area call is made, with no special user action required to invoke it.

If, in a two-work-area call, the input street name is not valid for the given input location, Geosupport takes the following actions:

- The call is rejected with a Geosupport Return Code of '50' and an appropriate Message.

- Up to four locally valid street name aliases of the invalid street name are returned in the WA1 List of Street Names field. (Specifically, the names that are returned are the principal street name of each local street name group that is valid for the given location. The concepts of 'principal street name' and 'local street name group' are discussed below and in the next section.)

- The Reason Code contains the number of names returned in the List of Street Names.

- For MSW: the WA1 Number of Street Names Field contains the number of names returned in the List of Street Names, in packed decimal format. For COW: the WA1 Number of Street Codes and Names Field contains the number of names returned in character decimal format.

For example, the address 375 7 AVENUE in Manhattan is located south of Central Park, so the street name ADAM C POWELL BOULEVARD is invalid for this address. Therefore, a two-work-area call to Function 1E (for example) with the input address as 375 ADAM C POWELL BOULEVARD would result in a GRC '50' rejection and the return of the locally valid alias street name 7 AVENUE in the List of Street Names. On the other hand, 2019 7 AVENUE is north of Central Park, so 2019 ADAM C POWELL BOULEVARD is a valid address, and is accepted by Function 1E. Similarly, a two-work-area call to Function 2 would reject the intersection of ADAM C POWELL BOULEVARD and WEST 56 STREET with a GRC of '50' and the return of the locally valid alias street name 7 AVENUE in the List of Street Names.

Local Group Codes (LGCs)

Local street name validity is reflected in the sixth and seventh digits of the 10SC, which constitute the Local Group Code (LGC). Street codes are assigned in such a way that two names for a street have the same LGC value if and only if those names are valid for the same portion (possibly all) of the street. Note that if two names are valid for overlapping portions of a street, or one is valid for a subset of the portion where the other is valid, then those names are in different local groups. In order to be in the same local group, names must be valid for exactly the same portion of the street.

Conceptually, the set of all street names for a given street can be viewed as being partitioned into subsets called 'local street name group' each group identified by its LGC value and consisting of all the names that are valid for a particular portion (possibly all) of the street. (Most New York City streets only have one local street name group.)

A LGC value is meaningful only relative to its B5SC value. The B5SC identifies the street, and the LGC identifies a local street name group for the given street, that is, the group of all names for the given street that are valid for a particular portion (possibly all) of the street. The B5SC concatenated with the LGC, that is, the first eight bytes of the B10SC, constitute the Borough and Seven-Digit Street Code (B7SC). Two street names have the same B7SC value if and only if they are names for the same street (same B5SC value) and are valid for the same portion of the street (same LGC value relative to the given B5SC value).

Street Name Codes (SNCs)

The final three digits of the B10SC are called the Street Name Code (SNC). Thus, the B10SC consists of the concatenation of the borough code, 5SC, LGC and SNC. The SNC serves simply to serialize the street names within a local group, so that the full B10SC is unique to a specific spelling of a specific street name.

Consider the example of Seventh Avenue in Manhattan. The following is a list of many of Geosupport's normalized aliases for this street, sorted by B10SC. The dashed lines highlight the four local street name groups.

STREET NAME	B10SC =	BORO+	5SC +	LGC +	SNC
A C POWELL BOULEVARD	11061001010	1	10610	01	010
AC POWELL BOULEVARD	11061001020	1	10610	01	020
ADAM C POWELL BOULEVARD	11061001030	1	10610	01	030
ADAM POWELL BOULEVARD	11061001040	1	10610	01	040
ADAM POWELL JR BOULEVARD	11061001050	1	10610	01	050
ACP BOULEVARD	11061001060	1	10610	01	060
A C P BOULEVARD	11061001070	1	10610	01	070
POWELL BOULEVARD	11061001080	1	10610	01	080
ADAM CLAYTON POWELL BOULEVARD	11061001090	1	10610	01	090
ADAM CLAYTON POWELL JR BOULEVARD	11061001100	1	10610	01	100
FASHION AVENUE	11061002010	1	10610	02	010
SAINT VINCENTS SQUARE	11061003010	1	10610	03	010
ST VINCENTS SQUARE	11061003020	1	10610	03	020
7 AVENUE	11061004010	1	10610	04	010
SEVENTH AVENUE	11061004020	1	10610	04	020

All of the names in the above list are aliases of each other, and therefore their B10SCs have the same B5SC value, '110610'. The first ten names in the list, A C POWELL BOULEVARD and its nine spelling variants, constitute the group of names valid only for the part of the street north of Central Park; this local group is identified by LGC value '01' and B7SC value '11061001'. The name FASHION AVENUE is valid only for the portion of the street in the Garment District, and constitutes the sole member of local group '02'. Local group '03' consists of the names SAINT VINCENTS SQUARE and ST VINCENTS SQUARE, which are valid only for a small portion of the street in the vicinity of the former Saint Vincent's hospital. Finally, the names 7 AVENUE and SEVENTH AVENUE are valid for the entire street and constitute local group '04'.

IV.6 Functions D, DG and DN; Primary, Principal and Preferred Street Names

This section discusses Functions D, DG and DN. These functions are referred to as the Geosupport 'display functions' because, although they do not actually display anything themselves, they return street names that applications can use to format geographic locations for display on reports, screens, mailing labels, work orders for field work, etc. Functions D, DG and DN process input five-, seven- and ten-digit street codes (accompanied by borough codes), respectively. (The display functions can also be used to obtain address numbers in display format. This is discussed in Section V.2)

The selection of street names for display is a significant consideration for any street that has more than one local street name group. Given a specific location (i.e., an address, intersection, street segment or blockface) on a street, applications can use a simple procedure involving a call to Function DG to obtain a street name that is considered 'optimal' to display for that location, called the 'preferred street name'. Functions D and DN return street names that are of more specialized and limited use.

The display functions do not have a Work Area 2, and are accessed via one-work-area calls only. (If a second work area is mistakenly supplied, it is ignored.) Work Area 1 contains fields for the input street codes and for the output street names. The street names that the display functions return are full street names (never partial street names), normalized in accordance with the SNL and Street Name Normalization Format Flag values that are in effect for the given call.

Input Data

For the convenience of applications, each of the display functions can process up to three input street codes in a single call. If there are multiple input street codes, they are processed independently of each other and are not treated as though they were specifying a geographic location such as an intersection. (Similarly, if there is both an input street code and an input address number, they are not treated as though they were specifying an address.) In particular, a successful call to a display function does not imply the validation of the input data as a geographic location. Furthermore, the output street names returned by the display functions are not by themselves customized to be location-specific. Function DG must be used in conjunction with a call to another function to obtain a location-customized preferred street name.

For Function D, there are two different sets of fields in Work Area 1 that applications can use to pass input street code values, as follows.

- For MSW calls, if the input street codes are in the form of PB5SCs, the 4-byte input fields that are labeled PB5SC-1, PB5SC-2 and PB5SC-3 in the Work Area 1 layout in Appendix 2 are used.

- For MSW or COW calls, if the input street codes are in the form of B5SCs, the 11-byte input fields labeled B10SC-1, B10SC-2 and B10SC-3 are used. The input B5SC values, which are 6 bytes long, must be passed in these fields left-justified, and the contents of these fields beyond the first six bytes are ignored.

If an MSW application passes values to Function D in both sets of input street code fields (presumably inadvertently), the PB5SC fields are processed, and the B10SC fields are ignored.

For Function DG and DN, only the fields B10SC-1, B10SC-2 and B10SC-3 are used. In the case of Function DG, input 8-byte B7SC values must be passed in these fields left-justified, and the contents of these fields beyond the first eight bytes are ignored.

In a call to any of the display functions, Geosupport will process all three of the input street code fields, even if some of the fields are blank. If a street code field is blank, Geosupport will simply skip it and process the next field. For example. if B10SC-1 is blank, but B10SC-2 and B10SC-3 are not blank, they will be processed. The output street names will appear in the corresponding street names fields, viz. Street Name-2 and Street Name-3. Similarly, if B10SC-1 is not blank but B10SC-2 is blank, B10SC-3 will still be processed and the output street names will appear in Street Name-1 and Street Name-3. An error message is generated only if all the input street code fields are blank. Similar conditions hold for the PB5SC fields.

Output Data

The output street names that the display functions return are as follows:

- Function D is used to obtain, for an input B5SC value, or PB5SC value (MSW only), the primary street name for the given street. The primary street name is one alias, that is, one spelling of one street name, that GSS has designated, from among all the aliases for the street, as 'best' representing the street as a whole. (Note: The designation of primary street names has no 'official' status, and of necessity sometimes involves an element of arbitrariness.) The primary street name is not customized to be the 'best' name for any particular location along the street; it is simply the street name deemed most suitable to display if a single street name must be used to represent the entire street. Most applications do not require the services of Function D. However, some applications may, for example, have a requirement to display a consistent street name for all locations that are on the same street, so that it will be clear to users that all the displayed locations do refer to the same street. When possible, GSS designates as primary a street name that is valid for the entire length of the street. However, it is important to note that there are a few streets that do not have any such names**.** On such streets, there are locations where the street's primary street name is invalid. An example exists in Queens. 103 Street and William Clarke Place share the same B5SC viz.419690, and 103 Street is the primary street name. However, 700 William Clarke Place is a valid address and 700 103 Street is invalid because 103 Street is not valid at that location.

- Function DG is used to obtain, for an input B7SC value, the principal street name of the corresponding local street name group. This is a street name belonging to the given local street name group that GSS has designated as 'best' representing that group of street names, that is, the name that has been deemed to have the most 'standard' spelling. (As with primary street names, the designation of principal street names has no 'official' status, and of necessity sometimes involves an element of arbitrariness.) The most important use of Function DG is to retrieve preferred street names, as discussed below.

- Function DN is used to obtain, for an input B10SC value, the full street name spelling to which that B10SC value uniquely corresponds. Function DN is useful mainly in certain atypical applications that store ten-digit street codes in an application file, but do not store the input street names from which the street codes were originally obtained, and the application has a requirement (for legal purposes, for example) to display those originally-entered street names. Such applications can use Function DN to obtain the original name from the corresponding stored B10SC value (although the name will be provided in normalized form.) Application designers can obviate the need to make Function DN calls by retaining in the application file either the original input street name or that name in normalized form.

The display functions return one output street name for each valid input street code. For each input street code that is invalid, the display functions return all question marks (the character '?') in the corresponding output street name field. In addition, if at least one input street code is invalid, the GRC value '64' is issued along with an appropriate Message.

Preferred Street Names

As explained above, the primary street name is not necessarily the 'best' name to use to express any particular location along a street. Furthermore, although each principal street name is the 'best' representative of its local group of street names, there may be more than one local group valid at a particular location.

COW applications can retrieve preferred street names easily. Given a specific address, street intersection, street segment or blockface along a street, COW applications can use Function

1, 1A, 1B, 2, 3 or 3C, respectively, with the Work Area 1 Browse Flag set to 'R' to obtain the DCP-preferred street name(s) specific to that location. For a description of the Browse Flag, see Section III.8 Selection of Output Street Names (COW only).
Note: In support of the unique requirements of the New York City Board of Elections' voter registration application, COW Function 1E with Browse Flag set to 'R' will return the BOE-preferred street. For most addresses, the DCP-preferred LGC and the BOE-preferred LGC are identical.

MSW application may also obtain preferred street names corresponding to the input. Given a specific address, street intersection, street segment or blockface along a street, MSW applications can use Function 1, 1A, 1B, 2, 3 or 3C, respectively, in conjunction with Function DG, to obtain the DCP preferred street name specific to that location, as follows:

1. Issue a two-work-area call to the appropriate location-processing function (Function 1, 2, 3 or 3C), to obtain an item called the 'DCP-preferred LGC', which all of these functions return in WA2. The DCP-preferred LGC represents the blockface-specific local street name group that GSS has designated from among those local groups that are valid for the given blockface as being the 'best' group of street names to display for that blockface. (Note: In support of unique requirements of the New York City Board of Elections' voter registration application, Function 1E returns an item called the BOE-preferred LGC in place of the DCP-preferred LGC. For most addresses, the DCP-preferred LGC and the BOE-preferred LGC are identical.)

2. Concatenate the DCP-preferred LGC to the B5SC to form a B7SC.

3. Call Function DG with the above B7SC as input to obtain the preferred street name. The principal street name of the DCP-preferred local group is the preferred street name for the given location.

For example, suppose the original user input address to an application is 2019 SEVENTH AVENUE in Manhattan. This address is within the portion of the street north of Central Park, where two local groups are valid: local group 1 (LGC = '01'), which consists of the name POWELL BOULEVARD and its spelling variants, and local group 4 (LGC = '04'), which consists of the names 7 AVENUE and SEVENTH AVENUE. GSS has designated local group 1 as the DCP-preferred LGC for the portion of the street north of Central Park, and has also designated ADAM C POWELL BOULEVARD as the principal name of this local group.

A COW application obtains the preferred street name for the address 2019 SEVENTH AVENUE in Manhattan by issuing a Function 1 call with the Work Area 1 Browse Flag set to 'R'. Geosupport returns the DCP-preferred street name, ADAM CLAYTON POWELL JR BOULEVARD. The associated B10SC, 11061001100, will also be returned. (Function 1E will return 7 AVENUE and 11061004010 correspondingly, since BOE chose 7 Avenue as the preferred street name.).

An MSW application can obtain the preferred street name for the address 2019 SEVENTH AVENUE in Manhattan, by performing the procedure outlined above, as follows:

- Function 1 is called with the input address 2019 SEVENTH AVENUE. Function 1 returns in WA1 the B10SC value of the input street name, SEVENTH AVENUE, namely, the value

'11061004020'. The first six positions, '110610', constitute the street's B5SC value. Function 1 also returns, in WA2, the DCP-preferred LGC value for this address, which is '01'.

- The application concatenates the B5SC value with the DCP-preferred LGC value, forming the B7SC value '11061001'.

- The application calls Function DG using this B7SC value as input, obtaining ADAM C POWELL BOULEVARD as the preferred street name corresponding to the address 2019 SEVENTH AVENUE. The application may now display the address as 2019 ADAM C POWELL BOULEVARD.

In summary, the MSW application began with the address 2019 SEVENTH AVENUE, and by following the outlined procedure, in which first Function 1 and then Function DG was called, the application formed the 'preferred' address 2109 ADAM C POWELL BOULEVARD for display.

If either the COW or MSW application had started with the address 375 SEVENTH AVENUE, which is located south of Central Park, then either procedure would have resulted in the address 375 7 AVENUE, since 7 AVENUE is the principal name of the DCP-preferred local group for all locations on Seventh Avenue south of Central Park.

Please note: There is a new switch defined in COW Work Area 1 that will allow a user to call Geosupport and get a new, extended Work Area 2 for various functions. Functions 1, 1E, 1A, 3, 3C, BL and BN have extended work areas. These extended Work Areas contain Street Names of cross streets, etc. in addition to Street Codes. Users will rarely have to make separate D, DG, or DN calls (as explained above) to get the street names.

IV.7 Street Codes and Non-Addressable Place Names

This section discusses the manner in which street codes are assigned to Non-Addressable Place names (NAPs). Every NAP is a name of a simplex, a complex or a constituent entity of a complex (see Section III.6). By definition, every simplex and every complex has a NAP. A constituent entity of a complex may or may not have a NAP, and may or may not have one or more addresses. (A building that has neither an address nor a NAP is called a Non-Addressable Un-named Building (NAUB). NAUBs can be identified only by their Building Identification Numbers (BINs). NAUBs and BINs are discussed in detail in Chapter VI.)

Like conventional street names, some NAPs have aliases (alternative names and spelling variants). For example, CABRINI MEDICAL CENTER and CABRINI MED CENTER are spelling variants of the same name; AVERY FISHER HALL and PHILHARMONIC HALL are alternative names of the same geographic feature. As with conventional street names, the B10SC values assigned to NAP aliases have the same B5SC value.

In the case of a complex and its constituent entities, the assignment of street codes is analogous to the methodology used for streets. In general (the exceptional case is described below), the names of the entire complex and the names of its constituent entities are all treated as aliases of each other (that is, their B10SCs have the same B5SC value), since they are all names of the same geographic feature (the entire complex) or parts thereof (the constituent entities of the complex). Within the umbrella of this B5SC value, the NAPs that are valid for each portion of the complex, namely, either the entire complex or a particular constituent entity, are assigned to a different local group. Thus, the entire complex has its own distinct B7SC value, and each constituent entity has its own distinct B7SC value.

The following NAPs associated with Manhattan's Lincoln Center complex illustrate the assignment of street codes to NAPs associated with a complex.

NAP	**B 10SC**
LINCOLN CENTER	1 25006 01 010
LINCOLN CTR FOR THE PERFRMG ARTS	1 25006 01 030
NY STATE THEATER	1 25006 02 020
NEW YORK STATE THEATER	1 25006 02 040
N Y STATE THEATER	1 25006 02 060
AVERY FISHER HALL	1 25006 03 010
PHILHARMONIC HALL	1 25006 03 030

All of the NAPs associated with Lincoln Center (of which only a sample is listed above) have the same B5SC value, 125006. Within this B5SC value, the LGC value 01 is assigned to the NAPs of the complex as a whole, LINCOLN CENTER and LINCOLN CTR FOR THE PERFRMG ARTS (and other variants not listed). The LGC value 02 is assigned to NY STATE THEATER and variants thereof, and so on. An application can use the B5SC value, 125006, as the retrieval key to retrieve all the records in an application file for the NAPs associated with Lincoln Center, both records for the complex as a whole and records for its constituent entities. If only the records for the complex as a whole are to be retrieved, the application would use the B7SC value 12500601. If only the records for the New York State Theater are to be retrieved, the application would use the B7SC value 12500602, and so on. (Note that none of these retrievals would retrieve any records stored by address, since the street name or addressable place name in an address would have a different B5SC value than the one assigned to the NAPs.)

IV.8 Street Code Input Feature

For most functions involving street input, applications have the option to pass the input streets to Geosupport in the form of either street names or street codes. The exceptions are Function 1N and the display functions. Function 1N requires input streets to be passed in the form of street names, since that function's sole purpose is to normalize input street names and provide their street codes. The display functions require input streets to be passed in the form of street codes, since those functions are designed to provide street names corresponding to input street codes.

The street code input feature is useful in an application that stores street codes but not street names in an application file (presumably to save disk storage space), since it enables the application to process records from that file directly through a Geosupport location-processing function, without first having to call a display function to obtain street names.

Applications can provide input street codes to any of the functions that can accept them in any of the following forms (the field names used below are the same as those used in the WA1 layouts in Appendix 2 for MSWs and Appendix 13 for COWs.):

- PB5SCs (MSW only), passed in as many as necessary of the WA1 input fields PB5SC-1, PB5SC-2 and PB5SC-3.

- B5SCs, passed left-justified and space-filled in as many as necessary of the WA1 input fields B10SC-1, B10SC-2 and B10SC-3.

- B7SCs, passed left-justified and space-filled in as many as necessary of the WA1 input fields B10SC-1, B10SC-2 and B10SC-3.

- B10SCs, passed in as many as necessary of the WA1 input fields B10SC-1, B10SC-2 and B10SC-3.

For functions that involve multiple input streets, the input streets specified in a call must all be in the same form, either all street names, or all PB5SCs (MSW only), or all B5SCs, or all B7SCs, or all B10SCs. Note that the first byte of all input street code fields is a borough code. When input streets are specified using street code input, the contents of the separate WA1 input borough code field (MSW only) is ignored.

Local street name validation (see Section IV.5) is not performed when the street input is in the form of five-digit street codes, but it is performed with seven-digit and ten-digit street code input.

Functions 1, 1A, 1B, 1E, and AP and Street Code Input

When a user supplies a borough and 5-digit street code as input to Functions 1, 1A, 1B and AP, Geosupport returns the DCP-preferred street name and its corresponding B10SC. For Function 1E, Geosupport returns the BOE-preferred street name and its corresponding B10SC. Primary street names are not returned, because primary street names do not always apply to the entire street stretch, and may produce an error when used as input for a subsequent call for that location. Preferred street names are also often the more widely used name and therefore a better choice.

The street names returned by Functions 1, 1A, 1B, AP and Function 1E are usually the same. An example where the street names are not the same is for Functions 1 and 1A calls for address numbers (e.g. 2019) on 7 Avenue in Manhattan north of West 110th Street. If the user supplies the B5SC of 110610, the street name ADAM C. POWELL BOULEVARD, the DCP-preferred name, will be returned. Since ADAM C. POWELL BOULEVARD is the street name most commonly used in this location, it is a better choice than the primary street name (7 AVENUE). However, Function 1E will return 7 AVENUE since this is the BOE-preferred street name.

The technique of returning the preferred street name instead of the primary street name helps to insure that if the street name is used as input to Geosupport with the address number, it will be a successful call.

NAPs and Street Code Input

With respect to a NAP of a simplex, as with conventional street input, the user has the option to specify the input datum either in the form of the name (in this case, the NAP) or its B5SC. However, five-digit street code input is prohibited for a NAP of a complex or a constituent entity of a complex (it is rejected with a GRC value of '07'); instead, 7-digit or 10-digit street code input (B7SC or B10SC) is accepted. The reason for this restriction is that different entities of the same complex may be located within different blockfaces, tax lots, census blocks, administrative or political districts etc., so that the B5SC may not be specific enough to enable Geosupport to determine the proper set of output data to return.

IV.9 Summary of Street Codes

This section recapitulates the discussion of street codes. A B5SC value represents a New York City street (or a pseudo-street, non-street feature, place name or intersection name) and is assigned to all of the street's aliases, that is, to all of the names by which that street, or any part of it, is known to Geosupport. Therefore, the B5SC is a suitable item to use as an access key for street-related geographic retrieval, since then retrieval will be consistent with respect to street name aliases. That is, retrieval will succeed regardless of which alias is used at the time of record creation and which is used at retrieval time.

A B10SC value represents a particular spelling of a particular name for a street (along with all of that name's partial street names, if any). Two B10SC values are identical in their first six bytes (the B5SC values) if and only if the street names to which those B10SC values correspond are aliases (names for the same street). Since B10SC values correspond uniquely to a single spelling of a single name for a street, they can be used to automatically resynchronize the B5SCs stored in an application file to reflect street code assignment changes made in new Geosupport releases. Such resynchronization is essential, and is the user's responsibility. A Street Name/Street Code Change Bulletin and a Geosupport file called the Street Code Change File (SCCF) are made available in each new Geosupport release to facilitate user-developed procedures for street code resynchronization. If an application file contains stored B10SCs, the SCCF can be used to develop a fully automated street code resynchronization procedure that directly accesses only those records in the application file containing B10SC values that must be updated, and that updates those B10SCs; this is the optimal resynchronization method. If street names and B5SCs are stored in the file, but not B10SCs, then the B5SCs can be resynchronized by using Function 1N and processing every record in the file. If only B5SCs are stored in the file, then the change bulletin must be used, and records containing B5SCs involved in changes must be individually researched.

Some streets in the city have certain names that are only locally valid, that is, valid only for a portion of the street. The set of all names for a given street is partitioned into 'local street name groups' corresponding to portions of the street where various street names are valid. Two names for a street are in the same local group if and only if they are valid for exactly the same portion of the street. Each local group is assigned a Local Group Code (LGC) value, which is a number from '01' to '99' that labels the group relative to all of the local groups for that street. The B5SC value and LGC value are concatenated to form the B7SC value, which is assigned to every name belonging to the corresponding local group, and only to those names. Each local group has a single member designated as the principal street name for that group. Each portion of a street has one local group designated as the preferred local group for that portion. The principal name of the preferred local group is called the preferred street name for that portion of the street. The preferred street name is obtainable for any specific location on a street. For example, for an address, the preferred street name is obtained by calling Function 1 to obtain both the B5SC and the preferred LGC, concatenating these to form a B7SC, and using the latter as input to a call to Function DG. For an intersection, street segment or blockface, Function 2, 3 or 3C is called, respectively, instead of Function 1.

The B5SC, B7SC and B10SC can be viewed as forming a hierarchy in which the greater the length of the item, the more the more restricted the set of street names represented. The B5SC represents all the names for the street. The B7SC represents all the names that are valid for a particular portion (possibly all) of the street. The B10SC represents a particular name (and any unambiguous partial street names generated from it).

The methodology that is used to assign street codes to the Non-addressable Place Names (NAPs) of a complex and its constituent entities is analogous to the methodology used with street names. The B5SC represents all the NAPs of both the complex as a whole and all of its constituent entities. A distinct B7SC represents all the NAPs that are valid for a particular portion (possibly all) of the complex, that is, all the NAPs that are valid either for the complex as a whole or for a particular constituent entity. A distinct B10SC represents each individual normalized spelling of a specific NAP (and any unambiguous partial names generated from it).

For the reader's convenience, two reference tables summarizing street codes are below. Table IV-1 is a summary of the various street code items used by Geosupport, conventional abbreviations for them, and their lengths in bytes. The abbreviations listed in Table IV-1 are used throughout the remainder of the UPG. In these abbreviations, 'B' represents the standard Geosupport one-byte Borough Code, as described in Appendix 3, and 'P' means that the item is packed. (Note: Packed applies to MSW only.) Table IV-2 is a summary of the three main types of street code items, indicating the display function that accepts each as input, and what street name that display function returns as output. Table IV-2 is written to describe the assignment of street codes to street names, but it applies analogously as well to the NAPs of a complex and its constituent entities.

Table IV-1: Notation for Street Code Items

Item Abbreviation	Item Name	Length (Bytes)
5SC	Five-digit Street Code	5
P5SC (MSW only)	Packed Five-digit Street Code	3
B5SC	Borough and Five-digit Street Code	6
PB5SC (MSW only)	Packed Borough and Five-digit Street Code	4
7SC	Seven-digit Street Code	7
B7SC	Borough and Seven-digit Street Code	8
10SC	Ten-digit Street Code	10
B10SC	Borough and Ten-digit Street Code	11
LGC	Local Group Code (6th and 7th digits of 10SC)	2
SNC	Street Name Code (8th, 9th and 10th digits of 10SC)	3

5SC + LGC = 7SC
B5SC + LGC = B7SC
B5SC + LGC + SNC = B7SC + SNC = B10SC

Table IV-2: Summary of Street Code Items

Type of Street Code	Geography Represented	Corresponding Street Name(s)	Applicable Display Function and Its Output Datum
B5SC	A street for all or any portion of the given street	All names valid	D - returns primary name
B7SC	The portion (possibly all) of a street where a group of names is valid	All the names in the given local street name group	DG - returns principal name of local group
B10SC	The portion (possibly all) of a street where a specific name is valid	One spelling of one name (and any unambiguous partial names generated from it)	DN - returns the unique name to which the given B10SC corresponds

CHAPTER V: ADDRESS PROCESSING - FUNCTIONS 1, 1A, 1B, 1E, AP

V.1 Introduction

This chapter and the following two chapters discuss in detail the various types of geographic locations that Geosupport can accept as input, and the Geosupport functions that process them. This chapter, Chapter V, discusses addresses and Functions 1, 1A, 1B, 1E, and AP . Chapter VI discusses properties (tax lots) and buildings and Functions 1A (covering aspects not discussed in Chapter V), BL and BN. Chapter VII discusses 'street configurations' (geographic locations that are specified in terms of combinations of streets) and Functions 2, 3, 3C and 3S.

V.2 Address Numbers ('House' Numbers), Normalization and Formats: HNI, HNS and HND

Address numbers identify buildings, and are combined with street names and addressable place names (see Section III.6) or with street codes (as surrogates of street names or place names) to form addresses. Address numbers are commonly called 'house' numbers (although this term is a misnomer, since many addresses refer to buildings other than houses). To be consistent with common parlance and with other Geosupport documentation, the term 'house number' will be used instead of 'address number' in the remainder of this document, except in literal citations of Geosupport reject messages, since those messages use the term 'address number'.

Applications can pass a house number to any of the address-processing functions in character form, in the 12-byte WA1 input House Number field for MSW and the 16-byte WA1 input House Number field for COW. A house number passed in this manner need not be in any particular format, but could be a 'raw', un-formatted house number. Alternatively, house numbers can be passed in a 6-byte WA1 input field in a special Geosupport format called the House Number in Internal format (HNI), which presumes, the application will have obtained the HNI from a previous Geosupport call. HNIs are only used with MSW. A newer Geosupport format called House Number in Sort Format (HNS) is used for COWs.

When a house number is passed to Geosupport in the 12-byte WA1 for MSW or the 16-byte WA1 for COW input House Number field, Geosupport normalizes it. The house number normalization algorithm is complex, and a full description of it is beyond the scope of this document, but some aspects are discussed below. If normalization is successful, an output normalized house number is produced in two standard formats, the 12-byte or 16-byte output House Number in Display format (HND) and the 6-byte output House Number in Internal format (HNI) or the 11-byte House Number in Sort format (HNS), and both of these are returned to the application in WA1. The HND is in character form and is suitable for display, for example, on application screens, reports and mailing labels. While the HNS format contains character data, it is intended for Geosupport internal use. To conserve space, users may store this value in their files.

The HNI format contains packed decimal data, and is the format that Geosupport uses internally to perform its address-matching routines. The HNI is not documented in detail herein, and is of little direct relevance to most users. However, to conserve disk space in application files in which house numbers must be stored in some form, users can store the 6-byte HNI in their files rather than the 12-byte HND for MSW or the 11-byte HNS in their files rather than the 16-byte HND for COW, and then use any of the display functions, Functions D, DG and DN, to obtain the house number in HND format for display, as described below.

Processing of HNIs or HNSs by the Display Functions

The processing of an input HNI or HNS by a display function consists only of forming and outputting the HND. The successful processing of an input HNI or HNS by a display function implies that the HNI or HNS conforms to Geosupport's format requirements for HNIs or HNSs, but does not imply that the HNI or the HNS forms part of a valid address.

The display functions can process up to two input HNI or HNS values in a single call, using the two input HNI or HNS fields and two output HND fields in WA1. If two input HNIs or HNSs are supplied, they are processed independently of each other and are not treated as forming an address range. If only one input HNI or HNS is supplied, it may be passed in either of the input HNI or HNS fields.

The display functions return one output HND for each validly formatted input HNI or HNS. For each input HNI or HNS that is invalid, the display functions return all question marks (the character '?') in the corresponding output HND field. In addition, if at least one input HNI or HNS is invalid, the GRC value '13', Reason Code value '9' and corresponding Message are issued.

The display functions can also be used to obtain street names corresponding to input street codes. (The processing of street codes by the display functions is discussed in detail in Section IV.6.) In a single call, the display functions can process input HNIs or HNSs without input street codes, input street codes without HNIs or HNSs or both types of input. If both HNIs or HNSs and street codes are provided as input data to a display function call, they are processed independently of each other and are not treated as forming an address. In particular, the display functions perform no address validation.

HNIs or HNSs as Input to the Address-Processing Functions

The user has the option of providing input house numbers to the address-processing functions in the form of an HNI or HNS instead of a 'raw' unprocessed house number. This feature is useful for processing an application file that already contains house numbers in HNI or HNS format from a previous pass through Geosupport. The use of this feature slightly improves execution efficiency by allowing Geosupport to circumvent the house number normalization routine.

House Number Format Standards

'Raw' (un-normalized) input house numbers must conform to certain Geosupport standards, which are based on the characteristics of New York City's addresses. If an input house number does not satisfy these standards, Geosupport is unable to normalize it and rejects the call. The house number standards include the following, among others:

- Conformance to a set of allowable characters

- A limitation on the total length of the 'basic house number' (this term and the term 'house number suffix' are defined below)

- Limitations on the number of digits and maximum numeric values of the basic house number, if it does not contain a hyphen; or such limitations on the portions of the basic house number preceding and following the hyphen, if a hyphen is present

- Validity of the house number suffix (discussed below), if one is present

Every valid New York City house number conforms to the above standards.

The ability of Geosupport to normalize an input house number does not by itself signify that that house number, together with the input borough and street, form in combination a valid New York City address. Successful normalization signifies only that the input house number conforms to Geosupport's house number format criteria. Only the successful completion of a two-work-area call to one of the address-processing functions has significance with respect to the geographic validity of the input address. (See Section II.4 for a discussion of the distinction between the validations performed by one- and two-work-area calls.)

New York City house numbers consist of a 'basic house number', possibly followed by a 'house number suffix'. (Note: the basic house number and house number suffix are not to be confused with the digits to the left and right of the hyphen in a hyphenated house number. For example, in the Queens address '240-55 1/3 DEPEW AVENUE', '240-55' is the basic house number, and is hyphenated; '1/3' is the house number suffix.) A dash character may appear in the input house number field between the basic house number and the house number suffix, e.g. 22-GARAGE. Geosupport replaces the dash with a blank and processing continues. No message is generated for this situation.

Only a small percentage of New York City addresses have house number suffixes. The following are some examples of valid New York City addresses containing house number suffixes (highlighted in bold type):

519 **Front** East 12th Street (Manhattan)
625 **Rear** Smith Street (Brooklyn)
120 **1/2** First Avenue (Manhattan)
240-55 **1/3** Depew Avenue (Queens)
469 **1/4** Father Capodanno Boulevard (Staten Island)
470 **A** West 43rd Street (Manhattan)
171**C** Auburn Avenue (Staten Island)
20-29 **Garage** 120th Street (Queens)

Input basic house numbers may contain a dash(the character '**-**'), which can serve either as a <u>hyphen</u>, as with most house numbers in Queens and some house numbers in other boroughs, or as a <u>range separator</u>.

- <u>House Number Ranges:</u> Addresses in New York City are often expressed in ranges, using a dash to separate the low and high house numbers of the range. For example, 22-28 Reade Street in Manhattan represents the range of even addresses consisting of 22 Reade Street, 24 Reade Street, 26 Reade Street and 28 Reade Street, all of which are valid individual addresses for the same building. In other words, in this example, the character string '22-28' is not an individual house number, but represents a range of house numbers, in which the dash serves as a range separator, and the number to the left of the dash, 22, as well as that to the right of the dash, 28, constitute by themselves valid individual house numbers for Reade Street.

- <u>Hyphenated House Numbers:</u> Consider the Queens address 22-28 36th Street. The house number portion of the address, 22-28, consists of the same character string as the above Reade Street example, but it has a very different meaning in the two cases. In the Reade Street case, 22-28 represents a range of even house numbers; in the 36th Street case, 22-28 is a single hyphenated house number, not a range of several unhyphenated house numbers. In a hyphenated house number, the digits to the left and to the right of the hyphen in combination form a single house number; the digits on one side of the hyphen are not by themselves geographically meaningful. For example, 22 36th Street and 28 36th Street are not valid Queens addresses. In addition, the position of the hyphen within a hyphenated house number is significant. For example, consider the addresses 13-103 41st Avenue and 131-03 41st Avenue. These are two distinct addresses on the same Queens street, even though the house numbers consist of the same sequence of digits and differ only in the position of the hyphen.

Geosupport's house number normalization algorithm interprets a dash encountered in an input house number either as a hyphen or as a range separation character, depending on the borough, the street (some streets do not conform to the norm for their borough with respect to house number hyphenation) and other criteria.

- <u>When Geosupport interprets the dash as a range separation character</u>: In normalizing the input house number, both the dash itself and the portion of the basic house number to the right of the dash are deleted. As one consequence of this, when the input to a two-work-area call is an address range, only the address formed from the house number to the left of the dash is validated; the house number to the right of the dash is ignored and no conclusion can be drawn about its validity from the success or failure of the call. For example, 22-28 Reade St in Manhattan is normalized as 22 READE STREET; the '28' is ignored during normalization, and is <u>not</u> validated as an individual house number in a two-work-area call.

- <u>When Geosupport interprets the dash as a hyphen</u>: In normalizing the input house number, the digits on both sides of the hyphen are retained, as is the hyphen itself.

If Geosupport determines that an input house number in character form has a missing or inappropriately present dash, then whenever it is feasible, Geosupport modifies the house number to correct the error before normalizing it. (Geosupport never modifies input HNIs or HNSs.) Geosupport will make such a modification automatically (without user request), but only if the intended address is clear and unambiguous and is valid for the function being called, and a valid address could not be formed by normalizing the input house number in a different fashion. Two types of such dash-related modifications are as follows:

- When an input house number does not contain a dash, but Geosupport determines that the house number should be hyphenated: Geosupport inserts a hyphen, provided it can determine the proper position of the hyphen unambiguously so that a valid address results. For example, the input address 6603 Booth Street in Queens is normalized as 66-03 BOOTH STREET; the input address 63101 Alderton Street in Queens is normalized as 63-101 ALDERTON STREET.

- When an input house number contains a dash, but Geosupport determines that the presence of the dash is erroneous (i.e., the house number is invalid whether the dash is interpreted as a hyphen or as a range separator): Geosupport concatenates the digits to the left and right of the dash without retaining the dash itself, provided that this results in a valid address. For example, 10-22 38th Street in Brooklyn is normalized as 1022 38 STREET.

Whenever the house number normalizer makes an assumption about, or a dash-related modification to, an input house number, Geosupport informs the calling application by issuing a warning condition. A warning is issued, for example, when Geosupport assumes that an input dash is a range separator and then normalizes the house number by deleting the dash and digits following it, or when it assumes that a required hyphen is missing and inserts one.

When Geosupport is unable to normalize an input house number without making a dash-related modification so that a valid address results, and there is more than one type of dash-related modification that would result in a valid address, the input is considered ambiguous. For such a rejection, the Message would list the possible valid forms of the input address. This assists the user to determine how the input house number should be modified to make it valid. For example, consider the input 10-14 Lexington Avenue in Manhattan. Lexington Avenue has unhyphenated addresses only. There are two reasonable interpretations of the user's intended input in this example. These are 10 Lexington Avenue, which assumes the input is an address range, and 1014 Lexington Avenue, which assumes the dash is an inappropriately present hyphen. All of the address-processing functions consider both of these to be valid addresses. Initially, 10-14 Lexington Avenue in Manhattan was rejected as ambiguous, but, at user request, the first successful house number is accepted; i.e. 10 Lexington Avenue in Manhattan.

In the borough of Queens, the great majority of streets have hyphenated house numbers only; a few streets have unhyphenated house numbers only, and a few streets have 'mixed hyphenation'(i.e., both hyphenated and unhyphenated house numbers). In the other four boroughs, all but a few streets have unhyphenated house numbers only, a few streets have hyphenated house numbers only, and a few streets have mixed hyphenation. Riverside Drive in Manhattan is an example of a mixed-hyphenation street. A small stretch of Riverside Drive running north from West 156th Street has hyphenated even addresses ranging from 156-00 to 159- 34 (with some gaps). The remainder of Riverside Drive has unhyphenated addresses only.

Information on the address hyphenation status of each of the city's streets is maintained internally within Geosupport. The house number normalizer makes use of this information when analyzing an input house number that contains a dash character. Dash analysis is particularly complex for mixed-hyphenation streets, for which a dash could be either a hyphen or a range separator. For example, 156-158 Riverside Drive is a valid range of unhyphenated addresses assigned to a building located near West 88th Street, while 156-10 Riverside Drive is a valid single hyphenated address assigned to a building located near West 156th Street.

When there are more than 3 digits following the dash in an input address number on a street having unhyphenated or mixed hyphenated house numbers, Geosupport treats the dash as a range separation character and issues a warning message that the address number has been altered (GRC 01 / Reason 1). When this input occurs on a street having only hyphenated house numbers, the call is rejected and Geosupport issues an error message (GRC 13 / Reason 2).

V.3 Specifying Input Data to the Address-Processing Functions: NAPs, Parsed-Form Addresses, Free-Form Addresses and Unit Information

Functions 1, 1A, 1B, 1E and AP are Geosupport's address-processing functions. In general, they accept as input conventional street addresses, Addressable Place names, and certain Non-Addressable Place names (NAPs) (described in Section III.6 and further discussed in Section IV.7). Note, however, that Function AP does not accept Non-Addressable Place names as input.

- Addresses can be specified in parsed form, that is, with the house number and street specified in separate WA1 input fields. The street can be specified either as a street name or a street code. Non-street feature names, pseudo-street names and intersection names may not be used. There are two options for specifying an address in parsed form:

    - Parsed-form addresses using street name: Specify a borough code (or ZIP code), street name and house number (using the WA1 input borough code (or ZIP code) and street name-1 field and either the MSW 12-byte or COW 16-byte WA1 input house number field or the MSW 6-byte WA1 input HNI field or the COW 11-byte HNS field).

    - Parsed-form addresses using street code: Specify a borough code (or ZIP code), street code and house number. The borough code and street code may be specified using any of the WA1 input combined borough code and street code fields (the B5SC, PB5SC, B7SC or B10SC) for MSW. For COW, there is only one borough code/street code field. The house number may be specified using either the MSW 12-byte or COW 16-byte WA1 input house number field or the MSW 6-byte WA1 input HNI field or the COW 11-byte HNS field.

- Alternatively, addresses can be specified in free-form, that is, with the house number specified together with the street name in the WA1 input Street Name field, as described below. Non-street feature names, pseudo-street names, intersection names and partial street names (see Section III.4) may not be used. When addresses are specified in free-form, the input house number and HNI or HNS fields are not used.

- NAPs are specified in the same fashion as addresses, as described above, except that typically no house number is supplied. If a house number is supplied with a NAP, Geosupport typically ignores the house number and issues a warning. If the NAP is one that actually has house numbers associated with it, then if the address exists the house number will not be ignored. (See Section III.6 for more information.)

Free-form addresses are addresses in which the house number and street name are stored together in a single field, as they might appear in the address line of a mailing address. When an application passes all blanks in the WA1 input house number, HNI and HNS fields, and Geosupport determines that the WA1 input Street Name field does not contain a NAP, Geosupport assumes that the latter contains a free-form address, and attempts to parse the contents into a house number followed by a street name.

Since both house numbers and street names vary in length, and may be separated by a varying number of blanks, these items will not be in predictable positions within a free-form address. Therefore, when processing a free-form address, Geosupport must parse the contents of the input street name field to attempt to identify and logically separate the house number and the street name. If this is successful, the processing proceeds as with parsed-form address input. If an input free-form address contains any extraneous data following the house number and street name, such as an apartment number, neighborhood name, borough name or ZIP code, Geosupport attempts to recognize those data as extraneous information, in which case it ignores them, or in the case of COW function calls, Geosupport will also attempt to process the extraneous data as Unit input. (See Section V.15 for more discussion of the UNIT feature.)

Geosupport's processing of free-form addresses is complex and is not as reliable as that for parsed-form address input. It is **strongly recommended** that, whenever possible, applications be designed to pass input addresses to Geosupport in parsed form, that is, to pass input house numbers and input street names in separate fields.

In order to give users the ability to describe addresses in more detail, Geosupport now allows users to specify UNIT information, e.g. APT 5, on address-processing functions. This feature is described more fully in Section V.15.

V.4 Input Address Acceptance/Rejection and its Validation Significance

The address-processing functions differ significantly among themselves with respect to which input addresses they accept and reject, and with respect to the significance of the validation of an input address implied by acceptance or rejection. These distinctions are discussed below.

Function 1. Function 1 accepts an input address if and only if it falls within the administrative address range allocated to some blockface (described below). Thus, Function 1's acceptance of an input address does not by itself validate whether the input address is the actual address of a building, but only whether it falls within an administrative address range.

The administrative address range allocated to a blockface is the set of addresses that actually are, or potentially may be, assigned to buildings on that blockface. Administrative address ranges are allocated to blockfaces by the offices of the Borough Presidents. In many cases, the administrative address range allocated to a blockface is broader than its current 'actual' address range (i.e., the range encompassed by the lowest and highest actual addresses of existing buildings on the blockface). This reserves addresses for new buildings that might be built on that blockface in the future. (To 'shoehorn' new buildings between existing buildings, it is sometimes necessary to assign house numbers with suffixes like A, B, 1/2 and 1/3.)

In theory, an administrative address range encompasses all of the actual addresses of existing buildings on the blockface. However, there are discrepancies from this in reality for a relatively small number of blockfaces, as well as temporary discrepancies caused by Geosupport data errors.

An administrative address range may also encompass nonexistent addresses, either between the low and high actual addresses of the blockface or beyond them. For example, consider the blockface on the east side of East 28 Street between Avenues I and J in Brooklyn. The administrative address range allocated to this blockface is 901-999. Function 1 would accept any odd address between 901 and 999 on E 28 Street in Brooklyn as input, whether or not that input address is a valid address of an existing building. In reality, the lowest and highest actual house numbers of existing buildings on this blockface (as of the writing of this document) are 901 and 985, and within this range there are gaps in actual addresses. For example, there are buildings on East 28 Street with the house numbers 925 and 929, but there is not currently a building with the house number 927, nor are there buildings with any of the odd house numbers from 987 through 999. Nevertheless, all of these house numbers will result in successful Function 1 calls, since they all fall within the administrative address range.

Function 1E. With the exception of a rare case discussed below, Functions 1 and 1E accept the same addresses and reject the same addresses, and the validation significance of acceptance and rejection is the same for both functions.

The exceptional case is that of an address that is split among more than one Election District (ED). As of this writing, there is only one instance of this case, 3333 Broadway in Manhattan; it is split among three EDs. Therefore, for this address, Function 1E is unable to determine an ED (or any of the higher-level political districts). Since the primary purpose of Function 1E is to provide the political geography for an address, Function 1E rejects this address with a GRC value of '56'. However, portions of this building in specific EDs can be identified using house number suffixes, 'A' through 'E': 3333A through 3333C Broadway are in ED 94 of Assembly District (AD) 70; 3333D Broadway is in ED 82 of AD 70; and 3333E Broadway is in ED 83 of AD 70. Function 1E accepts these addresses as input, and returns the political districts specific to the input. Functions 1 and 1A accept both the un-suffixed and suffixed addresses.

Function 1A. Function 1A accepts an input address if and only if the address falls within one of the following two cases:

- Valid actual address. If the input address is a valid address of an existing building on a property, there is a normal completion (Geosupport Return Code = '00').

- Pseudo-address. If the input address is a 'pseudo-address' , a warning is issued (GRC = '01', Reason Code = '8' or '9'). Pseudo-addresses (not to be confused with pseudo-street names) are discussed in Section VI.5.

If the input address is neither a valid address of an existing building nor a pseudo-address, Function 1A rejects that input address. This is true even if the input address falls within an administrative address range allocated to a blockface and is therefore accepted by Functions 1 and 1E. Thus, Function 1A's criterion for accepting an input address is typically more stringent than those of Functions 1 and 1E, and the validation significance of acceptance differs accordingly.

Function AP. Function AP accepts an input address if and only if the address falls within the following case:

- Valid actual address. If the input address is a valid address of an existing building on a property, there is a normal completion (Geosupport Return Code = '00').

Function AP's criterion is very similar to Function 1A's. If the input address is not a valid address of an existing building, Function AP rejects that input address. This is true even if the input address falls within an administrative address range allocated to a blockface and is therefore accepted by Functions 1 and 1E. Thus, Function AP's criterion for accepting an input address is typically more stringent than those of Functions 1 and 1E, and the validation significance of acceptance differs accordingly.

Function 1B Input Address Processing and Return Code Processing

Function 1B makes an internal combined call to Extended Function 1A and Extended Function 1E (see descriptions of 1E and 1A above). Extended Functions 1A and 1E return more information than the regular Functions 1A and 1E. This is described in Section V.5 (Output Data Returned) below.

Function 1B invokes Function 1A Extended processing first. If the input address number is altered by the Function 1A Extended processing (e.g. deleting a hyphen) the altered version of the address number is passed as input to the Function 1E Extended processing.

Also, since Function 1A is more stringent than Function 1E, it is possible that the address will be rejected by the Function 1A portion of 1B and then successfully processed by the Function 1E portion of 1B. There can be rare cases where the input address is processed successfully by the Function 1A portion and rejected by the Function 1E portion. In Work Area 1, there are two sets of GRC, Reason Code and Message fields to accommodate the Function 1E and Function 1A processing included in Function 1B.

The original set of GRC, Reason Code and Message fields in Work Area 1 contain the GRC, Reason Code and Message from the Function 1E Extended portion of the Function 1B call. This second set contains the GRC, Reason Code and Message for the Function 1A Extended portion of the Function 1B call. (As described above, it is entirely possible that Geosupport will find one set of information and not find the other. There can be an error code and message in the new GRC and Message fields indicating property data (Function 1A) has not been found, and a 00 or 01 GRC in the original Return Code field indicating Blockface (Function 1E) information has been found, or just the opposite.)

V.5 Output Data Returned in Work Area 2 of Address Processing Functions

The address-processing functions differ significantly with respect to the output data they return.

Function 1. Function 1, when called using two work areas, performs blockface-level processing. Almost all of the items that Function 1 returns in WA2 are associated with the entire blockface, and do not vary with the specific input address within that blockface. Among these items is a set of geographic district identifiers, such as Census Tract and Block, Police Precinct and Community District.

One piece of information returned by Function 1 that does vary with the specific input address is a pair of spatial coordinates. This identifies the approximate location of the given address on the earth's surface.

School District (SD) boundaries split some blockfaces, and in those cases, Function 1 returns the SD value that is appropriate for the specific input address. However, the high and low house numbers returned in WA2 always correspond to the entire blockface, not to the portion of the blockface within the given SD. When the blockface is split by a SD boundary, no indication is provided that the blockface is split.

An example of a blockface that is split by a SD boundary is the odd-address side of FARRAGUT ROAD in Brooklyn between EAST 105 STREET and EAST 108 STREET. The address range for the entire blockface is 10501 to 10799. The subrange from 10501 to 10599 is in SD 18; and the subrange from 10601 to 10799 is in SD 19. If the input to a Function 1 call is 10559 FARRAGUT ROAD, '18' is returned in the WA2 SD field, but 10501 and 10799 are returned as the address range for the blockface. If the input to a Function 1 call is 10611 FARRAGUT ROAD, '19' is returned in the WA2 SD field, but, again, 10501 and 10799 are returned as the address range for the blockface.

The information that regular Function 1 returns in WA2 also includes two lists of street codes for the cross streets at both ends of the blockface. These cross street codes are B5SCs thus reflecting the primary street names. The Extended WA2 (MODE=X) also returns B7SC lists of cross streets and their street names thus reflecting the principal street names. Applications can use these cross streets to identify address-based data to blockfaces or street segments. In many applications, the consolidation of data for individual locations to the level of the blockface or street segment can significantly improve the efficiency of a municipal operation. The conversion of address-based data to segment-based data is further discussed in Section VII.3.

If a COW application has a need to display the street names of the cross streets, aside from calling Function D or DG, the user can employ one of the following options:

a. The Mode Switch in WA1 can be set to 'X' and the Extended function will return cross street codes as B7SCs and their corresponding principal street names in the extended portion of WA2. This is done with no processing overhead. This can be helpful to the user since the Primary Name is not always the best name for a particular cross street. See description of Extended Mode in Section II.7)

b. The Cross Street Names Flag in WA1 can be set to 'E' and the cross street names will be returned in the List of Street Names in WA1 (see entries for Cross Street Names Flag and List of Street Names in Appendix 3). The Cross Street Names will be the primary street names since they are based on B5SCs. Note that the cross street names feature incurs processing overhead, and should only be used when necessary,. It is recommended that the Extended Mode option, mentioned above, be used.

   NOTE: There is no longer a need to set the Cross Street Names Flag to "E" when using Function 1 and 1E with Mode Switch of "X", since the Cross Street Names are in the Extended part of the work area, although this will not create an error if the Cross Street Names flag is set to "E". However, the Street Names returned in Work Area 1 with the Cross Street Name flag are based on the B5SCs and not the updated B7SCs.

Function 1 and 1E Extended Work Areas - MODE=X (COW Only)

In the Extended Function 1 and 1E work area 2, the BOE Preferred LGC and associated street name will be returned in new fields that are defined in the "Extended" portion of Work Area 2.

The Extended Function 1 and 1E work area 2 includes additional fields such as USPS Preferred City Name, Latitude and Longitude, Neighborhood Tabulation Area Name, Bike Lane 2, Bike Traffic Direction, Street Width, Street Width Maximum, etc. For a complete list, see the Work Area layout in Appendix 13.

Underlying Street Name or Street Address

For NAPs and Addressable Place Names, the underlying street name or street address is returned as part of a warning message (reason code V). The street code of the underlying true street is not included in the list of cross streets. For example, Fifth Avenue is an underlying street of the Empire State Building; it will not be included in the list of cross streets for the Empire State Building. Information on the underlying true street appears in COW WA2 and MSW Long WA2.

Additional data in COW regular WA2 and in long WA2 for MSW Functions 1 and 1E

The long WA2 option is available for the MSW Functions 1 and 1E. Since all the additional data in the long WA2 for MSW Functions 1 and 1E are included in the regular WA2 for COW Functions 1 and 1E, there is no long WA2 option for COW. (There are extended work areas for COW Function 1/1E which are discussed below.) The additional data in COW regular WA2 and long MSW WA2 includes the following:

- Segment ID
- Borough and 7-digit street code for the underlying true street of a NAP or Addressable Place Name.
- Underlying house number
- 2000 Census tract, block, and block suffix. (The 2010 fields are in the regular portion of the work area.)
- (COW only) Hurricane Evacuation Zone
- (COW Only) Organics Recycling Schedule
- (COW Only) Bulk Items Pickup Schedule

Functions 1, 1B, and 1E allow a user to receive roadbed-specific information in place of information based upon the generic center line of a multi-roadbed street. A user requests roadbed-specific information via the ‘Roadbed Request Switch’. This means that a Function 1, 1B, or 1E call with this switch set will return the roadbed-specific geocodes, assuming that the input street has multiple roadbeds. Examples of geocodes that would be different include Segment ID, Segment Type Code, X-Y coordinates, LION Key and possibly cross streets and Census Tracts / Blocks. An additional file has been added to the Geosupport system to handle this data. Users who prefer non-roadbed-specific information, which assumes a single roadbed for all roads, are not required to make any changes.

Function 1E. Function 1E, when called using two work areas, returns all of the WA2 data items that Function 1 returns. In addition, Function 1E returns the following political district identifiers in WA2: Election District, State Assembly and Senate Districts, City Council District, Congressional District and Municipal Court District.

Function 1E handles cases where a School District boundary splits a blockface in the same manner as Function 1 does. In addition, Election District boundaries can also split blockfaces, and Function 1E handles those cases similarly. This includes the special case of the addresses 3333A through 3333E Broadway discussed in Section V.6.

As indicated above, Function 1E permits roadbed-specific information to be returned to the user. For more information, refer to the description as part of Function 1.

COW Function 1/1E Extended Mode - Mode Switch set to "X". Geosupport has an Extended Work Area 2 for COW Functions 1 and 1E called Function 1 and 1E Extended. The first 300 bytes of Function 1 and 1E with the Mode Switch set to "X" will be the same as regular Function 1 and 1E calls. Note: Please see **Appendix 13** for the Extended Work Area 2 layout. Some of the fields in the extended portion of the Function 1/1E Work Areas include: USPS Preferred City Name, NTA Name, Latitude, and Longitude.

Note: There is no longer a need to set the Cross Street Names Flag to "E" when using Function 1 and 1E with Mode Switch "X", since the Cross Street Names are in the Extended part of Work Area 2, although this will not create an error if the field is set to "E". However, the Street Names returned in Work Area 1 with the Cross Street Names flag are based on the B5SCs (thus returning the primary street names) and not based on the updated B7SCs which allow the Extended Work Area 2 to return the principal street names.

Function 1A. Function 1A, when called using two work areas, performs property (i.e., tax lot) and building-level processing. Function 1A returns information in WA2 associated with the specific property and building (if any) containing the input address. This information includes the property identifiers (tax block and tax lot numbers), and a list of all addresses of all buildings on the property (or as many as will fit in WA2) as well as the Building Identification Numbers (BINs) if any. Function 1A's output information is discussed in detail in Section VI.6.

Function 1A Extended Work Area 2 (Mode Switch set to 'X') – COW Only. The first 246 bytes of the Extended Work Area 2 for Function 1A, up to the "Number of Entries in List of Geographic Identifiers" field, are the same as with regular Work Area 2. Aside from adding the new Function 1A Reason Code, Warning Code, GRC and filler to the work area for Function 1A Extended, the only change is in the address list. **The Principal Street Name (based on the B7SC in the address list) has been added to each element in the address list for the user's convenience**. Note that Mode Switch of 'X' is not valid with the Long Work Area 2 Flag set to Y, since the Function 1A Long Work Area 2 primarily returns BINs, not street codes.

Function AP (COW Only). Function AP, when called using two work areas, performs Address Point processing and some property-level and building-level processing. Function AP returns the Address Point ID and the X,Y spatial coordinates of the Address Point. In addition, Function AP returns the Borough-Block-Lot of the Address Point and its BIN. The tax-lot information in WA2 lists only one address in the lot, namely, the input address with the BIN number (if an) of the building at that address. Function AP's property output information is very similar to Function 1A's output. Function AP and Function 1A's output information is discussed in detail in Section VI.10 and Section VI.6.

Function AP Extended Work Area 2 (Mode Switch set to 'X') – COW Only. The first 246 bytes of the Extended Work Area 2 for Function AP, up to the "Number of Entries in List of Geographic Identifiers" field, are the same as with regular Work Area 2. Aside from adding Function AP Reason Code, Warning Code, GRC and filler to the work area 2 for Function AP Extended, the only change is in the address list. **The Principal Street Name (based on the B7SC in the address list) has been added to each element in the address list for the user's convenience**.

<u>Function 1B (COW Only).</u>
Function 1B returns Blockface-level information and political geography, followed by property-level information for a given input. Work Area 2 consists of the output of a Function 1E call with Mode Switch = "X" followed by the output of a Function 1A call with Mode Switch = "X". The input requires borough or zip code, address number if needed, and street name or street code. Function 1B processing first retrieves the property-level information (Function 1A Extended- tax lot and building) based on the input. The Function 1A Extended processing may modify the input address (e.g. a hyphen is inserted into the address number). In any case, the input address used by Function 1A Extended is then used to retrieve the blockface and political data (Function 1E Extended).

Function 1B (combined Function 1E Extended and 1A Extended) returns a total of 4300 bytes in Work Area 2. The first 1500 are for the Blockface portion (Function 1E, see description above) of the call. The next 2800 bytes are for the Property Level portion (Function 1A, see description above and Section VI.6) of the call.

A second set of Geosupport Return Code (GRC), Reason Code and Error/Warning Message fields is defined in <u>Work Area 1</u> to be used for Function 1B. This new set contains the GRC, Reason Code and Error or Warning Message for the Function 1A Extended portion of the Function 1B call. The original GRC, Reason Code and Message fields in Work Area 1 contain the Return Code, Reason Code and Error or Warning Message from the Function 1E Extended portion of the Function 1B call. It is entirely possible that Geosupport will find one set of information and not find the other. There can be an error code and message in the new GRC and Message fields indicating property data (Function 1A) has not been found, and a 00 or 01 GRC in the original Return Code field indicating Blockface (Function 1E) information has been found or just the opposite.

Work Area 2 for Function 1B
Function 1B returns a total of 4300 bytes in Work Area 2. The first 1500 are for the Blockface (Function 1E Extended) portion of the call. The next 2800 bytes are for the Property Level (1A Extended) portion of the call.

In the Function 1B Work Area 2, the Function 1E Extended WA2 output portion includes all the Function 1E Extended fields. There is one difference, namely that the preferred LGC that is returned in the Function 1B Work Area 2 is the <u>DCP preferred LGC</u>, not the Board of Elections preferred LGC.

A new Return Code and Reason Code field are defined in Work Area 2 for each of the 1E Extended and 1A Extended portions of the 1B call. This information duplicates the original and secondary Return Code and Reason Codes in Work Area 1. **GBAT does not return a Work Area 1 and therefore does not return both Return Code fields. In order to make it easier for the GBAT user to see the results for both components of the 1B call, Work Area 2 contains a Return Code and Reason Code for each portion (1E and 1A)**. If data is found, either in the Blockface (Function 1E) call or the Property Level (Function 1A) call, that data will be returned to the user along with both Return Codes and Reason Codes.

If data has been found for the Blockface (1E) portion of the call, there will be data in columns 1 through 1500 of Work Area 2 returned to the user. Columns 1005-1006 will contain the GRC for the 1E portion of the call (which will be either a "00" or "01" indicating a warning) and column 1001 will contain the Reason Code if there is a warning. If data has not been found for the Blockface (1E) portion of the call, columns 1 through 1500 will be blank aside from the Error GRC in column 1005-1006 and the Error Reason Code, if any, in column 1001.

If data has been found for the Property Level (1A) portion of the call, there will be data in columns 1501-4300 of Work Area 2. Columns 1751-1752 will contain the GRC for the 1A portion of the call (which will be either a "00" or a "01" indicating a warning) and column 1747 will contain the Reason Code if there is a warning. If data has not been found for the Property Level (1A) portion of the call, columns 1501-4300 will be blank aside from the Error GRC in column 1751-1752 and the Error Reason Code, if any, in column 1747.

If data has not been found for either the Blockface or Property Level request, Function 1B's Work Area 2 will be returned to the user with all fields blank aside from the two GRC and Reason Code fields mentioned above.

V.5.1 Mainframe GOAT Screen for Function 1B

In order to make room for more information, the Function 1B GOAT screen is formatted somewhat differently from the other GOAT screens. Since this new screen has many changes we are making an exception and describing it in the UPG.

a. There is only one field for the address number (Adr #:) and street name (Strt:). The same field is now used for the user's input and the normalized output.
b. The screen is basically divided into two halves – with the top half giving Blockface Level Information (Function 1E) and the bottom half giving Property Level Information (Function 1A).
c. Two Return Code and Message Areas are displayed at the bottom of the screen. The first message area will reflect the Property Level portion and the second message area will reflect the Blockface and Political Level portion.
d. The Function Code input field is at the very top of the screen (Function Code:). The same field is used to display '1B' and to allow the user to transfer to another function.
e. The Unit input field is at the very top of the screen (Unit:). The same field is used to return the normalized unit display format output.

```
Function Code: 1B   *****  GOAT  (Geographic Online Address Translator)  ****
 Adr#: 1            Strt: PENN PLAZA                      Unit:
 Boro: 1 MANHATTAN 10SC: 4560201010     Browse(P/F/R):   Roadbed Req: N TPAD: N
 -------------------- Block Face Level Information ----------------------------
 Segm Id: 0297867 Physical Id:  0174203  Feature Type:                CD ELG: N
 ED/AD: 060/75    DSNY Dist/Sec: 105/051 DSNY Sub/Sched:    1H/MWF/EF SOS: R
 City Council: 03 NYPD PB/PCT: MS/014   2010 CT/CB  101.00/1002  Cont Parity:
 Fire Div/Batt: 01/07 Fire Comp/Insp Area:  L024 ZIP Code: 10119 Com Dist: 105
 Low Addr Nbr: 1           Low Cross St: 11061004    7 AVENUE
 Hi  Addr Nbr: 1           Hi  Cross St: 11081002    8 AVENUE
 -------------------- Property Level Information-------------------------------
 Block/Lot:   783/0070 BIN:        BIN Stat:   TBIN/Stat:        /  Vacant: N
 Structures: 0003      BD Class: O4 RPAD SCC: 4 X,Y Coords: 0986363,0212982
 BID:   34 STREET PARTNERSHIP   Condo#:      Condo Low-Hi Lot:
 Type of Item    Low Adr #   High Adr #  Street Name              Bldg ID Number
 Addr Range            1            1 PENN PLAZA                        1014387
 Addr Range          265          265 WEST   33 STREET                  1014387
 Addr Range          206          268 WEST   34 STREET                  1014387
 ------------------------------------------------------------------------------
 Function 1A Extended: Return Code = 00

 PRESS F7 TO SCROLL BACKWARD, F8 TO SCROLL FORWARD
 Function 1E Extended: Return Code = 01 Reason Code = V
 1 PENN PLAZA IS ON RIGHT SIDE OF WEST 33 STREET
```

Sample Mainframe GOAT Function 1B Screen

V.6 Duplicate Addresses

New York City has a small number of duplicate addresses, which are not data errors in Geosupport files, but real duplicates in the assignment of house numbers to buildings or in the allocation of administrative address ranges to blockfaces. Some duplicate addresses were created when formerly independent towns were consolidated into one of the city's boroughs. Other duplicates involve situations in which a developer or other entity has given the same name to a private street that the city has given to a public street in the same borough. When two streets in the same borough have the same name, Geosupport treats them as portions of a single street, regardless of how far apart they are geographically.

Geosupport's address-processing functions, Functions 1, 1A, 1B and 1E, when called using two work areas, have a special feature to process duplicate addresses. This feature involves the use of Duplicate Address Pseudo-Street Names (DAPSs), described in Section III.6. DAPSs are assigned to every street that has duplicate addresses, providing a means for users to specify unambiguously a particular instance of such an address. The user may alternatively specify the unique ZIP Code for the address. See Section III.6 for more detail.

Whether a given input address is processed as a duplicate address depends on the function. Functions 1 and 1E behave identically with respect to duplicate address processing, both in the set of addresses they consider to be duplicates, and in the way addresses are processed. However, Function 1A differs from Functions 11E in both of these respects.

Note, that **Function 1B** is a combination of Function 1A Extended and Function 1E Extended.

Function 1B first calls Function 1A Extended to process the input address. During its processing, Function 1A Extended may modify the input address, (e.g. if it assumes a range). Function 1B then calls Function 1E Extended with the input address as it was modified by Function 1A Extended. Separate error messages are issued by the Function 1A Extended and the Function 1E Extended processing. Both messages are returned to the user.

There are two cases of duplicate address situations:

- Case 1: Overlap of Administrative Address Ranges Allocated to Two Blockfaces: The same administrative address range (discussed in Section V.4) or portion thereof is allocated to two different blockfaces on the same street in the same borough. That is, an administrative address range allocated to one blockface along a street contains, coincides with, or otherwise overlaps with, that allocated to another blockface along the same street. Any input address that is within such an overlap is processed as a duplicate address by Functions 1 and 1E.

- Case 2: Duplication of an Address or Address Range Assigned to Two Buildings: The same address or range of addresses is assigned to two different buildings on the same street in the same borough. Any such input address is processed as a duplicate address by Function 1A.

In general, an address that is an instance of Case 2 is also an instance of Case 1, but the reverse is not necessarily true. That is, almost all addresses that are processed as duplicates by Function 1A are also processed as duplicates by Functions 1/1E, but there are many addresses that are processed as duplicates by Functions 1/1E but are not processed as duplicates by Function 1A.

Hillside Avenue in Queens has addresses that exemplify both of the above cases. A Case 1 example is the following: There is a blockface of Hillside Avenue in the Bellerose neighborhood of Queens to which the administrative address range 239-02 to 239-10 is allocated. There is another blockface of Hillside Avenue, in the Douglaston neighborhood of Queens, to which the administrative address range 239-02 to 239-20 is allocated. Since the Bellerose range is entirely contained within the Douglaston range, Functions 1 and 1E process every house number in the Bellerose range (all the even house numbers on Hillside Avenue from 239-02 to 239-10) as a duplicate address.

Despite the administrative address range duplication, not every individual even house number on Hillside Avenue between 239-02 and 239-10 is a valid actual building address in both Bellerose and Douglaston, i.e., is an instance of Case 2. Function 1A does not process an address as a duplicate unless it is assigned to two different buildings, even if Functions 1 and 1E process that address as a duplicate.

Function 1A faces three possibilities when processing an address that Functions 1/1E consider to be a duplicate, as illustrated by the following Hillside Avenue examples:

- 239-02 Hillside Avenue is assigned to buildings in both Bellerose and Douglaston. Therefore, this address is processed as a duplicate address by Function 1A, as well as by Functions 1/1E.

- 239-06 Hillside Avenue is assigned to only one building, in Bellerose. Therefore, this address is processed normally, not as a duplicate address, by Function 1A, even though it is processed as a duplicate address by Functions 1/1E.

- There are no buildings to which 239-04 Hillside Avenue is assigned. Therefore, this address is rejected as entirely invalid by Function 1A, even though it is processed as a duplicate address by Functions 1/1E.

Processing of a duplicate address. When an address-processing function considers an input address to be a duplicate, it processes that address as follows.

- If the street in the input address is specified using the conventional street name (and no ZIP code is specified or an invalid ZIP code is specified), the call is rejected with a Geosupport Return Code of '75'. The accompanying Message informs the user that the function considers this input address to be a duplicate address, and indicates the two DAPSs that could be used to specify this address unambiguously. For example, 239-02 Hillside Avenue is considered a duplicate address by all of the address-processing functions, so all of them would reject the input 239-02 HILLSIDE AVENUE and would return a GRC of '75' and the Message:

  DUPLICATE ADDRESS-USE HILLSIDE AVENUE BELLEROSE
  OR HILLSIDE AVENUE DOUGLASTON

- If the user specifies the input address using one of the DAPSs instead of the conventional street name, it is accepted. For example, 239-02 HILLSIDE AVENUE BELLEROSE is accepted by all of the address-processing functions, as is 239-02 HILLSIDE AVENUE DOUGLASTON. These functions return output information that is specific to the blockface (Functions 1/1E) or the tax lot and building (Function 1A) pinpointed by the DAPS.

- If the user specifies the input address using the conventional street name and a valid ZIP code then it is accepted. For example, 239-02 HILLSIDE AVENUE with ZIP code 11426 (in Bellerose) is accepted by all of the address-processing functions, as is 239-02 HILLSIDE AVENUE with ZIP code 11363 (in Douglaston). These functions use the corresponding DAPS information for the output street name and street code. These functions return output information that is specific to the blockface (Functions 1/1E, 1B) and/or the tax lot and building (Function 1A, 1B) pinpointed by the DAPS.

To summarize, for an address that the function being called considers to be a duplicate, the conventional street name, without a ZIP code, is rejected; only a DAPS or a conventional street name, with a ZIP code, is accepted as an input street name for such addresses.

Processing of a **non-duplicate** address on a street that has DAPSs. Now suppose that a particular address-processing function considers a given input address to be a valid non-duplicate. If the street does not have DAPSs (i.e., if the street does not have any addresses that are considered to be duplicates by any of the address-processing functions), then the processing does not involve the duplicate address processing feature. If the street does have DAPSs, then the address is processed as follows.

- If the address is specified using the conventional street name, it is accepted. For example, 239-20 Hillside Avenue is considered a non-duplicate address by all of the address-processing functions. Therefore, they all accept 239-20 HILLSIDE AVENUE as input. 239-06 Hillside Avenue is considered a non-duplicate address by Function 1A (it is valid for one building only, which happens to be in Bellerose), but it is considered a duplicate address by Functions 1/1E. Therefore, Function 1A accepts 239-06 HILLSIDE AVENUE as input, but Functions 1/1E reject this as a duplicate address for which DAPS input, or a ZIP code, is required.

- If the address is specified using DAPSs, the processing depends on the function:
    - Functions 1/1E reject the address. For example, Functions 1/1E reject 239-20 HILLSIDE AVENUE BELLEROSE, as well as 239-20 HILLSIDE AVENUE DOUGLASTON. Functions 1/1E treat DAPSs as valid only for addresses they consider to be duplicates, and reject DAPSs for addresses that these functions do not consider to be duplicates.
    - Function 1A's processing depends on whether Functions 1/1E consider the address to be a duplicate:
        - If Functions 1/1E consider the address to be a non-duplicate, Function 1A rejects the address. For example, Function 1A rejects the input 239-20 HILLSIDE AVENUE BELLEROSE, as well as 239-20 HILLSIDE AVENUE DOUGLASTON.
        - If Functions 1/1E consider the address to be a duplicate, Function 1A accepts the address when it is specified using the DAPS corresponding to the neighborhood where the address is valid, and rejects the address when it is specified using the other DAPS. For example, as mentioned above, 239-06 Hillside Avenue is valid only for a building in Bellerose. Therefore, Function 1A accepts 239-06 HILLSIDE AVENUE BELLEROSE, but it rejects 239-06 HILLSIDE AVENUE DOUGLASTON. Note that this contrasts with the behavior of Functions 1/1E, which reject both DAPSs when they consider an address to be a non-duplicate.

We now summarize the duplicate address processing feature. Functions 1 and 1E behave identically with respect to duplicate address processing: they consider the same addresses to be duplicates, and they process all addresses in exactly the same way, both those they consider to be duplicates and those they do not. However, Functions 1/1E differ from Function 1A in certain respects.

- Functions 1/1E differ from Function 1A in which addresses they consider to be duplicates. Almost all addresses that Function 1A considers to be duplicates are also considered duplicates by Functions 1/1E. However, there are many addresses that Functions 1/1E consider to be duplicates that Function 1A does not.

- If an address-processing function considers an input address to be a duplicate, the function rejects the conventional street name, and accepts DAPSs, or conventional street names with ZIP codes.

- If an address-processing function considers an input address to be a valid non-duplicate, it accepts the conventional street name.

- If an address-processing function considers an input address to be a valid non-duplicate, and the street is specified using a DAPS, the action taken depends on the function. Functions 1/1E reject both DAPSs, regardless of whether Function 1A considers the address to be a duplicate. Function 1A's action depends on whether Functions 1/1E consider the address to be a duplicate. If Functions 1/1E consider the address to be a non-duplicate, Function 1A rejects both DAPSs. If Functions 1/1E consider the address to be a duplicate, Function 1A accepts the DAPS that corresponds to the location where the input address is a valid address of a building, and rejects the other DAPS.

- As mentioned earlier, Function 1B is a combination of Function 1A Extended and Function 1E Extended. Function 1B first performs Function 1A Extended processing of the input address. Function 1B then performs Function 1E Extended processing of the input address (as it was modified by Function 1A Extended). Separate error messages are issued by the Function 1A Extended and the Function 1E Extended processing. Both messages are returned to the user.
  - If Function 1A Extended accepts the input, e.g. 239-06 Hillside Avenue, but Function 1E Extended does not, then the Function 1A portion of the Function 1B Work Area 2 will contain valid output, but the Function 1E Extended portion will show an error message rejecting the input (GRC 75) and no valid output will appear in the Function 1E Extended portion.

V.7 Marble Hill/Rikers Island

There are two New York City areas, Marble Hill and Rikers Island, that have the following idiosyncrasy: each is more closely identified geographically with a borough other than the borough to which the area legally belongs. The former is referred to as the 'alternative borough'.

- Marble Hill: The legal borough is Manhattan, and the alternative borough is the Bronx. Marble Hill is located on the Bronx side (the north side) of a body of water separating Manhattan Island from the Bronx, and it has a land boundary with the Bronx but it is connected to Manhattan Island only by a bridge.

- Rikers Island: The legal borough is the Bronx, and the alternative borough is Queens. Rikers Island is physically connected to Queens via a bridge but is not connected to the Bronx.

Because of their locations, Marble Hill and Rikers Island receive many of their government services from their alternative borough, and therefore they are included in many operational and administrative districts of the alternative borough. For example, most of Marble Hill is in Bronx Community District (CD) 8, and the remainder of it is in Bronx CD 7. Marble Hill also has a Bronx ZIP code (10463). Rikers Island is assigned to Queens CD1.

In practice, both the legal borough and the alternative borough are used when specifying Marble Hill and Rikers Island locations. To accommodate this practice, Geosupport's address-processing and street configuration-processing functions have been designed to accept either the legal borough or the alternative borough as the input borough for Marble Hill and Rikers Island locations. For example, the Marble Hill address 150 WEST 225 STREET is accepted by the address-processing functions whether Manhattan or the Bronx is specified. The Rikers Island address 18-99 HAZEN STREET is accepted whether the Bronx or Queens is specified.

When an application makes a two-work-area call to any of the address-processing or street configuration-processing functions other than Function 3S, and specifies the alternative borough for a Marble Hill or Rikers Island location, Geosupport issues a warning with a Reason Code value of 'C' and an appropriate Message.

Except for the LION Key (viz. Borough Code, Face Code and Sequence Number) the information returned to the application in WA2 is the same regardless of which borough is specified as the input borough. Note, however, that the output borough name and street code(s) returned to the application in WA1 do depend on which borough is specified as the input borough. Each street in Marble Hill and Rikers Island has two street codes assigned to it, one for the legal borough and one for the alternative borough. The street code(s) and borough name that are returned in WA1 correspond to the input borough.

V.8 Special Ruby Street Processing

The address processing functions have a special feature to handle an anomaly involving a stretch of a street that lies along the Brooklyn-Queens border. On the Brooklyn side, this street is called Ruby Street; on the Queens side of the same physical street, it is called 75 Street. Many residents of the Brooklyn side of this street customarily specify Brooklyn as the borough but they specify the Queens street name, 75 Street, rather than the 'legal' Brooklyn street name, Ruby Street. A further complication is that there is a different Brooklyn street (in Bay Ridge, far from the Queens border) that is also called 75 Street. Geosupport handles these anomalies automatically, as follows:

When an address-processing function is called, and Brooklyn is specified as the input borough, and 75 STREET is specified as the input street name, Geosupport is able to determine from the input house number (assuming it is a valid house number) whether the address is on 75 Street in Bay Ridge or is actually on Ruby Street. If it is in Bay Ridge, it is processed normally. If the address is on Ruby Street, then Geosupport takes the following actions:

- The street name RUBY STREET and the street code for Ruby Street are returned in WA1 instead of the normalized input street name, 75 STREET, and the latter's Brooklyn street code.

- WA2 is returned with a full complement of data.

- Geosupport issues a warning with a Reason Code value of either '6' or '7'. (Reason Code '6' indicates simply that the output street name and street code differ from the corresponding input values. Reason Code '7' indicates in addition that the input and output house numbers differ from each other in some way, as per Section V.2. See Appendix 4.)

V.9 Vanity Addresses

Vanity addresses are a type of geographically 'dislocated' address in which the street name is that of a different street from the one on which the building entrance is actually located. Developers sometimes use such addresses in the belief that a prestigious street name enhances the market value of a property.

1049 FIFTH AVENUE in Manhattan is an example of a vanity address. Although this is ostensibly a Fifth Avenue address, the building entrance to which this address is assigned is actually located on the south side of East 86th Street between Fifth and Madison Avenues. (In this case, the building has no frontages at all on the named street, although that is not a prerequisite to being a vanity address.)

Functions 1 and 1E process vanity addresses as follows.

- A warning with Reason Code 'V' is issued, along with a message that indicates the 'true' street name (the name of the street on which the building entrance is actually located).
- The output data returned, including cross streets and geographic district identifiers, pertain to

the true blockface. For example, the information returned for 1049 FIFTH AVENUE corresponds to the blockface on the right (south) side of East 86th Street between Fifth and Madison Avenues, not to a blockface of Fifth Avenue. In particular, East 86th Street is not returned as a cross street, since it is the true 'on' street; and Fifth Avenue is returned as the cross street at the low-address end of the segment.

- The source for the Spatial Coordinates (a.k.a. X-Y coordinates) returned for Vanity Addresses (and NAPs) is the **Citywide Street Centerline file (CSCL)**. The CSCL information guarantees that the X-Y coordinates fall within the actual location (e.g. building footprint) of the Vanity Address.

Function 1A processes vanity addresses as follows:

- A warning with Reason Code 'V' is not issued.
- The output data returned pertain to the actual building associated with the vanity address.
- In the list of geographic identifiers at least two entries will appear: one (type V entry) for the vanity address and one for the real street (a.k.a. true street or underlying street). The second entry will be either a regular address entry with house numbers and street information or a type R entry indicating the street that the entrance to the vanity address is on.

V.10 Out-of-Sequence Addresses

In addition to vanity addresses, there is another type of geographically dislocated address called out-of-sequence addresses. In such an address, the street name does refer to the street where the referenced building entrance is actually located, but the house number is out of sequence with those of the adjacent buildings. An out-of-sequence address may or may not be so dislocated that the building entrance is on a blockface other than the one that is consistent with the normal addressing pattern of the given street. Developers sometimes request such addresses because they feel they are euphonious or easy to remember.

An example of an out-of-sequence address is 62 WEST 62 STREET in Manhattan. This address refers to a building entrance located on the south side of West 62nd Street between Broadway and Columbus Avenue. In this case, the out-of-sequence address is indeed on the blockface that is consistent with the normal addressing pattern for West 62nd Street. However, the building in question is directly to the east of a building with the address range 42-44 WEST 62 STREET. This violates the normal addressing pattern for West 62nd Street, and for east-west streets on the west side of Manhattan in general, in which the house numbers consistently increase going from east to west.

Functions 1 and 1E process out-of-sequence addresses as follows. A warning with Reason Code 'O' is issued for any address on a blockface containing an out-of-sequence address. The output data returned, including cross streets and geographic district identifiers, pertain to the blockface on which the building entrance is actually located. The Spatial Coordinates returned are those of a point calculated under the assumption that the building entrance is located at the midpoint of the blockface.

An opposite-parity address contains a house number that is of the opposite parity to the predominant parity on the blockface. Opposite-parity addresses are processed in the same manner as out-of-sequence addresses.

V.11 ZIP Code as Input Instead of Borough Code

For Functions 1, 1A, 1B, and 1E, the user may supply the five-digit ZIP code in place of the borough code. Geosupport will determine the borough based on the ZIP code. If both a ZIP code and a borough code are supplied, the borough code will be used and, in general, the ZIP code will be ignored.

Please note that the ZIP code is not validated. It is mainly used to determine the borough. For example, if you supply a ZIP code that is valid for the borough, but not for that particular location, the specified function will execute successfully. In addition, the ZIP code returned in Work Area 2 may be different than the ZIP code you have supplied.

In general the ZIP codes returned in Work Area 2 are usually accurate for residential areas since these ZIP codes are validated by the Board of Elections. If you believe that the ZIP code returned by Geosupport is incorrect, please forward the address in question with the ZIP code you believe is correct to GSS_Feedback@planning.nyc.gov. See Appendix 6 for more information.

V.12 Fuzzy Search for Address Functions 1, 1A, 1B, and 1E

Geosupport processes situations where there is only one possible valid similar name and that valid similar name is created by adding the word EAST or WEST to the front of the input street name (in other words, the input street name is a front-truncated street name). For example, if a user supplies 212 146 STREET in Manhattan as the input to a Function 1, 1A, 1B or 1E call, Geosupport recognizes that 146 Street does not exist in Manhattan. Since only WEST 146 STREET exists (there is no East 146 Street), Geosupport will accept the call with a warning message indicating that West 146 Street is assumed.

V.13 Special Place Name Processing

Functions 1 and 1E return the underlying street name of an addressable place name, and the street address of a non-addressable place name, as part of a warning message with reason code **V**. In addition, the underlying information is returned in code format in the COW Work Area 2 and the MSW Long Work Area 2.

V.14 'No Cross Street' Segment Processing

When there are no cross streets at the end of a segment, Functions 1, 1E and B return the cross streets from preceding or subsequent segments. The High and Low Addresses at those cross streets are also returned. In Function 1 and 1E Extended and Function 1B, the Node ID and X-Y coordinates (spatial coordinates) at those cross streets are returned as well.

If the user wishes to see the original values of the Node ID and X-Y coordinates of the original segment (which may have no cross street) those values appear in special 'segment' fields in Functions 1/1E Extended and Function 1B.Work Area 2.

V.15 UNIT Information Feature (COW Only)

Users have requested the ability to describe addresses more in more detail. Geosupport now allows users to specify UNIT information, e.g. APT 5, on COW address-processing functions.

The UNIT feature enables users to keep better track of information specific to units within a building. For example, it will be useful for PECO (Post Emergency Canvassing Operations) to record which units in a building were canvassed, and which units required assistance. By allowing users to input apartment numbers it will help the users keep track of whom they saw when going into the field. They can print lists with apartment numbers and keep track of which apartments were seen and which still remain to be seen. The Unit information can also be used on mailing labels, etc.

- Unit information may appear at the end of an input free-form address,
  e.g. 120 BROADWAY STE 3102
- Alternatively, unit information may also appear in the Unit Input field in Work Area 1,
  e.g. STE 3102

Unit information consists of a **Type** and an **Identifier.** For example, ‘APT 5’ consists of a Unit Type of ‘APT’ (apartment) and a Unit Identifier of ‘5’. (Unit Type and Unit Identifier are similar to NENA (National Emergency Number Association) terminology.) NENA and USPS (US Postal Service) have defined Preferred Types with a length of up to 4 characters. Geosupport converts the input Type to the Preferred Type. See Table of Preferred Types later in this section. If the unit information does not have a recognized type, the Type will be set to a pound sign, viz. #, and the data will be considered as the Identifier. If the data is longer than the space available in the Unit fields, the identifier will be truncated and a warning message (Reason Code $) will be issued.

Unit information is supplied by the user in the Work Area 1 (WA1) Unit Input field for a length of 14, or at the end of a free-form address. In either case, the unit information is normalized and returned in the Output Area of WA1 in two formats – Display format and Sort format.

- Display format for a length of 14, with Type and Identifier concatenated with one blank in between them.

- Sort format for a length of 14, which is broken down into two consecutive fields
  - Unit Type for a length of 4
  - Unit Identifier for a length of 10

The following table indicates the size and location of the UNIT fields in the COW Work Area 1. These fields are defined in the Geosupport COPY library.

UNIT Fields Work Area 1 (COW only)				
Field name	**Size**	**From**	**To**	**Functions**
---- The following Unit field is in the Input portion of Work Area 1 ----				
Unit Input	14	219	232	1*

UNIT Fields Work Area 1 (COW only)				
Field name	**Size**	**From**	**To**	**Functions**
---- The following Unit fields are in the Output portion of Work Area 1 ----				
UNIT - SORT FORMAT	14	667	680	1*
Unit – Type	4	667	670	1*
Unit – Identifier	10	671	680	1*
Unit – Display Format	14	681	694	1*

The <u>normalization</u> of Unit input includes recognizing the Unit Type and Identifier and converting all Unit Types to the Preferred Unit Types. In addition, the first instance of a Type is moved to the front of the Display Unit field. Some of the basics of normalization are mentioned here.

- All ordinals are removed
- All characters aside from A-Z, 0-9, -, / are removed
- All extraneous blanks and all blanks before and after / or – are removed
- The first instance of a Type is moved to the front of the unit field with the rest of the identifier following, e.g. 1st Floor will be output as FL 1.
- All instances of a Type are replaced by the Preferred Type
- In the absence of a Type, the software will return a pound sign (#).
- In Display format there will always be a blank between the Type and the Identifier, e.g. `MEZZA` will appear as `MEZZ A` in a Unit output field. (`MEZZ` is the preferred Type for Mezzanine.)

Note: In the following discussions, blanks appear as hyphens.

- Consider an example where the Unit Input is '`4TH-FLOOR`'. It will be normalized to: '`FL-4`' in the Display format. The ordinal '`TH`' was removed; '`FLOOR`' was replaced by the Preferred Type '`FL`'; and '`FL`' was moved to the front of the Display Unit field.

- The Sort format is similar except that it is composed of two fields. The Type is always 4 characters. The first instance of a Type is put into the Type field of the Sort format. The Identifier has 10 characters and any numeric may have extra spaces around them to ensure that they sort properly. In this case, '`4TH-FLOOR`' would be appear as '`FL--`' in the Sort Type field and '`---4------`' in the Sort Identifier field. The extra blanks before the '4' in the Sort Identifier field will ensure that if they are sorted, the sort version of '`10TH-FLOOR`' ('`--10------`') will appear <u>after</u> the sort version of '`4TH-FLOOR`'.

- If no Type at all is recognized in the input, then a pound sign '#' is used as the Type in the Display and the Sort format. For example, if the Unit Input just had a '5', Then the Display format would contain '`#-5`'; the Sort format would contain Type: '`#---`' and Identifier: '`---5------`'.

- If Unit Input is specified in the WA1 Unit Input field, and additional information also appears after the Street Name in a free-form call, then the WA1 Unit Input field is processed and the information appearing after the free-form address is ignored.

- When the Unit information is supplied as part of the free-form address, Geosupport continues to give the Reason Code 'W' warning message
`INPUT STREET NAME HAS BEEN MODIFIED`

- In rare instances, a Unit Identifier may be truncated in an output field. In that case, if the Unit Input was specified in the WA1 Unit Input field, then a warning message is issued. The warning message is:

GRC	Reason Code	Functions	Message
01	$	1*	UNIT IDENTIFIER HAS BEEN TRUNCATED

When this situation occurs with a free-form address, the original warning message with Reason Code 'W': `INPUT STREET NAME HAS BEEN MODIFIED` is still given.

The following is a table of the Preferred Unit Types and the Alternate Types that are recognized as input. The Preferred Type will appear in the Unit Output fields.

Table of PREFERRED UNIT TYPEs				
Preferred Unit Type	**Alternate Input 1**	**Alternate Input 2**	**Alternate Input 3**	**Alternate Input 4**
APT	APARTMENT	APART	APT	
BSMT	BASEMENT	BSMT	BSM	
BLDG	BUILDING	BLDG	BLD	
CLR	CELLAR	CELAR	CELL	CLR
COMM	COMMONS	COMMON	COMM	COM
CONC	CONCOURSE	CONCOURS	CONC	
CORR	CORRIDOR	CORRID	CORR	COR
DEPT	DEPARTMENT	DEPT	DEP	
FL	FLOOR	FLR	FL	
FRNT	FRONT	FRNT	FRT	
HNGR	HANGER	HNGR		
KEY	KEY			
LBBY	LOBBY	LBBY	LBY	
LOT	LOT			
LVL	LEVEL	LEVL	LVL	LEV
LOWR	LOWER	LOWR	LOW	
MEZZ	MEZZANINE	MEZZ	MEZ	
OFC	OFFICE	OFFIC	OFF	
PH	PENTHOUSE	PNTHSE	PH	
PIER	PIER			

Table of PREFERRED UNIT TYPEs				
Preferred Unit Type	**Alternate Input 1**	**Alternate Input 2**	**Alternate Input 3**	**Alternate Input 4**
REAR	REAR			
RM	ROOM	RM		
SIDE	SIDE			
SLIP	SLIP	SLP		
SPC	SPACE	SPAC	SPC	
STG	STORAGE	STORAG	STRG	STG
STOP	STOP	STP		
STE	SUITE	SUIT	STE	
TRLR	TRAILER	TRLR		
TRML	TERMINAL	TRMNL	TRML	
UNIT	UNIT	UNT		
UPPR	UPPER	UPPR	UPR	
WING	WING	WNG		

Mainframe GOAT (CICS) Support of Unit - Functions 1A and 1B

- Function:1A
- Input: Field labeled '`Unit`' is available for input data.
- Output: Field labeled '`Norm Unit Disp`' displays the Normalized Display Format Unit Output field.

- Function:1B
- Input: Field labeled '`Unit`' is available for input data.
- Output: To save screen space, the Field labeled '`Unit`' that was used for input is also used for output and displays the Normalized Display Format Unit Output field.

Mainframe GBAT Support - Functions 1A and 1B

- **Required** GBAT Control Entries

  WORKAREA=COW
  RECTYPE=1A or 1B

- **Optional** GBAT Control Entries

UNIT=S,L	defines location of Unit input field (not required if input data is free-form only)
GEOUNIT=YES or NO	specifies if GBAT returns the Normalized Display Format Unit output field.
GEOCODE=NO or ALL	required if GEOUNIT=YES

- **Optional LRECL** change

  If GEOUNIT=YES is in effect, the LRECL of OUTFILE must be increased by 70.

- For more detail on GBAT Unit processing, see Chapter IX, Appendix 9, and

Appendix 12.

Summary of Geosupport support of Unit processing

- As of this writing, Unit Processing is supported by:
    - Mainframe Batch and CICS
    - Desktop Edition
    - Linux Edition
    - .net and Java classes
    - Mainframe GBAT Batch (Functions 1A and 1B)
    - Mainframe GOAT CICS (Functions 1A and 1B)
    - Desktop Edition GBAT (Functions 1A and 1B)!
    - GeoExcel 2013
    - Web GOAT

- As of this writing, Unit fields are not processed by:
    - Mainframe GBAT Batch (Functions 1 and 1E)
    - Desktop Edition GBAT (Functions 1 and 1E)
    - Desktop Edition GOAT

CHAPTER VI: TAX LOT AND BUILDING PROCESSING - FUNCTIONS 1A, BL, BN / ADDRESS POINT PROCESSING - FUNCTION AP

VI.1 Introduction

New York City has approximately one million parcels of privately and publicly owned real property, called tax lots, containing more than 800,000 buildings. This chapter describes the Geosupport functions that process tax lots and buildings, Functions 1A, BL and BN. It also describes the Geosupport function that provides the Address Point information for addresses in New York City, Function AP.

Two data items discussed in detail in this chapter, the Borough-Block-and-Lot (BBL) and the Building Identification Number (BIN), serve as unique identifiers for tax lots and buildings, respectively. (Addresses are non-unique building identifiers, since many buildings have more than one address.) Function 1A accepts address input, Function BL accepts BBL input, and Function BN accepts BIN input.

Address Point IDs which relate to a 'real' posted address, and BBL and BIN information can be retrieved via Function AP. Function AP accepts address input. For more information on Function AP and Address Points, see Section VI.10.

Functions 1A, 1B, BL, and BN return property information that is updated on a weekly basis. (Prior to Version 17.1/Release 17A, the property information was updated on a quarterly basis. For Function 1B, only the property level data will be updated weekly.[4]) COW users may request more up-to-date information relating to new buildings and demolitions via the TPAD Request Flag for Functions 1A, 1B, BL and BN. (Note that TPAD information is not available for Function AP. Also, for Function AP, the property information continues to be updated on a quarterly basis.) For more information on the TPAD feature see Section VI.11 which discusses TPAD[5] BIN and Status Information (COW only). See also Appendix 17 which discusses TPAD error processing and work area field names.

VI.2 Tax Lots and BBLs

The city's tax geography is designated and modified by the New York City Department of Finance (DOF). The tax geography consists of the subdivision of the territory of the city (excluding city-owned land that is mapped for streets) into tax blocks, each of which is further subdivided into one or more tax lots.

- Each tax block is identified, uniquely within its borough, by a tax block number assigned by DOF. Each tax block can consist of one, more than one, or a portion of one physical city block.

- Each tax lot is identified, uniquely within its tax block, by a tax lot number assigned by DOF.

[4] The weekly updates are typically available to users on the DoITT mainframe. For other users, discuss availability with the Geosupport Staff.
[5] TPAD – Transitional Property Address Directory

Thus, each of the city's tax lots is identified, uniquely within the entire city, by the combination of three items, the borough code, tax block number and tax lot number. These items are often concatenated to form a single data item called the Borough-Block-and-Lot (BBL).

DOF strives to keep the tax block numbering as stable as possible over time, to facilitate property title searches and other historical record-keeping. For example, when a new stretch of street divides what was a single physical block into two physical blocks, DOF generally retains the old tax block number for both of the new physical blocks. As a result, there are many tax blocks that consist of more than one physical block. Occasionally, DOF does subdivide a tax block into two or more new tax blocks, assigning new tax block numbers to them. This may be done when a large area of land is being developed, often in conjunction with the mapping of a new pattern of streets. In recent years, this has most commonly occurred in Staten Island.

In contrast to the relatively stable tax block geography, the tax lot geography is quite volatile. DOF constantly merges and 'apportions' (subdivides) tax lots, generally assigning new tax lot numbers to the newly created tax lots. However, DOF sometimes reassigns the tax lot number of a 'predecessor' lot (one of the lots that is being merged or apportioned out of existence) to a 'successor' lot. As a result, it is possible for the same BBL value to refer simultaneously to an existing tax lot and to one or more tax lots that no longer exist.

Figure VI-1, below, illustrates the tax geography for a portion of Manhattan in the vicinity of City Hall.

Figure VI-1: Tax Geography for a Portion of Manhattan

The large numbers in Figure VI-1 are tax block numbers, and the small numbers are tax lot numbers. Notice that tax block 153 is a case of a tax block consisting of two physical blocks. Also notice that tax blocks 154 and 155 both have a tax lot 1, exemplifying that tax lot numbers are unique only **within a tax block.** (Similarly, tax block numbers are unique only within a borough.)

VI.3 Buildings and Building Identification Numbers (BINs)

Many city agencies must maintain and process building-related data rather than, or in addition to, tax lot-related data. These two levels of processing are distinct, since a single tax lot can contain more than one building or no buildings.

A critical issue for building-level processing is to be able to identify buildings consistently. Neither addresses nor BBLs are suitable to serve as consistent identifiers for buildings. Some shortcomings of using addresses as building identifiers are as follows:

- Many buildings have more than one address.
- Some buildings have no addresses.
- The same address can identify both an existing building and a demolished one.
- New York City has a small number of instances in which two different existing buildings have the same address (see Section V.6).

Some shortcomings of using BBLs as building identifiers are as follows:

- Some tax lots contain more than one building.
- The relationship of buildings to tax lots is volatile, since tax lots are often subdivided and merged over time.

In order to provide a unique, immutable, citywide standard for building identification that can support consistent building-level processing, GSS has developed a set of Building Identification Numbers (BINs) that are assigned to every known building in the city. (BINs are distinct from, and should not be confused with, house numbers.) A BIN is a seven-byte numeric item, the first digit of which is the borough code. If a BIN field in a Geosupport work area is 'empty' (devoid of information), it contains the borough code followed by all zeros (in contrast to most Geosupport fields, which contain all blanks when 'empty'). These are often referred to as zero BINs or 'million' BINs (e.g. 1000000, 2000000, etc.).

By using BINs as the building identifier, city agencies can process and match building-related data easily and in a consistent manner. Indeed, there are buildings that do not have either an address or a Non-Addressable Place Name (NAP) and can be identified only by their BIN. In this document, such buildings are called Non-Addressable Un-named Buildings (NAUBs). Typical examples of NAUBs are some storage sheds on industrial lots and some comfort stations in parks.

The proliferation of the use of BINs among city agencies facilitates matching data by building across applications and across agencies. The Department of Buildings, which is particularly involved with building-level processing, uses BINs to identify buildings in its major computer applications.

The BIN that is assigned to a building is never changed (except to correct assignment errors); it remains assigned to that building permanently, even if the building is subsequently demolished or its BBL changes as a result of a tax lot merger or apportionment. If a building is demolished, and a new building is subsequently built and given the same address as that of the demolished building, GSS assigns to the new building a new BIN, different from that of the demolished building. In this case, the same address ambiguously identifies two distinct buildings (the new one and the demolished one), but each building is unambiguously identified by its own unique BIN. <u>However, only the 'active' BIN for an address is returned in the Geosupport System at one time, unless the user sets the TPAD request switch in which case a Transitional BIN may also be returned for a given address (see Section VI.11 for more information)</u>. That is, only one BIN per address is accepted as Function BN input and returned as Function 1A, 1B and BL output. Generally, the active BIN of an address is the BIN assigned to the most recent building at the given address. Function BN also accepts as input the BINs assigned to buildings that have no addresses, such as NAUBs.

VI.4 Condominiums and Billing BBLs

Condominiums are a class of properties with unique characteristics. A condominium consists of condominium <u>units</u>, each of which constitutes a separate tax lot that has its own BBL. In a residential condominium, the condominium units are generally the individual apartments. In a commercial condominium, the units might be retail shops or blocks of space in an office building. There are also mixed-use condominiums that have both commercial and residential units. A condominium can encompass all or part of a building or more than one building, possibly on more than one tax block.

The individual units in a condominium (but not the condominium itself) are parcels of real property. For example, title to an individual unit can be conveyed via a deed; unit owners are responsible for paying real estate taxes directly to the city; and liens can be placed against units.

Many municipal operations relate to condominiums as a whole rather than to specific condominium units. Examples are collecting sanitation fines, issuing code violations and inspecting and licensing building-wide systems such as boilers and elevators.

To distinguish condominiums from their constituent units, DOF has assigned to each condominium a set of special tax lot identifiers called the <u>billing BBL</u>. (Condominiums are also identified by a Condominium Identification Number, also assigned by DOF.) If a condominium occupies land on more than one tax block, DOF assigns a billing BBL to each portion of the condominium on a separate tax block. Function BL accepts billing BBLs as valid input data, and Functions 1A and BN return them as output data.

DOF assigns billing BBLs only to condominiums, not to condominium units or non-condominium properties. Billing BBLs do not represent actual tax lots, and are not lienable. However, billing BBLs do provide a mechanism to obtain the name and address of a more appropriate party than a unit owner to communicate with concerning condominium-wide matters. DOF maintains files keyed to BBL which, for conventional BBLs, contain the names and addresses of parties registered to receive bills for real property taxes, often the property owner, but possibly a property manager, attorney or mortgagee. For a condominium billing BBL, the party listed might be an officer of the condominium, a property manager or an attorney. (Note: Geosupport does not provide direct access to DOF's files; to arrange such access, contact DOF.) In some instances there may be a condominium that has not yet been assigned a Billing BBL by DOF (or the Billing BBL was not yet available when the Geosupport files were generated); in these cases the BBL that is returned by Geosupport is set to zero and a warning message is issued.

VI.5 Vacant Street Frontages and Pseudo-Addresses

'Real' addresses are officially assigned to new buildings by the topographic bureaus at each of the five borough president's offices. In addition, GSS assigns addresses called pseudo-addresses to some vacant street frontages of tax lots, that is, to street frontages that do not have 'real' building addresses. Pseudo-addresses have no 'official' status; they are not meaningful outside of the Geosupport System and should not be used for any operational purpose. In particular, mail sent to a pseudo-address is likely to be undeliverable. Since pseudo-addresses are not associated with buildings, they do not have associated BINs. Note: Pseudo-addresses are not to be confused with the unrelated concept of pseudo-street names (discussed in Section III.6).

When assigning a pseudo-address, GSS attempts to anticipate what 'real' address might someday be assigned to a building if one were to be built at that location. However, the assignment of pseudo-addresses can sometimes involve an element of arbitrariness, especially where there is a wide gap between the two real addresses that 'sandwich' a vacant frontage, or where there is a row of several adjacent vacant frontages. When assigning a pseudo-address, at a minimum, GSS uses a house number that is not already in service on the given street and that is in proper sequence with nearby real house numbers and with any previously assigned pseudo-addresses. If no such house number is available, no pseudo-address is assigned to that vacant street frontage.

Function 1A is designed to accept as input both real addresses and pseudo-addresses. Also, both Function 1A and Function BL include pseudo-addresses in the list of geographic identifiers that they return for a tax lot Pseudo-addresses serve the following purpose: Certain information is obtainable from Geosupport by address but not by BBL, such as many political and administrative district identifiers that Functions 1 and 1E return. For vacant tax lots, which have no buildings at all and therefore no real addresses, pseudo-addresses provide the only means to obtain such information from Geosupport. Of course, for those vacant tax lots that have no pseudo-addresses assigned to them, it is not possible to obtain such information from Geosupport.

If a pseudo-address comes to be assigned as a real address of a newly constructed building, GSS changes that address's classification in the Geosupport System from pseudo-address to real address. At the same time, the address's tax lot might also change, if the new building happens to be on a different tax lot than the lot to which the address had been assigned as a pseudo-address. Real addresses can also change status and become either Geosupport rejects or pseudo-addresses, as the result of building demolitions. Geosupport is updated to reflect such changes, but time lags are possible.

VI.6 Function 1A

Function 1A processes input addresses and NAPs. When Function 1A is called using two work areas, it returns information in WA2 related to the tax lot and the building (if any) identified by the input data (see work area layouts in Appendix 2 (MSW) and Appendix 13 (COW)). If the input address is a pseudo-address, a warning is issued with Reason Code '8' or '9'.

See Chapter V for a general discussion of Geosupport address processing, much of which is applicable to Function 1A. In particular, the various combinations of data items that can be used to specify an input address are described in Section V.3. Section V.4 discusses how Function 1A differs from the other address-processing functions with respect to the validation significance of input address acceptance and rejection, and explains why Function 1A is the best address-processing function to use to validate addresses. Special address processing features discussed in Chapter V are also available with Function 1A, including duplicate address processing, the special Marble Hill/Rikers Island feature, and the special Ruby Street feature.

An important purpose of Function 1A is to provide the BBLs for which addresses are known. The BBLs can then be used (outside of the Geosupport System) to retrieve information from various city files that are keyed to BBL, including DOF's billing address files, from which the name and mailing address of the party registered to receive real estate tax bills can be retrieved. This same party might also be an appropriate recipient for many other property-related city mailings, such as notices of inspections, violations, summonses, fines, hearing notifications and licenses.

If the property is part of a Business Improvement District (BID), the BID is returned in Work Area 2 as a borough and five-digit street code (B5SC). Function D may be used to obtain the name of the BID.

The latitude and longitude of the location are also returned by COW Function 1A.

The long WA2 option (COW and MSW) as well as the Extended WA2 option (COW only) are available for Function 1A. Note that Extended WA2 is not valid if Long Work Area 2 is in effect. All three WA2s (viz. regular, long, and extended) for Function 1A contain a set of data organized into a list. The list in the regular WA2 and the Extended WA2 is a List of Geographic Identifiers (LGI). The LGI is intended to provide a comprehensive geographic profile of the tax lot by listing, so far as the information is known and space allows, all of the buildings the lot contains; all of the street addresses and non-addressable street frontages of each of those buildings; all of the vacant street frontages of the lot; and all NAPs associated with the lot. See the entry for the List of Geographic Identifiers in Appendix 3 for a detailed discussion of the contents of the LGI.

The LGI's entries are ordered so that entries with non-empty BINs are listed first, grouped by BIN. If the input address is a real address, the first group of entries in the LGI consists of the entries for the BIN corresponding to the input address, and (except for certain special cases) the very first entry is an address range encompassing the input address. (The special cases are when the input information contains the alternative borough for a Marble Hill or Rikers Island location or the alternative street name or street code for a Ruby Street address -- see Sections V.7 and V.8.) Any entries with empty BINs (a.k.a. zero BINs), such as entries for pseudo-address ranges, are listed after the entries with non-empty BINs as space in the LGI allows. If the input address is a pseudo-address, an address range encompassing it may or may not appear in the LGI, depending on the availability of space in the LGI and on the order in which the non-BIN entries happen to be listed.

The LGI has a maximum capacity of 21 entries, which for almost all tax lots is sufficient to contain all of the lot's geographic identifiers. A tax lot that does have more than 21 geographic identifiers is said to have the 'LGI overflow condition'. The LGI overflow condition is indicated by a value in the LGI Overflow Flag in Function 1A's regular WA2, as well as by the issuance of a warning (Reason Code 'A').

By definition, when a tax lot has the LGI overflow condition, some of the lot's geographic identifiers are not included in the LGI. In particular, it is possible that the BINs of some of the lot's buildings do not appear in the LGI. The purpose of the long WA2 option for Function 1A is to provide a means for applications to retrieve a complete list of BINs for all the buildings on a tax lot, even for lots that have the LGI overflow condition. The long WA2 contains a List of Buildings on the Tax Lot. Each entry in this list consists only of a BIN; the list includes no address, street frontage or NAP information. (Such information can be obtained for each of the lot's buildings by making Function BN calls.) The maximum capacity of the List of Buildings is 2,500, which is sufficient to list the BINs of all of the buildings on any tax lot in New York City.

Applications can use the long WA2 option for all tax lots, even for those that do not have the LGI overflow condition. Using the long WA2 option for every Function 1A call, rather than only for tax lots that have the LGI overflow condition, may be advantageous in applications that require a list of BINs but do not require the other information returned in the LGI. Doing so simplifies application design: only a single Function 1A call would be required for each input address, and the List of BINs, unlike the LGI, contains every BIN for the lot without repetition. However, users should be aware that, for tax lots that have the LGI overflow condition, a long WA2 call causes Function 1A to perform more I/O operations than a regular WA2 call.

If the input address to a Function 1A call (using the regular WA2, the long WA2, or the Extended WA2), is that of a condominium, Geosupport returns a 'C' in the Condominium Flag in WA2. In addition, the following information is returned for condominiums:

- Condominium Billing BBL (or the billing BBL of the portion of the condominium in the tax block containing the input address, if the condominium is in more than one tax block). In some instances there may be a condominium that has not yet been assigned a Billing BBL by DOF (or the Billing BBL was not yet available when the Geosupport data files were generated); in these cases the BBL that is returned by Geosupport is set to zero and a warning message issued.
- DOF Condominium Identification Number (provided that DOF has assigned an ID number to the condominium and GSS has entered it into the Geosupport data).
- The low BBL of all the condominium units in the building identified by the input address.
- The high BBL of all the condominium units in the building identified by the input address.

For the positions of these fields in Work Area 2, see Appendix 2 and Appendix 13 for MSW and COW respectively.

Function 1A Extended Work Area 2 (Mode Switch set to 'X'). This option is available in COW only. The first 246 bytes of the Extended Work Area 2 for Function 1A, up to the "Number of Entries in List of Geographic Identifiers" field, are the same as with regular COW Work Area 2. Aside from adding some filler and the new Function 1A Reason Code, Warning Code, and GRC fields (which are identical to the WA1 fields) to the work area for Function 1A Extended, the only change is in the address list. The street codes in the address list are B7SCs instead of B5SCs. **The Principal Street Name (based on the B7SC in the address list) has been added to each element in the address list for the user's convenience**. Note that Mode Switch of "X" is not valid with the Long Work Area 2 Flag set to Y, since the Function 1A Long Work Area 2 primarily returns BINs, not street codes.

VI.7 Function BL

The input to Function BL is a BBL identifying a tax lot. Like Function 1A , Function BL can be called with the long WA2 option. As with COW Function 1A, COW Function BL can be called requesting the Extended Work Area 2 (Mode Switch set to 'X').

The layouts of the regular, long and extended WA2s for Function BL are the same as the corresponding layouts for Function 1A, as described in Section VI.6. However, since the input information to Function BL identifies only a tax lot, whereas the input information to Function 1A identifies a specific building via its address, the contents of certain WA2 fields have a different significance for Function BL than for Function 1A. These fields are the BBL (in positions 29-38 for MSW and 34-44 for COW), the BIN (in positions 70-76 for MSW and 82-88 for COW), and the LGI (in positions 184-939 for MSW and 251-1363 for COW) of the regular WA2. All other WA2 fields have the same contents for both functions. For Function BL, the contents of the WA2 fields for the BBL, BIN and LGI are as follows:

- If the input BBL identifies a single-building non-condominium tax lot: The output BBL field contains the input BBL. The BIN field contains the BIN of the tax lot's only building. The LGI may contain all types of entries. As with Function 1A, the LGI may or may not be comprehensive with respect to the tax lot's real address ranges and with respect to its BINs.

- If the input BBL identifies a multi-building non-condominium tax lot: The output BBL field contains the input BBL. The BIN field contains the BIN of an arbitrary one of the tax lot's buildings. The LGI may contain all types of entries. As with Function 1A, the LGI may or may not be comprehensive with respect to the tax lot's real address ranges and with respect to its BINs.

- If the input BBL identifies a vacant tax lot, i.e., a tax lot that has no buildings: The output BBL field contains the input BBL. The BIN field contains the Borough Code followed by all zeros. The LGI consists of all of the pseudo-address ranges (type Q entries) assigned to the tax lot, and all vacant street frontages (type F entries) of the tax lot.

- If the input BBL identifies a condominium unit: The output BBL field contains the billing BBL of the condominium (except in cases where a billing BBL has not yet been assigned by DOF (or the billing BBL was not available when the Geosupport data files were generated), in which case the BBL returned contains zeros and a warning message is issued). If the condominium occupies portions of more than one tax block, the output BBL field contains the billing BBL of the portion of the condominium that is specific to the tax block containing the input condominium unit. The BIN field contains the BIN of the building that contains that unit. The LGI contains building-related entries (real address ranges, NAUBs (type B entries), NAPs (type G, N and X entries) and blank-wall building frontages (type W entries)) only for the building containing the input condominium unit, and is comprehensive for that building. The LGI can contain all non-building-related types of entries (vacant street frontages (type F entries) and pseudo-address ranges (type Q entries)).

- If the input BBL is a billing BBL of a condominium: The output BBL field contains the input BBL. The BIN field contains the BIN of an arbitrary one of the condominium's buildings on the tax block identified by the input billing BBL. The LGI may contain all types of entries. As with

Function 1A, the LGI may or may not be comprehensive with respect to the tax lot's real address ranges and with respect to its BINs.

VI.8 Standard and Legacy Versions of Functions 1A and BL

The version of Functions 1A and BL that is documented in this *User Programming Guide* is called the standard version. The standard version was first created in 1995 when major modifications were made to Functions 1A and BL. The predecessor version of Functions 1A and BL is called the legacy version. The legacy version is no longer supported and was discontinued as of version 10.0. If you have programs that use the legacy PAD, please refer to the Geosupport Technical Bulletin 05-1 dated February 18, 2005 for information on converting to standard PAD. Copies of this bulletin are available upon request to GSS_Feedback@planning.nyc.gov.

All MSW applications that invoke Functions 1A and BL must set the 1ABL Version Switch to the value 'S'. Note: COW applications only support standard PAD, so the 1ABL Version Switch is not applicable.

VI.9 Function BN

Function BN processes a building specified by an input BIN. Function BN does not have the long WA2 option. However, the Mode Switch of X (Extended) is available as an option.

The layout of the regular WA2 for Function BN is identical to that of the regular WA2 for Function 1A, while the layout of the Extended WA2 is the same as that of the Extended WA2 for Function 1A. However, in Function BN's WA2, the LGI contains entries only for the input building; not for any other buildings on the tax lot. It also does not contain any vacant street frontage (type F) or pseudo-address (type Q) entries. Function BN's LGI is always complete with respect to the input building, since there is no building in New York City that has more than 21 geographic identifiers.

Except for the difference in the contents of the LGI and its list counter field, the Number of Entries in the
LGI, the contents of Function BN's WA2 and Function 1A's regular WA2 are identical for a given tax lot.

VI.10 Function AP (COW Only)

Emergency Management and the Department of Health and Mental Hygiene have a need to geocode addresses to their corresponding CSCL address points. By geocoding to a CSCL address point, the user application will presumably geocode to a 'real' posted address – not an address that might be part of an administrative range for a building. The Functions AP and AP Extended[6] (a.k.a. APX) return the desired information.

Function AP processes input addresses. When Function AP is called using two work areas, it returns

[6] Function AP Extended is also known as Function APX. It is invoked by calling Function AP with the Mode Switch set to X.

information in WA2 related to Address Point, tax lot and the building identified by the input data. Work Area 2 contains the Address Point ID and X, Y coordinates of the Address Point. It also contains some property information such as the BBL and BIN of the input address. Note that the Work Area 2 contains information related only to the input address, not to any other addresses or buildings on the lot.

The Work Area 2 layouts for Functions AP and AP Extended are very similar to those of Functions 1A and 1A Extended. Only those fields deemed necessary for the AP function are returned with AP and AP Extended. Fields that are not needed are filler. The field names in the copylibs are typically very similar to each other except for the prefixes.

Since the AP function is requesting the address point of only one address, Geosupport returns only one address in the Work Area 2 address list.

See the Function AP work area layouts in Appendix 13 (COW).

See Chapter V for a general discussion of Geosupport address processing, much of which is applicable to Function AP.

Function AP Extended Work Area 2 (Mode Switch set to 'X'). The first 246 bytes of the Extended Work Area 2 for Function AP, up to the "Number of Entries in List of Geographic Identifiers" field, are the same as with regular COW Work Area 2. Aside from adding some filler and the Function AP Reason Code, Warning Code, and GRC fields (which are identical to the WA1 fields) to the work area for Function AP Extended, the only change is in the address list. The street codes in the address list are B7SCs instead of B5SCs. **The Principal Street Name (based on the B7SC in the address list) is added to each element in the address list for the user's convenience**.

VI.11 Transitional Property Address Directory (TPAD) Building Identification Number (BIN) and status information for Functions 1A, 1B, BL and BN (COW Only)

(Note: For more information about the TPAD feature, including error processing, be sure to see Appendix 17.)

The TPAD File: The TPAD (Transitional Property Address Directory) file, allows users to get some up-to-date property related information. Geosupport has four functions (1A, 1B, BL and BN) that access the Property Address Directory (PAD) file. The PAD file contains property level information and is updated on a quarterly[7] basis. In order for users to get more up-to-date information regarding the status of new building construction and/or demolition, the Department of City Planning (DCP) has created the TPAD file.

The TPAD file is updated daily with new information received from the Department of Buildings (DOB) regarding job filings for new buildings (NB). DOB uses the BIN-On-Demand system to obtain a new BIN at the time that an applicant pre-files an application on an address not currently in Geosupport. The newly assigned BINs are included in the TPAD file. In addition, changes in status

[7]As of Release 17A, those users who are on the DoITT mainframe typically will have PAD data that is updated weekly via the UPAD (Update PAD) file. Other users, e.g. Desktop users, will have PAD data that is updated quarterly. If desired, those users can make arrangements for more frequent updates.

of both NB and demolition (DM) jobs are updated <u>weekly</u>.

Invoking the TPAD functionality: To invoke TPAD processing, Geosupport users set the TPAD request switch in Work Area 1. When this switch is set to 'Y' for a 1A, 1B, BL or BN call, Geosupport will read the TPAD file along with the PAD file, thereby being able to return more up-to-date information to users.

The TPAD Switch is located in position 329 of the COW Work Area 1. If the switch is set to 'N' or blank, then no TPAD processing is performed. If the TPAD Switch is set to "Y", then the following TPAD information will be returned to the user for Functions 1A, 1B, BL, and BN:

Work Area 2 Fixed Portion
Status of DM Job for BIN of the Input Address
New BIN for NB Job for Input Address or BBL
Status of NB Job
Conflict Flag

Work Area 2 Address List
Status of Job for this BIN in the Address List

TPAD Status Values are as follows:

TPAD Status Value	Associated Job Type	Description
Space	n/a	No activity for this address
0	NB	New BIN issued (for DOB); NB Job application not yet filed
1	NB	NB Job application filed and paid for
2	NB	NB Job signed off [temporary or final Certificate of Occupancy (T/CO or C/O) issued]
3	NB	New BIN issued (for HPD[8]); NB Job application not yet filed
5	DM	DM Job application filed and paid for
6	DM	DM Job signed off (building demolished)

When the TPAD Switch is set 'on', Geosupport will always return a value in the TPAD Conflict Flag in Work Area 2. On occasion, when there are conflicts between the data in the PAD and the TPAD record, the Conflict Flag in Work Area 2 will be set to a value greater than '1'. The possible values of the Conflict Flag are described in the table below. See Appendix 17 for a detailed description of the contents of the Geosupport Return Code, Reason Code, Reason Code Qualifier, and Error Message, when TPAD processing is requested.

[8] HPD - Department of Housing Preservation and Development

TPAD Conflict Flag Value	Meaning (and associated TPAD Warning Message)
0	TPAD data found, no conflicts with PAD data (no warning message returned)
1	PAD found, no TPAD data found (no warning message returned)
2	TPAD BBL used, no existing PAD BBL
3	TPAD BBL used, PAD pseudo-address on different BBL than TPAD NB BIN
4	TPAD BBL used, existing PAD BIN of Input Address on different BBL than TPAD NB BIN
5	(Not implemented)
6	TPAD BBL used, existing PAD BIN of Input Address with DM-5 on different BBL than TPAD NB BIN
7	TPAD BBL used, existing PAD BIN of Input Address with DM-6 on different BBL than TPAD NB BIN
8	PAD BBL used, TPAD NB BIN with NB-0 on different BBL than PAD BIN
9	PAD BBL used, TPAD NB BIN with NB-1 on different BBL than PAD BIN
A	PAD BBL used, TPAD NB BIN with NB-2 on different BBL than PAD BIN
B	PAD BBL used, TPAD NB BIN with NB-3 on different BBL than PAD BIN
C	TPAD data found, TPAD address overlaps PAD address
D	Address Found in TPAD, not found in PAD
E	BIN found in TPAD, not found in PAD

In mainframe GOAT (CICS), the TPAD information can be retrieved by entering a ‘Y’ in the ‘TPADData’ or ‘TPAD’ field on the 1A, 1B, BL and BN screens.

The mainframe GBAT control card for TPAD processing is TPADDATA, with values of ‘YES’ or ‘NO’.

<u>Interpreting the TPAD data</u>
Because of the transitional nature of the data that can be returned by requesting the TPAD data, interpreting the data can sometimes be confusing. This section will describe how the transitional information is returned and try to reduce some of this confusion. The user should note, however, some situations will be inherently confusing and will require additional Geosupport function calls to clarify the situation.

<u>Geosupport Processing when TPAD Information IS NOT requested:</u>

The **BIN of Input Address** field will contain the BIN of a building that existed at the time of the Geosupport release.

The relationship of the **BIN of Input Address field** to the input for Geosupport 1A, 1B, BL and BN calls is as follows:

- 1A and 1B: The content of the BIN of Input Address field will be the BIN associated with the input address (if any).

- BL: For most BBLs the content of the BIN of Input Address field will be the single BIN associated with the input BBL. For those BBLs that have multiple associated BINs, this will be one of the BINs. There is no way of determining which BIN it will be.

- BN: The content will always be the input BIN.

<u>Geosupport Processing when TPAD Information IS requested:</u>

The goal of the Transitional PAD Data (TPAD) enhancements is to supplement the above information with data maintained in the Transitional PAD file. To accomplish this, Geosupport first makes a regular 1A, 1B, BL, or BN call. It then reads the Transitional PAD file for additional information. Three new fields (not including the TPAD Request Switch and Conflict Flag) have been added to WA2 to reflect this TPAD information. The new fields are:

1. The **TPAD BIN of Input Address Status** field will hold the status for the **BIN of Input Address** field.
2. The **TPAD New BIN** field will contain the BIN that has recently been issued for potential new construction.
3. The **TPAD New BIN Status** field will hold the status for the **TPAD New BIN** field.

TPAD Status For BIN of Input Address	**Interpretation**
Space	Building exists, there is no demolition pending
0	This status will not be used here
1	This status will not be used here
2	Building previously did not exist, but new building issued Certificate of Occupancy (C/O) after last PAD release
5	Building exists; a DM permit has been paid for
6	Building previously existed; DM was signed off after last PAD release

TPAD Status for New BIN		
Value	**Associated Job**	**Type Description**
Blank		No activity for this address
0	NB	New BIN issued (for DOB); application not yet filed
1	NB	NB Job application filed and paid for
2	NB	NB Job signed off [temporary or final Certificate of Occupancy (T/CO or C/O) issued]
3	NB	New BIN issued (for HPD); application not yet filed
5	DM	DM Job application filed and paid for
6	DM	DM Job signed off (building demolished)

Address List TPAD Enhancements

For regular 1A, 1B, BL, and BN calls, the Address List contains alternate addresses associated with the BBL for 1A, 1B, and BL calls and with the BIN for BN calls. Each entry represents an address range and the BIN (if any) associated with this address. For TPAD enhancements we have done two things. We added a TPAD status field for each address entry. And, we have changed the order of the display of Addresses in the list. We list the BIN of Input Address first, followed by New BINs, if any, followed by Demolitions, followed by the rest of the addresses in the PAD record. For Long Work Area 2 requests, we have added a new field for each BIN, the TPAD Status field. Only 2187 BINs will be displayed in the Long Work Area 2 for TPAD requests.

Address List entries with BIN that existed at the time of the Geosupport Release

TPAD Status For Existing BIN	**Interpretation**
Space	Building exists, there is no demolition pending
0	This status is not used here
1	This status is not used here
2	This status is not used here
5	Building exists; a DM permit has been paid for
6	Building previously existed; DM was signed off after last PAD release

Address List entries with TPAD New BIN contain a newly assigned BIN for the input address.

TPAD Status For New BIN	**Interpretation**
Space	This status will not be used here
0	A New BIN has been assigned to the address, but its purpose is unknown
1	A New BIN has been assigned and a New Building Job has been paid for at DOB
2	A New BIN has been assigned and the building has been given a T/CO or C/O by DOB
5	This status is not used here
6	This status is not used here

The field names of the various TPAD-related fields in COW Work Area 1 and Work Area 2 are available in Appendix 13.

CHAPTER VII: STREET CONFIGURATION PROCESSING - FUNCTIONS 2, 3, 3C, 3S

VII.1 Introduction

This chapter discusses various types of geographic locations known collectively as 'street configurations', and the Geosupport functions that process them. Street configurations are locations that are specified in terms of a combination of either two or three streets or a node ID (aka node number)[9].

- The two-street configurations are street intersections, which are specified in terms of a pair of intersecting streets, or in terms of a single intersection name, or in terms of a node ID.

- The three-street configurations are locations that are specified in terms of an 'on' street between two cross streets. There are three types of three-street configurations: street segments, blockfaces, and street stretches.

Table VII-1 lists the types of street configurations that Geosupport can process, the data items required to specify each type, the functions that process them, and the sections of this chapter in which they are discussed. The final section in this chapter describes borough boundary processing, a special feature of all the street configuration functions except Function 3S.

Table VII-1: Street Configuration Types and the Functions that Process Them

Street Configuration Type	Specified By	Function	Section
Intersections	• 2 intersecting streets and, if the 2 streets intersect twice, a compass direction specifying which intersection to process, -or- • one intersection name –or- • **(COW Only**) one node ID (required if streets intersect more than twice)	2 or 2W	VII.2
Street Segments (and related configurations)	• 'On' street and 2 consecutive (or 'nearly' consecutive) cross streets	3	VII.3& VII.4
Blockfaces	• 'On' street, 2 consecutive cross streets, and compass direction specifying side of street	3C	VII.3& VII.5
Street Stretches	• 'On' street and (optionally) any 2 cross streets and, if the 'on' street intersects a cross street twice, a compass direction specifying which intersection to process	3S	VII.3& VII.6

Applications pass input streets to the street configuration functions in the appropriate WA1 input

[9]Node ID is described in Section VII.2. The phrase 'node number' may occasionally appear in Geosupport documentation and in copy books.

fields, either in the form of street names or in the form of street codes. In the case of two-street configurations, the order of the two input streets is immaterial; either input street may be passed in either WA1 input street field. In the case of three-street configurations, the 'on' street must be passed in the WA1 input 'on' street field; the two cross streets may be passed in either order in the two WA1 input cross street fields.

For any of the street configuration functions, input street names may be pseudo-street names or intersection names, except for the 'on' street in a three-street configuration. Place names may not serve as input street names. (For a discussion of non-street features, pseudo-street names, place names and intersection names, see Section III.6.) <u>In the remainder of this chapter, the term 'street' refers to a street name or street code that conforms to the above criteria.</u>

Geosupport processes street configurations based on a simplified model of the city's geography embodied in a digital map of New York City called CSCL (Citywide Street Centerline). The CSCL is a single-line map, that is, it represents streets and other linear geographic features, including railroad lines and shorelines, as single lines with no thickness, and it represents intersections as single points with no area or internal detail. In reality, of course, intersections occupy areas of various sizes and shapes, as reflected in a more realistic type of map known as a double-line map. The distinction between a single-line map and a double-line map is illustrated in Figure VII-1. The Department of City Planning extracts a version of the CSCL known as LION which may be more familiar to Geosupport Users and is available for download or for view on DCP's website:
http://www1.nyc.gov/site/planning/data-maps/open-data.page#lion

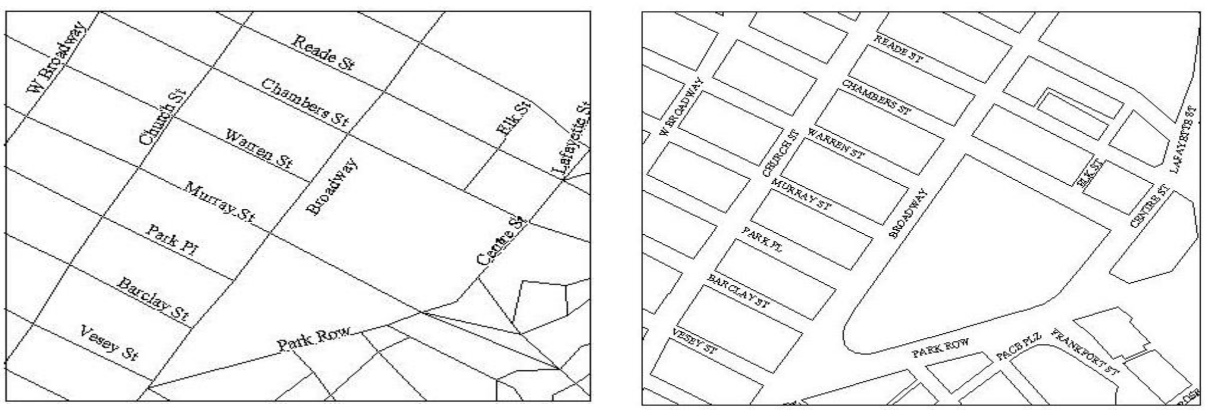


Figure VII-1: Single Line and double-Line Maps Contrasted

VII.2 Intersections: Function 2 and Function 2W

Note that any references to Function 2 apply to Function 2W as well, unless specifically stated otherwise. Note also that Function 2W is a COW-only function.

Function 2 is the Geosupport function that processes street intersections. Function 2 can process not only conventional street intersections, but also node IDs (COW only), intersection names and 'pseudo-intersections', that is, intersections of a conventional street with a pseudo-street (see Section III.6). There are three types of pseudo-intersections: dead ends, points at which a street intersects with the city limits, and bending points of streets. A point is considered a bending point if the angle of the street at that point is not within the range 160-200 degrees (i.e., not within 20 degrees of a straight line).

Nodes

We use the term node generically to refer to all types of intersections, both conventional and pseudo. Each node is assigned a unique node ID. Nodes, defined via street names and street codes, can serve not only as Function 2 input, but also as the delimiting endpoints of street stretches for input to the functions that process three-street configurations. Node IDs can serve as input only to a COW Function 2 or Function 2W call.

Formally, a node is a point along a street where one of the following occurs:

- Conventional intersection of two streets: The street intersects with at least one other street (called a cross street). Example: 'the intersection of BROADWAY and CHAMBERS STREET in Manhattan'

- City Limit Point: The street (or non-street feature e.g. bridge or tunnel) intersects with the city limits. (The street may terminate at that point or it may continue as a suburban street). City Limit points occur at the Bronx-Westchester County border, the Queens-Nassau County border, the New York-New Jersey border and the Staten Island –New Jersey border.
  The New Jersey borders occur in the Hudson River, for example HOLLAND TUNNEL and CITY LIMIT in Manhattan. An example of Queens city limit is (see Figure VII-2): 'LINDEN BOULEVARD at the CITY LIMITS in Queens'

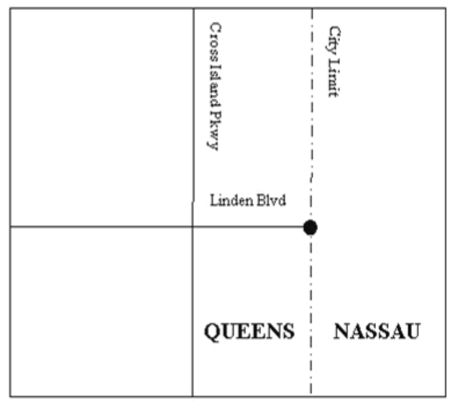


Figure VII-2: City Limit Point

- Dead End: The street has a termination point (called a dead end) that is not at the city limits and at which there are no cross streets. Example (see Figure VII-3): 'DEAD END of CROES AVENUE in the Bronx'. City limit points are excluded from being treated as possible dead ends because city streets may continue across the city limits into the adjacent suburban county.)

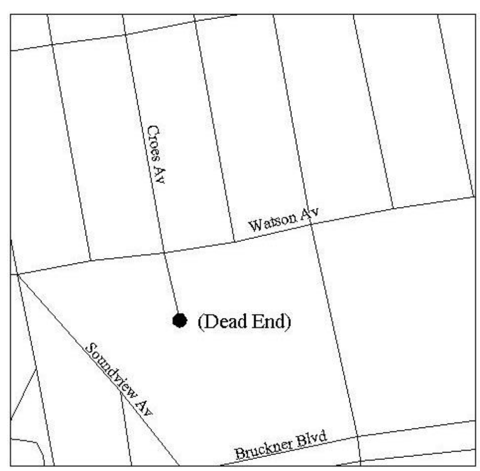


Figure VII-3: Dead End

- Bend: The street has a bending point. Example (see Figure VII-4): 'BEND of COMMERCE STREET' and 'BEND of BARROW STREET' in Manhattan. Note that the bending point of Barrow is also a conventional street intersection, the intersection of Barrow and Commerce Streets. The Commerce Street bending point is not a conventional intersection, and can only be specified in terms of the pseudo-street BEND.

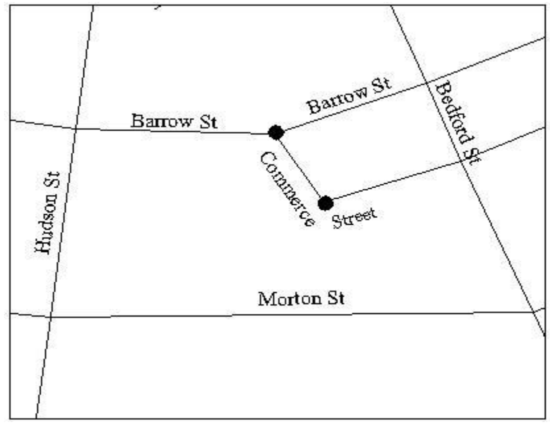


Figure VII-4: Bends

Conceptually, nodes can be characterized as those points along streets that can be specified in a form recognizable to Geosupport, that is, in the form of an intersection name, or a pair of street codes or a pair of street names that possess street codes, or a node ID (in a COW function call). One, and only one, street of a pair may be a pseudo-street.

The allowable pseudo-streets are DEAD END and its aliases, CITY LIMITS and its aliases, and BEND and its aliases. See Section III.6 for a discussion of pseudo-street names.

Number of Intersections of a Pair of Streets

Given any pair of New York City streets (or a street and a pseudo-street), there are four possibilities:

- The two streets do not intersect at all.
- They intersect at one location (the 'unique-node case').
- They intersect twice (the 'two-node case').
- They intersect more than twice (the 'many-node case').

Function 2 can process a pair of input streets in the unique-node case and in the two-node case, but a node ID is required as input in the many-node case (supported only in COW). If the user does not know the node ID, Function 2W may be used to assist the user in determining the appropriate node ID. For a description of this process, see the Overview of Function 2 Node Enhancements and the discussion of the many-node case in Specifying Function 2 Input Data below. Note that aside from dead ends, bends, subway lines, highways, etc., the many-node case is rare. There are numerous streets that have more than two dead ends, and there are numerous streets that have more than two bends.

The Two-Node Case

The two-node case occurs with greater frequency than might be expected. Some types of situations in which the two-node case occurs are the following:

- A street bends or curves, causing it to intersect with a second street at two different points. An example in Queens is the two intersections of the curved street Cromwell Crescent with Alderton Street (see Figure VII-5).

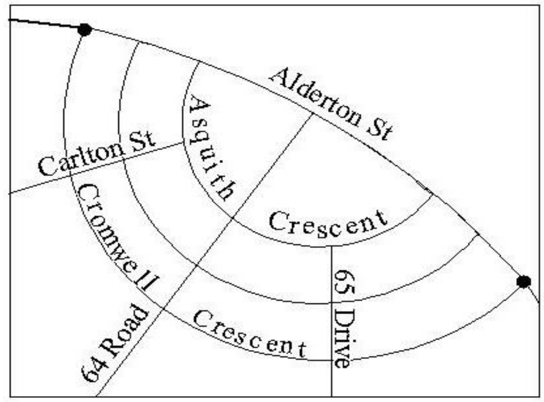
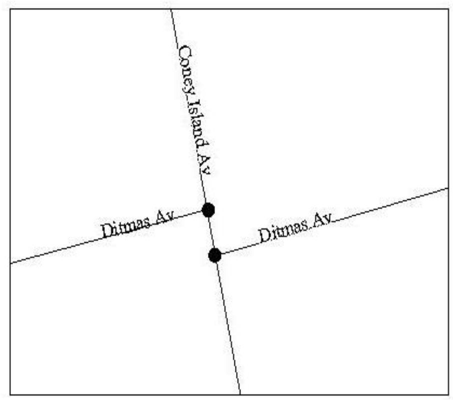


Figure VII-5: Street Intersecting Twice with Curved Street

- A street has a displacement or offset as it crosses another street (a configuration sometimes called a 'dogleg'), so that there are two points where the two streets intersect. An example in Brooklyn is Ditmas Avenue where it crosses Coney Island Avenue (Figure VII-6).



FigureV11-6: 'Dogleg'

- A street forks into two branches (for example, around a traffic island, plaza or small park) such that both branches have the same street name and they both intersect with another street. An example in Manhattan is Duane Street, which forks around a small triangular park; both branches of Duane Street intersect with Hudson Street (Figure VII-7).

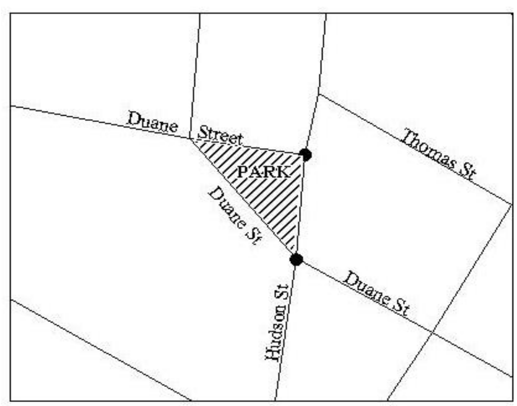


Figure VII-7: Street Fork

- A street has exactly two dead ends. An example in the Bronx is Odell Street (Figure VII-8). The two pseudo-intersections of Odell Street with the pseudo-street DEAD END are considered to be an instance of the two-node case. Similarly, streets that have exactly two intersections with the city limit, and streets that have exactly two bending points, are instances of the two-node case.

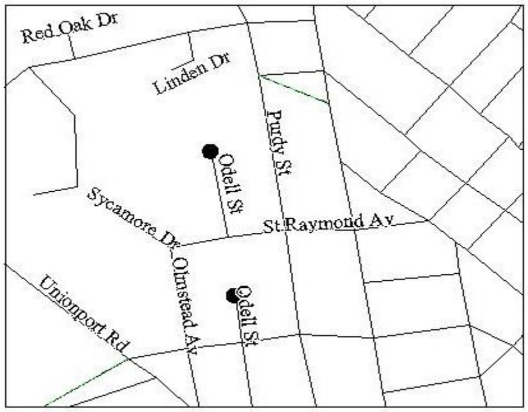


Figure VII-8: Street with Two Dead Ends

Overview of Function 2 Node Enhancements

Node ID (Node Number) as Input

Processing the 'Many-Node' Case
(COW Only)

A unique Node Number known as a node ID is assigned to each of New York City's intersections. Geosupport returns node IDs for many of its functions, e.g. 1/1E Extended, 1B, 2, 3, 3C, 3S. Users in a GIS environment also have access to the node IDs via CSCL or LION. Users can specify a node ID as input to Function 2 and get information about the intersection without specifying cross streets or an intersection name. Geosupport also uses node IDs to allow processing of streets that intersect more than twice.

Function 2W is available to all users

Function 2W returns a 4000-byte Work Area 2. The first 200 bytes are identical to the entire Work Area 2 of regular Function 2. Additional information appears in the remainder of the Function 2W Work Area 2, which can be used in processing streets that intersect more than twice.

Node as Input to Function 2

Users have requested the ability to retrieve information about an intersection based on the intersection's Node Number. That capability has been added to Function 2 (and Function 2W). Work Area 1 has a Node Number input field where the user specifies the node input. A Node Number output field is also defined in Work Area 1 where the normalized (right-justified and zero-filled) Node Number appears. If the user also inputs street names or street codes, they will be ignored and the Node Number input will take priority.

Processing Two Streets that Intersect more than twice ('Many-Node case')

Users have also requested the ability to retrieve information about an intersection of two streets that intersect more than twice. If two streets intersect more than twice for a Function 2 call, the user will now get an error message (GRC 03 Reason Code A) suggesting that the user run Function 2W to get related nodes.

The same input that is rejected above (streets that intersect more than twice) will be rejected when those streets are processed by Function 2W. Function 2W will return an error message (GRC 03 Reason Code B) that tells the user to use a node as input – **However, - In Addition to GRC 03/A and an Error Message, Function 2W will also Return A Work Area 2 (WA2) that Contains Related Nodes and Street Codes**. This is unique in Geosupport because rejected calls normally do not return information in Work Area 2. The Function 2W WA2 will include the Node Numbers of all the nodes satisfying the input (up to 20 nodes) and a list of B7SCs of the intersecting streets at each node,

Based on the Node Numbers and the Street Codes, the user can choose which node should be processed. The user then issues a Function 2 or 2W call with the node ID as input and that call should execute successfully.

GBAT support of Node Input to Function 2

GBAT has a new option called NODE where the user specifies the location of the Node input. When

NODE is input to GBAT the GBAT statistics will not be broken down by borough since borough is not a required part of the input. It is recommended that users not specify streets as input together with nodes for a GBAT run since none of the output statistics will be broken down by borough.

GBAT support of Streets that Intersect more than twice

GBAT has a new option, called RELATEDNODES, for Function 2. If the user requests RELATEDNODES and the streets intersect more than twice (GRC 03 Reason Code A or B) GBAT will issue a Function 2W call under the covers, and get the nodes and street codes information from WA2. GBAT will place this information in a separate error file, viz. ERRFIL3 which the user can examine and then choose the node to be processed. The NODE can then be used as input to a subsequent run.

In addition to the entry in ERRFIL3 (which contains the nodes and street codes list), GBAT creates a normal error entry in the standard error file (viz. ERRFILE)

Note that when a GBAT entry is rejected with GRC03 it will not be written to the GBAT output file (OUTFILE) even if it is for Function 2W which generates a WA2 in this situation. The information is returned to the user in ERRFIL3.

GOAT support of Streets that Intersect more than twice

When input streets intersect more than twice, Mainframe GOAT (CICS) and the web version of GOAT on the Web display a list of up to 20 nodes and the cross streets at these nodes, with their street codes and street names. The user can then more easily choose a node and reissue the GOAT call using the chosen node as input.

Specifying Function 2 Input Data

Applications pass input to Function 2/2W by specifying either an intersection name, or two distinct streets (i.e., two streets that have different B5SCs), or a node ID (COW only) identifying the intersection. If the input information is in the form of an intersection name, it may be passed in either WA1 input street name field, and the other field should preferably be left blank or it may contain any conventional street that exists at the given intersection. If the input data are in the form of two streets that are an instance of the two-node case, an input compass direction (‘N’, ‘S’, ‘E’ or ‘W’) must also be specified. The compass direction identifies which of the two nodes is to be processed, by specifying that node’s spatial position relative to the other one. For example, if ‘N’ is specified as the input compass direction, then Function 2 will process the northernmost of the two nodes. If the user knows the node ID of the intersection, this may be used as input instead of the two streets and a compass direction. If the input information is in the form of a node ID, a borough code is not required and is ignored if supplied.

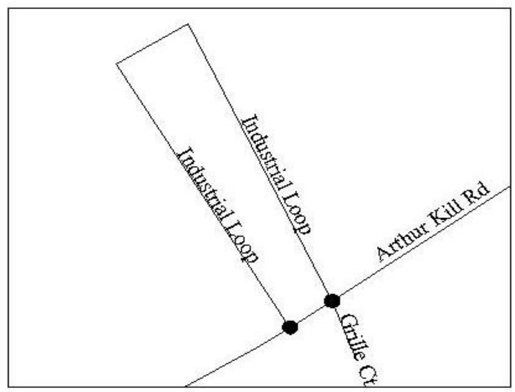


Figure V11-9: Simultaneous 2-Node and Unique-Node Case

Note that an intersection may be an instance of the two-node case when specified (with a compass direction) in terms of a particular pair of streets, while the same intersection may be an instance of the unique-node case when specified (without a compass direction) in terms of a different pair of streets. For example, in Staten Island, Industrial Loop and Arthur Kill Road intersect at two nodes (see Figure VII-9). When specifying either of those nodes as an intersection of Industrial Loop and Arthur Kill Road, a compass direction is required. However, at the northern (or alternatively, the eastern) one of those nodes, there is a third street, Grille Court. That node can be specified, without a compass direction, as the unique intersection either of Grille Court and Industrial Loop, or of Grille Court and Arthur Kill Road. That node could alternatively be identified by its node ID (viz. 0000890) and no street names are needed. In some instances of the two-node case, the two nodes are ‘nearly’ (i.e., within 10 compass degrees of) due east-west of each other. In that event, attempting to distinguish between the two nodes in terms of the compass directions north and south would be highly error-prone. In those cases, therefore, Function 2 accepts only ‘E’ and ‘W’ as valid input compass directions. Similarly, if the spatial relationship between the two nodes is ‘nearly’ (within 10 degrees of) due north-south, Function 2 accepts only ‘N’ and ‘S’.

For Manhattan only, in the two-node case, Geosupport rotates the spatial relationship between the pairs of nodes 30 degrees counterclockwise before determining whether they are ‘nearly’ north-south or east-west of each other. This comports with the widespread conventional treatment of the avenues and streets in most of Manhattan as if they were oriented due north-south and due east-west, respectively. In reality, Manhattan’s principal street pattern lies approximately at a 30-degree clockwise rotation from the cardinal points of the compass. For a more detailed discussion of the 30-degree rotation for Manhattan, see the entry for Segment Orientation in Appendix 3.

In most instances of the two-node case, the two nodes have a pronounced ‘diagonal’ spatial relationship, that is, they are not within 10 degrees of either due north-south or due east-west of each other. In that case, Function 2 accepts all four compass directions as valid input. For example, either 'N' or 'W' is accepted as a specification for the northwestern intersection of Alderton Street and Cromwell Crescent (the intersection highlighted on the upper left in Figure VII-5); either 'S' or 'E' is accepted as a specification for the southeastern (lower right) intersection of these streets.

<u>In the two-node case, a user must supply a compass direction, with street names, to issue a successful call</u>. <u>Alternatively, the user may supply a node ID instead of the street names and a compass direction.</u> If the two nodes in the two-node-case are close together, <u>under certain conditions it may not matter which intersection is selected</u>. For example, if a medical emergency occurred at the intersection of Reade and Elk Streets in Manhattan, when reporting the location it would not matter which of the two intersections was provided since the two intersections are separated by about 21 feet. On the other hand, if the medical emergency is reported as having occurred at the intersection of Castle Hill Avenue and Zerega Avenue in the Bronx, a more precise compass direction is required since the two intersections are separated by about 10,631 feet or roughly two miles.

When no compass direction is supplied, the error message returned by Geosupport (GRC 02) for a two-node case includes the distance, in feet, between the two nodes. Depending upon the circumstance, the user may make a reasoned decision as to whether the precise intersection is required or if it does not make any difference which intersection is requested.

<u>In the many-node case, a user must supply a node ID as input to issue a successful call</u>. A node ID is accepted as input only to COW Function 2 or 2W. If the user does not have the node ID Function 2W may be invoked to retrieve the node IDs and B7SCs that exist at the duplicate intersections. The user may then invoke Function 2 or 2W with the node ID of his choice.

The procedure is as follows:

- When an <u>**MSW Function 2 call**</u> is issued with streets that intersect more than twice, the resulting message is:

  GRC 03 Reason Code is 'blank'.

  `'STREETS INTERSECT MORE THAN TWICE - CAN ONLY BE PROCESSED BY COW FUNCTION CALL'`

  The user can now modify his application to issue a <u>COW</u> Function 2 call and proceed as defined below. Note that the Reason Code no longer contains the number of times that the streets intersect (3 through 9).

- When a <u>**COW Function 2 call**</u> is issued with streets that intersect more than twice, the resulting message is:

  GRC 03 Reason Code is 'A'.

  `'STREETS INTERSECT MORE THAN TWICE-USE FUNCTION 2W TO FIND RELATED NODES'`

  The user can now modify his application to issue a COW Function 2W call and proceed as follows.

- When a <u>**COW Function 2W call**</u> is issued with streets that intersect more than twice, the resulting message is:

  GRC 03 Reason Code is 'B'.

  `'STREETS INTERSECT MORE THAN TWICE - USE NODE AS INPUT'`

In addition to the error message, Function 2W also returns a Work Area 2 which contains the node IDs (up to 20 nodes) where the streets intersect and also the B7SCs of the streets at those nodes. There can be up to 5 intersecting streets at each node, and each of those streets may have up to 4 aliases. The user can then choose a node and issue a COW Function 2 or 2W call with that node ID as input. The call should then be successful. See Appendix 13 for the detail layout of Work Area 2 for Function 2W.

Note: The GRC 03 message returns 'blank', 'A', or 'B' as the Reason Code. It no longer returns the number of intersections (3 through 9) as the Reason Code .

Possible Outcomes of a Function 2 or 2W Call

Table VII-2 lists possible outcomes of a Function 2 or 2W call by Geosupport Return Code (GRC). Table VII-2 does not include standard reject conditions that are applicable to most Geosupport functions, such as an inability to normalize or recognize an input street name. In Table VII-2, the term 'intersection' also encompasses pseudo-intersections.

Table VII-2: Possible Outcomes of a Function 2 and 2W Call

Possible Outcomes of a Function 2 and 2W Call	
GRC/ Reason Code	**Meaning**
00	(Successful call) If the input information was in the form of an intersection name, it was recognized as a valid name of a specific intersection. If the input information was in the form of two streets, they intersect once or twice, and if twice, an input compass direction has been supplied which is a valid descriptor for one of those intersections. A full complement of output data is returned in the work areas.
01/H	(Warning) The two input streets intersect once, but the input compass direction field is non-blank. The input compass direction field is ignored. A full complement of output data is returned in the work areas.
01/N	(Warning) Both a node ID and street names or street codes were specified as input. The node ID will be used; the street names/codes will be ignored.
01/T	(Warning) The input street name is ignored if an intersection name is specified along with a street name that is part of the intersection.
02	(Reject) The two input streets intersect twice, but the input compass direction field is blank. A valid input compass direction value is required for these input streets.
03/blank	(Reject) **MSW -** The two input streets intersect more than twice. MSW Function 2 calls cannot process such intersections. The Reason Code value is blank. The message suggests that the user use a COW function call.

Possible Outcomes of a Function 2 and 2W Call	
GRC/ Reason Code	**Meaning**
03/A	(Reject) **COW -** The two input streets intersect more than twice. Function 2 calls cannot process such intersections. The message suggests that the user issue a Function 2W call to find related nodes.
03/B	(Reject) **COW – Function 2W only -** The two input streets intersect more than twice. Function 2W returns node IDs and street codes. The message suggests that the user use a node ID as input.
12	(Reject) The input information was in the form of an intersection name or a street code of an intersection name. Geosupport recognizes this name or code as valid, but does not yet have this name or code associated with a specific intersection.
30	(Reject) An input intersection name was specified along with an input street name, but the input street is not part of the intersection.
32	(Reject) An invalid node ID was specified as input. It was non-numeric or had embedded blanks..
33	(Reject) A node ID was specified as input, but no intersection was found with that node ID.
39	(Reject) The input compass direction field contains a non-blank value other than 'E', 'N', 'S' or 'W'.
40	(Reject) The two input streets intersect twice, but the two intersections are nearly N-S or E-W of each other and the input compass direction is an invalid descriptor for either of the intersections.
62	(Reject) If the input data were in the form of two input street names or codes, the two input streets do not intersect.

Function 2 Output Data

Among COW Function 2's WA1 output items are the following:

- **B7SCs and 32-byte street names of the intersecting streets** appear in the List of Street Codes and List of Street Names fields..

Among Function 2's WA2 output items are the following:

- **Identifiers for a set of geographic districts** that contain the intersection, including Census Tract, Community District and Police Precinct. The COW WA2 also includes Sanitation District and Health Center District.

- **Spatial Coordinates of the intersection**. These correspond to a nominal center point of the intersection and should not be treated as a precise identification of any particular point location on the earth's surface. (For a more detailed discussion, see the Spatial Coordinates entry in

Appendix 3.)

- **A List of Intersecting Streets** (in the form of PB5SCs for MSW and B5SCs for COW) identifying up to five streets incident upon the intersection. Subject to the space limitation, the list may include the PB5SCs or B5SCs of the two input streets, unless one is the pseudo-street BEND, which for Function 2 is never included in the list. The list may also include the PB5SCs or B5SCs of the pseudo-streets CITY LIMIT and DEAD END, and it may include the PB5SCs or B5SCs of any intersection names that are valid for the given intersection. If the application has a need to display the street names of the intersecting streets, the Cross Street Names Flag in WA1 can be turned 'on' and the names will be returned in the List of Street Names in WA1 (see entries for Cross Street Names Flag and List of Street Names in Appendix 3). Note that the cross street names feature incurs processing overhead, and should only be used when necessary.

- **A Compass Direction for Intersection Key**. If the first two entries in the List of Intersecting Streets are an instance of the two-node case (i.e., they intersect twice), the Compass Direction for Intersection Key contains a compass direction value identifying the intersection in terms of those two streets. If the two streets are not an instance of the two-node case, this field is blank. If both a 'longitudinal' compass direction ('N' or 'S') and a 'latitudinal' compass direction ('E' or 'W') are valid for this intersection, the longitudinal compass direction value appears in this field.

- **Political geography and CD Eligibility (COW Only)**. Function 2 returns Assembly District, Congressional District, State Senatorial District, Civil Court District, City Council District and CD Eligibility. Since it is possible that multiple political geographies may exist at an intersection, Geosupport returns the political geography associated with the most frequently occurring Election District / Assembly District (ED/AD). If there is no one political geography that occurs more frequently than any other, then the political geography associated with the ED/AD that is one of the most frequently occurring ED/ADs and that has the lowest numeric value is selected. This insures that the same data will be returned from one data cycle to the next data cycle. The only exception should be the changes in the political geography associated with the decennial census conducted by the federal government. No indication is provided that the intersection lies on a political boundary.

Since Function 2 treats street intersections as if they were single points, Geosupport does not provide a means for a user to request information specific to a portion of an intersection, such as a particular block corner. In the event that an intersection lies on a boundary of two or more geographic districts of a particular type, Function 2 returns the identifier for one of those districts, but provides no indication that some of the intersection's corners may lie in other districts. The district identifier that is returned for such an intersection is selected using an algorithm based on the community districts and atomic polygons (previously known as dynamic blocks) at that intersection. This algorithm typically allows for data consistency from one data release to the next. Note that the same district identifier will be returned no matter how the intersection is specified.

For example, the intersection of East 116 Street and Fifth Avenue in Manhattan lies on the boundaries of three different School Districts (SDs) (see Figure VII-10). Two of the four block corners at this intersection lie in SD 3, one lies in SD 4 and one lies in SD 5. For this intersection, Function 2 returns SD 3, and provides no indication that the intersection lies on a SD boundary.

Political Geography Returned with Function 2 Call (COW Only)

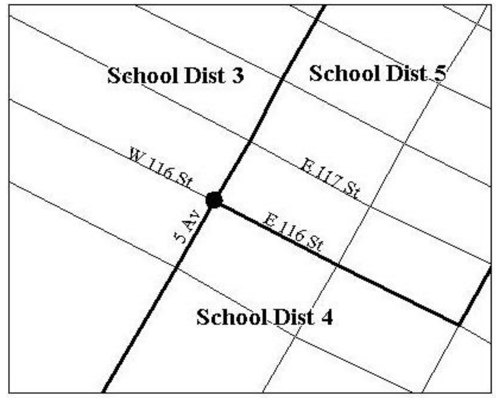


Figure V11-10: Multiple Districts at an Intersection

Political geography and CD Eligibility are returned in the Character-Only Work Area 2 for Function 2 calls. Since it is possible that multiple political geographies may exist at an intersection, Geosupport returns the political geography associated with the <u>most</u> <u>frequently</u> occurring ED/AD. If there is no one political geography that occurs more frequently than any other, then the political geography associated with the ED/AD that is one of the most frequently occurring ED/ADs and that has the lowest numeric value is selected. This insures that the same data will be returned from one data cycle to the next data cycle. The only exception should be the changes in the political geography associated with the decennial census conducted by the federal government.

Multi-Street Intersections and Retrieval Consistency

This subsection discusses the common situation of intersections at which there are more than two streets. Geosupport accepts any pair of those streets as a valid input specification for the intersection. (The concept of an intersection of multiple streets should not be confused with the concept of two streets that intersect at multiple points, which was discussed in the preceding subsection.)

For example, consider the three-street intersection of Hudson Street, Chambers Street and West Broadway in Manhattan (Figure VII-11). The user can specify this intersection as input to Function 2 in three ways: as the intersection of Hudson Street and Chambers Street; Hudson Street and West Broadway; or Chambers Street and West Broadway.

Similarly, a four-street intersection can be specified in six ways, etc. Function 2 returns identical WA2 information (other than that related to which streets were the input streets for the call) for an intersection regardless of which pair of streets is used to specify it.

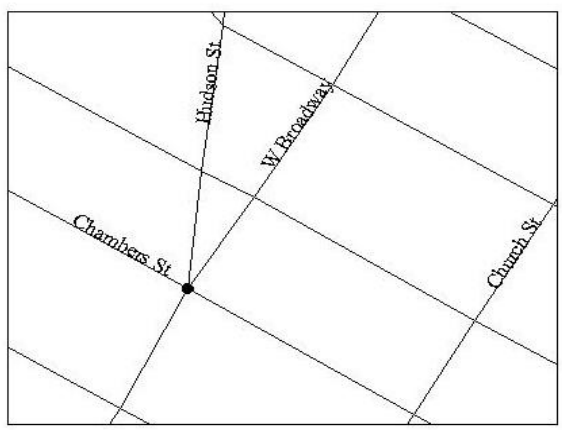


Figure VII-11: Three-Street Intersection

Since an intersection of more than two streets can be specified in more than one way, an important issue for some applications that process data by intersection is the ability to retrieve or match data from an application file <u>consistently</u> by intersection. (For a general discussion of the concept of application file geographic retrieval consistency, see Section I.3.) That is, it is desirable for applications to be able to retrieve data successfully for a multi-street intersection regardless of which pair of streets is used to identify the intersection. A data item called the Node ID, which is returned in Function 2's WA2, is designed to serve effectively as a unique, consistent intersection identifier. It is able to so serve because the same Node ID Number is returned regardless of how the intersection is specified. Moreover, the Node ID assigned to an intersection is kept constant over time. That is, the same Node ID is returned for a given intersection by every Geosupport release, even in cases where there is a change in the set of streets defining an intersection (such as the presence of a new street, the closure of an existing street, or a change in the street code assigned to a street).

Fuzzy Intersection Processing (Function 2) - Front-truncated street names

Under certain conditions, Function 2 will return data when front-truncated street names are given as input; e.g. 14 STREET instead of EAST 14 STREET or WEST 14 STREET. If a user supplies a front-truncated street name as one of the names that define an intersection, Geosupport will attempt to find the intersection using the appropriate street names. If Geosupport is successful in finding the intersection, it will process the call and issue a warning message (Reason Code J) indicating which street name was assumed. The following are a number of examples and special cases of this processing.

Consider the example of a user who issues a Function 2 call with 24 STREET and THIRD AVENUE in Manhattan as the input. Since 24 STREET in Manhattan is a front-truncated street name, Geosupport knows that there exists an EAST 24 STREET and a WEST 24 STREET in Manhattan. Geosupport attempts to find the intersection of East 24 Street and Third Avenue and the intersection of West 24 Street and Third Avenue in Manhattan. Since the intersection of East 24 Street and Third Avenue does exist in Manhattan and the intersection of West 24 Street and Third Avenue does not exist, data for the intersection of East 24 Street and Third Avenue in Manhattan is returned to the user, together with a warning message indicating that East 24 Street is assumed.

If the user supplies the front-truncated street name 34 STREET and FIFTH AVENUE in Manhattan as input to a Function 2 call, Geosupport will discover that both the intersection of EAST 34 STREET and FIFTH AVENUE and the intersection of WEST 34 STREET and FIFTH AVENUE exist. In this case, the Node IDs will be compared. Since, in this case, the Node IDs are the same, data for the intersection will be returned to the user. The street with the lower numeric value for its street code will be returned, which in this example is East 34 Street. The user will also receive a warning message indicating that East 34 Street is assumed.

If the user supplies the front-truncated street name 177 STREET and JEROME AVENUE in the Bronx as input to a Function 2 call, Geosupport will find that both the intersection of EAST 177 STREET and JEROME AVENUE and the intersection of WEST 177 STREET and JEROME AVENUE exist. However in this case the Node IDs will be different because a dogleg exists at the intersection. The Function 2 call would be rejected with an error message indicating that the intersection is not unique. As a result, the user must determine whether East or West 177 Street is the desired street.

Non-addressable Place Names (NAPs) will not be considered when processing truncated street names at an intersection. For example, if the user supplies ‘33’ and MADISON AVENUE in Manhattan as the input to a Function 2 call, Geosupport will find that in addition to EAST 33 STREET and WEST 33 STREET, there is also 33 POLICE PRECINCT. 33 Police Precinct is eliminated as a possibility because it is a NAP which may not be used in a Function 2 call. This leaves only East and West 33 Street as possibilities and since only East 33 Street intersects Madison Avenue in Manhattan, the call will be processed successfully and a warning message will indicate a street name change.

Note Concerning the 'Vestigial' Function 2C: A Geosupport enhancement that was implemented in Version 9.5 (March 1998) enabled Function 2 to process pairs of streets that intersect twice, using the input compass direction field to identify the specific intersection to be processed. Prior to that enhancement, Function 2 could only process pairs of streets that intersect once, and a separate function, Function 2C, had to be used to process pairs of streets that intersect twice. The enhancement enabled Function 2 to process both types of intersection input, rendering Function 2C obsolete. Function 2C is a 'vestigial' function, in the sense in which this term is described in Section I.5. In particular, all new applications should be designed to perform all intersection processing using Function 2 only. It is recommended that users modify existing applications by replacing all Function 2C calls with Function 2 calls. To do so, it may be necessary or appropriate to modify the application's reject handling routines to reflect the situations and GRC's delineated in Table VII-2. Function 2C is not further documented in this *User Programming Guide*.

VII.3 Three-Street Configurations - Concepts and Terminology

There are many applications in which geographic locations to be processed are identified in terms of an ‘on’ street between two cross streets. Geosupport can process several types of such locations, namely street segments, blockfaces and street stretches. We refer generically to all these types of locations as three-street configurations.

This section introduces concepts and terminology needed to discuss three-street configurations. The three succeeding sections discuss the Geosupport functions that process the various types of three-street configurations:

- Section VII.4 discusses Function 3, which processes street segments
- Section VII.5 discusses Function 3C, which processes blockfaces
- Section VII.6 discusses Function 3S, which processes street stretches.

The definitions below are based on Geosupport’s single-line map model of the city’s geography, as explained in Section VII.1. Also, recall that the term ‘street’ refers to a street name or street code that satisfies the criteria delineated in Section VII.1. The term ‘node’ is as defined in Section VII-2.

Street Stretches and Street Segments

A street stretch is a portion (possibly all) of a street (called the ‘on’ street) between any two nodes along it (called the delimiting nodes of the stretch). A street stretch is considered to comprise both sides of the ‘on’ street.

For Geosupport purposes, a street segment is defined as a street stretch between a pair of delimiting nodes which may not coincide with an intersecting street . A street segment can therefore consist of a set of one or more CSCL segments.

In Geosupport, the general term ‘street segment’ is used to describe two situations.

- A street segment is strictly defined as a street stretch such that the two delimiting nodes are consecutive along the ‘on’ street. Every such segment is uniquely identified by a segment ID.
- For Geosupport purposes, a street segment often refers to a street stretch consisting of more than one segment, such that at least one side of the street stretch is a single entire blockface. This street stretch is defined by multiple segments id’s, all of which may optionally be returned to the user. For a more detailed discussion see Section VII.4, which describes Function 3.

Every street stretch is composed of a set of one or more street segments, which do not necessarily form a continuously connected chain. That is, a street stretch can encompass gaps in the street.

Some examples of street stretches and segments follow.

- The stretch of Madison Avenue between East 51st Street and East 52nd Street in Manhattan (see Figure VII-12) is a street segment. The stretch of Madison Avenue between East 51st Street and East 54th Street is not a segment because its delimiting nodes are not consecutive along the 'on' street; it is a stretch consisting of three segments.

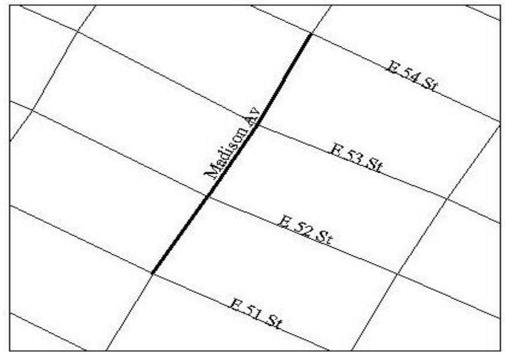
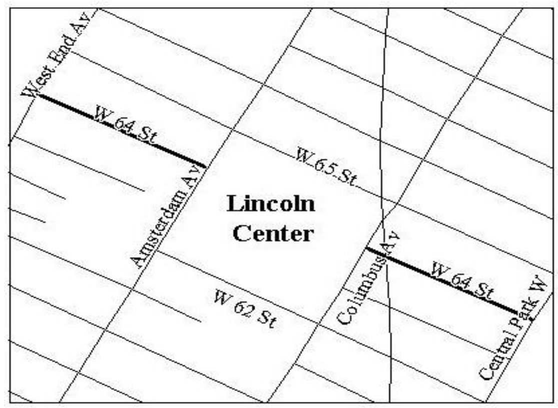


Figure V11-12: Street Stretch

- An example of a street stretch that is not connected is Manhattan's West 64th Street between Central Park West and West End Avenue (see Figure VII-13). West 64th Street has a gap (does not exist) between Columbus Avenue and Amsterdam Avenue, where it is interrupted by Lincoln Center. As a result, the stretch in question consists of two sub-stretches that are not connected to each other.



FigureV11-13: Street Stretch Containing Gap

Street stretches can be delimited by pseudo-intersections and intersection names as well as conventional street intersections:

- An example of a street segment in the Bronx delimited by a dead end is CROES AVENUE between WATSON AVENUE and DEAD END (see Figure VII-3).

- An example of a street stretch in Queens delimited by the city limits is LINDEN BOULEVARD between CROSS ISLAND PARKWAY and CITY LIMITS (see Figure VII-2).

- Some examples of street segments in Manhattan delimited by bends are: BARROW STREET between HUDSON STREET and BEND (also specifiable in terms of conventional streets as BARROW STREET between HUDSON STREET and COMMERCE STREET); and COMMERCE STREET between BARROW STREET and BEND (the only way to specify this segment) (see Figure VII-4).

Logical Direction Assigned to Streets

GSS has assigned a logical direction to every street segment in New York City. References to the left and right sides of any segment, and references to its delimiting nodes as the 'from' node and 'to' node, are relative to the segment's logical direction.

For streets that have addresses, the logical direction is always assigned as the direction of increasing addresses. Therefore, for any street with addresses, the 'from' node of any segment is always the node at its low address end, and the 'to' node is the node at the high address end; the left and right sides of the segment are determined accordingly.

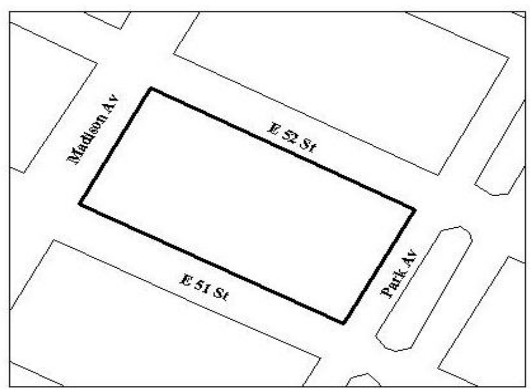
For features that have no addresses, such as all railroad tracks and some highways, the logical direction is assigned arbitrarily, but consistently, along the feature's full extent. Note that a street's logical direction, and thus the meaning of 'from', 'to', 'left' and 'right', is unrelated to the street's traffic direction, to its orientation with respect to the points of the compass, or to the order in which cross streets delimiting a stretch are specified.

Blockfaces

A blockface is a continuous frontage of a physical city block along one street, ignoring the presence of any bending points or other intervening nodes. That is, the portions of a street frontage of a block that lie on both sides of a bending point are considered to be parts of the same blockface.

For example, the Manhattan block bounded by Madison and Park Avenues and East 51st and East 52nd Streets has the following four blockfaces (see Figure VII-14, which, unlike most of the figures in this chapter, contains a double-line map to illustrate clearly the concept of a blockface):

- The east side of Madison Avenue between East 51st and East 52nd Streets
- The south side of East 52nd Street between Madison and Park Avenues
- The west side of Park Avenue between East 51st and   East 52nd Streets
- The north side of East 51st Street between Madison and Park Avenues



FigureV11-14: Block with Four Blockfaces

An example of a stretch with a bending point in Manhattan is Commerce Street between Bedford and Barrow Streets (see Figure VII-4). Both sides of this stretch are single blockfaces, even though the stretch consists of two segments connected at the bending point.

T-Intersections

A street stretch, and in particular a street segment, is considered to comprise both sides of the 'on' street. In the case of a street segment, each side necessarily is either a single entire blockface or a portion of one. Many segments consist of a pair of facing entire blockfaces along the 'on' street. However, this is not the case at a street configuration called a T-intersection. A T-intersection (so named because the streets are configured like the letter 'T') is an intersection where a cross street intersects the 'on' street on one side of the 'on' street only, and there are no cross streets on the other side of the 'on' street at that intersection. At a T-intersection, the 'on' street has a blockface that encompasses more than one segment, and conversely, at least one side of each of those segments consists of only a portion of that blockface.

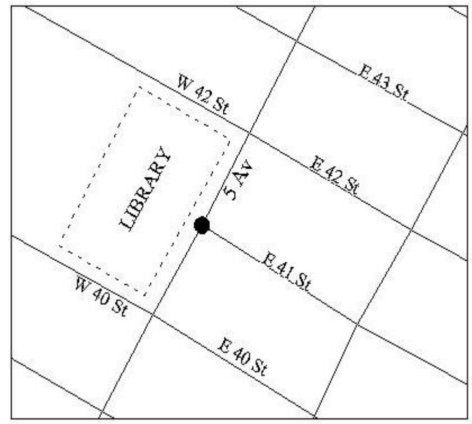


Figure VII-15: T-Intersection

An example of a T-intersection in Manhattan is the intersection of Fifth Avenue and East 41st Street (Figure VII-15). Because of the presence of the New York Public Library main building along the west side of Fifth Avenue between West 40th and West 42nd Streets, there are no cross streets on the west side of Fifth Avenue where it intersects with East 41st Street. The long blockface on the west side of Fifth Avenue encompasses two segments, each consisting of a portion of this long blockface facing a shorter entire blockface on the east side of Fifth Avenue.

It is possible for a street to have T-intersections at several consecutive nodes. An example in Manhattan is the three-segment stretch of Lexington Avenue between East 42nd and East 45th Streets (Figure VII-16). Because of the presence of the Grand Central Terminal complex on the west side of Lexington Avenue, East 43rd Street and East 44th Street intersect Lexington Avenue only on its east side, forming two consecutive T-intersections along Lexington Avenue. As a result, the west side of this stretch is a single long blockface, which faces three shorter blockfaces on the east side of Lexington Avenue.

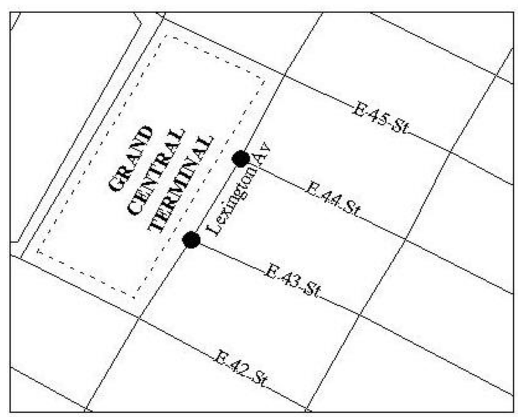


Figure V11-16: Two Consecutive T- Intersections

When a street has consecutive T-intersections at which the cross streets are on alternating sides of the 'on' street, then long blockfaces on both sides of the 'on' street face each other in overlapping fashion, forming segments both sides of which consist of portions of those long blockfaces. Union Avenue in Staten Island is an example (Figure VII-17). Note that Union Avenue between Leyden Avenue and Walloon Street is a street segment, because the two delimiting intersections are consecutive along Union Avenue, even though the cross streets are on opposite sides of the 'on' street.

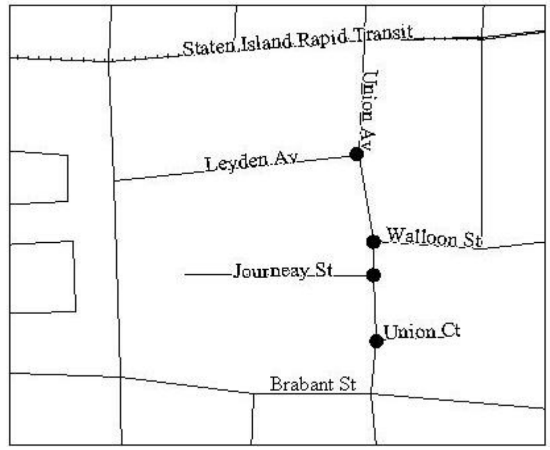


Figure VII-17: T-Intersections on Alternating Sides of street

VII.4 Street Segments and Related Configurations: Function 3

Function 3 is designed to accept as input portions of a street that are, loosely speaking, 'one block long'. More precisely, Function 3 processes two types of input street stretches:

- Street segments (i.e., portions of a street between two consecutive nodes).

- Street stretches consisting of more than one segment, such that at least one side of the street stretch is a single entire blockface. (Note that the user has the option of requesting that all segment ids in this type of output stretch be returned. See discussion of the Auxiliary Segment switch in the description of Function 3 output.) This type of input street stretch has three sub-cases:

    - At a T-intersection, there is a street stretch in which one side is a single entire blockface.
    - At a bending point at which there are no cross streets, there is a street stretch in which both sides are single entire blockfaces.
    - Physical street segments that are split into multiple sub-segments because of a change in some district such as ZIP codes or police beats.

The following examples illustrate the types of input data acceptable and not acceptable to Function 3. For the Lexington Avenue examples (in Manhattan), see Figure VII-16. For the Union Avenue examples (in Staten Island), see Figure VII-17. For the Commerce Street examples (in Manhattan), see Figure VII-4. For the Croes Avenue example (in the Bronx), see Figure VII-3.

Input Data Examples for Function 3

Input 'On' Street	One Cross Str.	Other Cross Str.	Fn 3 Action	Reason for Action
Lexington Avenue	East 42 Street	East 43 Street	Accepted	Single segment
Lexington Avenue	East 43 Street	East 44 Street	Accepted	Single segment
Lexington Avenue	East 44 Street	East 45 Street	Accepted	Single segment
Lexington Avenue	East 42 Street	East 45 Street	Accepted	Single entire blockface on west side of Lexington Ave
Lexington Avenue	East 42 Street	East 44 Street	Rejected	Multi-segment, neither side of Lex. Ave is a single entire blockface - west side is a portion of a blockface, east side comprises 2 blockfaces.
Lexington Avenue	East 43 Street	East 45 Street	Rejected	Multi-segment, neither side of Lex. Ave is a single entire blockface - west side is a portion of a blockface, east side comprises 2 blockfaces.
Union Avenue	Leyden Avenue	Walloon Street	Accepted	Single segment
Union Avenue	Walloon Street	Journey Street	Accepted	Single segment
Union Avenue	Journey Street	Union Court	Accepted	Single segment
Union Avenue	Union Court	Brabant Street	Accepted	Single segment
Union Avenue	Leyden Avenue	Journey Street	Accepted	Single entire blockface on west side of Union Avenue
Union Avenue	Walloon Street	Union Court	Accepted	Single entire blockface on east side of Union Avenue
Union Avenue	Journey Street	Brabant Street	Accepted	Single entire blockface on west side of Union Avenue
Commerce Street	Barrow Street	Bend	Accepted	Single segment
Commerce Street	Bedford Street	Bend	Accepted	Single segment
Commerce Street	Barrow Street	Bedford Street	Accepted	Both sides are single entire blockfaces
Croes Avenue	Watson Avenue	Dead End	Accepted	Single entire segment

<u>Function 3 Input Data Specification and Validation</u>

Applications pass an input stretch to Function 3 by specifying three input streets, consisting of the 'on' street and two cross streets, in the appropriate WA1 input fields. The input cross streets, but not the 'on' street, may be pseudo-streets or intersection names. The input cross streets may be specified in either order. As with all Geosupport street input, the three input streets to a Function 3 call are specified in the form of either street names or street codes.

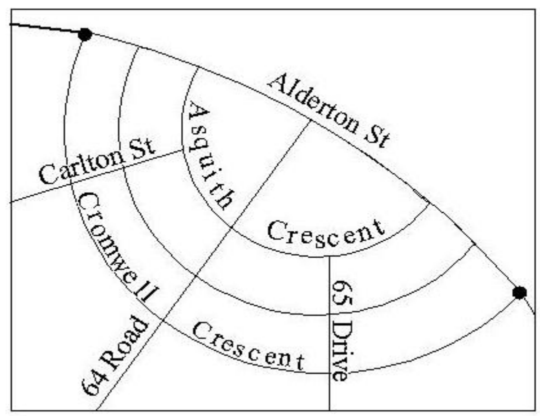
If either or both of the delimiting intersections of the input stretch has more than one cross street, the stretch may be specified using any of those cross streets. For example, the segment of Chambers Street illustrated in Figure VII-11 may be specified either as ‘Chambers Street between Church Street and West Broadway’, or as ‘Chambers Street between Church Street and Hudson Street’.

A successful two-work-area call to Function 3 signifies that the three input streets form a combination of an ‘on’ street and two cross streets that specify either a valid street segment or a valid street stretch at least one side of which is a single entire blockface.

Ambiguous Function 3 Input Data

Some combinations of an ‘on’ street and two cross streets are ambiguous as Function 3 input data, that is, the data specify more than one stretch that satisfies Function 3’s input criteria. An example of ambiguous Function 3 input data in Queens is ‘Alderton Street between Asquith Crescent and 64th Road’ (Figure VII-18). This combination of streets describes two different segments of Alderton Street.

Function 3 rejects such ambiguous input. Unlike Function 2, which provides a means (compass direction input) for users to specify unambiguously an intersection of two streets that intersect in two different places, Geosupport provides the user with no recourse when Function 3 rejects an input stretch specification as ambiguous.



FigureVII-18: Ambiguous Segment Specification

Function 3 Output Data

If a two-work-area call to Function 3 is successful, information about both sides of the input stretch is returned in WA2. (Note that the long WA2 option is available for the MSW Function 3. See Section II.5.) Some of the data items apply to both the left and right sides of the segment, e.g. the ‘on’ street name and street code, segment length, ‘From’ node (COW only), ‘To’ node (COW only), etc. Many of the data items in Function 3’s WA2 (both regular and long) are paired, with one item for the left side of the ‘on’ street and another item of the same type for the right side. For example, there are fields for left and right ZIP code, for left and right 2010 census tract, and for left and right address ranges (each range consisting of a ‘from’ house number and a ‘to’ house number). Other examples exist in the COW WA2 for Function 3, e.g. fields for left and right Elections District (ED), for left and right Assembly District (AD), and for left and right Blockface ID (in COW Function 3 Extended). As explained in Section VII.3, left and right are determined by the ‘on’ street’s logical direction, and therefore are independent of the order in which the user specifies the input cross streets.

In the case of an input stretch encompassing more than one segment (the T-intersection and bend cases), the values of the WA2 items that Function 3 returns for the side of the street comprising more than one blockface are as follows. The low and high house number values that are returned correspond to the entire stretch. The values that are returned for all other side-related items correspond to the 'last' (relative to the stretch's logical direction) blockface. For example, consider Fifth Avenue in Manhattan between East 40 and East 42 Streets (see Figure VII-15). Since the direction of increasing addresses along Fifth Avenue is from south to north, that is also Fifth Avenue's logical direction. It follows that the right side of the given stretch is the east side. It consists of two blockfaces. Relative to the logical direction, the 'last' of these blockfaces is the one between East 41 and East 42 Streets. Accordingly, the right address range that is returned in WA2, consisting of the right low house number and the right high house number, corresponds to the entire right side of Fifth Avenue between East 40 and East 42 Streets. The values returned for all other items for the right side of the input stretch correspond to the 'last' blockface, the one between East 41 and East 42 Streets. The data returned represents two segments, but only one Segment ID is capable of being returned in the regular Function 3 WA2; consequently only the Segment ID with the lowest value is returned in the regular Function 3 WA2. COW Function 3 is capable of returning all the Segment IDs that exist in the returned segment. (See discussion of Auxiliary Segment Switch below.) If the user requests Fifth Avenue between East 40th street and East 41st Street, the segment ID returned will be 00034174. If the user requests Fifth Avenue between East 41st Street and East 42nd Street, the Segment ID returned will be 00034176. However if the user requests Fifth Avenue between East 40th Street and East 42nd Street, which represents two segments, (and the Auxiliary Segment Option is not requested) the segment ID returned will be 00034174, which is numerically the lower of the two numbers.

A COW Function 3 call may return, at the user's option, all the Segment IDs (up to 70) of the segments that comprise the generated output segment. To request this data, the <u>Auxiliary Segment Switch (AUXSEG a.k.a. SEGAUX)</u> in the COW WA1 must be set to 'Y'. This will result in all the Segment IDs (up to 70) being returned in a 500-byte area appended to the COW Function 3 WA2.

Function 3 returns the Segment Length in WA2. This value is expressed in feet, and is computed from the Spatial Coordinates of the nodes that constitute the segment's endpoints; it is an approximation to the true length of the segment. <u>Segment Length values provided by Geosupport should not be used in applications that require an engineering level of precision</u>. In the case of an input stretch encompassing more than one segment, the Segment Length value that function 3 returns is the sum of the lengths of the constituent segments.

Another item that Function 3 returns in WA2 is called the Curve Flag. It indicates whether the input segment is curved, and if so, whether that curve is an arc of a circle or is an irregular curve. In the case of an arc of a circle, the Curve Flag indicates on which side of the segment's 'secant line' (the straight line joining the segment's endpoint nodes) the curve lies. If the input segment is curved, whether regularly or irregularly, the Segment Length value returned is approximately equal to the true arc length of the curve, rather than the secant length. If the input stretch encompasses more than one segment, the Curve Flag is returned with an 'on' (non-blank) value if at least one of the constituent segments is curved. For further information, see the entries for Curve Flag and Segment Length in Appendix 3.

In COW format, Function 3 also returns the FROM and TO node IDs. In addition, in Extended COW format, Function 3 Extended (with or without Auxiliary Segments) returns the X,Y coordinates associated with each of the nodes as well.

The <u>Extended WA2 Mode Switch</u> can be used to request the Extended COW format for Function 3. The first 450 bytes of Function 3 with the Mode Switch set to "X" will be the same as for regular

COW Function 3 calls. The additional fields consist of items such as Bike Lane 2, Bike Traffic Direction, Street Width, X-Y Coordinates, Roadway Type, Traffic Direction and Neighborhood Tabulation Area Names. For a full list of the data returned, see the COW Work Area layout in Appendix 13.

The long WA2 option is available for the MSW Function 3. The additional data provided in the MSW long WA2 include the census geography and the administrative fire district geography. All this data is included in the regular COW Function 3 WA2.

Fuzzy Street Name Search for Functions 3 and 3C
See Section VII.8 Fuzzy Street Name Search Processing for Functions 3, 3C, and 3S

Cross Street Reversal Flag

A WA2 item returned by Function 3 called the Cross Street Reversal Flag indicates whether the order of the input streets is consistent with, or opposite to, the stretch's logical direction. This flag can be used to determine which side of the street is the left side and which side is the right side in relation to the order of the input cross streets, as follows:

- If the Cross Street Reversal Flag is returned as a blank, the cross street that was specified in the input First Cross Street field in WA1 is at the 'from' end of the stretch and the cross street that was specified in the Second Cross Street field is at the 'to' end, so that left and right are consistent with facing from the first cross street to the second cross street.

- If the Cross Street Reversal Flag contains an 'R', the first input cross street is at the 'to' end and the second is at the 'from' end, so that left and right are consistent with facing from the second cross street to the first cross street.

For example, consider the segment of Lexington Avenue between East 42nd and East 43rd Streets. Since the addresses on Lexington Avenue increase from south to north, East 42nd Street is at the 'from' end of this segment and East 43rd Street is at the 'to' end. If an application specifies this segment to Function 3 by passing East 42nd Street in the First Cross Street WA1 field and East 43rd Street in the Second Cross Street WA1 field, the Cross Street Reversal Flag will be returned as a blank. On the other hand, if East 43rd Street is passed in the First Cross Street field and East 42nd Street is passed in the Second Cross Street field, the flag will be returned containing an 'R'.

Segment Orientation

In applications that involve field operations, such as those that generate work orders to dispatch personnel to specific blockfaces, the use of 'left' and 'right' as descriptors of the sides of a street can cause confusion for personnel in the field, because their significance is based on the street's logical direction, which is not necessarily obvious in the field. Compass directions, on the other hand, are absolute descriptors of the sides of a street; the west side of Lexington Avenue in Manhattan is a specific, invariant side of that street, and is independent of how an observer may be facing. So in such applications, compass directions may be more suitable as side-of-street descriptors than 'left' and 'right'.

To determine compass direction descriptors for the left and right sides of a segment, applications can use an item called the Segment Orientation that Function 3 returns in WA2. The Segment Orientation indicates how the input segment (or the last segment of the input stretch, if it consists of more than one segment) is oriented with respect to the points of the compass, taking into consideration the ‘on’ street’s logical direction. For example, if the input segment is Lexington Avenue between East 42nd Street and East 43rd Street, using the Segment Orientation, the application can determine that the left side of this segment (as determined by the street’s assigned logical direction) is the west side and the right side is the east side. See the entry for Segment Orientation in Appendix 3 for details on the possible values of the Segment Orientation and how to use it to determine compass direction descriptors for sides of streets.

In addition, in some applications it is desirable to be able to describe the ‘ends’ of a street segment in terms of a compass direction.

The application can use the Segment Orientation in conjunction with the Cross Street Reversal Flag to express a compass direction descriptor for a side of a street in terms of left or right relative to a particular ordering of the cross streets (as opposed to left and right relative to the street’s logical direction). For example, the application can determine that, when facing from East 42nd Street to East 43rd Street, the left side of Lexington Avenue is the west side; or that, when facing from East 43rd Street to East 42nd Street, the left side of Lexington Avenue is the east side.

Applications can use the Segment Orientation and the Cross Street Reversal Flag to determine compass direction descriptors for the ‘ends’ of a street segment, as well as its sides. For example, it can be determined that East 43rd Street is at the north end of the Lexington Avenue segment in our example, and East 42nd Street is at the south end.

See the entry for Segment Orientation in Appendix 3 for further details.

Consistent Retrieval of Application Data by ‘On’ Street and Two Cross Streets

If a street stretch has a delimiting node at which there is more than one cross street, the stretch can be specified in more than one way. Some applications require the ability to retrieve records for stretches from an application file consistently by geographic location, that is, independently of which cross streets were used to specify a stretch at record creation time and which cross streets are used at retrieval time. Function 3 provides items that can be used to form a key for such retrieval. Among the output items that Function 3 returns in WA2 are two lists of street codes (in the form of PB5SCs) for all the cross streets at the two delimiting nodes. Each list is ordered so that its first entry is always the numerically smallest PB5SC of all the entries in that list. This arrangement facilitates the formation by the application of a key for consistent geographic retrieval. The key would consist of a combination of the PB5SC for the ‘on’ street, the first entry in the ‘from’ cross street list, and the first entry in the ‘to’ cross street list.

If the application has a need to display the street names of the cross streets, the Cross Street Names Flag in WA1 can be turned ‘on’ and the names will be returned in the List of Street Names in WA1 (see entries for Cross Street Names Flag and List of Street Names in Appendix 3). Note that the cross street names feature incurs processing overhead, and should only be used when necessary.

Converting Address-Keyed Application Data to ‘On’ Street/Cross Streets

As mentioned in Section V.5, Function 1’s WA2 has two lists of cross streets for the two intersections delimiting the blockface containing the input address. Like the cross street lists in Function 3’s WA2, Function 1’s lists are arranged so that the numerically smallest PB5SC in each list is that list’s first entry. (However, unlike Function 3’s lists, either or both of Function 1’s lists can be empty.) Applications can identify an input address to a street stretch by using Function 1’s cross street lists to create a stretch-type key in the same way as described above for Function 3. This is useful in some applications that process geographically heterogeneous input data, with some input records, for example, identified by an address and others by an ‘on’ street and two cross streets. An example of such an application is the New York City Department of Transportation’s Street Light Information and Complaints System, which generates and tracks work orders for street light repair work. Among the ways in which this application improves the efficiency of those operations is by providing a means to consolidate all transactions involving street lights located on the same street segment into a single work order, regardless of whether the initial identification of the location is by an address or by an ‘on’ street and two cross streets.

VII.5 Blockfaces: Function 3C

In some applications, data are related to blockfaces, which are specific to a side of a street, rather than to street stretches or segments, which comprise both sides of the ‘on’ street. One way in which users commonly specify blockfaces is in terms of an ‘on’ street, two cross streets and a compass direction designating the side of the ‘on’ street, for example: “in Manhattan, the east side of Madison Avenue between East 50th and East 51st Streets”. Given such a blockface specification, Function 3C can be used to obtain information specific to that blockface. (For Manhattan only, the compass orientations of blockfaces are shifted 30 degrees counterclockwise, to conform to the widespread conventional treatment of the avenues and streets in midtown Manhattan as if they were oriented due north-south and due east-west, respectively. For more details on this 30-degree shift, see the description of Segment Orientation in Appendix 3.)

Function 3C accepts as input the long blockfaces formed by T-intersections. The sides of stretches opposite to such long blockfaces consist of more than one blockface and are not accepted as Function 3C input.

The input items to Function 3C are an ‘on’ street, two cross streets and a compass direction specifying the side of the street. The input cross streets, but not the ‘on’ street, may be pseudo-streets or intersection names. Note that, for Function 3C, the input compass direction has a different significance than it does for Function 2. In the case of Function 3C, the compass direction identifies which side of the street is to be processed. In the case of Function 2, it identifies, for a pair of input streets that intersect at two distinct locations, which of those two intersections is to be processed.

The same combinations of an ‘on’ street and two cross streets that Function 3 rejects as ambiguous input data are also rejected as ambiguous input data by Function 3C.

When Function 3C is called using two work areas, it returns in its WA2 those Function 3 WA2 items that are not associated with a specific side of the street, such as the lists of cross streets, the Segment Length, the ‘From’ node (COW only), ‘To’ node (COW only), etc. It also returns all of those Function 3 WA2 items that are specific to the side of the street specified by the input compass direction, such as the low and high house numbers, ZIP code and community district for that side of the street.

A successful two-work-area call to Function 3C signifies the following:

- The input ‘on’ street and two cross streets (or intersection names) specify a street stretch that is valid as Function 3 input (i.e., it is either a single street segment or a multi-segment stretch at least one side of which is a single entire blockface)

- The input compass direction is a valid specification (as defined below) of a side of that stretch

- The specified side of the stretch is a single entire blockface

As the second condition above implies, Function 3C treats some compass directions as invalid side-of-street specifications for some street stretches. The validity of a compass direction as a specification of a side of a street is determined by the orientation of the segment (or of the last segment of the stretch, if it consists of more than one segment) with respect to the points of the compass, as indicated by the value of the Segment Orientation. If the segment is oriented ‘nearly’ (i.e., within ten degrees of) due east-west, as indicated by a Segment Orientation value of ‘E’ or ‘W’, then its sides can only be validly described as the north and south sides, and Function 3C will reject east and west as side-of-street specifications. Similarly, if the segment is within ten degrees of due north-south, as indicated by a Segment Orientation value of ‘N’ or ‘S’ , then it is considered to have only east and west sides, and Function 3C will reject north and south as side-of-street specifications. (Note: recall that all Segment Orientation values in Manhattan are rotated 30 degrees counterclockwise. This has the effect, for example, of causing Geosupport to treat Third Avenue in Midtown Manhattan as a ‘nearly’ north-south street. Thus, Function 3C accepts as input either the east or west side of Third Avenue between, say, East 50 Street and East 51 Street, but it rejects the north and south sides.)

Of course, most segments are ‘diagonal’ (not oriented within ten degrees of due north-south or due east-west), in which case all four compass directions are accepted as valid side-of-street specifications. For example, if the segment is oriented northwest-southeast, one side of the segment is simultaneously the north side and the east side, and the other side is simultaneously the south side and the west side.

Consider the example illustrated in Figure VII-15. The east side of Fifth Avenue between East 40th and East 41st Streets is a valid blockface specification and is accepted by Function 3C. The same is true for the east side of Fifth Avenue between East 41st and East 42nd Streets. The west side of Fifth Avenue between East 40th and East 42nd Streets is likewise a valid blockface specification, in this case designating the long blockface of a T-intersection. The east side of Fifth Avenue between East 40th and East 42nd Streets is not a valid blockface specification, and is rejected by Function 3C (even though that combination of ‘on’ street and two cross streets is accepted by Function 3), since that side of Fifth Avenue between those cross streets consists of two blockfaces. See Section VII.4 for a description of the Auxiliary Segment Switch. That switch allows the user to request that Geosupport return all the segment IDs in a long face of a T-intersection, or any other multi-segment situation.

The Extended WA2 Mode Switch is available for Function 3C. The first 300 bytes of Function 3C with the Mode Switch set to “X” will be the same as regular Function 3C calls. The additional fields that are returned with Function 3 Extended are returned with Function 3C Extended as well.

VII.6 Street Stretches: Function 3S

Function 3S processes street stretches. An input stretch is specified by an ‘on’ street and (optionally) any two cross streets, using the same WA1 input fields as are used for Function 3. If the ‘on’ street intersects an input cross street twice, an input compass direction must also be specified to identify which of those two intersections is intended to delimit the stretch. Input cross streets, but not the ‘on’ street, may be pseudo-streets or intersection names. If no input cross streets are specified, the delimiting nodes of the input stretch default to the ‘on’ street’s beginning and ending nodes, and the input stretch consists of the entire ‘on’ street. If the ‘on’ street is a locally-valid name, then only the intersections in that portion of the street, where the name is valid, will appear in the list. Similarly, if street code input is used, the B7SC will determine the stretch of the locally-valid street.

Function 3S’s WA2 contains a list of all of the input stretch’s ‘intersections’ in sequence between the beginning and ending delimiting nodes of the stretch. An ‘intersection’ can either be a node (as defined in Section VII.2), or it can be a non-specifiable intersection, that is, a point at which the street intersects only with a geographic feature to which a street code has not been assigned.

WA2 also contains a list counter containing the number of such intersections. There is space in the list for a maximum of 350 intersections.

- Each entry in the list typically contains the numerically smallest and second smallest PB5SCs for MSW, and up to five B7SCs for COW (the first two B7SCs are typically the numerically smallest and second smallest, of all of the cross streets at the represented intersection, if any).
- Note that to return the most useful information to the user, ‘normal’ streets in numerical order appear first in the list entry, followed by ‘special’ streets, such as Ramps and Exits. Railroads, Shorelines and Borough Boundaries will then appear followed by Named Intersections, CITY LIMITs, DEAD ENDs, and BENDs. This will occur even if the ‘special’ streets have lower street codes than the ‘normal’ streets.
- To avoid unnecessary listing of BENDs, Function 3S recognizes a BEND only if the angle of the bend is 60 degrees or more. (Prior to Release 16D, a bend was listed if the angle was 20 degrees or more.) Also, a bend is not included in the list of cross streets when another real street intersects there as well.
- The ‘on’ street is not included in the list of cross streets at each intersection.
- If there is only one cross street at an intersection, the list entry contains packed zeros in the second cross street field for MSW and blanks in remaining cross street fields for COW.
- List entries representing non-specifiable intersections contain packed zeros in both cross street fields for MSW and blanks in all cross street fields for COW.
- Two streets with different B7SCs but with the same B5SCs may appear in a COW list entry. This can happen when the Preferred Street Name of a street changes at an intersection. For example, in Brooklyn, the Preferred Street Name of Livingston Street becomes Aitken Place when Livingston Street intersects Clinton Street. The COW list entry for that intersection on Clinton Street will include B7SCs for both Livingston Street (B7SC 3-56530-01) and Aitken Place (B7SC 3-56530-02).
  Note: An MSW Function 3S call returns only B5SCs and in this situation the list may include two identical streets codes with the same B5SC. This, at least, informs the MSW user that there are two street names at that point. As in the past, we strongly encourage MSW Work Area users to migrate to the COW Work Areas so you can benefit from multiple Geosupport

enhancements that are not included in MSW.

Each list entry also contains the distance in feet between the node represented by this list entry and the node represented by the previous list entry. The maximum value this field can contain is 99,999. Please note that the distance information is only a rough approximation and cannot be used for applications that require precise distance measurements. Note, also, that the distance field will always contain zero in the first list entry returned by Function 3S since there is no previous list entry.

There is also a field in each list entry for a **Gap Flag**. A non-blank value in the Gap Flag indicates that one of the following is true:

a. There is some kind of gap in the ‘on’ street between the node represented by this list entry and the node represented by the previous list entry

b. Multiple segments have been combined to create this entry so that only Real Street intersections are listed. Intersections with bends and other non-street features are combined to create one entry.

In other words, a non-blank value indicates that either there is no segment of the ‘on’ street connecting those two nodes, or that multiple segments have been combined to represent a ‘single’ segment between the two nodes. Note that the Gap Flag will always be blank in the first list entry returned by Function 3S since there is no previous list entry.

The Gap Flag is set to ‘G’ when there is a break in a street, such as exists with 7 Avenue between Central Park South (a.k.a. West 59 Street) and Central Park North (a.k.a. West 110 Street) in Manhattan. The length returned represents the distance between the end of one string of segments and the start of the next string of segments. With 7 Avenue in Manhattan, the length of the gap would be the distance from the intersection of 7 Avenue and Central Park South and the intersection of 7 Avenue and Central Park North.

The Gap Flag will be blank even if there is a gap between the first intersection in the list and the preceding intersection in the entire street; since, from the user’s perspective there is no gap within in the stretch. An example of this is the partial street stretch of Broadway in Manhattan between East 17 Street and East 20 Street. There is a gap between East 14 Street and East 17 Street, but there will not be any indication of that gap in the list of intersections. If, on the other hand, the user requested the partial street stretch of Broadway in Manhattan between East 10 Street and East 20 Street, the gap between East 14 Street and East 17 Street will appear in the list.

There are situations (e.g. dogleg and new stretch) where merely indicating that a gap exists is not sufficiently descriptive.

The Gap Flag is also used to indicate that segments have been combined when ‘Real Streets Only’ are requested.

To handle these situations, the Gap Flag has three values in addition to ‘G’.

1. ‘D’ for a Dogleg
2. ‘N’ for a New Stretch.
   Note: For entries with the value of ‘N’, the length from the previous node is set to zero.

3. ‘C’ for Combined Segments. This occurs when the user requests ‘real streets only’ which results in some segments being combined. See the description of the ‘Real Street Only’ flag below.

Example of **Dogleg**

Looking at Elk Street in Manhattan, which exists between Chambers Street and Duane Street, there is a gap at Reade Street. This is not a real gap, but rather a dogleg. Gaps of this nature are identified with the letter ‘D’ to indicate the existence of a dogleg. The length field contains the length of the dogleg. (see Figure VII.6 for example of dogleg.

Examples of **New Stretch**

1. A new stretch may involve situations where there are multiple roadbeds like Ocean Parkway in Brooklyn and Allen Street in Manhattan. In these cases one roadbed is listed first and then the first segment of each of the other roadbeds is listed as New (‘N’). The length field which contains the distance from the previous node is set to zero.

2. A new stretch may involve a triangle, which occurs when a road veers off for one or more segments and then comes back. Examples of this exist in the Bronx involving White Plains Road and Rhinelander Avenue. In this case, Rhinelander Avenue appears twice in the White Plains Road stretch; once as part of the entire street and once as a “New” one-segment stretch between nodes 0079418 and 0079417. Another example of a triangle is Queens Boulevard between Yellowstone Boulevard and 70 Road. On the southern side of Queens Blvd, there is a “spur” of Queens Boulevard between Yellowstone Boulevard and 70 Road separated from the main portion of Queens Boulevard by MacDonald Park. In any case the length field is set to zero.

3. A new stretch may involve a ‘street’ that has several separate stretches. In the Bronx, an example of this is the Throgs Neck Expressway which has several separate stretches, some of which have a different name (e.g. Throgs Neck Boulevard), but use the same five-digit street code. The first segment of each of these separate street stretches is listed as New (‘N’), and the distance from the previous node is set to zero.

Description of **Combined Segments and the “Real Street Only” Flag**

In the COW there is an input flag in WA1 called the “**Real Street Only”** flag for users who seek only “real” cross streets along a stretch of a street, and not items defined as “Non-Street Feature” or “Bend”.

If the “Real Street Only” flag is set to **R**, only “Real” street list entries are returned. This means that “Non-Street Feature” or “Bend” items are not returned. The length from the previous node to the node with “Non-Street Feature” or “Bend” is added to the next segment and the **Gap Flag** is set to **C**, which indicates that segment lengths have been combined and one or more nodes have been omitted. There are two exceptions to this situation; namely, if the Gap Flag of the current node is equal to **N or G** which means a new stretch has commenced or if the Gap Flag of the next node is equal to **N** or **G**. In this case, a new stretch is starting and adding in the length of the preceding segment does not make sense. If the “Real Street Only” flag is set to any value other than **R**, all segments are displayed.

Example of **Combined Segments**

Consider the street stretch in Manhattan on A C Powell Boulevard between West 137 Street and West 140 Street. A normal function 3S call will result in seven intersections listed, including three non-street feature intersections. If “Real Street Only” is requested, only four intersections are listed, and the distances between the intersections are adjusted accordingly.

Additional COW List entry items
In the COW, for Function 3S, each list entry also includes a **Marble Hill/Rikers Island flag**, the Node ID of the intersection and a count of the number of streets at the intersection.

Note: In COW work areas, the entries in the list of intersections include B7SCs instead of B5SCs (as had been returned prior to Version 10.6). Users who are still using MSW work areas will find B5SCs in the list of intersections as in the past.

Locally Valid Street Name or Street Code processing
In Function 3S, if the on-street is a **locally-valid street name**, e.g. 'FASHION AVENUE' in Manhattan, Geosupport returns only the intersections where the name 'FASHION AVENUE' in Manhattan is valid. In this example, Geosupport will return approximately 16 intersections for 'FASHION AVENUE' in Manhattan.

If the user provides street code input instead of street name input, Geosupport uses the B7SC of the input to find the stretch of the locally-valid street. Of course, if the user supplies only the B5SC the entire street will be searched, which, hopefully, is what the user intended.

In COW work areas, the entries in the list of intersections will include B7SCs instead of the B5SCs as had been returned previously. Users who are still using MSW work areas will find B5SCs in the list of intersections as in the past.

Roadbed Street Stretches: Function 3S Partial Implementation
Function 3S may be used to obtain information about roadbed street stretches via the Roadbed Request Switch (as opposed to only generic street[10] stretches). Please be aware that the roadbed processing, which is only partially implemented, may change and is being provided to enable you, the user, to take advantage of this enhancement while in its infancy.

Information about generic street stretches may be obtained for the entire street stretch or for part of a street stretch. However information about roadbed street stretches may only be obtained for certain types of stretches. Information about certain parts of a street stretch is not fully functional and will result in a Geosupport Return Code (GRC) of 96. It is expected to be fully functional in a future release of Geosupport.

It is the user's responsibility to set the Roadbed Request Switch which is in Work Area 1.

If the Roadbed Request Switch is set to **R**, then a roadbed street stretch will be returned to the user. A blank in the Roadbed Request Switch will result in a generic street stretch being returned to the user. Any other value will result in a Geosupport Return Code (GRC) of 65.

If a user supplies a generic name for a multi-roadbed street and the Roadbed Request Switch indicates

[10] Generic streets are single line representations of streets that have multiple roadbeds, such as Queens Boulevard in Queens, the Grand Concourse in the Bronx, Broadway (in the Upper West Side) in Manhattan and Ocean Parkway in Brooklyn.

that generic processing is desired (i.e. value of the switch is ‘blank’), the output will be virtually the same as prior to implementation of the Roadbed Request Switch. An example of this would be Park Row in Manhattan.

If a user supplies a generic name for a multi-roadbed street and the Roadbed Request Switch indicates that roadbed processing is desired (i.e. value of the switch is ‘R’), the output may or may not be what was provided in the past. If the generic name supplied represents an undivided street, the generic and roadbed processing will produce the same output and it is possible to request part of the street stretch. If the generic name supplied represents a multi-roadbed street either in part or in full, then the entire stretch may be requested. Also, a street stretch that begins and ends with an undivided portion of the street may be requested. If only part of the street involves a multi-roadbed, then the undivided portion may be requested in part. For example, 58 Avenue in Queens is undivided in part. Consequently you may ask for roadbed processing from, say, 211 Street to 219 Street. If you ask for roadbed processing from, say, 214 Street to 218 Street, you will receive GRC 96 indicating that this functionality is under construction. If the entire stretch is requested with roadbed processing, the output will be different than what the output is for generic processing. The output starts with Rust Street and continues supplying the cross streets until about 213 Street where 58 Avenue becomes a multi-roadbed street. All of the intersecting streets on one roadbed are presented until about 219 Street, where 58 Avenue becomes undivided. The output then returns to earlier segments where 58 Avenue branched off as well as the segments for the other roadbed between 211 Street and 219 Street.

If a user supplies a street name that is defined as a roadbed name, but does not set the Roadbed Request Switch to indicate that roadbed processing is requested, then a GRC of 57 with the associated error message of “INPUT INCLUDES ROADBED NAME, BUT ROADBED REQUEST SWITCH IS OFF” will be returned to the user.

If a user supplies a street name that is defined as a roadbed name and sets the Roadbed Request Switch to indicate that roadbed processing is requested, then only those streets within the two cross streets that intersect the specified roadbed will be returned in the output. For example if you request the stretch for Park Avenue Northbound Roadbed and set the Roadbed Request Switch to indicate that roadbed processing is requested, then the output will include the streets that cross the northbound roadbed.

Coincident Segments: Function 3S Processing

Coincident segment processing (where one road is above another road) has become more consistent as of Release 16C. Coincident segments (streets, subways, railroads) were sometimes being listed as cross streets in releases prior to 16C. As of Release 16C, the B7SCs of segments coincident with the ‘on’ street are no longer listed as cross streets at both the ‘from’ node and ‘to’ node unless the coincident segment diverges at either the ‘from’ node or the ‘to’ node of the ‘on’ street. The new rules for coincident segments are as follows:

i. At a point where one of the two coincident segments’ stretch ends, the coincident segment will not be listed as a cross street.
ii. At a point where one of the two coincident segments diverges (no longer coincident), the divergent segment will be listed as a cross street.
iii. At a point where two divergent segments become coincident, the incoming divergent segment will be listed as a cross street.

iv. At a point where a coincident segment stretch ends and a new coincidence begins with another 'on' street. The continuing and terminated segments will be listed as cross streets.

VII.7 Borough Boundary Processing (Functions 2, 3 and 3C)

All of the street configuration functions other than Function 3S allow users to specify locations that lie along a boundary of two boroughs in terms of streets from both boroughs. Function 2, for example, accepts the intersection of Brooklyn's Ridgewood Avenue and Queens's Rockaway Boulevard as a valid input street intersection lying on the Brooklyn-Queens boundary. A more unusual example that Function 2 also accepts as a valid input intersection is the intersection of Atlantic Avenue in Brooklyn and Atlantic Avenue in Queens. Although physically, Atlantic Avenue is a single continuous street that crosses the Brooklyn-Queens border; Geosupport treats the portions of Atlantic Avenue in the two boroughs as two different streets, and therefore recognizes their meeting point at the borough boundary as an intersection.

A borough boundary location can be specified in terms of streets from different boroughs as follows. For street input data that are in the form of street names, there are three WA1 input fields for borough codes called Borough Code 1, Borough Code 2 and Borough Code 3 (see the WA1 layout in Appendix 2). These fields correspond respectively to the three WA1 input street name fields called Street Name 1, Street Name 2 and Street Name 3. A value is always required in Borough Code 1. If no values are loaded into Borough Code 2 and/or Borough Code 3, the default values are the value in Borough Code 1. When not all of the input street names are in the same borough, the proper value(s) must be inserted into Borough Code 2 and/or Borough Code 3, as appropriate.

If the street input data are in the form of street codes, either as PB5SCs or as B10SCs, each input street code field contains a borough code in its first byte position. This makes it possible to specify input streets from different boroughs using street code input.

The borough boundary processing feature described in this section is not implemented for Function 3S, which requires all three input streets to be from the same borough. If the input streets are in the form of street names, the borough must be specified in the WA1 input field Borough Code 1; Function 3S ignores the contents of the WA1 input fields Borough Code 2 and Borough Code 3.

VII.8 Fuzzy Name Search Processing for Functions 3, 3C, and 3S – Front-truncated street names

Under certain conditions, Functions 3, 3C, and 3S will return data when front-truncated street names are given as input; e.g. when 14 STREET in Manhattan is given as input instead of EAST 14 STREET or WEST 14 STREET.

When a user supplies a street that is a front-truncated street name, Geosupport will process that front-truncated street name if the front-truncated street name supplied may only refer to a single street name. For example, if a user supplies '7 STREET' in Manhattan as an input street, Geosupport knows that the only possibility is 'EAST 7 STREET' in Manhattan since there is no 'WEST 7 STREET'.

When a user supplies a street name that is a front-truncated street name such as 57 STREET where there are two viable street names, such as EAST 57 STREET and WEST 57 STREET in Manhattan, then Geosupport will determine which of the two street names actually intersects with the other input street. (Geosupport invokes Function 2 under-the-covers to check the intersections.) Geosupport will accept the call if only one of the two street names actually intersects the other input street. As an example, if a user inputs ’57 STREET’ between ‘PARK AVENUE’ and ‘MADISON AVENUE’, Geosupport will provide data, because in Manhattan ‘EAST 57 STREET’ intersects ‘PARK AVENUE’ and ‘MADISON AVENUE’. As another example, if a user inputs ‘PARK AVENUE’ between 57 STREET and 58 STREET, Geosupport will accept the call, because in Manhattan EAST 57 STREET intersects ‘PARK AVENUE’ as does EAST 58 STREET.

A warning message with Reason Code J will be issued when Geosupport assumes a name that is different from the input street name.

There are situations where a front-truncated street name will not be accepted. As an example, a Function 3S call where a user inputs ‘57 STREET’ between ‘PARK AVENUE’ and ‘SEVENTH AVENUE’, Geosupport will not provide data, because, in Manhattan, ‘EAST 57 STREET’ intersects ‘PARK AVENUE’ and ‘WEST 57 STREET’ intersects ‘SEVENTH AVENUE’. ‘EAST 57 STREET’ and ‘WEST 57 STREET’ are not considered to be the same streets. As another example, a Function 3S call where a user inputs ‘57 STREET’ with no cross streets. Geosupport will not provide data, because it has no cross street to help determine whether the user wants East 57 Street or West 57 Street. When no data is returned, Geosupport will return the Geosupport Return Code (GRC) of ‘EE’ for ‘57 STREET’ and provide a list of similar names which will include both ‘EAST 57 STREET’ and ‘WEST 57 STREET’.

The fuzzy search involving Functions 3, 3C and 3S is similar to the fuzzy search for Function 2 Intersection Processing, which is described in a sub-section of VII.2.

CHAPTER VIII: THE GEOSUPPORT API - USER PROGRAM CODING AND JCL

VIII.1 Introduction

The Geosupport System's Application Programming Interface (API), the mechanism by which a user-written batch or CICS application program interfaces with the Geosupport System, was described in broad terms in Chapter II. The present chapter describes in detail, for the programming languages most widely used to develop applications on city mainframes, the statements that the user must code in an application program to access Geosupport via the API. The languages covered are COBOL, Assembler (i.e., any dialect of IBM mainframe assembler language), PL/1, C (supported on the mainframe at the Department of Information Technology and Communications (DoITT) by the IBM/C compiler) and NATURAL (a proprietary programming language used with the ADABAS database management system). An important optional user programming aid, the Geosupport COPY facility, is also discussed. The Geosupport-related JCL that the user must code to compile, link and (for batch applications) execute an application program is also described.

Notes for non-DoITT mainframe users:

- All JCL documented in this chapter is valid for the DoITT mainframe. Variations from this JCL are possible at other data centers where Geosupport is installed, for a variety of reasons. For example, the DSNs of the Geosupport files may differ from those at DoITT to conform to local file naming standards. Variations from DoITT may also be caused by software environment differences, such as the version of the operating system that is running. In addition, certain software products mentioned in this chapter, such as IBM/C or ADABAS, that are installed at DoITT may be unavailable at other data centers. Non-DoITT users should refer any Geosupport-related JCL questions or problems to their data center's Geosupport System Administrator (the system programmer at the data center who is responsible for installing new Geosupport releases).

- Non-DoITT users should also be aware that certain Geosupport files and functions that are available at DoITT may not currently be installed at their data center. Specifically, a foreground file named PAD, which is accessed only by Functions 1A, BL and BN, is relatively large and therefore is not installed at some data centers at which there are no current applications that require Functions 1A, BL or BN. At those data centers, Functions 1A, BL and BN are not available for use. If future applications at those data centers require Functions 1A, BL and/or BN, the PAD file can then be installed, thereby activating those functions.

VIII.2 Review of the Geosupport API

The Geosupport API consists of the following elements:

- Driver: A Geosupport program called the driver that serves as an intermediary between the user's application program and the Geosupport foreground software. The driver exists in the form of a load module, which the user must link-edit with the application program. (The link-editing is performed automatically for NATURAL programs.)

- Work Areas: One or two standard-layout work areas that are used to pass data back and forth between the application program and Geosupport. The user must include the Geosupport work area(s) in the application program.

- Programming Statements: Programming statements that the user must code in the application program to utilize the driver and work area(s) to interface with Geosupport.

The work areas and required programming statements are identical in the batch and CICS environments, except that there is a different driver for each environment. The driver for batch applications is named GBI. The driver for CICS applications is named GOAIDRV. The driver serves two purposes:

- It passes execution control from the user's application program to the Geosupport foreground software, which is external to the application program load module.

- It passes the memory address(es) of the work area(s), which are located within the application program, to the Geosupport foreground software, enabling Geosupport to access the work areas.

The user program must include the required Geosupport work area(s) in its working storage (COBOL, Assembler or C), automatic storage (PL/1) or U size buffer (NATURAL). When the application program issues a call to the driver, either one or two work areas (more precisely, their memory addresses) are passed as parameters of the call. The length and layout of Work Area 1 (WA1) are fixed. The length and layout of Work Area 2 (WA2) are determined by the function and, for functions that have either the long WA2 option or the Mode Switch of ‘X’ – Extended (discussed in Section II.5), by which option is specified. The distinction between one-work-area and two-work-area calls is discussed in Section II.4.

For the convenience of users whose application programs are written in COBOL, Assembler, PL/1, C or NATURAL, Geosupport COPY files are maintained. They contain source code descriptions of all of the work area layouts in each programming language. The Geosupport COPY files are discussed in detail in Section VIII.4. The use of the Geosupport COPY facility is optional but strongly recommended.

In batch applications, the user JCL for the execute step must include JOBLIB or STEPLIB DD statements for the load libraries that contain the Geosupport foreground software. Section VIII.8 describes the JCL required for batch execution, and Appendix 8 contains examples.

Important note for CICS applications written in NATURAL:

In order for Geosupport’s CICS driver to be able to pass control to the Geosupport foreground software properly, the driver must determine whether the user program is written in NATURAL. (This is necessary because NATURAL programs make non-standard program calls in the CICS environment. In a standard call, the address of the parameter list is passed in Register 1. Programs written in COBOL, Assembler, PL/1 and C generate standard calls. However, CICS NATURAL programs use Register 1 for a different purpose. Therefore, for NATURAL programs only, the Geosupport CICS driver uses the Transaction Work Area instead of Register 1 to pass the addresses of the work areas to Geosupport.)

The Geosupport CICS driver determines whether the calling program is a NATURAL program by examining an internal Geosupport table that contains the transaction-IDs of all applications written in

NATURAL. If the transaction-ID of a CICS NATURAL program is not in that table, the transaction will terminate abnormally when attempting to call Geosupport. At DoITT, the updating of the Geosupport NATURAL transaction-ID table is the responsibility of DoITT staff. Therefore, DoITT users developing new CICS applications written in NATURAL must make a request to the appropriate DoITT staff to enter the new transaction-IDs into the Geosupport table. NATURAL CICS users running at other computer centers should contact GSS at GSS_Software@planning.nyc.gov.

VIII.3 Coding API Calls

This section describes the source code statements that the user must code in the application program to call the driver. Also described, for PL/1 and C applications, are the statements required to declare the driver as an external entry point. Such a declaration is not required for COBOL, Assembler and NATURAL.

For all programming languages, the driver can be called either with one or with two calling parameters. The first parameter passes the address of Work Area 1 to the driver. If the application program is making a two-work-area call, the second parameter passes the address of Work Area 2 to the driver.

The programming statements to declare and call the driver are shown below in the form that must be coded for batch application programs. For CICS programs, the user must code these statements in the same way, but with the name of the CICS driver, GOAIDRV, in place of the batch driver, GBI.

In a (batch) PL/1 program, the driver must be declared as an external entry point as follows:

```
DCL GBI EXTERNAL ENTRY OPTION (ASM,INTER);
```

In a (batch) IBM/C program, the driver should be declared as follows:

```
#pragma linkage (GBI,OS)
long GBI(void *,... );
```

If ‘WA1’ and >WA2= are the names that the user has given to the work areas within the application program source code, the statement calling the driver would be coded as follows in a (batch) application program:

Language	One-Work-Area Call	Two-Work-Area Call
COBOL	CALL ‘GBI’ USING WA1.	CALL ‘GBI’ USING WA1, WA2.
Assembler	CALL GBI,WA1,VL	CALL GBI,(WA1,WA2),VL
PL/1	CALL GBI (WA1);	CALL GBI (WA1, WA2);
IBM/C	GBI(&WA1);	GBI(&WA1,&WA2);
NATURAL	CALL ‘GBI’ USING WA1	CALL ‘GBI’ USING WA1 WA2

VIII.4 The Geosupport COPY Files

This section describes an optional feature of Geosupport, its COPY files. The Geosupport COPY files contain source code layouts of the Geosupport API work areas in the COBOL, Assembler, PL/1, C and NATURAL programming languages. The use of the Geosupport COPY files can greatly facilitate user programming and is strongly recommended for all applications. The Geosupport COPY files are contained in the Geosupport COPY libraries, which are described below.

In this section, basic concepts of COPY files are explained, and the organization of the Geosupport COPY libraries is described. In Section VIII.5, the specific source code statements that users must code in their programs to utilize the Geosupport COPY files are described. Section VIII.6 describes the JCL required to compile a program that utilizes the Geosupport COPY files.

Overview of COPY Files in General

Many programming languages, including COBOL, Assembler, PL/1, C and NATURAL, have a facility for referring, within the source code of a program, to external files (generically referred to as 'COPY files' in this document) containing source code to be inserted into the program at compile time. (C 'COPY files' are usually called header files; NATURAL 'COPY files' are called Local Data Areas (LDAs).) Each programming language has a declarative command ('COPY' in COBOL and Assembler, '%INCLUDE' in PL/1, '#include' in C, 'LOCAL USING' in NATURAL) for referring to such external COPY files. During program compilation, when the compiler encounters such a command, it dynamically retrieves the source code stored in the named COPY file and processes that source code as if it were an integral part of the program source code. The source code retrieved at compile time from the COPY file serves as input to the compiler only; it is not inserted permanently into the user's program source code file. Only the declarative statement that refers to the COPY file is permanently present in the program source code. Note: declarative statements referencing external source code COPY files are not to be confused with external program calls. Declarative statements are directives to the compiler, and are processed at source code compilation time; program calls are executable statements, performed at application execution time.

For COBOL, Assembler, PL/1 and C, COPY files must reside as members of a Partitioned Data Set (PDS) called a COPY library, which must be made accessible to the compiler by coding a SYSLIB DD statement in the JCL for the compile step. In addition, for COBOL and PL/1, an appropriate compiler option must be specified. For NATURAL, COPY files are called Local Data Areas (LDAs) and reside in the system library in each ADABAS database. The Database Administrator (DBA) must modify each NATURAL application's security profile to make the LDAs accessible to the application.

An ideal situation in which to use COPY files is when numerous programs in an application must all describe the same data structure(s). Using this technique, a source code description of each data structure is stored centrally in a COPY library. All programs requiring one or more of the data structures need only contain declarative statement(s) referring to the appropriate member file(s) in the COPY library. This approach insures that all the programs define the given storage layout in exactly the same way, using the same data item names, data types and data lengths. This facilitates application-wide maintenance and debugging. Changes to a data structure need only be made centrally in the COPY file, rather than separately and redundantly in each program.

Of course, the source code in a program that references a COPY file must be written so that it is compatible with the source code in that COPY file. In particular, for fields that are defined in the COPY file and referred to in the program, the program must use the same data names and must assume the same data types and lengths as does the COPY file.

The Geosupport COPY Libraries

There are two Geosupport COPY libraries that collectively contain COBOL, Assembler, PL/1 and C source code COPY files for all of the Geosupport API work area layouts. Geosupport also has a set of NATURAL LDAs for the work area layouts. The use of these facilities can greatly facilitate user application programming. Among the potential productivity benefits are the following:

- Elimination of the need for application programmers to key into their programs lengthy source code descriptions of the Geosupport work area layouts line by line.

- Standardization of Geosupport data item names among the programs in an application, facilitating troubleshooting and the reassignment of programming staff to programs written by others.

- Standardization of the descriptions (data types and lengths) of Geosupport data items in an application, fostering accuracy and compatibility among programs and files.

- Simplification of the updating of programs to reflect changes to Geosupport work area layouts. Each time a program that references the Geosupport COPY libraries is recompiled, the latest versions of the work area layouts are automatically retrieved.

The Geosupport COPY libraries supporting COBOL, Assembler, PL/1 and C applications are two catalogued Partitioned Data Sets (PDSs) named A030.GEO.COPYLIB2 and A030.GEO.COPYLIB.

For NATURAL applications at DoITT, the DoITT Database Administration staff is responsible for installing the Geosupport LDAs in the system library (CSCLIB) for each ADABAS database and for making the LDAs accessible to each application that needs such access by updating the application's profile. <u>It is the user's responsibility to communicate with the appropriate DoITT staff to request such installation and profile updating.</u>

The Geosupport COPY libraries contain a complete set of COPY files for the Geosupport API work areas in COBOL, Assembler, PL/1, C and NATURAL. Each COPY file contains source code descriptions of one or more of the work areas in one of the supported programming languages, as explained below. The Geosupport COPY libraries support both batch and CICS applications.

The MSW Work Area 2s of Functions 1, and 1E, (regular WA2), 2, 3 and 3C all have the same length, 200 bytes. For each of the supported programming languages except C, the layouts of these work areas are stored together in a single COPY file, coded as redefinitions of the same memory area. (In the COBOL files, this is done using REDEFINES. In the Assembler files, it is done using an ORG to reset the Location Counter. In the PL/1 files, it is done using BASED. In the NATURAL LDAs, it is done using REDEFINE.) Except for C, each of the remaining work area layouts has its own COPY file. For C, there is a single COPY file (called a 'header file' in C terminology) containing the layouts of all of the work areas, including WA1.

The COW Work Area 2s are handled in a similar fashion, though they may not all have the same length.

Tables VIII-1 and VIII-2, below, list all of the MSW and COW COPY files respectively for COBOL, Assembler, PL/1, NATURAL and C. The tables indicate the work areas for which each file contains layouts, the lengths of those work areas in bytes, and the name of each file by programming language. Appendix 5 and Appendix 14 contain printouts of the MSW and COW COPY files respectively.

Table VIII-1: MSW COPY Files for COBOL, Assembler, PL/1, C and NATURAL

MSW WORK AREA	FUNCTION(S)	LENGTH (bytes)	- - - - - - - - - - - - - COPY File Name - - - - - - - - - - - - - -				
			COBOL	ASSEMBLER	PL/1	C	NATURAL
WA1	All	884	W1COB	W1BAL	W1PL1	WAC	GEOLW1
WA2	1 (regular WA2), 1E (regular WA2), 2, 3 (regular WA2), 3C	200	W2COB	W2BAL	W2PL1	WAC	GEOLW2
WA2	1 (long WA2), 1E (long WA2), 3 (long WA2)	300	W2COBL	W2BALL	W2PL1L	WAC	GEOLW2L
WA2	1A&BL (regular WA2), BN (*)	939	W2COB1A	W2BAL1A	W2PL11A	WAC	GEOLW21A
WA2	1A&BL (long WA2) (**)	17,683	W2COB1AL	W2BAL1AL	W2PL11AL	WAC	GEOLW2AL
WA2	3S	4,224	W2COB3S	W2BAL3S	W2PL13S	WAC	GEOLW23S

The COW COPY Files Table (Table VIII-2) appears on the following page.

Table VIII-2: COW COPY Files for COBOL, Assembler, PL/1, C and NATURAL

COW WORK AREA	FUNCTION(S)	LENGTH (bytes)	COPY File Name				
			COBOL	ASSEMBLER	PL/1	C	NATURAL
WA1	All	1,200	P1COB	P1BAL	P1PL1	PAC	GEOLP1
WA2	1 & 1E (Regular WA2), 3C (Regular WA2)	300	P2COB	P2BAL	P2PL1	PAC	GEOLP2
WA2	2	200	P2COB	P2BAL	P2PL1	PAC	GEOLP2
WA2	2W	4000	P2COB	P2BAL	P2PL1	PAC	GEOLP2
WA2	3 (Regular WA2)	450	P2COB	P2BAL	P2PL1	PAC	GEOLP2
WA2	3 (WA2 with AUXSEG option)	950	P2COB	P2BAL	P2PL1	PAC	GEOLP2
WA2	3C (WA2 with AUXSEG option)	800	P2COB	P2BAL	P2PL1	PAC	GEOLP2
WA2	3 (Extended WA2)	1,000	P2COB	P2BAL	P2PL1	PAC	GEOLP2
WA2	3C (Extended WA2)	850	P2COB	P2BAL	P2PL1	PAC	GEOLP2
WA2	3 (Extended WA2 w/AUXSEG)	1,500	P2COB	P2BAL	P2PL1	PAC	GEOLP2
WA2	3C (Extended WA2 w/AUXSEG)	1,350	P2COB	P2BAL	P2PL1	PAC	GEOLP2
WA2	1A & BL (Regular WA2), BN (*)	1,363	P2COB1A	P2BAL1A	P2PL11A	PAC	GEOLP21A
WA2	1A & BL (Long WA2) (**) 1A & BL (TPAD Long WA2) (***)	17,750	P2COB1AL	P2BAL1A	P2PL11AL	PAC	GEOLP2AL
WA2	1A & BL & BN (Extended WA2) (****)	2,800	P2COB1AL	P2BAL1A	P2PL11AL	PAC	GEOLP2AL
WA2	1 & 1E (Extended WA2)	1,500	P2COB1AL	P2BAL1A	P2PL11AL	PAC	GEOLP2AL
WA2	1B	4,300	P2COB1AL	P2BAL1A	P2PL11AL	PAC	GEOLP2AL
WA2	3S	19,274	P2COB3S	P2BAL3S	P2PL13S	PAC	GEOLP23S
WA2	AP	1,363	P2COBAP	P2BALAP	P2PL1AP	PAC	GEOL2AP
WA2	AP (Extended WA2)	2,800	P2COBAP	P2BALAP	P2PL1AP	PAC	GEOL2APX

(*) Functions 1A, BL and BN share a single regular WA2 layout.
(**) Functions 1A and BL share a single long WA2 layout. (Function BN has no long WA2 option.).
(***) Functions 1A and BL share a single TPAD long WA2 layout. (Function BN has no TPAD long WA2 option.).
(****) Functions 1A, BL and BN share a single extended WA2 layout.

VIII.5 Coding API Calls When Using Geosupport COPY Files

This section describes the source code statements that COBOL, Assembler, PL/1, C and NATURAL users must code in application programs that use Geosupport COPY files. The required statements consist of declarative statements to reference the COPY files (using the file names in Table VIII-1) and statements calling the driver.

In Section VIII.3, the forms of calls to the driver were given using arbitrary data names for the work areas. In programs that do not use Geosupport COPY files, those names are user-selectable. In the present section, the forms of the driver calls are given again, this time with the specific data names that are required for compatibility with the COPY files. COBOL and C are the only supported languages that permit COPY file users to select their own names for the work areas (but not for the fields within the work areas). Prior to each call to the driver, the program must prime Work Area 1 with the input data to be processed by Geosupport, as described in Section II.3.

The declarative statements referencing COPY files cause the compiler to process the source code contained therein as if it were present within the application program's own source code at the point in the program where the declarative statement is located. Application programs need only reference those Geosupport COPY files that are required for the Geosupport function(s) the program actually calls, although referencing other COPY files does no harm.

COBOL Source Code Statements

To reference Geosupport **MSW COPY files**, COBOL programs must contain the appropriate one (or more) of the following statements in WORKING-STORAGE:

01 ANY-NAME-FOR-WA1. COPY W1COB.	WA1, all functions
01 ANY-NAME-FOR-WA2. COPY W2COB.	WA2, Functions 1 & 1E & 3 (regular WA2), 2, 3C
01 ANY-NAME-FOR-WA2-L. COPY W2COBL.	WA2, Functions 1& 1E & 3 (long WA2)
01 ANY-NAME-FOR-WA2-1A. COPY W2COB1A.	WA2, Functions 1A & BL (regular WA2), BN
01 ANY-NAME-FOR-WA2-1AL. COPY W2COB1AL.	WA2, Functions 1A & BL (long WA2)
01 ANY-NAME-FOR-WA2-3S. COPY W2COB3S.	WA2, Function 3S

For COBOL programs that will be executed in the **batch environment** and that use Geosupport COPY files, API calls are coded as follows:

One-work-area calls, all functions:
  CALL 'GBI' USING ANY-NAME-FOR-WA1.

Two-work-area calls, Functions 1 & 1E & 3 (regular WA2), 2, 3C:
  CALL 'GBI' USING ANY-NAME-FOR-WA1 ANY-NAME-FOR-WA2.

Two-work-area calls, Functions 1 & 1E & 3 (long WA2):
  CALL 'GBI' USING ANY-NAME-FOR-WA1 ANY-NAME-FOR-WA2-L.

Two-work-area calls, Functions 1A & BL (regular WA2), BN:
  CALL 'GBI' USING ANY-NAME-FOR-WA1 ANY-NAME-FOR-WA2-1A.

Two-work-area calls, Functions 1A & BL (long WA2):
  CALL 'GBI' USING ANY-NAME-FOR-WA1 ANY-NAME-FOR-WA2-1AL.

Two-work-area calls, Function 3S:
  CALL 'GBI' USING ANY-NAME-FOR-WA1 ANY-NAME-FOR-WA2-3S.

CICS programs issue calls as above but with GOAIDRV in place of GBI.

To reference Geosupport **COW COPY files** include the appropriate COPY files whose names begin with P1 and P2 instead of W1 and W2, e.g. P1COB instead of W1COB. Note that in the COW format, there is no long WA2 for Functions 1, 1E, and 3. Note, also, that there are additional function options in the COW format.

* To choose the appropriate COW COPY file, see Table VIII-2.*

Assembler Source Code Statements

To reference Geosupport **MSW COPY files**, Assembler programs must contain the appropriate one (or more) of the following statements:

COPY W1BAL	WA1, all functions
COPY W2BAL	WA2, Functions 1 & 1E & 3 (regular WA2), 2, 3C
COPY W2BALL	WA2, Functions 1 & 1E & 3 (long WA2)
COPY W2BAL1A	WA2, Functions 1A & BL (regular WA2), BN
COPY W2BAL1AL	WA2, Functions 1A & BL (long WA2)
COPY W2BAL3S	WA2, Function 3S

For Assembler programs that will be executed in the **batch environment** and that use Geosupport COPY files, API calls are coded as follows:

CALL GBI,W1BAL,VL	One-work-area calls, all functions
CALL GBI,(W1BAL,W2BAL),VL	Two-work-area calls, Functions 1 & 1E & 3 (regular WA2), 2, 3C
CALL GBI,(W1BAL,W2BALL),VL	Two-work-area calls, Functions 1 & 1E & 3 (long WA2)
CALL GBI,(W1BAL,W2BAL1A),VL	Two-work-area calls, Functions 1A & BL (regular WA2), BN
CALL GBI,(W1BAL,W2BAL1AL),VL	Two-work-area calls, Functions 1A & BL (long WA2)
CALL GBI,(W1BAL,W2BAL3S),VL	Two-work-area calls, Function 3S

CICS programs issue calls as above but with GOAIDRV in place of GBI.

To reference Geosupport **COW COPY files** include the appropriate COPY files whose names begin with P1 and P2 instead of W1 and W2, e.g. P1BAL instead of W1BAL. Note that in the COW format, there is no long WA2 for Functions 1, 1E, and 3. Note, also, that there are additional function options in the COW format.

* To choose the appropriate COW COPY file, see Table VIII-2. *

PL/1 Source Code Statements

To reference Geosupport **MSW COPY files**, PL/1 programs must contain the appropriate one(s) of the following statements:

%INCLUDE W1PL1;	WA1, all functions
%INCLUDE W2PL1;	WA2, Functions 1 & 1E & 3 (regular WA2), 2, 3C
%INCLUDE W2PL1L;	WA2, Functions 1 & 1E & 3 (long WA2)
%INCLUDE W2PL11A;	WA2, Functions 1A & BL (regular WA2), BN
%INCLUDE W2PL11AL;	WA2, Functions 1A & BL (long WA2)
%INCLUDE W2PL13S;	WA2, Function 3S

For PL/1 programs that will be executed in the **batch environmen**t and that use Geosupport COPY files, API calls are coded as follows:

CALL GBI (W1PL1);	One-work-area calls, all functions
CALL GBI (W1PL1,W2PL1);	Two-work-area calls, Functions 1 & 1E, 2, 3 (regular WA2), 3C
CALL GBI (W1PL1,W2PL1L);	Two-work-area calls, Functions 1 & 1E & 3 (long WA2)
CALL GBI (W1PL1,W2PL11A);	Two-work-area calls, Functions 1A & BL (regular WA2), BN
CALL GBI (W1PL1,W2PL11AL);	Two-work-area calls, Functions 1A & BL (long WA2)
CALL GBI (W1PL1,W2PL13S);	Two-work-area calls, Function 3S

CICS programs issue calls as above but with GOAIDRV in place of GBI.

(<u>Note:</u> for either a batch or a CICS PL/1 program, the appropriate Geosupport driver (GBI or GOAIDRV respectively) must be declared as an external entry point. See Section VIII.3.)

To reference the Geosupport **COW COPY files** include the appropriate copy files whose names begin with P1 and P2 instead of W1 and W2, e.g. P1PL1 instead of W1PL1. Note that in the COW format, there is no long WA2 for Functions 1, 1E, and 3. Note, also, that there are additional function options in the COW format.

* To choose the appropriate COW COPY file, see Table VIII-2. *

IBM/C Source Code Statements

To reference the Geosupport **MSW COPY file** IBM/C programs must contain the following statement:

```
#include <wac.h>
```

In the following C source code examples, the letter ‘L’ appears in upper case to facilitate distinguishing it from the numeric character ‘1’.

The work area layouts must be declared using the typedefs in the Geosupport COPY file. For example:

C_WA1 anyname_wa1;	WA1, all functions
C_WA2_F1 anyname_wa2_f1;	WA2, Functions 1 & 1E (regular WA2)
C_WA2_F1 anyname_wa2_f1L;	WA2, Functions 1 & 1E (long WA2)
C_WA2_F1A anyname_wa2_f1a;	WA2, Functions 1A & BL (regular WA2), BN
C_WA2_F1AL anyname_wa2_f1aL;	WA2, Functions 1A & BL (long WA2)
C_WA2_F2 anyname_wa2_f2;	WA2, Function 2
C_WA2_F3 anyname_wa2_f3;	WA2, Function 3 (regular WA2)
C_WA2_F3L anyname_wa2_f3L;	WA2, Function 3 (long WA2)
C_WA2_F3C anyname_wa2_f3c;	WA2, Function 3C
C_WA2_F3S anyname_wa2_f3s;	WA2, Function 3S

For C programs that will be executed in the **batch environment** and that use the Geosupport COPY file, API calls are coded as follows:

GBI (&anyname_wa1);	One-work-area calls, all functions.
GBI (&anyname_wa1,&anyname_wa2_f1);	Two-work-area calls, Functions 1 & 1E (regular WA2)
GBI (&anyname_wa1,&anyname_wa2_f1L);	Two-work-area calls, Functions 1 & 1E (long WA2)
GBI (&anyname_wa1,&anyname_wa2_f1a);	Two-work-area calls, Functions 1A & BL (regular WA2), BN
GBI (&anyname_wa1,&anyname_wa2_f1aL);	Two-work-area calls, Functions 1A & BL (long WA2)
GBI (&anyname_wa1,&anyname_wa2_f2);	Two-work-area calls, Function 2
GBI (&anyname_wa1,&anyname_wa2_f3);	Two-work-area calls, Function 3 (regular WA2)
GBI (&anyname_wa1,&anyname_wa2_f3L);	Two-work-area calls, Function 3 (long WA2)
GBI (&anyname_wa1,&anyname_wa2_f3c);	Two-work-area calls, Function 3C
GBI (&anyname_wa1,&anyname_wa2_f3s);	Two-work-area calls, Function 3S

CICS programs issue calls as above but with GOAIDRV in place of GBI.

(Note: for either a batch or a CICS C program, the Geosupport driver (GBI or GOAIDRV respectively) must be declared as an external entry point. (See Section VIII.3.)

To reference the Geosupport **COW COPY files** include the PAC COPY file instead of the WAC COPY file. Note that in the COW format, there is no long WA2 for Functions 1, 1E, and 3. Note, also, that there are additional function options in the COW format.

NATURAL Source Code Statements

Natural MSW

NATURAL programs reference Geosupport MSW LDAs by containing one or more of the following statements in DEFINE DATA:

LOCAL USING GEOLW1	WA1, all functions
LOCAL USING GEOLW2	WA2, Functions 1 & 1E & 3 (regular WA2), 2, 3C
LOCAL USING GEOLW2L	WA2, Functions 1 & 1E & 3 (long WA2)
LOCAL USING GEOLW21A	WA2, Functions 1A & BL (regular WA2), BN
LOCAL USING GEOLW2AL	WA2, Functions 1A & BL (long WA2)
LOCAL USING GEOLW23S	WA2, Function 3S

For NATURAL MSW programs that will be executed in the **batch environment** and that use the Geosupport COPY files (LDAs), API calls are issued as follows:

CALL 'GBI' USING W1NAT	One-work-area calls, all functions
CALL 'GBI' USING W1NAT W2NAT	Two-work-area calls, Functions 1 & 1E & 3 (regular WA2), 2, 3C
CALL 'GBI' USING W1NAT W2NATL	Two-work-area calls, Functions 1 & 1E & 3 (long WA2)
CALL 'GBI' USING W1NAT W2NAT1A	Two-work-area calls, Functions 1A & BL (regular WA2), BN
CALL 'GBI' USING W1NAT W2NATAL	Two-work-area calls, Functions 1A & BL (long WA2)
CALL 'GBI' USING W1NAT W2NAT3S	Two-work-area calls, Functions 3S

CICS NATURAL programs issue calls as above but with GOAIDRV in place of GBI.

Natural COW

NATURAL programs reference Geosupport COW LDAs by containing one or more of the following statements in DEFINE DATA:

LOCAL USING GEOLP1	WA1, all functions
LOCAL USING GEOLP2	WA2, Functions 1 & 1E & 3C
LOCAL USING GEOLP2	WA2, Function 2
LOCAL USING GEOLP2	WA2, Function 3
LOCAL USING GEOLP21A	WA2, Functions 1A & BL (regular WA2), BN
LOCAL USING GEOLP2AL	WA2, Functions 1A & BL (long WA2)
LOCAL USING GEOLP23S	WA2, Function 3S
LOCAL USING GEOL2AP	WA2, Function AP
LOCAL USING GEOL2APX	WA2, Function AP Extended

For NATURAL COW programs that will be executed in the **batch environment** and that use the Geosupport COPY files (LDAs), some samples of API calls follow:

CALL 'GBI' USING P1NAT	One-work-area calls, all functions
CALL 'GBI' USING P1NAT P2NAT	Two-work-area calls, Functions 1 & 1E & 3C
CALL 'GBI' USING P1NAT P2NAT2	Two-work-area calls, Function 2

CALL ‘GBI’ USING P1NAT P2NAT3	Two-work-area calls, Function 3
CALL ‘GBI’ USING P1NAT P2NAT1A	Two-work-area calls, Fns 1A & BL (regular WA2), BN
CALL ‘GBI’ USING P1NAT P2NAT1AL	Two-work-area calls, Functions 1A & BL (long WA2)
CALL ‘GBI’ USING P1NAT P2NAT3S	Two-work-area calls, Functions 3S
CALL ‘GBI’ USING P1NAT P2NATAP	Two-work-area calls, Functions AP
CALL ‘GBI’ USING P1NAT P2NATAPX	Two-work-area calls, Functions AP Extended

Note that there are additional function options in the COW format.

* To choose the appropriate COW COPY file (P2NATxxx), see Table VIII-2. *

CICS NATURAL programs issue calls as above but with GOAIDRV in place of GBI.

VIII.6 JCL for the Compile Step

COBOL, Assembler, PL/1 and C programs that do not reference Geosupport COPY files do not require any Geosupport-related JCL in the compile step. When compiling a COBOL, Assembler, PL/1 or C program that references Geosupport COPY files, the Geosupport COPY libraries must be made accessible to the compiler, as described below. NATURAL programs are compiled in the usual way, with no special user action required to access the Geosupport LDAs.

The Geosupport COPY libraries that support COBOL, Assembler, PL/1 and C are two catalogued files which at DoITT have the DSNs A030.GEO.COPYLIB2 and A030.GEO.COPYLIB. (At other installations, users should verify these DSNs with the data center's Geosupport System Administrator.) The COPY libraries must be concatenated under the DDname SYSLIB in the JCL for the compile step. Since the two libraries have some member names in common, it is essential to concatenate their DD statements in the proper order as shown below.

Assuming that one of the standard IBM catalogued procedures for compiling is being used, the JCL for SYSLIB should be coded as follows:

```
COBOL:         //COBOL.SYSLIB     DD DSN=A030.GEO.COPYLIB2,DISP=SHR
               //                 DD DSN=A030.GEO.COPYLIB,DISP=SHR

ASSEMBLER:     //ASM.SYSLIB       DD DSN=A030.GEO.COPYLIB2,DISP=SHR
               //                 DD DSN=A030.GEO.COPYLIB,DISP=SHR
               //                 DD DSN=<name of user macro library>,DISP=SHR
               //                 DD DSN=SYS1.MACLIB,DISP=SHR

PL/1:          //PLI.SYSLIB       DD DSN=A030.GEO.COPYLIB2,DISP=SHR
               //                 DD DSN=A030.GEO.COPYLIB,DISP=SHR

IBM/C:         //COMPILE.SYSLIB DD
               //                 DD  DSN=A030.GEO.COPYLIB,DISP=SHR
```

For Assembler applications, care must be taken to insure that the required Assembler macro libraries are concatenated to SYSLIB, as shown.

For C applications, note that the compiler requires access only to COPYLIB, not to COPYLIB2, and furthermore, care must be taken to insure that COPYLIB is concatenated to the IBM/C header file library, rather than overriding it. Overriding is prevented by coding one DD statement with a blank operand field followed by the DD statement for the Geosupport COPY library, as shown.

For COBOL applications, in addition to providing the DD statements for SYSLIB, the appropriate compiler option, LIB, must also be in effect. Since LIB is the default, it does not have to be explicitly specified.

For PL/1 applications being compiled by a compiler other than the IBM Enterprise PL/1 Compiler, in addition to providing the DD statements for SYSLIB, the appropriate compiler option, MACRO or INCLUDE, must also be in effect. If %INCLUDE is the only kind of preprocessor statement in the program, then the INCLUDE option should be used instead of the MACRO option. This will make compilation faster. If other kinds of preprocessor statements are in the program in addition to the %INCLUDE statement(s), then the MACRO option must be used. For example:

```
// EXEC IBMZC,PARM.PLI=' MACRO'
                    or
// EXEC IBMZC,PARM.PLI=' INCLUDE'
```

In the IBM Enterprise PL/1 Compiler, the meaning of the INCLUDE compiler option has changed. As a result, if %INCLUDE is the only kind of preprocessor statement in the program, then no compiler option reflecting that fact should be coded. If other kinds of preprocessor statements are in the program in addition to the %INCLUDE statement(s), then as is the case with other PL/1 compilers, the MACRO option must be used.

VIII.7 JCL for the Linkage Editor Step

In both batch and CICS applications, the Geosupport driver must be link-edited into the user program. For applications written in NATURAL, this is done automatically with no special user action required. For non-NATURAL applications, either batch or CICS, users must link-edit their programs as explained below.

When link-editing a non-NATURAL application, the user must provide in the JCL for the linkage editor step a DD statement for the Geosupport load library containing the driver, as well as an INCLUDE statement in the SYSIN file specifying the driver. The DD statement should be coded as follows ("YOURDDN" may be replaced by any DDname):

```
//YOURDDN   DD   DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
```

For batch programs, the INCLUDE statement in the SYSIN file should be coded as follows:

```
//LKED.SYSIN DD  *
      •
      •
  INCLUDE YOURDDN(GBI)
      •
      •
/*
```

For CICS programs, the INCLUDE statement should be coded as follows:

```
//LKED.SYSIN DD  *
      •
      •
  INCLUDE YOURDDN(GOAIDRV)
      •
      •
/*
```

VIII.8 JCL for the Execute Step (Batch Applications)

For user programs being executed in the batch environment, the user must provide seven megabytes of memory for Geosupport, in addition to the memory required for the user program itself.

Geosupport Software Files

User programs that are executed in the batch environment also require Geosupport-related DD statements in the JCL for the execute step. A STEPLIB or JOBLIB DD statement must be provided to make the Geosupport foreground component batch load module library accessible to the application. As of Version 10.1 of Geosupport, users do this by coding either of the following DD statements:

```
//STEPLIB  DD    DSN=A030.GEO.SUPPORT.PDSE.LOADLIB,DISP=SHR
//         DD    DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
                  or
//JOBLIB   DD    DSN=A030.GEO.SUPPORT.PDSE.LOADLIB,DISP=SHR
//         DD    DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
```

(NATURAL users, please see the important note at the end of this section regarding the STEPLIB or JOBLIB DD statement.)

Geosupport Data Files

As of Version 10.1 of Geosupport, the user no longer has to provide DD statements for the Geosupport data files. In fact, if these DD statements are provided they are ignored by Geosupport. The data set names of the Geosupport data files are stored in a module called DSNAMES. If you need to use a non-standard Geosupport data file, please see your systems programmer.

Note for NATURAL Users:

When using a NATURAL batch execution procedure, care must be taken to insure that the Geosupport load library is concatenated to the two standard NATURAL libraries, rather than overriding them. Overriding is prevented by coding two DD statements with blank operand fields, followed by the DD statement for the Geosupport load library. The following JCL is an example (any stepname may be used):

```
//STEPNM      EXEC  <NATURAL-procname>,REGION=7M
//STEPLIB     DD
//            DD
//            DD    DSN=A030.GEO.SUPPORT PDSE LOADLIB,DISP=SHR
//            DD    DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
```

CHAPTER IX: GEOSUPPORT BATCH ADDRESS TRANSLATOR (GBAT)

IX.1 Introduction

This chapter describes the Geosupport Batch Address Translator (GBAT), the Geosupport System's batch utility program. Users can often satisfy their requirements for batch Geosupport processing without having to write custom programs by processing their files through GBAT.

GBAT can process any user file that meets certain easily satisfied requirements (described in Section IX.4). It can be used to execute any of the Geosupport functions that are available in the batch environment. It can be used to normalize house numbers and street names, to obtain street codes, to validate geographic locations such as addresses and intersections, and to obtain geographic information about such locations such as cross streets, community district, ZIP code, tax block and tax lot, spatial coordinates or any of the other information that Geosupport provides.

To run GBAT, the user must set up a batch job, and must create a small 'control file' that controls the GBAT execution. Section IX.2 discusses JCL considerations for setting up the batch job. Section IX.3 outlines the processing that GBAT performs and discusses programmed abnormal terminations. The remaining sections of this chapter discuss each of GBAT's six input and output files. Appendices 9, 10, and 12 also pertain to GBAT. Appendices 9 and 12 contain several GBAT tables that are indispensable references for setting up the control file (Tables A9-1, A9-2 and A9-3), interpreting the MSW GBAT output data (Table A9-4), interpreting the COW GBAT output data (Table A12-2), and setting up the JCL (Table A9-5 for MSW format, Table A12-3 for COW format). Appendix 10 contains annotated sample GBAT jobs, including JCL, control files and output listings.

IX.2 JCL Considerations

GBAT makes calls to the Geosupport System via Geosupport's standard API in the same manner as is done by any user-written batch Geosupport application program. To execute GBAT, the user sets up a batch job that invokes a catalogued procedure called GBAT2, which contains all the JCL necessary to support the Geosupport calls. This 'proc' consists of a single step, the stepname of which is also GBAT2. It contains an EXEC statement that executes the GBAT program, a STEPLIB DD statement specifying the program library containing the GBAT and Geosupport load modules, and DD statements for all of the Geosupport foreground files. The user must add DD statements to the GBAT execution step for GBAT's own input and output files. Those files, and their required DDnames, are as follows:

- Input data file, DDname INFILE or INVSAM. Mandatory. Contains the user's geographic information to be processed. Discussed in Section IX.4.

- Input control file, DDname CARDIN. Mandatory. Contains encoded information that describes the use's input data file and specifies GBAT processing options. Discussed in Section IX.5.

- Input alias file, DDname ALIASES. Optional. Allowable if the function being executed accepts street name input. Contains user-defined street name aliases (alternative names and spelling variants) that GBAT is to use to supplement the street names recognized by Geosupport. Discussed in Section IX.6.

- Output file of accepted data, DDname OUTFILE. Optional. Contains one record corresponding to each input data record that is accepted by Geosupport. The record consists of an exact copy of the input data record, followed by data obtained from Geosupport. Discussed in Section IX.7.

- Output file of rejected data, DDname ERRFILE. Mandatory. Contains one record corresponding to each input data record that is rejected by Geosupport. The record consists of the Geosupport Return Code and Reason Code, followed by an exact copy of the input data record. Discussed in Section IX.8.

- Output file of rejected data, DDname ERRFIL2. Mandatory when RECTYPE=1B. Contains one record corresponding to each input data record that is rejected (or partially rejected) by Geosupport Function 1B. The record consists of the Geosupport Return Code and Reason Code for the Function 1E Extended portion of Function 1B, followed by the Geosupport Return Code and Reason Code from the 1A Extended portion of Function 1B, followed by an exact copy of the input data record. Discussed in Section IX.8.

- Output file of rejected data, DDname ERRFIL3. Mandatory when RECTYPE=2 and RELATEDNODES=YES. Contains one record corresponding to each input data record that is rejected by Geosupport with GRC 03 Reason Code B (many-node case). The record consists of the Geosupport Return Code and Reason Code, followed by an exact copy of the input data record, followed by the information needed to choose a node. Discussed in Section IX.8.

- Output print file, DDname SYSPRINT. Mandatory. Contains GBAT messages and summary run statistics. Discussed in Section IX.9.

Two of the GBAT files, the input alias file and the output file of accepted data, are optional. GBAT opens these files only if there are certain entries in the control file specifying their use. If an optional file is not used, a DD statement for that file need not be included in the JCL. However, including such a DD statement causes no harm, unless the file it refers to does not exist, which would cause a JCL error.

In the course of execution, certain conditions (described in Section IX.3) may arise that cause GBAT to terminate abnormally. In all cases in which GBAT exits via a programmed abnormal termination, it issues a Condition Code[11] of 12 or greater, and it produces incomplete or no output files. If the user's job contains any steps following the GBAT execution step (the step that invokes the GBAT2 proc) that are dependent on the existence of the output files that GBAT is expected to create, it is

---

[11] Each step of a batch job running on an IBM mainframe can issue a Condition Code upon termination of the step. By convention, a Condition Code of '00' indicates normal completion of the step, '04' indicates generally normal completion but with a minor condition warranting a warning and higher values indicate severe problems or errors causing abnormal termination. Condition Codes appear in the SYSPRINT output job log. A JCL parameter, COND, can be coded in the EXEC statement of any job step to cause that step to be bypassed if the Condition Code of a specified previous step satisfies a specified condition.

Note: Condition Codes are sometimes called 'Return Codes', in IBM documentation and elsewhere. Condition Codes are not to be confused with Geosupport Return Codes (GRCs). The Condition Codes discussed in this chapter are issued by the GBAT program, appear in the output job log and can be tested by the COND JCL parameter. GRCs are issued by the Geosupport System and are returned to the calling application (including to GBAT) in Work Area 1; they do not appear in the output job log and are not accessible to COND. GBAT does include the GRC in each record it writes into the output file of rejected data (discussed in Section IX.8).

advisable to code the COND parameter in the EXEC statements of those steps so that those steps are bypassed if the Condition Code issued by the GBAT execution step is 12 or greater. For example, if GBATSTEP is the stepname of the GBAT execution step, then coding COND=(12,LE,GBATSTEP.GBAT2) in the EXEC statement of a subsequent step will cause that step to be bypassed if 12 is less than or equal to the Condition Code of GBATSTEP.

IX.3 GBAT Processing and Programmed Abnormal Terminations

Before GBAT begins processing the input data file, it first validates the control file and, if appropriate, the alias file. The entire control file is validated for syntax and content, as described in Section IX.5. Regardless of the outcome of that validation, if the function being executed accepts street name input, and the user has provided an alias file, and the user has specified either ALIASES=VAL or ALIASES=YES in the control file, then the contents of the entire alias file are also validated, as described in Section IX.6. For each error encountered during these validations, GBAT issues an appropriate error message but continues the validation processing. Informational and warning messages may also be issued during the control file and alias file validation processing.

After the control file and alias file validation processing is completed, GBAT determines whether to terminate abnormally or to commence processing the input data file. GBAT terminates abnormally at this point if there has been at least one control file error or, when an alias file has been provided, if there has been at least one alias file error and ALIASES=VAL has been specified. (In contrast, when ALIASES=YES is specified, the alias file is validated and error messages are issued as appropriate, but alias file errors do not cause GBAT to terminate abnormally.) Conditions that cause GBAT to issue informational or warning messages do not trigger abnormal termination.

The Condition Codes issued for programmed abnormal terminations triggered by control file and alias file errors are as follows:

- Condition Code 12: only the control file had errors (or both the control file and the alias file had errors, but ALIASES=YES was specified, so that any alias file errors do not affect the manner in which GBAT terminates).

- Condition Code 13: only the alias file had errors, and ALIASES=VAL was specified.

- Condition Code 14: both files had errors, and ALIASES=VAL was specified.

When no alias file is provided, Condition Code 12 can occur, but not Condition Codes 13 and 14.

If the control file and alias file validation processing is completed normally, GBAT processes the input data file and writes data to the output files. Specifically, GBAT reads each record from the input data file, and uses the geographic information obtained there from as the input data for a standard API call to the Geosupport System. If the information is accepted by Geosupport, GBAT writes a record into the output file of accepted data (unless the user has chosen not to create this optional file). If the information is rejected by Geosupport, GBAT writes a record into the output file of rejected data. Both types of output records consist of exact copies of the input data record together with data that GBAT has obtained from Geosupport. At the completion of execution, GBAT writes out a small report (usually less than one page long) of summary run statistics.

- Condition Code 15:
  GBAT sets the Condition Code to 15 when GBAT execution is terminated because of a record length error for the following files: ERRFILE (COW and MSW), ERRFIL2 (COW only), and ERRFIL3 (COW only).

If there is a record length error for other files, e.g. OUTFILE, GBAT may ABEND with U4038. In addition to the ABEND, other messages are generated, e.g. `IBM0122S ONCODE=22 The RECORD condition was raised because the length of the record variable was greater than the record length (ONFILE = OUTFILE).`

- Condition Code 20:
  In the course of processing the input data file, a condition called a MAXREJECTS violation, discussed in detail below, may arise. If so, GBAT ceases processing the input data, writes out the report of run statistics reflecting the processing that has occurred up to that point, and terminates abnormally with Condition Code 20. Otherwise, GBAT continues processing until all input data records have been processed, writes out the report of run statistics, and then terminates normally with Condition Code 00.

The MAXREJECTS Feature: When coding the control file, if the user specifies incorrect record positions for an input data field, it is likely that Geosupport will reject most or all of the input data records. An optional control entry called MAXREJECTS is designed to prevent GBAT, to the extent possible, from wastefully processing an input data file in its entirety when incorrect record positions have been specified in the control file for an input field. The MAXREJECTS feature does this by causing execution to terminate abnormally with Condition Code 20 if a certain number of records at the beginning of the input data file are all rejected by Geosupport for any reason other than an invalid borough code. (The latter exception is designed to prevent a MAXREJECTS termination from occurring inappropriately when a user file has records that intentionally contain blank or otherwise invalid borough codes because those records represent locations outside of New York City.)

The MAXREJECTS control entry is used to specify the number of consecutive rejected records at the beginning of the input data file (ignoring any records rejected for an invalid borough code) that are to trigger a MAXREJECTS termination. For example, the control entry MAXREJECTS=50 directs GBAT to terminate abnormally with Condition Code 20 if every one of the first 50 input data records that are not rejected because of an invalid borough code is rejected for any other reason.

At the user's discretion, warnings can be treated as if they were rejects for the purpose of triggering a MAXREJECTS abnormal termination; see the discussion of the REJECTWARNINGS control entry in Section IX.7.

The MAXREJECTS control entry is optional. If the user does not code a MAXREJECTS control entry, then the value in effect defaults to MAXREJECTS=200. If the user codes MAXREJECTS=NOMAX, the MAXREJECTS feature is turned off; that is, the entire input data file is processed, regardless of how many records at the beginning of the file are rejected.

Coding incorrect input field specifications in the control file tends to make a MAXREJECTS termination likely, but it does not guarantee it. That is because some input data records may contain values in the incorrectly specified field positions that, purely by coincidence, are valid for the intended data item. If there happened to be such a record near the beginning of the input data file, and that record happened to be accepted by Geosupport, that would preclude a MAXREJECTS termination. Conversely, a MAXREJECTS termination can occur even when there are no control file errors. That is because Geosupport may reject all of the input data records that are within the scope of the MAXREJECTS triggering set simply because those particular records happen to contain geographically invalid data.

Note that the completion of a GBAT execution with Condition Code 00 does not by itself signify that no input data records were rejected by Geosupport. It signifies only that no errors were found in the control file nor (if ALIASES=VAL was coded) in the alias file; that a MAXREJECTS violation did not occur; and therefore that all input data records were processed (but not necessarily accepted) by Geosupport.

IX.4 The Input Data File (DDNAME=INFILE or INVSAM)

This mandatory input file contains the user geographic data to be processed by GBAT. In order for GBAT to be able to process a data file, it must satisfy the following requirements:

- The file must be either a sequential file or a VSAM file accessed sequentially. The DDname INFILE is used for sequential files; INVSAM is used for VSAM files. The file can have either fixed or variable length records, but the maximum permissible record length is 32,000 bytes.

- The file must be geographically homogeneous; that is, all of its records must contain the same type of geographic location to be processed. Heterogeneous files, such as a file in which some records contain addresses and others contain intersections, cannot be processed by GBAT. This restriction follows from the fact that, during one execution, GBAT calls the same Geosupport function to process every input record.

- Each data item that serves as an input item must occupy the same field position(s) within every INFILE (INVSAM) record. These field positions are specified in the control file.

IX.5 The Input Control File (DDNAME=CARDIN

This mandatory input file contains encoded information that controls the GBAT execution, including the Geosupport function being requested, processing options, and the positions of input fields in the input data records. The control file must be provided as a fixed-length file with an LRECL of 80. Users often provide the control file as an in-stream file embedded in the JCL.

Control File Syntactic Rules The information in the control file is coded in the form of control entries, which must conform to the following syntactic rules:

- Control entries may be coded in any order.

- Each record in the control file may contain one or more control entries. If more than one control entry is coded within the same record, those entries must be separated from each other by at least one blank, and they may be separated by any number of blanks.

- A control entry must not span two records.

- No blanks are permitted within a control entry.

- A control entry consists of a keyword, followed by an equals sign, followed by either a single variable value or a pair of variable values separated by a comma, depending on the keyword, as follows:

- Keywords other than those specifying the location of a field within the input data records require one variable, and are of the form KEYWORD=V, where V is a variable value specified by the user. For example, the control entry RECTYPE=1E specifies that Function 1E is to be executed during this GBAT run; 'RECTYPE' is the keyword in this control entry, and '1E' is the variable value.

- Most keywords that specify the locations of input data fields require two variables. Such a control entry is of the form KEYWORD=S,L where S and L specify the starting position and length of the input field, respectively. The two variable values must be separated by a comma. For example, the control entry ONSTREET=58,32 specifies that the input street name field starts in position 58 of the input data record and is 32 bytes long.

- For keywords that specify the locations of input fields for data items of invariant length, coding the length variable is usually optional. For example, a BIN is always a seven-byte item; therefore, if an input BIN field starts in, say, position 29, the control entry specifying that field may be coded as either BIN=29 or BIN=29,7. However, a BBL is always a ten-byte item, but must be explicitly coded as such. See Table A9-2 for default information.

Many of the control entries are optional. GBAT assigns predetermined default values to the variables of all relevant optional control entries that the user has not coded. The default values are suitable for most applications. GBAT issues messages in SYSPRINT informing the user of all such default assignments.

<u>Control File Validation Processing</u> GBAT validates the control file for syntax and, to a certain extent, for content, as described below. GBAT issues an error message in SYSPRINT for each control file error encountered. After completing the validation of the control file, if there have been any errors, GBAT terminates abnormally without processing the input data file and exits with a Condition Code of either 12 or 14 as described in Section IX.3. Certain conditions encountered during control file validation cause warning messages to be issued, but are otherwise ignored and do not cause GBAT to terminate abnormally.

The control file validations include verifying that all of the control entries that are mandatory for the specified Geosupport function have indeed been coded; that the variable values that have been coded in each control entry are valid values for the given keyword; and that the starting position and length that have been specified for each input data field are consistent with the input data file's record length (that is, they do not in combination specify positions beyond the end of the input data record). To do so, GBAT opens the input data file and obtains its LRECL from its Data Set Control Block (DSCB). In the case of a variable length file, the LRECL in the DSCB is the maximum allowable LRECL of the file, as specified by the user when the file was catalogued. Therefore, for a variable length input data file, GBAT can validate only that the starting positions and lengths of input fields coded in the control file are consistent with the longest possible input data file record. For a variable length file, it is the user's responsibility to insure that all starting positions and lengths specified in the control file are valid for the shortest actual input data file record. If they are not, unpredictable results may ensue.

If the control file contains more than one control entry for the same keyword, the last such control entry is effective and the others are ignored. However, no warning messages are issued indicating the presence of such duplicate keyword entries.

Appendix 9 contains three reference tables that document the full set of control entries. These tables are indispensable references for setting up control files. Tables A9-1 and A9-2 are organized by keyword, and Table A9-3 is organized by Geosupport function. Table A9-1 lists all the control entries along with narrative descriptions of their formats, purposes and usages, and for most of the control entries, citations to sections of the UPG where pertinent topics are discussed in detail. Table A9-2 indicates, for every control entry, the permissible values and the default values of its variables, and the functions for which that control entry may be used. Table A9-3 indicates, for every function, which control entries and combinations of control entries are permissible, mandatory and optional. See also the sample GBAT jobs in Appendix 10 for examples of control files.

An expeditious approach for creating a new GBAT control file is first to ascertain from Table A9-3 which control entries are mandatory and optional for the function to be executed. Tables A9-1 and A9-2 can then be consulted to review those of the control entries with which the user is unfamiliar.

IX.6 The Input Alias File (DDNAME=ALIASES

For all Geosupport functions that accept street name input, GBAT users have the option to provide a set of user-defined street name aliases (alternative street names and street name spelling variants) in an input alias file. These aliases supplement the set of street names that Geosupport recognizes of its own accord. It is important to note that the user's aliases supplement Geosupport's street names; they do not supersede them. Also, the aliases in an alias file supplement the Geosupport names only temporarily, that is, only during a GBAT execution in which that particular alias file is provided; GBAT does not 'remember' any user-defined aliases that have been supplied in prior GBAT executions.

The alias feature is intended to enable users to customize GBAT execution for a particular data file. This feature is particularly useful for processing a data file that contains a few street names that are misspelled in a consistent manner in many records. By providing just a few entries in an alias file to identify those misspellings with corresponding 'correct' (Geosupport-recognized) spellings, the user may greatly improve the 'hit' rate without having to modify the data file itself. This could be beneficial, for example, if the data file being processed was obtained from an outside source and the user has no software at hand to modify the contents of the file to correct street name misspellings.

To use the alias feature, a control entry containing the keyword ALIASES must be coded as follows:

- ALIASES=VAL directs GBAT to validate the alias file (as described below), and then to process the input data file only if the alias file had no invalid records. If so, then during the processing of the input data file, the user-defined aliases supplement the set of street names that Geosupport recognizes. Records that result in warnings are not considered invalid in this context, and do not prevent the processing of the input data file.

- ALIASES=YES directs GBAT to validate the alias file, and then to process the input data file regardless of whether there were any invalid alias records. During the processing of the input data file, the user-defined aliases that are in the valid alias records supplement the set of street names that Geosupport recognizes, while those in invalid alias records are not used.

If no ALIASES control entry is coded, or if ALIASES=NO is specified, then GBAT performs no alias file processing, even if an ALIASES DD statement appears in the JCL.

If ALIASES=VAL or ALIASES=YES is specified, except for the circumstance discussed in the next paragraph, the user must add a DD statement to the JCL of the GBAT execution step containing the DDname ALIASES, referencing the file that the user wishes to use as the alias file during this GBAT execution.

If ALIASES=VAL or ALIASES=YES is specified, but the function being executed does not accept street name input, then a warning message is issued during control file validation, and the ALIASES control entry, as well as the ALIASES DD statement in the JCL (if any), are otherwise ignored; in particular, no alias file validating is performed in this circumstance.

The alias file must be a sequential file. Although it is expected that most alias files will have at most a few dozen records, GBAT is designed to accommodate alias files of up to 5,000 records. The alias file must have a record length of 80 and must conform to the following layout:

Record Layout of Alias File

Field	Size	Positions	Comments
Borough Code	1	1	Standard Geosupport borough codes
User's Alias Street Name	32	2-33	Need not be in normalized format
Street Name Recognized by Geosupport	32	34-65	Need not be in normalized format
Filler	15	66-80	Blanks

Alias File Validation Processing GBAT validates each record in the alias file, and writes an appropriate message to SYSPRINT for each error or warning condition encountered. A basis of the validation processing is that the alias street name is supposed to be a name that is not already recognized by Geosupport, whereas the street name in the field labeled ‘Street Name Recognized by Geosupport’ is supposed to be recognized. The alias file validation processing is as follows:

- ‘Normal’ case: if the alias name is not recognized, and the putative Geosupport-recognized name is in fact recognized, the alias file record is valid.

- Error: If the alias name and the putative Geosupport-recognized name are identical, the alias record is invalid. This condition tends to indicate that the user inadvertently entered the alias name incorrectly when creating this record.

- Warning: If the two names are different, and they are both recognized by Geosupport, and they have the same seven-digit street code (B7SC), then the alias record is superfluous but harmless. A warning message is issued, and the alias name is used.

- Error: If both names are recognized, but they have different B7SC values, the alias record is invalid.

- Error: If the putative Geosupport-recognized name is not in fact recognized, the alias record is invalid.

Note: GBAT does not check whether there is more than one record in the alias file containing the same alias name. If there is more than one, only the first valid record (if any) is used during the processing of the input data file; the other records containing that alias name are validated but are otherwise ignored. It is the user’s responsibility to insure that the alias file does not have multiple records containing the same alias name. GBAT issues no warning message indicating the existence of such records.

IX.7 The Output File of Accepted Records (DDNAME=OUTFILE)

This optional output file contains a record corresponding to each input data record accepted by Geosupport. The user can specify whether OUTFILE is to be created, and if so, how its records are to be constituted, using the GEOCODE control entry. (The GEOUNIT control entry also plays a role in determining how the OUTFILE records are constituted. GEOUNIT is discussed later in this section.) The user can specify whether warnings are to be treated as accepted records or as rejects using the REJECTWARNINGS control entry. These control entries are discussed in detail below.

Controlling the Creation and Contents of OUTFILE with GEOCODE (and GEOUNIT)
GBAT creates either two or three output files, depending on the (coded or default) value in effect for the GEOCODE control entry. If GEOCODE=VAL is explicitly coded (it is never the default), only ERRFILE and SYSPRINT are created. If the value in effect for GEOCODE is other than VAL, then OUTFILE, the file of accepted records, is also created. When GEOCODE=YES or ALL, then ERRFIL2 or ERRFIL3 may also be created.

The purpose of the option GEOCODE=VAL is to enable the user to validate the input data file while avoiding the execution-time overhead that would be incurred to create OUTFILE. The user can execute GBAT repeatedly with GEOCODE=VAL, each time correcting as many rejected input data records as possible, until the rejection rate is acceptable to the user. At that point, a final execution with GEOCODE=NO, YES or ALL can be run to obtain OUTFILE.

In all cases in which OUTFILE is created, its records are formed by appending data obtained from Geosupport to exact copies of the accepted input data records. The length and layout of the appended Geosupport data depend on the function requested and on the GEOCODE option that is in effect (and, for COW Functions 1, 1E, 1A and 1B, the GEOUNIT option that is in effect) as described below.

For GEOCODE=NO, the appended items consist generally of output items from Work Area 1 appropriate to the given function. For MSW format, Table A9-4 in Appendix 9 lists, by function, the precise layout of the data appended for GEOCODE=NO. For the COW format, see Table A12-2 in Appendix 12.

For GEOUNIT=YES (which is a COW only option), the additional appended items consist of one output item from COW Work Area 1 appropriate to the Unit input for Functions 1, 1E, 1A and 1B. Table A12-2A in Appendix 12 shows the format of the appended data.

In general terms, the items that are appended for GEOCODE=NO (and GEOUNIT=YES) are as follows:

- For functions involving street names, the appended information includes normalized street name(s) and Geosupport street code(s). All normalized street names are provided as 32-byte items, blank-filled on the right as necessary. All MSW street codes are provided as ten-digit street codes without a borough code (10SCs); all COW street codes are provided as eleven-digit street codes with a borough code (B10SCs).

- For functions involving house numbers, normalized house numbers are appended. For Functions 1, 1A, 1E, and 1B each normalized house number is returned as follows: the normalized House Number in Display format (HND) which will be either a 12-byte item in MSW format or a 16-byte item in COW format. Also, for MSW format only, the normalized House Number is returned in a special format for the Department of Housing Preservation and Development (HNHPD), an 8-byte item. For Functions D, DG and DN, the HNHPD is not returned.

- In addition, for COW Functions 1, 1E, 1A and 1B, if GEOUNIT=YES is in effect, the 14-byte Normalized Display Format Unit Output field is also appended. Table A12-2A in Appendix 12 shows the format of the appended data

- For Function BL, the 10-byte BBL in standard format is appended. (The standard BBL consists of the borough code, the 5-byte tax block and the 4-byte tax lot.)

- For Function BN, the 7-byte BIN is appended.

For GEOCODE=YES, each OUTFILE record is formed by appending to a copy of the input record the entire Work Area 2. (See Appendix 2 and Appendix 13 for Geosupport work area layouts, MSW and COW respectively.) GEOCODE=YES is invalid for functions that do not have a WA2. For functions that have the long WA2 option, the long WA2 is appended only if the user has explicitly specified LONGWA2=YES in the GBAT control file; if the user specifies LONGWA2=NO, or does not specify a LONGWA2 control entry, then the regular WA2 is appended. Similarly for COW functions that have the Extended Mode option (MODE=X) and/or the Auxiliary Segment option (AUXSEG=YES) the larger WA2 will be appended only if the option is specifically requested.

For GEOCODE=ALL, each OUTFILE record is formed by concatenating an exact copy of the input record, followed by the data appended for the given function when GEOCODE=NO is specified (as listed in Table A9-4 in Appendix 9 for MSW and Table A12-2 in Appendix 12 for COW), followed by the data appended when GEOCODE=YES is specified. Note, for COW Functions 1, 1E, 1A and 1B when GEOUNIT=YES is specified, the GEOUNIT=YES data appears between the GEOCODE=NO data and the GEOCODE=YES data. GEOCODE=ALL is invalid for functions that do not have a WA2.

For MSW, Table A9-5 in Appendix 9 lists the length of the appended data by function and GEOCODE value. For COW, see Table A12-3 in Appendix 12. When setting up the JCL, the user must specify the LRECL parameter in the OUTFILE DD statement to equal the sum of the LRECL of the input data file and the length of the appended data as indicated in Table A9-5 for MSW, and Table A12-3 for COW.

Controlling the Treatment of Warnings with REJECTWARNINGS

Every input data record that produces a Geosupport Return Code (GRC) of '00' is treated as an accepted record; that is, the following actions are taken:

- If OUTFILE is being created, GBAT writes a corresponding output record into OUTFILE.
- Regardless of whether or not OUTFILE is being created, the record contributes to the count of accepted records that appears in the SYSPRINT report of run statistics (see Section IX.9)
- If the record is within the scope of the MAXREJECTS triggering set (see Section IX.3), it precludes a MAXREJECTS abnormal termination.

Every input data record that produces a GRC of greater than '01' is treated as a reject; that is, the following actions are taken:

- GBAT writes a corresponding output record into ERRFILE (and ERRFIL2 and ERRFIL3 as needed), the output file of rejected records.
- The record contributes to the count of rejected records that appears in the SYSPRINT report of run statistics (see Section IX.9)
- Unless the record is rejected for an invalid borough code, it is counted as a rejected record for the purpose of determining whether a MAXREJECTS abnormal termination is to be triggered.

At the user's discretion, input data records that produce warnings (GRC = '01') either can all be treated as accepted records or they can all be treated as rejects. This choice is specified using the optional REJECTWARNINGS control entry, as follows:

- If REJECTWARNINGS=YES is specified, only the GRC '00' records are treated as accepted records; GRC '01' records are treated as rejects.

- If REJECTWARNINGS=NO is specified, then the GRC '01' records as well as the GRC '00' records are treated as accepted records.

- (Default) If no REJECTWARNINGS control entry is supplied, then the default value is NO; that is, the GRC '01' records as well as the GRC '00' records are treated as accepted records.

IX.8 The Output Files of Rejected Records (DDNAME=ERRFILx)

IX.8.1 ERRFILE

This mandatory output file contains a record for each 'rejected' input data record. The value of the REJECTWARNINGS option that is in effect determines which input data records are treated as rejects, as explained in Section IX.7.

Each ERRFILE record consists of four bytes, followed by an exact copy of the input data record. The four bytes consist of the two-byte GRC, followed by a one-byte filler containing a '-'(dash character) for display readability, followed by the one-byte Reason Code. The LRECL of ERRFILE must always be four greater than that of the input data file. It is the user's responsibility to specify the LRECL of ERRFILE correctly in the JCL.

IX.8.2 ERRFIL2 (for use by Function 1B only)

ERRFIL2 is mandatory with RECTYPE=1B. It contains a record for each 'rejected' input data record. The value of the REJECTWARNINGS option that is in effect determines which input data records are treated as rejects, as explained in Section IX.7.

The contents of each ERRFIL2 record is as follows: The first 4 bytes contain the 2-byte GRC, followed by a dash, followed by the Reason Code for the Block Face level (Function 1E Extended) information. This is followed by 6 bytes of filler. Byte 11 contains the 2-byte GRC, followed by a dash, followed by the Reason Code for the Property level (Function 1A Extended) information. This is followed by 6 bytes of filler. The input record begins in byte 21. The LRECL of ERRFIL2 must always be 20 greater than that of the input data file. It is the user's responsibility to specify the LRECL of ERRFIL2 correctly in the JCL.

The GBAT output ERRFILE will contain only those records that were rejected for both Block and Property level information.

The GBAT output ERRFIL2 will contain all records that were rejected for any reason. It will contain records that were rejected for:

- The Block level but not the Property level call
- The Property level but not for the Block level call
- Both the Block and Property level calls (These rejects will also be in the ERRFILEl)

If the input record has been rejected for both Block and Property level information, the output error record will be found both in the ERRFILE output error file, as well as the ERRFIL2 error file. The ERRFILE output record will have the GRC of the results of the Block level call (i.e. Function 1E), and corresponds to the GRC and Reason Code in Work Area 1. ERRFIL2 will have the same output error record and will contain both the GRC and Reason code and the newly defined GRC2 and its corresponding Reason Code. There will be no Work Area 2 returned by GBAT when the record is rejected for both Block an Property level information.

Note: If you are not using Function 1B, you do not have to add ERRFIL2 to your GBAT JCL. The file is not opened. No changes have to be made. However, if you are using GBAT for a Function 1B call, GBAT will abend if you do not add a DD card for ERRFIL2 to your JCL.

IX.8.3 ERRFIL3 (for use by Function 2 with RELATEDNODES=YES)

ERRFIL3 is mandatory with RECTYPE=2 and RELATEDNODES=YES. It contains a record for each input data record that is rejected with GRC 03 and Reason Code B (‘many-node case’).

When the requested streets intersect more than twice (GRC 03), if the user has set RELATEDNODES to YES s/he will get a special error file, ERRFIL3, with a logical record length of 3352 + length of the user’s input. The ERRFIL3 record will include for each of the many nodes, the Node ID and the streets (as B7SCs) at the nodes. Therefore, to process streets that intersect more than twice, the GBAT user need only add the RELATEDNODES=YES option to get the information needed. S/He does not have to run a Function 2W GBAT run.

The contents of each ERRFIL3 record is as follows: The first 4 bytes contain the 2-byte GRC (‘03’), followed by a dash, followed by the 1-byte Reason Code (‘B’). This is followed by 6 bytes of filler. A copy of the input record begins in byte 11. The input record is followed by the list of nodes and the B7SCs at the nodes. The LRECL of ERRFIL3 must always be 3352 greater than that of the input data file. It is the user’s responsibility to specify the LRECL of ERRFIL3 correctly in the JCL.

GBAT - ERRFIL3 Record Layout		
Length	**Positions**	**Contents**
4	1-4	’03-B’ (which is the GRC-Reason Code)
6	5-10	Blanks
Length of I/P record	11-nn	User’s input record
2	After input record	True Replication Counter (maximum of 20) (matches bytes 259-260 of Function 2W’s Work Area 2)
140	After input record + 2	List of up to 20 Node ID (7 bytes each) (matches bytes 261-400 of Function 2W’s Work Area 2)
3200	After input record + 142	List of B7SCs for Nodes. (matches bytes 401-3600 of Function 2W’s Work Area 2) (See Appendix 13 - layout of Function 2W’s Work Area 2)
Total length: 3352 + Length of user’s input record		

The count of the records in the new ERRFIL3 file will match the statistics for:
03 – STREETS INTERSECT MORE THAN TWICE – USE NODE AS INPUT.

Note that the rejected input records will also still appear in the regular reject file (ERRFILE) in the standard ERRFILE format.

Important JCL Note: ERRFIL3 must be defined in the user’s JCL for RELATEDNODES to take effect. If DDname ERRFIL3 is undefined in the user’s JCL, the file will default to DD DUMMY which will not give an appropriate length. The execution will fail with a programmed abnormal termination and a Condition Code of 15. See the following error message which will appear in the output.

Condition Code: 15
GBAT Error Message:
ERROR: THE RECORD LENGTH OF ERRFIL3 MUST EQUAL THE RECORD LENGTH OF THE INPUT FILE PLUS 3352. RECORD LENGTH OF THE INPUT FILE = xxx RECORD LENGTH OF ERRFIL3 = yyy .

Note: If you are not using RELATEDNODES, you do not have to add ERRFIL3 to your GBAT JCL. The file is not opened. No changes have to be made.

IX.9 The Output Print File (DDNAME=SYSPRINT)

This mandatory output file contains all GBAT messages, including routine informational messages, abnormal termination messages, control file and alias file validation error messages, and control file default assignment informational messages.

If GBAT terminates normally, or if it terminates abnormally with a MAXREJECTS violation, SYSPRINT also contains a report of run statistics, which is usually less than one page long. The user can specify a title line for the report, consisting of any character string of up to 73 bytes, by using the TITLE control entry.

The report of run statistics indicates the number of input records processed, the number accepted by Geosupport and the number rejected, all itemized by borough. The rejected record statistics are also itemized by GRC. Input data records that result in Geosupport warnings are counted in the report of run statistics either as accepted records or as rejects, depending on the value of the REJECTWARNINGS option that is in effect, as described in Section IX.7. In addition, the report contains a summary list of all the GRCs that have occurred during the given GBAT execution along with their corresponding Geosupport messages.

Statistics for RECTYPE=1B: GBAT run statistics for Function 1B are slightly different. The GBAT statistics for Function 1B are based on what is in the ERRFILE output error file. Since only records that are rejected for both the Blockface (Function 1E) and the Property Level (Function 1A) calls are in the ERRFILE, the output statistics are based on these records. The errors indicated in the statistics are based on the GRC from the Function 1E call. The report also displays totals for the 1B records that were accepted for the 1A portion but rejected for the 1E portion, and totals for the 1B records that were accepted for the 1E portion but rejected for the 1A portion.

APPENDICES AND GLOSSARY

APPENDIX 1: GEOSUPPORT FUNCTIONS - QUICK REFERENCE

Introduction

This appendix contains a summary description of each Geosupport function. The entry for each function includes the following elements:

- Description of function and UPG citations: A brief narrative description of the function's purposes, main features and principal output data, with references to relevant sections in the body of the UPG. (For a comprehensive list of output data items, see the corresponding work area layouts in Appendix 2.)

- Validation: A description of the validation significance of a successful two-work area call to the function. (The nature of the validation significance of a one-work area call is described in Section II.4.) Entries in this appendix for functions that cannot be called using two work areas do not have a validation section.

- Input fields: A list of mandatory and optional WA1 input fields used to call the function. All input field names are listed in this appendix as they appear in the WA1 layout in Appendix 2 for MSWs and Appendix 13 for COWs, except for street and house number input fields, which are listed as follows:

    - Input street fields are usually listed in this appendix generically, using the terms 'Street-1', 'Street-2' and 'Street-3'. Input street data may be in the form of either street names or street codes; input street code data may be in several forms (see Section IV.8). The terms 'Street-1', 'Street-2' and 'Street-3' refer to any of the following three sets of WA1 input fields, the choice of which is at the discretion of the application designer: Street Name-1, Street Name-2 and Street Name-3; or PB5SC-1, PB5SC-2 and PB5SC-3 (MSW only); or B10SC-1, B10SC-2 and B10SC-3. (Note: B5SC-x (where x = 1, 2 or 3) input and B7SC-x input is located left-justified and space-filled in the corresponding B10SC-x input fields.)

      The generic street input field names, 'Street-1', 'Street-2' and 'Street-3', are not used in the entries for Function 1N, which accepts input street names only, and Functions D, DG and DN, which accept input street codes only.

    - Input house number fields are listed generically using the term 'House Number'. Input house numbers may be in a displayable, character format, using the WA1 input field called House Number, or they may be in HNI format (MSW, see Section V.2), using the WA1 input field House Number in Internal Format (HNI), or they may be in HNS format (COW, see section V.2); using the WA1 input field House Number in Sort Format (HNS).

- Selected Geosupport Return Codes: A list of selected Geosupport Return Codes (GRCs) and Reason Codes that the function can issue, with brief explanations. Only certain notable GRCs specific to the function are included. GRCs that are self-explanatory or that apply to many functions, such as those relating to system errors or to street name normalization and recognition problems, are not included. For a complete list of GRCs, Reason Codes and Messages, see Appendix 4.

Appendix 2 (MSW) and Appendix 13 (COW) contain the work area layouts of all of the Geosupport functions. The abbreviated notation for street code items listed in Table IV-1 (at the end of Chapter IV) is used throughout Appendices 1, 2 and 13. Below is a summary list of the Geosupport functions.

Summary of Geosupport Functions

Function	User Input	Selected Geosupport Output Items
1	Address or Non-Addressable Place name (NAP)	Block face-level data - Standardized Street Name and Street Code, Address Range, List of Cross Streets, ZIP Code, Community District, Health Area, Health Center District, 1990 Census Tract, 2010 Census Tract and block, Fire Engine or Ladder Company, School District, Police Precinct, Police Patrol Borough, XY Coordinates (based on the State Plane Coordinate System), **COW:** Hurricane Evacuation Zone, **COW Extended**: USPS Preferred City Name, Latitude, Longitude
1B	Address or NAP	Same as for Function 1E + Property Level Information from Function 1A + Street Names for Cross Streets and Address Lists
1E	Address or NAP	Same as for Function 1 + Political Geography (Election District, Assembly District, Congressional District, City Council District, Municipal Court District and State Senatorial District)
1A	Address	Tax lot - and building-level data - Standardized Street Name and Street Code, Tax Block and Lot, Alternative Addresses for Lot, Building Identification Number (BIN), RPAD Building Class, Interior Lot Flag, Vacant Lot Flag, Irregularly-Shaped Lot Flag, Corner Code, Business Improvement District (BID), Latitude, Longitude.
1N	Street Name	Standardized Street Name and Street Code (not available in the Desktop Edition of GOAT)
2 / 2W	Pair of Intersecting Streets, Named Intersection, or Node Number	Intersection-Level data - Standardized Street Name and Street Codes, List of Additional Cross Streets, ZIP Code, Community District, Health Area, 1990 and 2000 Census Tract, Fire Districts, School District, Police Precinct, XY Coordinates (based on State Plane Coordinate System), **COW:** Sanitation District, Health Center District, some Political Geography **COW: 2W:** Latitude, Longitude, Node IDs and Cross Streets
3	On Street and a pair of Consecutive Cross Streets	Segment-level data - Standardized Street Names and Street Codes, Lists of Cross Streets at both ends, and information about both sides of the street, (including ZIP Codes, Community Districts, Health Areas, 1990, 2000 and 2010 Census Tracts, Fire Districts, School Districts, Police Precincts) **COW**: ‘From’ and ‘To’ Nodes, Election District, Assembly District **COW Extended:** Latitude, Longitude, Blockface ID

Summary of Geosupport Functions		
Function	**User Input**	**Selected Geosupport Output Items**
3C	On Street and a Pair of Consecutive Cross Streets & a Compass Direction (Side of Street)	Same as Function 3 but for one side of the street only (Blockface information)
3S	On Street and an Optional pair of any Intersecting Streets along the On Street	Stretch-level data - Street Stretch information: List of intersecting streets in order along ‘on’ street, the distance between them and node IDs
AP	Address	Address Point ID, Spatial Coordinates of CSCL Address Point, BBL, BIN
BF, BB	Character String	List of up to 10 street names in alphabetic order - supports street name browsing
BL	Borough, Tax Block and Lot	Tax lot- and building- level data - List of Addresses for Lot, List of Building Identification Numbers (BINs), RPAD Building Class, Interior Lot Flag, Vacant Log Flag, Flag, Corner Code, etc.
BN	Building Identification Number	Ta lot- and building-level data - List of Address Ranges for Building, Tax Block and Lot, RPAD Building Class, Interior Lot Flag, Vacant Lot Flag, Irregularly Shaped Lot Flag, Corner Code etc.
D, DG, DN	Street Code and/or House Number	Street Name and./or House Number in Displayable
HR	None – CICS GOAT	Geosupport Data Set Information – Creation date, release cycle, number of records
N*	Street Name	Normalized street name (w/o a borough, so no consideration of validity)

Function 1

Description: Function 1 processes an input address or input Non-Addressable Place name (NAP) (see Section III.6). When called using two work areas, Function 1 returns information about the blockface containing the input address or NAP. This information includes the cross streets at the two intersections delimiting the blockface, and a set of geographic district identifiers including ZIP code, census tract and community district. MSW Function 1 can be called with the long WA2 option. COW Function 1 may be called with the Extended Mode Switch.

See Chapter V for a detailed discussion of Function 1 and how it differs from Function 1A.

Validation: A successful outcome of a two-work area call to Function 1 signifies (assuming address rather than NAP input) only that the input address falls within a valid range of addresses of the same parity (odd or even house numbers) allocated to some blockface; it does not signify that there is an actual building having the input address. (To validate the latter condition, Function 1A or AP must be used. See Section V.4 and Section VI.10 for Function 1A and Function AP respectively.)

Input Fields:

Function 1 Input Fields		
Field	**Value**	**Comments**
Function Code	'1 ' ('1' followed by a blank)	Required.
Work Area Format Indicator	'C' = COW format Blank = MSW format	Optional; default (blank) requests MSW format. See Appendix 12.
Mode Switch	'X' = Extended Mode Work Area 2 Blank = normal mode	Optional; COW Only. See Section II.7.
Borough Code-1 (or ZIP Code)	'1'=Manhattan, '2'=Bronx, '3'=Brooklyn, '4'=Queens, '5'=Staten Island	Required. (ZIP Code may be used instead of Borough Code)
House Number		Required for address input except free-form addresses (see Section V.3). Typically not used for NAP input (see Section III.6).
Long WA2 Flag (MSW Only)	'L' = Long WA2, Blank = regular WA2	Optional; default (blank) is regular WA2. See Sec. II.5.
Street-1		Required.
SNL	A number between 4 and 32	Optional; default is 32. See Section III.2.
Street Name Normalization Format Flag	'C' = compact format, Blank = sort format	Optional; default (blank) requests sort format. See Section III.3.
Cross Street Names Flag	'E' = return names Blank = do not return names	Optional
ZIP Code		Optional; may be used instead of Borough Code, or to identify a DAPS. See Section III.6 and Section V.6.
Roadbed Request Switch	'R' = Roadbed info requested Blank = Generic info requested	Optional; default (blank) requests generic information.
Browse Flag (COW Only)	'P' = primary street name / code 'F' = principal street name / code 'R'= DCP preferred street name / code Blank = input street name / code	Optional; may be used to select output street name / code. Default (blank) requests use of input street name / code. See Section III.8

Selected Function 1 Geosupport Return Codes:

GRC Value/ Reason Code Value	Meaning
01/V	(Warning) The input was a vanity address, an addressable place name, or a NAP. This message returns the underlying address or street name when available
01/P	(Warning) The street segment containing the input address is an irregular curve (i.e., it is curved but not as an arc of a circle). No values are returned in the WA2 Spatial Coordinate fields.
07	The input street was specified as a B5SC (or PB5SC) representing a NAP that is the name of a complex. Five-digit street code input is not permitted for the name of a complex. Either the NAP (the name of the complex) must be specified in the input street name field, or its B7SC or B10SC must be specified in the appropriate input street code field.
28	Partial Street name is not valid for free-form address
29	Intersection name cannot be used as 'on' Street.
41	The input street name is valid but this entire street has no addresses
42	The input address does not fall within a valid range of addresses for a blockface of the input street.
50	The input street name is not valid for the portion of the street where the input house number is located. See Section IV.5.
75	The input address is a 'duplicate address' - i.e., the same address exists at two different locations on the given input street. (Note: this is not a user data error, but an address that is duplicated on this street in reality.) See Section V.6.
89	Long workarea2 option is invalid for COW format for function 1. It is only valid for MSW for this function

Function 1A

Description: Function 1A processes an input address or input NAP. When successfully called using two work areas, it returns information in WA2 about the tax lot and the building (if any) identified by the input address or NAP. See Chapter VI and particularly Sections VI.6.

The information that is returned in WA2 consists of information about the tax lot and the building (if any) identified by the input address or NAP. This information includes the Borough-Block-and-Lot (BBL), which is the Department of Finance's (DOF) identifier for the tax lot; the DOF building class code; the number of buildings on the lot; the number of street frontages of the lot; a flag indicating whether the lot is a condominium; the Building Identification Number (BIN) (see Section VI.3) of the building identified by the input address, if any; and the Business Improvement District (BID) if the property is in such a district. Function 1A can be called with the long WA2 option. The regular WA2 includes a List of

Geographic Identifiers (LGI) for the tax lot, including address ranges, BINs and street frontages. The long WA2 includes, instead of the LGI, a List of BINs for all the buildings in the tax lot.

Function 1A normally returns information that is updated on a quarterly basis[12]. COW users may request more up-to-date information on new buildings and demolitions using the TPAD Request Switch. The TPAD information will include the status of new building construction and/or demolition. See Section VI.11.

The regular, long, and extended WA2s for Function 1A are identical to those for Function BL. Function 1A enables the user to retrieve this information by address, while Function BL enables retrieval by BBL.

The regular and extended WA2s for Function 1A is identical to that for Function BN. Function 1A enables the user to retrieve this information by address, while Function BN enables retrieval by BIN.

Validation: An unconditionally successful outcome of a two-work-area call to Function 1A signifies that a building having the given input address exists. A warning is issued if the input is a pseudo-address (see Section VI.5).

Input Fields:

Function 1A Input Fields		
Field	**Value**	**Comments**
Function Code	'1A'	Required.
Work Area Format Indicator	'C' = COW format Blank = MSW format	Optional; default (blank) requests MSW format. See Appendix 12.
Mode Switch	'X' = Extended Mode Work Area 2 Blank = normal mode	Optional; COW Only. See Section II.7.
Borough Code-1 (or ZIP Code)	'1'=Manhattan, '2'=Bronx, '3'=Brooklyn, '4'=Queens, '5'=Staten Island	Required. (ZIP Code may be used instead of Borough Code)
House Number		Required for address input except free-form addresses (see Section V.3). Typically not used for NAP input (see Section III.6).
Street-1		Required.
SNL	A number between 4 and 32	Optional; default is 32. See Section III.2.

[12] Note that as of Release 17A, those users who are on the DoITT mainframe typically will have PAD data that is updated weekly via the UPAD (Update PAD) file. Other users, e.g. Desktop users, will have PAD data that is updated quarterly. If desired, those users can make arrangements for more frequent updates.

Function 1A Input Fields		
Field	**Value**	**Comments**
Street Name Normalization Format Flag	'C' = compact format, Blank = sort format	Optional; default (blank) requests sort format. See Section III.3.
ZIP Code		Optional; may be used instead of Borough Code, or to identify a DAPS. See Section III.6 and Section V.6.
Browse Flag (COW Only)	'P' = primary street name / code 'F' = principal street name / code 'R' = DCP preferred street name Blank = input street name / code	Optional; may be used to select output street name / code. Default (blank) requests use of input street name / code. Section III.8
Long WA2 Flag	'L' = Long WA2, Blank = regular WA2	Optional; default (blank) is regular WA2. See Sections II.5 and VI.6.
TPAD Request Switch (COW Only)	'Y' = TPAD information requested Blank or 'N' = TPAD not requested	Optional; may be used to request Transitional PAD information. See Section VI.11
1A/BL Version Switch	'S' = standard version(MSW or COW) Blank = standard version; (COW Only)	'S' is required for MSW; Optional for COW. See Section VI.8.
1A/BL Version Switch	'S' = standard version, Blank = standard version; valid only for COW	Required for MSW; Optional for COW. See Section VI.8.

Selected Function 1A Geosupport Return Codes:

GRC Value/ Reason Code Value	Meaning
01/8	(Warning) Input address is a pseudo-address.
01/A	(Warning) Function 1A has been called with the regular WA2, but the tax lot identified by the input address or NAP has the List of Geographic Identifiers (LGI) overflow condition, and therefore the LGI in WA2 is incomplete. If a complete list of BINs for the tax lot is required, Function 1A may be called with the long WA2 option for the same input data to retrieve the BINs of all buildings on the tax lot.
01/*	(Warning) [related to TPAD][See Section VI.11].Various messages are returned with this reason code. The Conflict flag is set to correspond to the specific warning message
04	An invalid value has been specified for the 1A/BL Version Switch. Must be 'S' for standard. See Section VI.8.
07	The input street was specified as a B5SC (or PB5SC) representing a NAP that is the name of a complex. Five-digit street code input is not permitted for the name of a complex. Either the NAP itself (the name of the complex) must be specified in the input street name field, or its B7SC or B10SC must be specified in the appropriate input street code field.
41	The input street name is valid but this entire street has no addresses.
42	The input address is not valid (as defined in Section V.4).
50	The input street name is not valid for the portion of the street where the input house number is located. See Section IV.5.
69/B	Invalid TPAD Request Switch. Must be Y, N or blank
73	Legacy version of Function 1A is discontinued. See Technical Bulletin 05-1.
75	The input address is a 'duplicate address' - i.e., the same address exists at two different locations on the given input street. (Note: this is not a user input data error, but an address duplication that exists in reality.) See Section V.6.
90	Invalid value specified for Long WA2 Flag – must be 'L' or blank

Function 1E

Description: Function 1E processes an input address or input NAP. When called using two work areas, it returns the same WA2 information that is returned by Function 1, and additionally, it returns a set of political districts, including Election, State Assembly and Senate, City Council and Congressional Districts. The layouts of WA2 for Functions 1 and 1E are identical, except for the political district fields, which are fillers in Function 1's WA2.

Input Fields: Same as Function 1, except for definition of the Browse Flag.
When the Browse Flag is set to 'R', the Board of Elections (BOE) preferred street code is returned instead of the DCP preferred street code. See below.

Browse Flag (COW Only)	'P' = primary street name / code 'F' = principal street name / code 'R' = BOE preferred street name / code Blank = input street name / code	Optional; may be used to select output street name / code. Default (blank) requests use of input street name / code. See Section III.8

Validation: Same as Function 1.

Selected Function 1E Geosupport Return Codes: Function 1E's possible GRC values include all of the ones for Function 1, and also the following:

GRC Value/ Reason Code Value	Meaning
01/E	(Warning) The output address range returned in WA2 is split by an election district boundary. Therefore, the election district value returned in WA2 applies to only a portion of that address range.
56	The input address is associated with more than one Election District (ED). Function 1E requires that this address be specified with a house number suffix to identify a portion of the building specific to one ED. See Section V.4.

Function 1B

Description: Function 1B processes an input address or input Non-Addressable Place name (NAP) (see Section III.6). When called using two work areas, Function 1B returns information about the blockface as well as information about the tax lot and the building (if any) identified by the input address or NAP. The information that is returned in WA2 includes the cross streets at the two intersections delimiting the blockface, and a set of geographic district identifiers including ZIP code, census tract and community district. Information about the tax lot and the building (if any) identified by the input address or NAP is also returned. This information includes the Borough-Block-and-Lot (BBL), which is the Department of Finance's (DOF) identifier for the tax lot; the DOF building class code; the number of buildings on the lot; the number of street frontages of the lot; a flag indicating whether the lot is a condominium; and the Building Identification Number (BIN) (see Section VI.3) of the building identified by the input address

Function 1B Input Fields:

Function 1B Input Fields		
Field	Value	Comments
Function Code	'1B'	Required.
Work Area Format Indicator	'C' = COW format	
Borough Code or ZIP Code	'1'=Manhattan'2'=Bronx, '3'=Brooklyn, '4'=Queens, '5'=Staten Island, or nnnnn	Required.
Street Name		Required.
SNL	A number between 4 and 32	Optional; default is 32. See Section III.2.
Street Name Normalization Format Flag	'C' = compact format, Blank = sort format	Optional; default (blank) requests sort format. See Section III.3.
ZIP Code		Optional; may be used instead of Borough Code, or to identify a DAPS. See Section III.6 and Section V.6.
Browse Flag	'P' = primary street name / code 'F' = principal street name / code 'R'= DCP preferred street name / cod e Blank = input street name / code	Optional; may be used to select Output street name / code. Default (blank) requests use of Input street name / code. See section III.8.

Validation: Same as Function 1 and Function 1A..

Selected Geosupport Return Codes: Function 1B's possible GRC values include all of the ones for

Function 1, Function 1E, Function 1A, and also the following:

GRC Value / Reason Code Value	Meaning
??/1 (MSW Only)	INVALID FUNCTION CODE – AVAILABLE IN COW FORMAT ONLY

Function 1N

Description: Function 1N is used to normalize a street name and obtain its street code. Functions 1, 1A and 1E can do this also, but those functions require an input house number. The purpose of Function 1N is to provide a way to process a street name alone, without a house number. Note that since the input to Function 1N is not a specific location along a street, Function 1N does not perform local street name validation.

Function 1N does not have a Work Area 2, and can only be called using one work area. See Section III.1.

Function 1N Input Fields:

Function 1N Input Fields:		
Field	Value	Comments
Function Code	‘1N’	Required
Work Area Format Indicator	C’ = COW format Blank = MSW format	Optional; default (blank) requests MSW format. See Appendix 12
Borough Code-1	1’=Manhattan, ‘2’=Bronx, ‘3’=Brooklyn, ‘4’=Queens, ‘5’=Staten Island	Required
Street Name-1		Required. (Note: Street code input is not permitted for Function 1N.)
SNL	A number between 4 and 32	Optional; default is 32. See Section III.2.

Function 1N Input Fields:		
Field	Value	Comments
Street Name Normalization Format Flag	'C' = compact format, Blank = sort format	Optional; default (blank) requests sort format. See Section III.3.
Browse Flag (COW Only)	'P' = primary street name / code 'F' = principal street name / code Blank = input street name / code	Optional; default (blank Selects output street name / code. See Section III.8.

Selected Geosupport Return Codes: All are self-explanatory.

Function 2 (and 2W)

Description: Function 2 processes an input intersection specified either in terms of an intersection name, or in terms of two streets (and, when necessary, a compass direction), or in terms of a node ID. If two input streets intersect exactly once, the user should not specify an input compass direction. If the two input streets intersect at two distinct locations, a compass direction must be specified; it serves to identify which of the two intersections the user wishes Geosupport to process. Geosupport has the ability to process a pair of input streets that intersect more than twice, only if the user can identify the intersection by its node ID. If the user does not know the node ID, the user may issue Function 2W to find the node ID. Function 2W is basically identical to Function 2 except when streets intersect more than twice, Function 2W will reject the call and return a Work Area 2 that includes the node IDs and street codes/street names for all the intersections at the various nodes. Function 2 and Function 2W are discussed in detail in Section VII.2.

When successfully called using two work areas, Function 2 returns information about the input intersection in WA2. If there are more than two streets at an intersection, Function 2 accepts any pair of those streets as user input for that intersection. An intersection that lies on a borough boundary can be specified in terms of one street from each borough, by using the WA1 input field Borough Code 2, as described in Section VII.7.

The information that Function 2 returns in WA2 includes a list of street codes for all streets at the intersection (including the input streets), spatial coordinates for the intersection, and a set of geographic area identifiers including community district, census tract, police precinct and others. If the intersection lies on the boundary of two or more areas of a given type, the information for one of those areas is returned..

In COW format only, Function 2 also returns political geography and CD Eligibility.

Validation: A successful outcome of a two-work-area Function 2 call signifies that the two input streets intersect exactly once (if no input compass direction was specified) or exactly twice (if a compass direction was specified). In the double-intersection case, a successful outcome also signifies that the input compass direction is a valid designation of one of the two intersections.

Input Fields:

Function 2 (and 2W) Input Fields		
Field	**Value**	**Comments**
Function Code	'2 ' ('2' followed by a blank) '2W'	Required.
Work Area Format Indicator	C' = COW format Blank = MSW format	Optional; default (blank) requests MSW format. See Appendix 12.
Borough Code-1	'1'=Manhattan, '2'=Bronx, '3'=Brooklyn, '4'=Queens, '5'=Staten Island	Required (unless Node Number is used as input). Specifies borough of Street Name 1.
Street-1		Required (*) (unless Node Number is used as input). Specifies either of the two streets defining the intersection.
Borough Code-2	See Borough Code-1)	Optional unless Street Name 2 is in a different borough from Street Name 1; default is value in Borough Code-1.
Street-2		Required (*) (unless Node Number is used as input). Specifies the other street defining the intersection.
Compass Direction	'N', 'S', 'E' or 'W'	Required only when the two input streets intersect twice, in which case it designates which intersection to process
Node Number	Seven-digit number	Required when streets intersect more than twice. Optional at other nodes. May be used instead of borough and street names.
SNL	A number between 4 and 32	Optional; default is 32. See Section III.2.

Function 2 (and 2W) Input Fields		
Field	**Value**	**Comments**
Street Name Normalization Format Flag	'C' = compact format, Blank = sort format	Optional; default (blank) requests sort format. See Section III.3.
Cross Street Names Flag	E' = return names Blank = do not return names	Optional.
Browse Flag (COW Only)	P' = primary street names / codes F' = principal street names / codes R' = DCP preferred street names/Codes Blank = input street names / codes	Optional; may be used to select output street names / codes. Default (blank) requests use of input street names / codes. See Section III.8

(*) Note: If either Street 1 or Street 2 contains an intersection name, then the other input street field may either be left blank or it may contain any street that exists at the given intersection.

Selected Function 2 (and 2W) Geosupport Return Codes:

Selected Function 2 (and 2W) Geosupport Return Codes	
GRC Value/ Reason Code Value	Meaning
01/H	(Warning) The two input streets intersect only once, but a non-blank input compass direction value has been supplied. The compass direction is superfluous and is ignored. A full complement of output data is returned in the work areas.
01/N	(Warning) Both a node ID and street names or street codes were specified as input. The node ID will be used; the street names/codes will be ignored.
01/T	(Warning) The input street name is ignored if an intersection name is specified along with a street name that is part of the intersection.
02	The two input streets intersect twice, but no input compass direction has been supplied. The distance between the two intersections is included in the message. A valid input compass direction value is required for these input streets.
03/blank	(Reject) **MSW -** The two input streets intersect more than twice. MSW Function 2 calls cannot process such intersections. The Reason Code value is blank. The message suggests that the user use a COW function call.
03/A	(Reject) **COW -** The two input streets intersect more than twice. Function 2 calls cannot process such intersections. The message suggests that the user issue a Function 2W call to find related nodes.

Selected Function 2 (and 2W) Geosupport Return Codes	
GRC Value/ Reason Code Value	Meaning
03/B	(Reject) **COW – Function 2W only** - The two input streets intersect more than twice. Function 2W returns node IDs and street codes. The message suggests that the user use a node ID as input.
12	The input information was in the form of an intersection name or a street code of an intersection name. Geosupport recognizes this name or code as valid, but does not yet have this name or code associated with a specific intersection.
30	An input intersection name was specified along with an input street name, but the input street is not part of the intersection
32	(Reject) An invalid node ID was specified as input. It was non-numeric or had embedded blanks..
33	(Reject) A node ID was specified as input, but no intersection was found with that node ID.
39	The input compass direction field contains an invalid value, that is, a non-blank value other than 'N', 'S', 'E' or 'W'.
40	The two input streets intersect twice, but the input compass direction value supplied is an invalid descriptor for either of those intersections. If the value supplied is 'E' or 'W', it is invalid because the two intersections are situated approximately due north-south of each other; if the value supplied is 'N' or 'S', it is invalid because the two intersections are situated approximately due east-west of each other.
50	An input street name is not valid for the portion of the street where the input intersection is located. See Section IV.5.
62	The two input streets do not intersect.

Function 3

Description: Function 3 processes street segments and closely related three-street configurations. A street segment is a part of a street (called the 'on' street) between two consecutive cross streets. For example, Madison Avenue (in Manhattan) between East 51st Street and East 52nd Street is a street segment. Madison Avenue between East 51st Street and East 53rd Street is not a street segment, because there is an intervening street, East 52nd Street, between the given cross streets. An exception to the requirement that the input cross streets be consecutive along the 'on' street is the case of a T-intersection: Function 3 accepts as input a street configuration that defines the long blockface of a T-intersection. (For precise definitions of the terms 'three-street configuration', 'street segment', and 'T-intersection', see Section VII.3.) A street segment intersecting with or lying on a borough boundary can be specified in terms of streets from both boroughs, by using the WA1 input fields Borough Code 2 and Borough Code 3, as described in Section VII.7.

The information returned by a successful two-work-area Function 3 call includes two lists of street codes for all cross streets at the two intersections defined by the input streets; and geographic area codes for the left and right sides of the street, such as the left and right community districts, ZIP codes, census tracts, etc. 'Left' and 'right' are defined relative to the 'on' street's 'logical direction', which in general is the direction of increasing address. The WA2 information also includes two items called the Segment Azimuth and the Segment Orientation that indicate how the street segment is oriented with respect to the points of the compass. Applications can use either of these items to determine compass direction descriptors for the left and right sides of the street. Another WA2 item, the Cross Street Reversal Flag, can be used to determine left and right relative to the order in which the input cross streets were specified.

In COW format, Function 3 also returns the FROM and TO node IDs.

In COW Extended format, Function 3 also returns Latitude and Longitude.

Function 3 in MSW format has the Long Work Area 2 Option (see Section II.5).

Function 3 in COW format has the Auxiliary Segment Option (see Section II.6).

For a detailed discussion of Function 3, see Section VII.4.

Validation: A successful outcome of a two-work-area call to Function 3 signifies that the input 'on' street and two cross streets define a valid street segment or long blockface of a T-intersection.

Input Fields:

Function 3 Input Fields		
Field	**Value**	**Comments**
Function Code	'3 ' ('3' followed by a blank)	Required.
Work Area Format Indicator	'C' = COW format Blank = MSW format	Optional; default (blank) requests MSW format. See Appendix 12.

Function 3 Input Fields		
Field	**Value**	**Comments**
Mode Switch	‘X’ = Extended Mode Work Area 2 Blank = normal mode	Optional; COW Only. See Section II.7.
Borough Code-1	‘1’=Manhattan, ‘2’=Bronx, ‘3’=Brooklyn, ‘4’=Queens, ‘5’=Staten Island	Required. Specifies borough of Street Name-1.
Street-1		Required. Specifies ‘on’ street
Borough Code-2	(See Borough Code-1)	Optional unless borough of Street Name-2 differs from that of Street Name-1. Specifies borough of Street Name-2. Default is Borough Code-1 value.
Street-2		Required. Specifies either cross street.
Borough Code-3	(See Borough Code-1)	Optional unless borough of Street Name-3 differs from that of Street Name-1. Specifies borough of Street Name-3. Default is Borough Code-1 value.
Street-3		Required. Specifies other cross street.
SNL	A number between 4 and 32	Optional; default is 32. See Section III.2.
Street Name Normalization Format Flag	‘C’ = compact format, Blank = sort format	Optional; default (blank) requests sort format. See Section III.3.
Cross Street Names Flag	‘E’ = return names Blank = do not return names	Optional
Long WA2 Flag (MSW only)	‘L’ = Long WA2, Blank = regular WA2	Optional; default (blank) is regular WA2. See Section II.5.
Auxiliary Segment Switch (COW only)	‘Y’ = return all segment IDs ‘N’ or Blank = regular WA2	Optional; default (blank) is regular WA2. See Section II.6
Browse Flag (COW Only)	‘P’ = primary street names / codes ‘F’ = principal street names / codes ‘R’ = DCP preferred street names / codes Blank = input street names / codes	Optional; may be used to select output street names / codes. Default (blank) requests use of input street names / codes. See Section III.8

Selected Function 3 Geosupport Return Codes:

GRC Value/ Reason Code Value	Meaning
01/L or R	(Warning) The input 'on' street lies on a borough boundary. The side of street indicated by the Reason Code value is outside of the input borough; no information is returned in WA2 for that side of the street if it is in Nassau or Westchester.
01/Q	These streets involve a dogleg, Shortest Stretch provided. (See Section VII.2)
45	Although each of the three input street names was individually recognized, collectively they do not define a valid street segment nor the long blockface of a T-intersection.
46	The geographic location specified by the combination of three input streets is ambiguous, i.e., it defines more than one valid segment or T-intersection blockface. Geosupport cannot process this input.
50	An input street name is not valid for the portion of the street where the input street segment is located. See Section IV.5.
55	At least one of the input streets is a Non-Addressable Place Name (NAP). NAPs are not allowed as input streets for this function
69/A	Invalid value specified for Auxiliary Segment Switch. Auxiliary Segment Switch must be 'Y' or 'N' or blank.
89	Long WA2 option is not valid for this function in COW format.
90	Invalid value specified for Long WA2 Flag - must be 'L' or blank.

Function 3C

Description: Function 3C processes blockfaces specified in terms of an input 'on' street, two cross streets and a compass direction designating the side of the street, such as 'the west side of Madison Avenue between East 53rd Street and East 54th Street'. A blockface intersecting with or lying on a borough boundary can be specified in terms of streets from both boroughs, by using the WA1 input fields Borough Code 2 and Borough Code 3, as described in Section VII.7.

When called using two work areas, function 3C returns blockface related information in WA2. This information is a subset of the set of items returned in WA2 by Function 3, consisting of those items that are related to the specified side of the street.

Function 3C in COW format has the Auxiliary Segment Option (see Section II.6).

Function 3C is discussed in detail in Section VII.5.

Validation: A successful outcome of a two-work-area call to Function 3C signifies that the input 'on' street and two cross streets define a valid street segment or long blockface of a T-intersection, and that the input compass direction is a valid designation of a side of this segment. The validity of an input compass direction is determined by the spatial orientation of the segment.

Input Fields:

Function 3C Input Fields		
Field	**Value**	**Comments**
Function Code	'3C'	Required.
Work Area Format Indicator	'C' = COW format Blank = MSW format	Optional; default (blank) requests MSW format. See Appendix 12.
Mode Switch	'X' = Extended Mode Work Area 2 Blank = normal mode	Optional; COW Only. See Section II.7.
Borough Code-1	'1'=Manhattan, '2'=Bronx, '3'=Brooklyn, '4'=Queens, '5'=Staten Island	Required. Specifies borough of Street Name-1.
Street-1		Required. Specifies 'on' street
Borough Code-2	(See Borough Code-1)	Optional unless borough of Street Name-2 differs from that of Street Name-1. Specifies borough of Street Name-2. Default is Borough Code-1 value.
Street-2		Required. Specifies either cross street.
Borough Code-3	(See Borough Code-1)	Optional unless borough of Street Name-3 differs from that of Street Name-1. Specifies borough of Street Name-3. Default is Borough Code-1 value.
Street-3		Required. Specifies other cross street.
Compass Direction	'N', 'S', 'E' or 'W'	Required. Specifies side of street of blockface (relative to street's 'logical direction' - see Section VII.3).
SNL	A number between 4 and 32	Optional; default is 32. See Section III.2.

Function 3C Input Fields		
Field	**Value**	**Comments**
Street Name Normalization Format Flag	'C' = compact format, Blank = sort format	Optional; default (blank) requests sort format. See Section III.3.
Cross Street Names Flag	'E' = return names Blank = do not return names	Optional
Long WA2 Flag (MSW only)	'L' = Long WA2, Blank = regular WA2	Optional; default (blank) is regular WA2. See Section II.5.
Auxiliary Segment Switch (COW only)	'Y' = return all segment IDs 'N' or Blank = regular WA2	Optional; default (blank) is regular WA2. See Section II.6
Browse Flag (COW Only)	'P' = primary street names / codes 'F' = principal street names / codes 'R'= DCP preferred street names / Blank= input street names / codes	Optional; may be used to select output street names / codes. Default (blank) requests use of input street names / codes. See Section III.8

Selected Geosupport Return Codes:

GRC Value	Meaning
09	The blockface on the side of street specified by the compass direction does not exist in the borough specified for the 'on' street.
39	The input compass direction field contains a non-blank value other than 'N', 'S', 'E' or 'W'
40	The input compass direction value is invalid as a descriptor of a side of the input street segment, because it is incompatible with the segment's spatial orientation. This condition arises if the segment is oriented approximately east-west and the input compass direction value is specified as 'E' or 'W' (because a street segment oriented approximately east-west has no east and west sides), or the segment is oriented approximately north-south and the input compass direction value is 'N' or 'S'
44	Although each of the three input street names was individually recognized, collectively they do not define a valid blockface.

GRC Value	Meaning
46	The combination of these three input streets is ambiguous, i.e., it defines more than one valid blockface. Function 3C cannot process such input.
50	An input street name is not valid for the portion of the street where the input blockface is located. See Section IV.5.
69/A	Invalid value specified for Auxiliary Segment Switch. Auxiliary Segment Switch must be 'Y' or 'N' or blank.

Function 3S

Description: Function 3S processes input street stretches. A street stretch is a portion of a street between any two cross streets. If an input cross street intersects with the 'on' street twice, an input compass direction is required to identify which of the two intersections is intended. If the user application does not specify input cross streets, Function 3S returns information about the full length of the 'on' street. Note that, in a Function 3S call, the input cross streets need not be consecutive along the 'on' street.

When successfully called using two work areas, Function 3S returns, in WA2, a list of all intersections in sequence along the 'on' street between (and including) the two intersections defined by the input 'on' and two cross streets, if any. If the user has not specified input cross streets, the list contains all intersections in sequence from the beginning to the end of the 'on' street. The sequence in which the intersections are listed accords with the direction of increasing addresses along the 'on' street. Each intersection in the list is specified as a pair of street codes for two of the streets at that intersection. One of the street codes listed for an intersection may or not be the street code of the 'on' street.

In a COW function 3S call, if the user requests Real Street Only output, only real street intersections are returned; Bends and Non-Street Features are not included in the list of intersections.

For each entry in the WA2 list of intersections of the street stretch, there are fields for a distance and a gap flag. The distance is the approximate distance in feet between the given intersection and its predecessor in the list; the gap flag indicates whether the intersection and its predecessor are connected by the 'on' street. The gap flag also indicates the nature of the gap. The first entry within a list will always have a zero in the distance field and a blank in the gap flag.

Function 3S is discussed in detail in Section VII.6.

Validation: A successful outcome of a two-work-area call to Function 3S using input cross streets signifies that each of the input cross streets intersects the input 'on' street.

Input Fields:

Function 3S Input Fields		
Field	**Value**	**Comments**
Function Code	'3S'	Required.
Work Area Format Indicator	'C' = COW format Blank = MSW format	Optional; default (blank) requests MSW format. See Appendix 12.
Borough Code-1	'1'=Manhattan, '2'=Bronx, '3'=Brooklyn, '4'=Queens, '5'=Staten Island	Required. Specifies borough of Street-1.
Street-1		Required. Specifies 'on' street.
Street-2		Optional. Specifies either cross street.
Compass Direction for First Intersection	'N', 'S', 'E' or 'W'	Required if Street-2 intersects Street-1 ('on'-street) twice. Identifies which of the two intersections is intended.
Street-3		Optional. Specifies other cross street. Must be specified if Street-2 is specified. If Street-2 and Street-3 are not specified, data for full length of street are returned in WA2.
Compass Direction for Second Intersection	'N', 'S', 'E' or 'W'	Required if Street-3 intersects Street-1 ('on'-street) twice. Identifies which of the two intersections is intended.
SNL	A number between 4 and 32	Optional; default is 32. See Section III.2.
Street Name Normalization Format Flag	'C' = compact format, Blank = sort format	Optional; default (blank) requests sort format. See Section III.3.
Real Street Only Flag (COW Only)	'R' = real streets only Blank = all streets	Optional; default (blank) requests all streets. See Section VII.6.
Roadbed Request Switch	R' = Roadbed info requested Blank = Generic info requested	Optional; default (blank) requests generic information See Section VII.6

Selected Geosupport Return Codes:

Value	Meaning
01/H	(Warning) The input ‘on’ street intersects only once with one of the input cross streets, but a non-blank input compass direction value has been supplied for that intersection. That compass direction is superfluous and is ignored. A full complement of output data is returned in the work areas.
05	A value was supplied in at least one of the input borough code fields other than Borough Code 1. All Function 3S input streets are required to be from the same borough, which must be supplied in the WA1 field Borough Code 1; Borough Code 2 and Borough Code 3 must be blank.
14	The three input streets do not define a street stretch, because the ‘from’ and ‘to’ input intersections are identical.
38	The input ‘on’ street and an input cross street intersect twice, but the input compass direction value supplied is an invalid descriptor for either of those intersections. If the value supplied is ‘E’ or ‘W’, it is invalid because the two intersections are situated approximately due north-south of each other; if the value supplied is ‘N’ or ‘S’, it is invalid because the two intersections are situated approximately due east-west of each other.
39	An input compass direction field contains an invalid value, that is, a non-blank value other than ‘N’, ‘S’, ‘E’ or ‘W’.
55	At least one of the input streets is a Non-Addressable Place Name (NAP). NAPs are not allowed as input streets for this function.
61	Geosupport has no street stretch data for this ‘on’ street. (This condition should never occur for a normal input street. It occurs if the input ‘on’ street is a pseudo-street name (such as DEAD END) or another type of geographic feature that Geosupport recognizes but that Function 3S cannot process as an input ‘on’ street.)
62	The input ‘on’ street does not intersect with one of the input cross streets.
66	The input ‘on’ street intersects with one of the input cross streets more than twice. Function 3S cannot be used to process this combination of input data. (However, Function 3S could be called for this ‘on’ street with no cross streets specified. That call would return data for the full length of the street, including the intersections in question.)
68	The input ‘on’ street intersects with one of the input cross streets twice. An input compass direction value must be supplied to identify which of the two intersections is intended.
96	The functionality to support part of a roadbed street stretch is under construction

Function AP

Description: Function AP processes an input address. When successfully called using two work areas, it returns information in WA2 about the CSCL Address Point identified by the input address. See Chapter VI and particularly Section VI.10. Function AP and its data are currently available to Geosupport users.

The information that is returned in WA2 consists of information about the address point and the tax lot and the building (if any) identified by the input address. This information includes the CSCL Address Point ID, the spatial coordinates of the Address Point, the Building Identification Number (BIN) and the Borough-Block-and-Lot (BBL), which is the Department of Finance's (DOF) identifier for the tax lot. By geocoding to a CSCL Address Point, the user application will presumably geocode to a 'real' posted address – not an address that might be part of an administrative range.

Function AP is also available in an Extended Mode. It includes that Principal Street Name in WA2. See the Function AP work area layouts in Appendix 13.

Validation: An unconditionally successful outcome of a two-work-area call to Function AP signifies that a building having the given input address exists.

Input Fields:

Function AP Input Fields		
Field	Value	Comments
Function Code	'AP'	Required.
Work Area Format Indicator	'C' = COW format	Required. AP is a COW only function
Mode Switch	'X' = Extended Mode Work Area 2 Blank = normal mode	Optional
Borough Code-1 (or ZIP Code)	'1'=Manhattan, '2'=Bronx, '3'=Brooklyn, '4'=Queens, '5'=Staten Island	Required. (ZIP Code may be used instead of Borough Code)
House Number		Required for address input except free-form addresses (see Section V.3).
Street-1		Required.
SNL	A number between 4 and 32	Optional; default is 32. See Section III.2.
Street Name Normalization Format Flag	'C' = compact format, Blank = sort format	Optional; default (blank) requests sort format. See Section III.3.

Function AP Input Fields		
Field	Value	Comments
ZIP Code		Optional; may be used instead of Borough Code, or to identify a DAPS. See Section III.6 and Section V.6.
Browse Flag (COW Only)	‘P’ = primary street name / code ‘F’ = principal street name / code ‘R’ = DCP preferred street name Blank = input street name / code	Optional; may be used to select output street name / code. Default (blank) requests use of input street name / code. Section III.8

Selected Geosupport Return Codes:

GRC Value/ Reason Code Value	Meaning
42	The input address is not valid (as defined in Section V.4).
50	The input street name is not valid for the portion of the street where the input house number is located. See Section IV.5.
75	The input address is a ‘duplicate address’ - i.e., the same address exists at two different locations on the given input street. (Note: this is not a user input data error, but an address duplication that exists in reality.) See Section V.6.

Functions BB and BF

Description: Function BB ("browse backward") and BF ("browse forward") enable applications to develop street name browse capability, in order to assist user data entry staff to determine valid spellings of street names that have been rejected. Functions BB and BF can only be called using one work area.

A sequence of repeated calls to Functions BB and/or BF will browse backwards and/or forwards in alphabetical order through the set of all valid normalized street names in a given borough. When issuing a COW Function BB or BF call, the user may request that only Primary or Principal street names be returned. This is done by setting the Browse Flag to 'P' or 'F' respectively.

Each call to one of these functions returns up to ten such names in alphabetical order (or fewer, if there are not ten names remaining in the given borough in the given browse direction). The names are returned in the WA1 field List of Street Names. The number of street names returned in the list is returned in the WA1 field Number of Street Names in List. For COWs, corresponding B7SCs are also returned.

To start a browse sequence, the user application calls either of the browse functions , passing a borough code and character string in the WA1 input fields called Borough Code 1 and Street Name 1, respectively. The input character string can be from one to 32 bytes long. When the last set of ten or fewer names in the given borough is reached, a warning is issued.

For a detailed discussion of Functions BB and BF, see Section III.7.

<u>Input Fields:</u>

Functions BB / BF Input Fields		
Field	**Value**	**Comments**
Function Code	'BB' or 'BF'	Required.
Work Area Format Indicator	'C' = COW format Blank = MSW format	Optional; default (blank) requests MSW format. See Appendix 12.
Borough Code-1	'1'=Manhattan, '2'=Bronx, '3'=Brooklyn, '4'=Queens, '5'=Staten Island	Required.
Street Name-1	Any character string	Required.
Browse Flag (COW Only)	'P' = primary street names' 'F' = principal street names Blank = all street names	Optional; default (blank) See Section III.7.

Selected Geosupport Return Codes:

GRC Value / Reason Code Value	Meaning
01/4	(Warning) The last street name has been reached in the specified input borough in the given browse direction. It is possible that fewer than ten street names have been returned in WA1
97	The input street name is alphabetically beyond the last street name in the specified input borough.

Function BL

Description: Function BL processes a parcel of real property, or tax lot, specified in terms of a standard Department of Finance set of tax lot identifiers, consisting of a combination of a borough code, a tax block number and a tax lot number, collectively called the BBL. When successfully called using two work areas, Function BL returns information about the tax lot in WA2. The WA2 layouts for Function BL are identical to those for Function 1A. Function 1A enables the user to retrieve this information by address, while Function BL enables retrieval by BBL.

For a detailed discussion of Function BL, see Chapter VI and particularly Section VI.7.

Validation: A successful outcome of a two-work-area call to Function BL signifies that the input BBL is valid.

Function BL Input Fields:

Field	Value	Comments
Function Code	'BL'	Required.
Work Area Format Indicator	'C' = COW format Blank = MSW format	Optional; default (blank) requests MSW format. See Appendix 12
Mode Switch	'X' = Extended Mode Work Area 2 Blank = normal mode	Optional; COW Only. See Section II.7.
Borough-Block-Lot (BBL)		Required.
Long WA2 Flag	'L' = Long Blank = regular WA2	Optional default (blank) is regular WA2. See Section II.5.
TPAD Request Switch (COW Only)	'Y' = TPAD information requested Blank or 'N' = TPAD not requested	Optional; may be used to request Transitional PAD information. See Section VI.11

Field	Value	Comments
1A/BL Version Switch	'S' = standard version, Blank = standard version; valid only for COW	Required for MSW; optional for COW. See Section VI. 8.

Selected Geosupport Return Codes:

GRC Value / Reason Code Value	Meaning
01/A	(Warning) Function BL has been called with the regular WA2, but the input tax lot has the List of Geographic Identifiers (LGI) overflow condition, and therefore the LGI in WA2 is incomplete. If a complete list of BINs for the tax lot is required, Function BL may be called with the long WA2 option for the same input data to retrieve the BINs of all buildings on the tax lot.
04	An invalid value has been specified for the 1A/BL Version Switch. See Section VI.8.
01/*	(Warning) [related to TPAD][See Section VI.11 and Appendix 4].Various messages are returned with this reason code. The Conflict flag is set to correspond the specific warning message.
69/B	Invalid TPAD Request Switch. Must be Y, N or blank
73	Legacy version of Function BL is discontinued. See Technical Bulletin 05-1.
90	Invalid value specified for Long WA2 Flag - must be 'L' or blank.

Function BN

Description: Function BN processes a building specified by an input Building Identification Number (BIN). For a discussion of BINs, see Section VI.3.

A successful Function BN call using two work areas returns information about the building in WA2. This includes the building's borough-tax block-tax lot (BBL); a list of geographic identifiers associated with the building (in contrast to Functions 1A and BL, which return geographic identifiers for the entire tax lot, subject to the list's space limitation); a building status flag and date *[not implemented]*; and a condominium flag. Condominiums have unique characteristics discussed in Section VI.4.

Function BN is discussed in detail in Chapter VI and particularly in Section VI.9.

Validation: A successful outcome of a two-work-area call to Function BN signifies that the input BIN is valid.

Input Fields:

Field	Value	Comments
Function Code	'BN'	Required
Work Area Format Indicator	C' = COW format Blank = MSW format	Optional; default (blank) requests MSW format. See Appendix 12.
Mode Switch	'X' = Extended Mode Work Area 2 Blank = normal mode	Optional; COW Only. See Section II.7.
BIN		Required

Selected Geosupport Return Codes:

GRC Value / Reason Code Value	Meaning
01/F	(Warning) The input BIN (contains a 9 in the 2nd digit after the borough code) is a temporary BIN assigned by GSS to a multi-building tax lot, the individual buildings of which have not yet been assigned permanent BINs. The temporary BIN will be replaced in the future
20	No input BIN value was specified.
21	The input BIN is not valid
22	The input BIN has an invalid format: either it contains non-numeric characters, or its first digit is not a valid borough code (the digits 1 through 5), or the digits beyond the first digit are all zeros.
23	The input BIN is a 'dummy' BIN (contains an 8 in the 2nd digit after the borough code) assigned by the NYC Department of Buildings. It exists only in DOB files and is not valid in Geosupport.

Functions D, DG and DN

Description: Functions D, DG and DN are the 'display' functions. They do not actually display anything themselves, but can be used to obtain data items that applications can use to format geographic locations for display on reports, screens, mailing labels etc.

The display functions do not have a WA2 and can only be called using one work area. Each of them can process any combination of up to two input House Numbers in Internal format (HNI) for MSWs or up to two input House Numbers in Sort format (HNS) for COWs and up to three input street codes. For each successfully processed input HNI/HNS, the corresponding House Number in Display format (HND) is returned in WA1. (House number processing by the display functions is discussed in detail in Section V.2.) For each successfully processed input street code, a corresponding street name is returned in WA1.

(Street code processing by the display functions is discussed in Section IV.6.) For each unsuccessfully processed input street code, the corresponding output field is returned containing all question marks. If one input HNI/HNS is supplied, it may be passed in either input HNI/HNS field. Input street codes may not 'skip' any input street code fields.

The display functions process each input item independently of the others, and the input data are not treated as collectively forming a geographic location. In particular, a successful call to a display function does not imply the validation of a geographic location. For example, if there is an input house number and an input street code, these are not treated or validated as forming an address, but are independently processed for conversion to display format. If the input consists of two street codes, these are not treated or validated as forming an intersection, etc.

Functions D, DG and DN differ in the type of street code each processes and in the street name each returns:

- Function D processes input borough-code-and-five-digit street codes, specified either in the form of B5SCs or PB5SCs (MSW only). Input B5SCs are passed left-justified and space-filled in the corresponding WA1 input B10SC fields. Input PB5SCs are passed in the corresponding MSW WA1 input PB5SC fields. For each successfully processed input B5SC or PB5SC (MSW only), Function D returns the corresponding 'primary' name for the street (a name from among all of the street's aliases that GSS has designated as 'best' representing the street as a whole).

- Function DG processes input borough-code-and-seven-digit street codes (B7SCs). Input B7SCs are passed left-justified and space-filled in the corresponding WA1 input B10SC fields. For each input B7SC, Function DG returns a street name that GSS has designated as the 'principal' street name of the local group of names represented by the given B7SC. Function DG can be used in conjunction with a geographic location-processing function to obtain the 'preferred street name' customized for a particular geographic location. (For a discussion of seven-digit street codes and local groups, see Section IV.5.)

- Function DN processes input borough-code-and-ten-digit street codes (B10SCs). For each input B10SC, Function DN returns the unique street name spelling corresponding to it.

Input Fields:

Field	Value	Comments
Function Code	'D ' (D followed by a blank) or 'DG' or 'DN'	Required.
Work Area Format Indicator	'C' = COW format Blank = MSW format	Optional; default (blank) requests MSW format. See Appendix 12
HNI-1 or HNS-1		Optional.
HNI-2 or HNS-2		Optional.
PB5SC-1 (MSW)		Function D only; optional unless PB5SC-2 is nonblank.
PB5SC-2 (MSW)		Function D only; optional unless PB5SC-3 is nonblank.
PB5SC-3 (MSW)		Function D only; optional.
B10SC-1 (or B5SC-1) (or B7SC-1)		Optional unless B10SC-2 is nonblank. (B5SC-1, B7SC-1are left-justified, space-filled in B10SC-1)
B10SC-2 (or B5SC-2) (or B7SC-2)		Optional unless B10SC-3 is nonblank. (B5SC-2, B7SC-2 are left-justified, space-filled in B10SC-2)
B10SC-3 (or B5SC-3) (or B7SC-3)		Optional. (B5SC-3, B7SC-3 are left- justified, space-filled in B10SC-3)
SNL	A number between 4 and 32	Optional; default is 32. See Section III.2.
Street Name Normalization Format Flag	'C' = compact format, Blank = sort format	Optional; default (blank) requests sort format. See Section III.3.

Selected Geosupport Return Codes:

GRC / Reason Code Value	Meaning
13	At least one input HNI/HNS has a format error. There are many possible house number format errors. The specific format error is indicated by the Reason Code and Message. Output HND fields corresponding to unsuccessfully processed input HNI/HNSs are returned containing all blanks.
64	At least one input street code is invalid. Output street name fields corresponding to invalid input street code fields are returned containing all '?'.

APPENDIX 2: MAINFRAME-SPECIFIC WORK AREA LAYOUTS (MSW)
(as of Geosupport System Software Version 17.2 – unchanged since 15.3)

This appendix contains layouts of all of the work MSW areas used with the Geosupport System's API. These layouts are current as of the Geosupport software version indicated above.

Some Geosupport functions can only be called using one work area, Work Area 1 (WA1). Other functions can be called using two work areas, WA1 and Work Area 2 (WA2). For a discussion of one-work-area and two-work-area calls, see Section II.4. WA1 contains both input fields (fields used to pass data from the application to Geosupport) and output fields (fields used to pass data from Geosupport to the application). WA1 is organized so that the input fields occur first, followed by a filler, followed by the output fields. WA2 contains output fields only.

All functions use the same WA1 layout, but the set of WA1 fields that are used depends on the function. In the layout of WA1 in this appendix, the column labeled 'Functions' indicates which functions use each field.

The functions that can be called using two work areas use various WA2 layouts of various lengths. In some cases, several functions share a single WA2 layout. For some functions, the user has a choice of two WA2 layouts, a 'regular' WA2 and a 'long' WA2. For a discussion of the long WA2 option, see Section II.5.

The following is a list of all of the Geosupport MSW work areas, indicating the length of each in bytes. Functions that are listed together share a single Work Area 2 layout. Appendix 3 consists of a data item dictionary describing the fields that occur in the work area.

Mainframe-Specific Work Area (MSW)	Length
WA1, all functions	884
Regular WA2, Function 1	200
Long WA2, Function 1	300
Regular WA2, Functions 1A, BL, BN	939
Long WA2, Functions 1A and BL	17,683
Regular WA2, Function 1E	200
Long WA2, Function 1E	300
WA2, Function 2	200
Regular WA2, Function 3	200
Long WA2, Function 3	300
WA2, Function 3C	200
WA2, Function 3S	4,224

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Work Area 1 (MSW) - All Functions			
Field	**Size**	**Position**	**Functions**
INPUT FIELDS:			
Geosupport Function Code	2	1-2	All
Borough Code-1[13]	1	3	All but BL, BN, D*
House Number	12	4-15	1, 1A, 1E
House Nr. in Internal Format (HNI)	6	16-21	1, 1A, 1E, D
Street Name-1	32	22-53	All but BL, BN, D*
Street Name-2	32	54-85	2, 3*
Street Name-3	32	86-117	3*
Compass Direction	1	118	2, 3C, 3S
Compass Direction for 2nd Intersection	1	119	3S
PB5SC-1	4	120-123	1, 1A, 1E, 2, 3*, D
PB5SC-2	4	124-127	2, 3*, D
PB5SC-3	4	128-131	3*, D
Roadbed Request Switch	1	132	1, 1E, 3S
Borough Code-2	1	133	2, 3, 3C
Borough Code-3	1	134	3, 3C
Street Name Normalization	2	135-136	All but B*
Length Limit (SNL)			
B10SC-1 (includes B5SC-1 and B7SC-1)	11	137-147	1, 1A, 1E, 2, 3*, D*
B10SC-2 (includes B5SC-2 and B7SC-2)	11	148-158	2, 3*, D*
B10SC-3 (includes B5SC-3 and B7SC-3)	11	159-169	3*, D*
ZIP Code	5	170-174	1, 1A, 1E
Borough-Block-and-Lot (BBL):	10	175-184	
Borough	1	175	BL
Tax Block	5	176-180	BL
Tax Lot	4	181-184	BL
Filler	1	185	
Building Identification Number (BIN)	7	186-192	BN
Street Name Normalization Format Flag	1	193	All but B*
Long Work Area 2 Flag	1	194	1, 1A, 1E, 3, BL
Filler - Reserved for Geosupport Use	12	195-206	
HNI-2	6	207-212	D*
Work Area Format Indicator	1	213	All
1ABL Version Switch	1	214	1A, BL
Cross Street Names Flag	1	215	1, 1E, 2, 3, 3C
Filler	4	216-219	

[13] Borough Code values are: '1'= Manhattan, '2'=Bronx, '3'=Brooklyn, '4'=Queens, '5'=Staten Island

Work Area 1 (MSW) - All Functions			
Field	**Size**	**Position**	**Functions**
OUTPUT FIELDS:			
HND-2	12	220-231	D*
Borough Name	9	232-240	All but D*
Street Name-1Normalized	32	241-272	All but B*
Street Name-2 Normalized	32	273-304	2, 3*, D*
Street Name-3 Normalized	32	305-336	3*, D*
HND	12	337-348	1, 1A, 1E, D*
HNI	6	349-354	1, 1A, 1E
Filler	7	355-361	
PB5SC-1	4	362-365	1*, 2, 3*, D*
Filler	2	366-367	
PB5SC-2	4	368-371	2, 3*, D*
Filler	2	372-373	
PB5SC-3	4	374-377	3*, D*
Attribute Bytes	3	378-380	
Up to ten PB5SCs	40	381-420	BB, BF
B10SC-1	11	421-431	1*, 2, 3*, D*
B10SC-2	11	432-442	2, 3*, D*
B10SC-3	11	443-453	3*, D*
Filler	5	454-458	
BBL Normalized	10	459-468	BL
Reserved	8	469-476	
Street Attribute Indicator	1	477	1*
Reason Code	1	478	All
Filler - Reserved for Geosupport Use	2	479-480	
Geosupport Return Code	2	481-482	All
Geosupport Message	80	483-562	All
Number of Street Names in List (packed)	2	563-564	1*, 2, 3*, BB, BF
List of Street Names: (10 Street Name Fields, 32 Bytes Each)	320	565-884	1*, 2, 3*, BB, BF

***NOTE:**
An asterisk in the second position of a function code is used as a shorthand notation to represent all function codes having the indicated value in the first position, as follows:

1* = 1, 1A, 1E, 1N
3* = 3, 3C, 3S
B* = BB, BF, BL, BN
D* = D, DG, DN

Regular Work Area 2 (MSW) Layout for Function 1		
Field	**Size**	**Positions**
Filler	22	1-22
Low House Number of Blockface	6	23-28
High House Number of Blockface	6	29-34
Alley/Cross Streets Flag	1	35
Number of Cross Streets at Low Address End	1	36
List of Cross Streets at Low Address End (up to 5 PB5SCs)	20	37-56
Number of Cross Streets at High Address End	1	57
List of Cross Streets at High Address End (up to 5 PB5SCs)	20	58-77
Community District:	3	78-80
Community District Borough Code	1	78
Community District Number	2	79-80
ZIP Code	5	81-85
DOT Street Light Contractor Area	1	86
Health Center District	2	87-88
Side of Street Indicator	1	89
Continuous Parity Indicator	1	90
2010 Census Tract	6	91-96
2010 Census Block	4	97-100
2010 Census Block Suffix *(Not Implemented)*	1	101-101
Filler	1	102-102
Filler	2	103-104
Health Area	4	105-108
Sanitation Recycling Collection Schedule	3	109-111
Feature Type Code	1	112
Interim Assistance Eligibility Indicator (IAEI)	1	113
Curve Flag	1	114
Police Patrol Borough Command	1	115
Police Precinct	3	116-118
School District	2	119-120
Filler to Preserve Layout Consistency with WA2 for Function 1E	14	121-134
Coincident Segment Count	1	135
Segment Type Code	1	136
Sanitation District	3	137-139
Sanitation Collection Scheduling Section and Subsection	2	140-141
Fire Division	2	142-143
Fire Battalion	2	144-145
Fire Company Type	1	146
Fire Company Number	3	147-149
Special Address Generated Record Flag	1	150
Reserved for Internal Geosupport Use	1	151
Filler (was Split Community School District Flag)	1	152
DCP-Preferred LGC	2	153-154
Face Code	4	155-158
Sequence Number	5	159-163

Regular Work Area 2 (MSW) Layout for Function 1		
Field	**Size**	**Positions**
1990 Census Tract	6	164-169
Filler	4	170-173
Dynamic Block / Atomic Polygon	3	174-176
X Coordinate	7	177-183
Y Coordinate	7	184-190
Segment Length in Feet	5	191-195
Sanitation Regular Collection Schedule	5	196-200

Long Work Area 2 (MSW) Layout for Function 1		
Field	**Size**	**Positions**
Same as corresponding positions in Function 1's regular WA2	200	1-200
Segment-ID	7	201-207
Underlying B7SC of True Street	8	208-215
Underlying HNI on True Street	6	216-221
2000 Census Tract	6	222-227
2000 Census Block	4	228-231
2000 Census Block Suffix *(Not Implemented)*	1	232-232
Filler	68	233-300

Regular Work Area 2 (MSW) Layout for Functions 1A, BL, BN		
Field	**Size**	**Positions**
Filler	28	1-28
Borough-Tax Block-Tax Lot (BBL):	10	29-38
Borough Code	1	29
Tax Block	5	30-34
Tax Lot	4	35-38
Tax Lot Version Number *[not implemented]*	1	39
RPAD Self-Check Code (SCC) for BBL	1	40
Filler	1	41
RPAD Building Classification Code	2	42-43
Corner Code	2	44-45
Filler (reserved)	2	46-47
Number of Street Frontages of Lot	2	48-49
Interior Lot Flag	1	50
Vacant Lot Flag	1	51
Irregularly-Shaped Lot Flag	1	52
Alternative Borough Flag	1	53
Filler	1	54
Strolling Key	13	55-67
List of Geographic Identifiers Overflow Flag	1	68
Reserved for Internal Geosupport Use	1	69
Building Identification Number (BIN) of Input Address or NAP	7	70-76
Condominium Flag	1	77
Condominium Identification Number	4	78-81
Low BBL of this Building's Condominium Units	10	82-91
Filler	1	92
Condominium Billing BBL	10	93-102
Filler	1	103
Condominium Billing BBL SCC	1	104
High BBL of this Building's Condominium Units	10	105-114
Filler	1	115
SBVP (Sanborn Map Identifiers):	8	116-123
Sanborn Borough Code	1	116
Sanborn Volume and Volume Suffix	3	117-119
Sanborn Page and Page Suffix	4	120-123
Filler (was DCP Commercial Area)	5	124-128
Cooperative Identification Number	4	129-132
Filler	4	133-136
Number of Existing Buildings on Lot	4	137-140
Tax Map Identifiers:	9	141-149
Borough Code	1	141
Tax Map Section	2	142-143
Tax Map Volume	2	144-145
Tax Map Page *[not yet implemented]*	4	146-149
X Coordinate of Internal Label Point	7	150-156
Y Coordinate of Internal Label Point	7	157-163
Business Improvement District (BID)	6	164-169

Regular Work Area 2 (MSW) Layout for Functions 1A, BL, BN		
Field	**Size**	**Positions**
Filler	12	170-181
Number of Entries in List of Geographic Identifiers	2	182-183
List of Geographic Identifiers, up to 21 entries - each entry consisting of 36 bytes as follows: Low House Number Filler High House Number Filler B5SC: Borough Code 5-Digit Street Code DCP-Preferred LGC BIN Geographic Identifier Type Code Filler Side of Street Indicator	756 6 3 6 3 1 5 2 7 1 1 1	184-939

Long Work Area 2 (MSW) Layout for Functions 1A and BL		
Field	**Size**	**Positions**
Filler	28	1-28
Borough-Tax Block-Tax Lot (BBL):	10	29-38
Borough Code	1	29
Tax Block	5	30-34
Tax Lot	4	35-38
Tax Lot Version Number *[not implemented]*	1	39
RPAD Self-Check Code (SCC) for BBL	1	40
Filler	1	41
RPAD Building Classification Code	2	42-43
Corner Code	2	44-45
Filler (reserved)	2	46-47
Number of Street Frontages of Lot	2	48-49
Interior Lot Flag	1	50
Vacant Lot Flag	1	51
Irregularly-Shaped Lot Flag	1	52
Alternative Borough Flag	1	53
Filler	15	54-68
Reserved for Internal Geosupport Use	1	69
Building Identification Number (BIN) of Input Address or NAP	7	70-76
Condominium Flag	1	77
Condominium Identification Number	4	78-81
Low BBL of this Building’s Condominium Units	10	82-91
Filler	1	92
Condominium Billing BBL	10	93-102

Long Work Area 2 (MSW) Layout for Functions 1A and BL		
Field	**Size**	**Positions**
Filler	1	103
Condominium Billing BBL SCC	1	104
High BBL of this Building's Condominium Units	10	105-114
Filler	1	115
SBVP (Sanborn Map Identifiers):	8	116-123
Sanborn Borough Code	1	116
Sanborn Volume and Volume Suffix	3	117-119
Sanborn Page and Page Suffix	4	120-123
Filler (was DCP Commercial Area)	5	124-128
Cooperative Identification Number	4	129-132
Filler	4	133-136
Number of Existing Buildings on Lot	4	137-140
Tax Map Identifiers:	9	141-149
Borough Code	1	141
Tax Map Section	2	142-143
Tax Map Volume	2	144-145
Tax Map Page *[not yet implemented]*	4	146-149
X Coordinate of Internal Label Point	7	150-156
Y Coordinate of Internal Label Point	7	157-163
Filler	16	164-179
Number of Buildings on Tax Lot (Maximum = 2,500)	4	180-183
List of Buildings on Tax Lot (each represented by a 7-Byte BIN)	17,500	184-17,683

Regular Work Area 2 (MSW) Layout for Function 1E		
Field	**Size**	**Positions**
Filler	22	1-22
Low House Number of Blockface	6	23-28
High House Number of Blockface	6	29-34
Alley/Cross Streets Flag	1	35
Number of Cross Streets at Low Address End	1	36
List of Cross Streets at Low Address End (up to 5 PB5SCs)	20	37-56
Number of Cross Streets at High Address End	1	57
List of Cross Streets at High Address End (up to 5 PB5SCs)	20	58-77
Community District	3	78-80
Community District Borough Code	1	78
Community District Number	2	79-80
ZIP Code	5	81-85
DOT Street Light Contractor Area	1	86
Health Center District	2	87-88
Side of Street Indicator	1	89
Continuous Parity Indicator	1	90
2010 Census Tract	6	91-96
2010 Census Block	4	97-100
2010 Census Block Suffix	1	101-101
Filler	1	102-102
Filler	2	103-104
Health Area	4	105-108
Sanitation Recycling Collection Schedule	3	109-111
Feature Type Code	1	112
Interim Assistance Eligibility Indicator (IAEI)	1	113
Curve Flag	1	114
Police Patrol Borough Command	1	115
Police Precinct	3	116-118
School District	2	119-120
Election District	3	121-123
Assembly District	2	124-125
Split Election District Flag	1	126
Congressional District	2	127-128
State Senatorial District	2	129-130
Civil Court District	2	131-132
City Council District	2	133-134
Coincident Segment Count	1	135
Segment Type Code	1	136
Sanitation District	3	137-139
Sanitation Collection Scheduling Section and Subsection	2	140-141
Fire Division	2	142-143
Fire Battalion	2	144-145
Fire Company Type	1	146
Fire Company Number	3	147-149
Special Address Generated Record Flag	1	150
Reserved for Internal Geosupport Use	1	151

Regular Work Area 2 (MSW) Layout for Function 1E		
Field	**Size**	**Positions**
Filler (was Split Community School District Flag)	1	152
Board of Elections-Preferred LGC	2	153-154
Face Code (was known as LION Face Code)	4	155-158
Sequence Number (was known as LION Sequence Number)	5	159-163
1990 Census Tract	6	164-169
Filler	4	170-173
Atomic Polygon (Previously known as Dynamic Block)	3	174-176
X Coordinate	7	177-183
Y Coordinate	7	184-190
Segment Length in Feet	5	191-195
Sanitation Regular Collection Schedule	5	196-200

Long Work Area 2 (MSW) Layout for Function 1E		
Field	**Size**	**Positions**
Same as corresponding positions in Function 1E's regular WA2	200	1-200
Segment-ID (was known as LION Segment-ID)	7	201-207
Underlying B7SC of True Street	8	208-215
Underlying HNI on True Street	6	216-221
2000 Census Tract	6	222-227
2000 Census Block	4	228-231
2000 Census Block Filler / Suffix	1	232-232
Filler	68	233-300

Work Area 2 (MSW) Layout for Function 2		
Field	**Size**	**Positions**
Filler	31	1-31
DCP-Preferred LGC for Street 1	2	32-33
DCP-Preferred LGC for Street 2	2	34-35
Number of Intersecting Streets	1	36
List of Intersecting Streets (up to five PB5SCs, 4 bytes each)	20	37-56
Compass Direction for Intersection Key	1	57
Filler	10	58-67
Filler	2	68-69
Fire Division	2	70-71
Fire Battalion	2	72-73
Fire Company Type	1	74
Fire Company Number	3	75-77
Community District	3	78-80
Community District Borough Code	1	78
Community District Number	2	79-80
ZIP Code	5	81-85
DOT Street Light Contractor Area	1	86
2010 Census Tract	6	87-92
Filler	3	93-95
Health Area	4	96-99
Filler	9	100-108
Node Number (was known as LION Node Number)	7	109-115
X Coordinate	7	116-122
Y Coordinate	7	123-129
Filler	4	130-133
Police Patrol Borough Command	1	134
Police Precinct	3	135-137
School District (was known as Community School District)	2	138-139
Reserved for Internal Geosupport Use	1	140
1990 Census Tract	6	141-146
SBVP1 (Sanborn Map Identifiers):	8	147-154
Sanborn Borough Code	1	147
Sanborn Volume and Volume Suffix	3	148-150
Sanborn Page and Page Suffix	4	151-154
SBVP2 (Sanborn Map Identifiers for Second Map, if any)	8	155-162
Sanborn Borough Code	1	155
Sanborn Volume and Volume Suffix	3	156-158
Sanborn Page and Page Suffix	4	159-162
Distance Between Duplicate Intersections	5	163-167
2000 Census Tract	6	168-173
Filler	27	174-200

Regular Work Area 2 (MSW) Layout for Function 3		
Field	**Size**	**Positions**
Filler	22	1-22
Curve Flag	1	23
Locational Status	1	24
County Boundary Indicator	1	25
Coincident Segment Count	1	26
Filler	3	27-29
DCP-Preferred LGC for Street 1	2	30-31
DCP-Preferred LGC for Street 2	2	32-33
DCP-Preferred LGC for Street 3	2	34-35
Number of Cross Streets at Low Address End	1	36
List of Cross Streets at Low Address End (up to five PB5SCs)	20	37-56
Number of Cross Streets at High Address End	1	57
List of Cross Streets at High Address End (up to five PB5SCs)	20	58-77
DOT Street Light Contractor Area	1	78
Cross Street Reversal Flag	1	79
Left Community District	3	80-82
Left Community District Borough Code	1	80
Left Community District Number	2	81-82
Right Community District	3	83-85
Right Community District Borough Code	1	83
Right Community District Number	2	84-85
Left ZIP Code	5	86-90
Right ZIP Code	5	91-95
Filler	18	96-113
Left Health Area	4	114-117
Right Health Area	4	118-121
Filler	2	122-123
Filler	2	124-125
Left Low House Number	7	126-132
Left High House Number	7	133-139
Right Low House Number	7	140-146
Right High House Number	7	147-153
Continuous Parity Indicator	1	154
Face Code (was known as LION Face Code)	4	155-158
Sequence Number (was known as LION Sequence Number)	5	159-163
Generated Record Flag	1	164
Segment Length in Feet (Packed)	3	165-167
Segment Azimuth	3	168-170
Segment Orientation	1	171
Filler	2	172-173
Filler	2	174-175
Left Interim Assistance Eligibility Indicator	1	176
Right Interim Assistance Eligibility Indicator	1	177
Dogleg Flag	1	178
Feature Type Code	1	179
Left Police Patrol Borough Command	1	180
Left Police Precinct	3	181-183

Regular Work Area 2 (MSW) Layout for Function 3		
Field	**Size**	**Positions**
Right Police Patrol Borough Command	1	184
Right Police Precinct	3	185-187
Left School District (was known as Left Community School…)	2	188-189
Right School District (was known as Right Community School…)	2	190-191
Reserved for Internal Geosupport Use	1	192
Segment-ID (was known an LION Segment-ID)	7	193-199
Segment Type code	1	200

Long Work Area 2 (MSW) Layout for Function 3		
Field	**Size**	**Positions**
Same as corresponding positions in Function 3's regular WA2	200	1-200
Left 1990 Census Tract	6	201-206
Filler	4	207-210
Left Atomic Polygon (Previously known as Dynamic Block)	3	211-213
Right 1990 Census Tract	6	214-219
Filler	4	220-223
Right Atomic Polygon (Previously known as Dynamic Block)	3	224-226
Left Fire Division	2	227-228
Left Fire Battalion	2	229-230
Left Fire Company Type	1	231
Left Fire Company Number	3	232-234
Right Fire Division	2	235-236
Right Fire Battalion	2	237-238
Right Fire Company Type	1	239-239
Right Fire Company Number	3	240-242
Left 2010 Census Tract	6	243-248
Left 2010 Census Block	4	249-252
Left 2010 Census Block Suffix / Filler	1	253
Right 2010 Census Tract	6	254-259
Right 2010 Census Block	4	260-263
Right 2010 Census Block Suffix / Filler	1	264
From Node	7	265-271
To Node	7	272-278
Left 2000 Census Tract	6	279-284
Left 2000 Census Block	4	285-288
Left 2000 Census Block Suffix	1	289
Right 2000 Census Tract	6	290-295
Right 2000 Census Block	4	296-299
Right 2000 Census Block Suffix	1	300

Work Area 2 (MSW) Layout for Function 3C		
Field	**Size**	**Positions**
Filler	21	1-21
Curve Flag	1	22
Segment Type Code	1	23
Locational Status	1	24
County Boundary Indicator	1	25
Coincident Segment Count	1	26
Filler	3	27-29
DCP-Preferred LGC for Street 1	2	30-31
DCP-Preferred LGC for Street 2	2	32-33
DCP-Preferred LGC for Street 3	2	34-35
Number of Cross Streets at Low Address End	1	36
List of Cross Streets at Low Address End (up to 5 PB5SCs)	20	37-56
Number of Cross Streets at High Address End	1	57
List of Cross Streets at High Address End (up to 5 PB5SCs)	20	58-77
Community District	3	78-80
Community District Borough Code	1	78
Community District Number	2	79-80
ZIP Code	5	81-85
DOT Street Light Contractor Area	1	86
2000 Census Tract	6	87-92
Filler	1	93
2010 Census Tract	6	94-99
2010 Census Block	4	100-103
2010 Census Block Suffix (Future Use)	1	104
Health Area	4	105-108
Cross Street Reversal Flag	1	109
Side of Street Indicator	1	110
Fire Division	2	111-112
Fire Battalion	2	113-114
Fire Company Type	1	115
Fire Company Number	3	116-118
Segment-ID (was known as LION Segment-ID)	7	119-125
Low House Number of Blockface	7	126-132
High House Number of Blockface	7	133-139
Alternate Low House Number	7	140-146
Alternate High House Number	7	147-153
Continuous Parity Indicator	1	154
Face Code (was known as LION Face Code)	4	155-158
Sequence Number (was known as LION Sequence Number)	5	159-163
Generated Record Flag	1	164
Segment Length in Feet (Packed)	3	165-167
Segment Azimuth	3	168-170
Segment Orientation	1	171
Filler	2	172-173
Interim Assistance Eligibility Indicator (IAEI)	1	174
Feature Type Code	1	175

Work Area 2 (MSW) Layout for Function 3C		
Field	**Size**	**Positions**
Police Patrol Borough Command	1	176
Police Precinct	3	177-179
School District (was known as Community School District)	2	180-181
Reserved for Internal Geosupport Use	1	182
1990 Census Tract	6	183-188
Filler	4	189-192
Atomic Polygon (Previously known as Dynamic Block)	3	193-195
2000 Census Block	4	196-199
2000 Census Block Suffix Filler	1	200

Work Area 2 (MSW) Layout for Function 3S		
Field	**Size**	**Positions**
Filler	21	1-21
Number of Cross Streets in Stretch (Maximum = 350)	3	22-24
List of Cross Streets in Stretch, each list entry 12 bytes as follows:	4200	25-4224
Smallest PB5SC at Intersection	4	
Second smallest PB5SC at Intersection	4	
Distance from Predecessor in Feet	3	
Gap Flag	1	

APPENDIX 3: DATA ITEM DICTIONARY

This Data Item Dictionary is an alphabetical list of the data items for which there are fields in the Geosupport API work areas, together with descriptive information. In general, data items are listed in this appendix under the names used in the work area layouts in Appendix 2 (MSW) and Appendix 13 (COW). However, if an item is associated with multiple work area fields having varying field names, and is identical in format and range of values in all those fields, the item is documented in a generically-named entry, and there is also a separate entry for each of those fields consisting only of a reference to the generic entry. For example, there is a generic entry for CENSUS TRACT containing full descriptive information, and there are also entries for 2000 CENSUS TRACT, LEFT 2000 CENSUS TRACT, RIGHT 2000 CENSUS TRACT, 2010 CENSUS TRACT etc., containing only a reference to the entry for CENSUS TRACT.

Each entry consists of an appropriate combination of the following elements:

- Name of Data Item. This might be identical to the name of a specific work area field or it might be a generic name for a data item that is represented by multiple work area fields.

- Field Names. A list of the field names associated with a generic entry.

- Function(s). A list of the Geosupport functions that utilize this data item as either an input or an output item in either WA1 or WA2. If the data item is in the added portion of WA2 that is passed when the function is called with the long WA2 option, this is so stated. Similarly, if the data is passed when the function is called with an Extended or Auxiliary or other option, it is so stated. In the list of functions, an asterisk in the second position of a function code is a 'wild card' signifying all functions having the indicated value in the first position, as follows:

  1* = 1, 1A, 1B, 1E, 1N; also 1Extended, 1A Extended, 1E Extended
  2* = 2, 2W??
  3* = 3, 3C, 3S, 3 & 3C with Auxiliary Segments, 3 & 3C Extended (with or without Auxiliary Segments)
  B* = BB, BF, BL, BN
  D* = D, DG, DN

- Work Area Format: A list of the work area format(s) that apply to this entry, namely, MSW (Mainframe-Specific Work Area) and/or COW (Character-Only Work Area).

- Length and Format. The length of this data item in bytes, and a description of its format, including whether it is numeric, alphabetic or alphanumeric (these terms are defined below); whether it contains any special editing characters; and for numeric items, the justification and the fill character. The following terms and abbreviations are used:

  RJ = Right-Justified
  LJ = Left-Justified
  ZF = Zero-Filled
  BF = Blank-Filled

Numeric:	Contains only the digits 0 through 9, and possibly blanks serving as fill characters only.
Alphabetic:	Contains letters of the alphabet only. LJBF unless otherwise stated.
Alphanumeric:	Can contain any allowable characters, including special characters such as hyphens. LJBF unless otherwise stated.

- Description. A brief narrative description of the data item. The description may include citations to sections of the UPG where the data item is principally discussed. Data items that are self-explanatory have no description and/or citations.

- Valid Values and Code Meanings. The values or ranges of values valid for this data item and, if the item consists of codes, the meaning of each code value.

1A/BL VERSION FLAG - See FUNCTION 1A/BL VERSION FLAG.

1990 CENSUS TRACT - See CENSUS TRACT.

2000 CENSUS BLOCK - See CENSUS BLOCK.

2000 CENSUS BLOCK SUFFIX - See CENSUS BLOCK SUFFIX.

2000 CENSUS TRACT - See CENSUS TRACT.

2010 CENSUS BLOCK - See CENSUS BLOCK.

2010 CENSUS BLOCK SUFFIX - See CENSUS BLOCK SUFFIX.

2010 CENSUS TRACT - See CENSUS TRACT.

ALLEY/CROSS STREETS FLAG (ALX)

Functions:	1, 1E
Work Area Format:	MSW and COW
Length and Format:	1 byte
Description:	Indicates if the segment has been split by alleys, or if the cross streets named in the segment have been copied from a previous or subsequent segment because the segment itself has no cross streets.

Code Value	Meaning
‘A’	Split by Alley(s)
‘X’	Cross Streets Modified
Blank	Neither Split by Alleys or Cross Streets Modified

ALTERNATE LOW AND HIGH HOUSE NUMBERS

Functions:	3C
Work Area Format:	MSW and COW
Length and Format:	See HOUSE NUMBER
Description:	These two fields are non-blank only if this blockface has addresses of both parities (the parity of a number is its attribute of being odd or even). Such a blockface is said to have ‘continuous parity’. If the blockface has continuous parity, the Continuous Parity Indicator is non-blank, the Low and High House Number fields contain the address range for one parity, and the Alternate Low and High House Number fields contain the address range for the other parity. (Which parity is in which set of house number fields is unpredictable.)

ALTERNATIVE BOROUGH FLAG

Functions:	1, 1A, 1B, 1E, 2, 3, 3C, 3S (COW only), BL, BN
Work Area Format:	MSW and COW
Length and Format:	1 byte
Description:	This flag indicates either that the input address is in Marble Hill or Rikers Island and the alternative (rather than the legal) borough was specified (see Section V.7), or that the input address is on Ruby Street in Brooklyn but it was specified using the alternative (Queens) street name 75 Street (see Section V.8).

This field was also known as the Marble Hill / Rikers Island Flag.

Code Value	Meaning
‘C’	Ruby Street address specified using 75 Street
‘M’	Marble Hill address with Bronx specified
‘R’	Rikers Island address with Queens specified

ALX FLAG - See ALLEY/CROSS STREETS FLAG

ANNOTATION POINT - No longer used by Geosupport. See SPATIAL COORDINATES OF THE TAX LOT CENTROID

ASSEMBLY DISTRICT

Field Names: LEFT ASSEMBLY DISTRICT
RIGHT ASSEMBLY DISTRICT
Functions: 1E, 2 (COW only), 3 (COW only), 3C (COW only)
Work Area Format: MSW and COW
Length and Format: 2 bytes. RJZF
Description: A district of the lower house of the New York State legislature. Consists of an aggregation of Election Districts

ATOMIC POLYGON - Previously known as DYNAMIC BLOCK

Functions: 1, 1B, 1E, 3(MSW: Long WA2), 3(COW), 3C
Work Area Format: MSW and COW
Length and Format: 3 bytes RJZF
Description: An atomic polygon is an un-subdivided polygon . Atomic polygons are created based on the New York City CSCL (Citywide Street Centerline) database. Atomic polygons are numbered uniquely within census tract.

ATTRIBUTE BYTE - See STREET ATTRIBUTE INDICATOR

AUXILIARY SEGMENT SWITCH (AUXSEG or SEGAUX)

Functions: 3, 3C, 3 & 3C Extended
Work Area Format: COW
Length and Format: 1 byte character.
Description: When this flag is set to ‘Y’, the list of all the Segment IDs that comprise the segment will be added to the end of Work Area 2 for Functions 3 or 3C.

Code Value	Meaning
‘N’ or Blank	One Segment ID is returned in Work Area 2.
‘Y’	A list of all the segment IDs is added to the end of Word Area 2 for Function 3 or 3C.

B7SC OF "TRUE" STREET (a.k.a. B7SC OF "UNDERLYING" STREET)

Functions:	1and 1E (MSW: Long WA2 only); 1, 1B and 1E (COW)
Work Area Format:	MSW and COW
Length and Format:	8 bytes (B7SC)
Description:	This item typically applies to Addressable Place Names, Non-addressable Place Names and Vanity Addresses. It item contains the B7SC of the street segment upon which the address specified is actually located. This is the street segment that is identified by the field SEGMENT-ID and by the fields FACE CODE and SEQUENCE NUMBER. In most cases, the B5SC portion of this item is identical to the B5SC specified in the key. However, the two B5SCs differ when the SPECIAL ADDRESS GENERATED RECORD FLAG is either 'B', 'N', 'P', or 'V'.

BBL

Functions:	1A, BL, BN, AP
Work Area Format:	MSW and COW
Length and Format:	10 bytes in standard version, Numeric. (Note: the legacy version of Functions 1A and BL is no longer supported.)

	Field	Length	Position	Comments
Standard:	Borough	1	1-1	
	Tax Block	5	2-6	RJZF
	Tax Lot	4	7-10	RJZF

Description: The first 6 bytes of the standard BBL consists of the 1-byte borough code followed by the 5-byte tax block field, which contains the tax block value right-justified and zero-filled. The last 4 bytes of the standard BBL is the standard tax lot field, which contains the tax lot value right-justified and zero-filled. See Section VI.8.

The BBL ('borough-block-and-lot') identifies a parcel of real property in New York City, called a tax lot. The BBL is composed of the concatenation of the Borough Code, Tax Block and Tax Lot. If the property is a condominium (indicated by the Condominium Flag), the WA2 BBL field contains the billing BBL of the condominium (see Section VI.4).

BID - See BUSINESS IMPROVEMENT DISTRICT

BIKE LANE	BIKE LANE is being replaced by BIKE LANE 2. See also BIKE LANE 2
Functions:	1 Extended, 1B, 1E Extended, 3 Extended, 3C Extended
Work Area Format:	COW
Length and Format:	1 byte
Notice:	As of Release 16D, Bike Lane has 11 codes, instead of 7. A new two-byte field, BIKE LANE 2, is being introduced. The original one-byte Bike Lane field still exists to give users a chance to update their applications. In the one-byte Bike Lane field, the value 'A' will appear when the new code is '10', and the value 'B' will appear when the new code is '11'. We recommend that users update their applications to refer to the new Bike Lane-2 since the one-byte Bike Lane field will be deleted in a later release.
Description:	Defines which street segments are part of the bicycle network as defined by the Department of Transportation.

Code Value	Meaning
1 Class I:	Separated Greenway
2 Class II:	Striped Bike Lane
3 Class III:	Signed Bicycle Route
4 Links:	Connecting Segments
5 Class I, II:	Combination of Class I and II
6 Class II, III:	Combination of Class II and III
7 Stairs:	Step streets, bridge stairs, etc.
8 Class I, III	Combination of Class I and III
9 Class II, I	Combination of Class II and I
A Class III, I	Combination of Class III and I
B Class III, II	Combination of Class III and II

BIKE LANE 2

Functions: 1 Extended, 1B, 1E Extended, 3 Extended, 3C Extended
Work Area Format: COW
Length and Format: 2 bytes, RJBF
Description: Defines which street segments are part of the bicycle network as defined by the Department of Transportation.
Note: As of Geosupport Version 16.4, Bike Lane 2 is being introduced to replace Bike Lane

The following table contains the values that can appear in the Bike Lane 2 field

Bike Lane 2 Values

Code Value	Meaning	Description
1	Class I:	Separated Greenway
2	Class II:	Striped Bike Lane
3	Class III:	Signed Bicycle Route
4	Links:	Connecting Segments
5	Class I, II:	Combination of Class I and II
6	Class II, III:	Combination of Class II and III
7	Stairs:	Step streets, bridge stairs, etc.
8	Class I, III	Combination of Class I and III
9	Class II, I	Combination of Class II and I
10	Class III, I	Combination of Class III and I
11	Class III, II	Combination of Class III and II

BIKE TRAFFIC DIRECTION

Functions: 1 Extended, 1B, 1E Extended, 3 Extended, 3C Extended
Work Area Format: COW
Length and Format: 2 bytes, RJBF
Description: Defines the traffic direction of the bike lanes on a segment.

The following table contains the values that can appear in the Bike Lane 2 field

Bike Traffic Direction Values

Code Value	Code Meaning	Description
Blank	No bike lane	No bike lane exists at this segment
FT	FROM node to TO node	Bike traffic flows with the segment's logical direction, i.e. from the FROM node to the TO node.
TF	TO node to FROM node	Bike traffic flows against the segment's logical direction, i.e. from the TO node to the FROM node.
TW	Two-Way	Bikes travel in both directions

BIN - See BUILDING IDENTIFICATION NUMBER

BLOCKFACE ID

Field Names: LEFT BLOCKFACE ID
RIGHT BLOCKFACE ID
Functions: 1 Extended, 1B, 1E Extended, 3 Extended, 3C Extended
Work Area Format: COW
Length and Format: 10 bytes. RJZF
Description: Left Blockface ID is a ten digit number identifying the block face on the left hand side of a segment. Correspondingly, Right Blockface ID identifies the block face on the right hand side of a segment. Block Face is defined as one continuous side of a physical block that is intersected on that side by two other physical through streets. Blockface IDs were established by DoITT's consultants working on the planimetric feature classes for NYC and are not maintained by the Department of City Planning.

BOARD OF ELECTIONS PREFERRED LGC

Functions: 1E
Work Area Format: MSW and COW
Length and Format: 2 bytes. RJZF
Description: This item is the LGC (the sixth and seventh digits of the 10-digit street code) that corresponds to the NYC Board of Elections' preferred street name for a given location.

BOROUGH CODE

Functions: All functions
Work Area Format: MSW and COW

Length and Format:	1 byte. Numeric.		
Description:	Code Value	Meaning	
	1	Manhattan	
	2	Bronx	
	3	Brooklyn	
	4	Queens	
	5	Staten Island	

BOROUGH/BLOCK/LOT - See BBL

BOROUGH/TAX BLOCK/TAX LOT - See BBL

BROWSE FLAG

Functions:	1, 1A, 1B, 1E, 1N, 2, 3, 3C, BB, BF		
Work Area Format:	COW		
Length and Format:	1 byte. Alphabetic		
Description:	Code Value	Meaning	
	Blank	All streets or normalized input street	
	P	Primary streets	
	F	Principal streets	
	R	Preferred street	Only Functions 1, 1A, 1B. 1E, 2, 3, and 3C. (Not 1N, BB, BF)

See Section III.7 for use of Browse Flag with Functions BB and BF.
See Section III.8 for use of Browse Flag with Functions 1, 1A, 1B, 1E, 1N, 2, 3, 3C.

BUILDING IDENTIFICATION NUMBER (BIN)

Functions:	1A, BL, BN, 1B (COW only) and AP (COW only)
Work Area Format:	MSW and COW
Length and Format:	7 bytes. Numeric
Description:	Building Identification Number. A permanent BIN is a seven-digit numerical identifier unique to each building in the City of New York. The first digit is the Borough Code. There are also two types of temporary BINs; those maintained by the Dept. of Buildings (DOB) and those maintained by the Dept. of City Planning (DCP). The temporary BINs assigned by DOB contain the number ‘8’ as the second digit, and the temporary BINs assigned by DCP contain a ‘9’ in the same position. DCP is currently in the process of phasing out all of its temporary BINs.

BUSINESS IMPROVEMENT DISTRICT (BID)

Functions: 1A, 1B, BL, BN

Work Area Format: MSW and COW

Length and Format: 6 bytes, B5SC

Description: The Business Improvement District (BID) field (which was requested by the Fire Department) consists of a borough and five-digit street code (B5SC). Function D may be used to obtain the 32-byte name of the BID. The 'Street Attribute Indicator' is set to 'C' for BIDs. An example of a Business Improvement District is `'5 AVE BID'` Note that a BID may not be used as input to Function 1, 1A, 1B, 1E, 2*, and 3*.

CD - See COMMUNITY DISTRICT or COMMUNITY DEVELOPMENT…

CD ELIGIBILITY FLAG - See INTERIM ASSISTANCE ELIGIBILITY INDICATOR

CENSUS BLOCK

Field Names: 2000 CENSUS BLOCK,
LEFT 2000 CENSUS BLOCK,
RIGHT 2000 CENSUS BLOCK,
2010 CENSUS BLOCK,
LEFT 2010 CENSUS BLOCK,
RIGHT 2010 CENSUS BLOCK

Functions: 1 & 1E (MSW: for 2010 - Regular WA2, for 2000 - Long WA2 Only;), 1 & 1E(COW). 2, 3 (MSW: Long WA2 Only), 3(COW), 3C

Work Area Format: MSW and COW

Length and Format: 4 bytes, numeric

Description: When appended by the CENSUS BLOCK SUFFIX, this area is the smallest geographic area defined by the U.S. Census Bureau for tabulating the census. Generally (but not always) corresponds to a physical city block. Each census block is numbered uniquely within its census tract.

CENSUS BLOCK SUFFIX

Field Names: 2000 CENSUS BLOCK SUFFIX,
LEFT 2000 CENSUS BLOCK SUFFIX,
RIGHT 2000 CENSUS BLOCK SUFFIX,
2010 CENSUS BLOCK SUFFIX,
LEFT 2010 CENSUS BLOCK SUFFIX,
RIGHT 2010 CENSUS BLOCK SUFFIX,

Functions: 1&1E (MSW: for 2010 - Regular WA2, for 2000 - Long WA2 Only;), 1, 1B &1E(COW) 2, 3 (MSW: Long WA2 Only), 3(COW), 3C

Work Area Format: MSW and COW

Length and Format: 1 byte.

Description: This suffix is defined by the U.S. Census Bureau. At the government's discretion, this field may, or may not, contain data.

CENSUS TRACT

Field Names:	1990 CENSUS TRACT, LEFT 1990 CENSUS TRACT, RIGHT 1990 CENSUS TRACT, 2000 CENSUS TRACT, LEFT 2000 CENSUS TRACT, RIGHT 2000 CENSUS TRACT 2010 CENSUS TRACT, LEFT 2010 CENSUS TRACT, RIGHT 2010 CENSUS TRACT
Functions:	1, 1E, 1B, 2, 3 (MSW: 2010 - Regular WA2; 2000 - Long WA2 Only), 3(COW), 3C
Work Area Format:	MSW and COW
Length and Format:	6 bytes, consisting of numeric 4-digit root followed by numeric 2-digit suffix. The root subfield is RJBF and the suffix subfield is RJZF if any. If the tract number contains no suffix, then the suffix subfield is blank.
Description:	Geographic area defined by the U.S. Census Bureau for the various decennial censuses. Census tracts for a particular census year are numbered uniquely within borough.

CITY COUNCIL DISTRICT

Function:	1B (COW), 1E, 2(COW only)
Work Area Format:	MSW and COW
Length and Format:	2 bytes.
Description:	A district represented by a member of the New York City Council. Consists of an aggregation of Election Districts. There are currently 51 City Council Districts.

CIVIL COURT DISTRICT

Functions:	1E, 1B (COW), 2(COW only)
Work Area Format:	MSW and COW
Length and Format:	2 bytes.
Description:	A district from which a Civil Court judge is elected. Consists of an aggregation of Election Districts.

COINCIDENT SEGMENT COUNT

Functions:	1, 1E, 3, 3C
Work Area Format:	MSW and COW
Length and Format:	1 byte, numeric
Description:	The Coincident Segment Count indicates the situation where one road is above another road. Most streets, such as Broadway in Manhattan have a value of '1' in the Coincident Segment Count. However, there are a few streets where the Coincident Segment Count is greater than one. An example of this is Third Avenue and the Gowanus Expressway in Brooklyn. The Gowanus Expressway is above Third Avenue from about 18th Street until 63rd Street. For these segments, the Coincident Segment Count is '2'.

COMMUNITY DEVELOPMENT BLOCK GRANT (CDBG) - See INTERIM ASSISTANCE ELIGIBILITY INDICATOR

COMMUNITY DEVELOPMENT ELIGIBILITY FLAG - See INTERIM ASSISTANCE ELIGIBILITY INDICATOR

COMMUNITY DISTRICT (CD)

Functions:	1, 1E, 2, 3, 3C, 1B (COW)
Work Area Format:	MSW and COW
Length and Format:	3 bytes. Numeric. The first byte is the Community District Borough Code, and the second and third bytes are the Community District Number, RJZF.
Description:	There are 59 community districts in the City of New York, as well as 12 Joint Interest Areas (JIAs). The JIAs are major parks and airports that are not contained within any CD. Examples are Central Park, Van Cortlandt Park, LaGuardia and JFK Airports. The JIAs are the numerically highest items in each borough.

Code	Meaning
101-112	**Manhattan** except Marble Hill
164	Central Park
201-212	**Bronx** except Rikers Island (Note: the Marble Hill section of Manhattan is in Bronx CDs 7 and 8)
226	Van Cortlandt Park
227	Bronx Park
228	Pelham Bay Park
301-318	**Brooklyn**
355	Prospect Park
356	Brooklyn Gateway National Recreational Area
401-414	**Queens** (Note: the Rikers Island section of the Bronx is in Queens CD 1)
480	LaGuardia Airport
481	Flushing Meadows - Corona Park
482	Forest Park
483	JFK International Airport
484	Queens Gateway National Recreational Area
501-503	**Staten Island**
595	Staten Island Gateway National Recreational Area

COMMUNITY DISTRICT ELIGIBILITY FLAG - See INTERIM ASSISTANCE ELIGIBILITY INDICATOR

COMMUNITY SCHOOL DISTRICT – see SCHOOL DISTRICT

COMPACT FLAG - See STREET NAME NORMALIZATION FORMAT FLAG

COMPASS DIRECTION

Functions: 2, 3C, 3S

Work Area Format: MSW and COW

Length and Format: 1 byte.

Description: In the case of Function 2, the compass direction identifies, for a pair of input streets that intersect at two distinct locations, which of those two intersections is to be processed. (See Section VII.2)
In the case of Function 3C, the compass direction identifies which side of the street is to be processed. (See Section VII.5)
In the case of Function 3S, if the 'on' street intersects the first cross street at two distinct locations, the compass direction identifies which of those two intersections is to be processed. (See Section VII.6)

COMPASS DIRECTION FOR INTERSECTION KEY

Functions: 2

Work Area Format: MSW and COW

Length and Format: 1 byte.

Description: If the first two entries in the LIST OF INTERSECTING STREETS are an instance of the two-node case (i.e., they intersect twice), this field contains a compass direction value identifying the intersection in terms of those two streets. If the two streets are not an instance of the two-node case, this field is blank. If both a 'longitudinal' compass direction ('N' or 'S') and a 'latitudinal' compass direction ('E' or 'W ') are valid for this intersection, the longitudinal compass direction value appears in this field.

COMPASS DIRECTION FOR 2nd INTERSECTION

Functions: 3S

Work Area Format: MSW and COW

Length and Format: 1 byte.

Description: If the 'on' street intersects the second cross street at two distinct locations, this compass direction identifies which of those two intersections is to be processed. (See Section VII.6)

CONDOMINIUM FLAG

Functions: 1A, BL, BN, 1B (COW), AP

Work Area Format: MSW and COW

Length and Format: 1 byte.

Description:

Code Value	Meaning
'C'	Property is a condominium
Blank	Property is not a condo.

CONDOMINIUM IDENTIFICATION NUMBER

Functions: 1A, BL, BN, 1B (COW), AP

Work Area Format: MSW and COW

Length and Format: 4 bytes

Description: An identification number assigned by the Department of Finance to each condominium in the city. This field is blank for non-condominiums.

CONGRESSIONAL DISTRICT

Function: 1E, 1B (COW), 2 (COW only)
Work Area Format: MSW and COW
Length and Format: 2 bytes.
Description: A district of the U.S. House of Representatives. Consists of an aggregation of Election Districts.

CONTINUOUS PARITY INDICATOR

Functions: 1, 1E, 3, 3C, 1B (COW)
Work Area Format: MSW and COW
Length and Format: 1 byte
Description: An 'address range' is a sequence of house numbers along an 'on' street between (and including) a Low House Number and a High House Number. Every address range has one of three possible parities: odd, even or continuous. An address range of odd parity consists of all odd house numbers along the 'on' street between the Low and High House Numbers. An even-parity range consists of all even house numbers between the Low and High House Numbers. A continuous-parity range consists of all house numbers (both even and odd) between the Low and High House Numbers. Most New York City blockfaces contain an address range that is either of even or odd parity. However, some blockfaces have a continuous-parity address range, usually where the opposite side of the street is non-addressable because it is a park, a body of water, etc. Some examples of the continuous parity case in Manhattan are Central Park West (the east side of the street runs along Central Park and is non-addressable, while the west side has both odd and even addresses); Riverside Drive; and the portion of Fifth Avenue that runs alongside Central Park.

If a New York City blockface has a continuous parity address range, Geosupport represents this range as two separate ranges, an odd-parity range and an even-parity range. The practical effect of this depends on the Geosupport function. For Functions 1 and 1E, if an input address lies on a continuous-parity blockface, only the range (i.e., the Low and High House Numbers) whose parity is the same as that of the input address is returned in WA2. For Function 3, if an input street segment contains a continuous parity address range, both the odd and the even ranges are returned, in the WA2 fields called Left Low House Number and Left High House Number for the range of one parity, and in the fields Right Low and High House Numbers for the range of the other parity; note that in this case, in reality both the odd and the even ranges are on the same side of the street, even though they are returned in fields called 'left' and 'right'. For Function 3C, if an input blockface is on a street segment containing a continuous parity address range (regardless of whether the input blockface is on the addressable or the non-addressable side of the segment), both the odd and the even ranges are returned, in the WA2 fields called Low House Number and High House Number for the range of one parity, and in the fields Alternate Low House Number and Alternate High House Number for the range of the other parity.

The field Continuous Parity Indicator indicates, for Functions 1, 1E, 3 and 3C, whether the street segment containing or corresponding to the user input is of the continuous parity type, and if so, which side of the segment is addressable.

Code Value	Meaning
Blank	The street segment does not have a continuous parity address range
'L' or 'R'	The street segment has continuous parity. In this case, the Continuous Parity Indicator indicates which side of the street segment, the left or the right, is addressable. (Left and right are specified with respect to the direction of increasing addresses along the segment)

COOPERATIVE IDENTIFICATION NUMBER

Functions: 1A, BL, BN, 1B (COW)
Work Area Format: MSW and COW
Length and Format: 4 bytes
Description: This is an identification number assigned by the Department of Finance to each cooperative in the city. This field is blank for non-coops.

CORNER CODE

Functions: 1A, BL, BN, 1B (COW)
Work Area Format: MSW and COW
Length and Format: 2 bytes
Description:

Code Value	Meaning
'SE','SW','NE','NW'	Tax lot occupies the indicated corner of the physical block
'CR'	Tax lot occupies more than one corner
Blank	Tax lot occupies no corners

COUNTY BOUNDARY INDICATOR

Functions: 3, 3C
Work Area Format: MSW and COW
Length and Format: 1 byte
Description: This field is non-blank when the street segment lies along a borough boundary. The value of this field indicates which side of the segment is out of borough.

Code Value	Meaning
'L'	Left side of segment is out of borough
'R'	Right side of segment is out of borough
Blank	Neither side is out of borough

CROSS STREET NAMES FLAG (a.k.a. EXPANDED FORMAT FLAG)

Functions:	1, 1E, 2, 3, 3C, 1B (COW)
Work Area Format:	MSW and COW
Length and Format:	1 byte character.
Description:	When this flag is set to 'E', the LIST OF STREET NAMES is used to return street names corresponding to the street codes in the LIST OF CROSS STREETS (Functions 1, 1B, 1E, 3 and 3C) or in the LIST OF INTERSECTING STREETS (Function 2). See LIST OF STREET NAMES for related details.

When possible, the BBL and BIN are returned in the output area of Work Area 1 for Functions 1, 1A, 1B, and 1E.

The cross street names feature incurs processing overhead, and should only be used when necessary. Note that Function 1B returns the principal street codes and street names of the cross streets in the Blockface portion of Work Area 2. Therefore it is typically not necessary to set the Cross Street Names flag with Function 1B.

Code Value	Meaning
Blank	The names of cross or intersecting streets are not returned in the LIST OF STREET NAMES. The BBL an BIN are not returned in the output area of Work Area 1.
'E'	The names of cross or intersecting streets are returned in the LIST OF STREET NAMES The BIN and BBL of the input address are returned in the output area of Work Area 1.

CROSS STREET REVERSAL FLAG

Function:	3, 3C
Work Area Format:	MSW and COW
Length and Format:	1 byte
Description:	This flag indicates the relationship between the order in which the user specified the input cross streets and the direction of increasing addresses along the 'on' street.

Code Value	Meaning
Blank	The direction from Street Name 2 to Street Name 3 (the two input cross street fields) conforms to the direction of increasing addresses
'R'	The direction from Street Name 2 to Street Name 3 is opposite to the direction of increasing addresses

CROSS SREETS See LIST OF CROSS STREETS (Functions 1, 1E, 3, 3C, 1B)
See LIST OF INTERSECTING STREET (Function 2)

See LIST OF CROSS STREET CODES (Function 3S)

CURVE FLAG

Functions:	1, 1E, 3, 3C, 1B (COW)
Work Area Format:	MSW and COW
Length and Format:	1 byte character
Description:	This flag indicates whether the given geographic feature segment is in reality curved. If so, the curve may be an arc of a circle or an irregular curve. When the segment specified by the input data is an arc of a circle, Functions 1 and 1E return **Spatial Coordinates** that are positioned relative to this arc rather than to the segment's chord (the imaginary straight line joining the curved feature's endpoints). When the segment specified by the input data is an irregular curve, Functions 1 and 1E return blanks in the **Spatial Coordinate** fields (*q.v.*), and issue a warning with Reason Code value 'P'. In the case of Functions 3 and 3C, if the input data define a street stretch encompassing more than one segment (because of a T-intersection or bend), the Curve Flag is set 'on' (non-blank) if at least one of the constituent segments of the stretch is curved. See also discussion of **Segment Length**.

Code Value	Meaning
Blank	Segment is not curved
'I'	Segment is an irregular curve, i.e., it is curved but it is not an arc of a circle
'L'	Segment is an arc of a circle on the left side of the line joining the segment's FROM and TO nodes
'R'	Segment is an arc of a circle on the right side of the line joining the segment's FROM and TO nodes

DCP PREFERRED LGC

Functions:	1, 1A and BL (regular WA2 only), 2, 3, 3C, BN
Work Area Format:	MSW and COW
Length and Format:	2 bytes RJZF
Description:	Identifies the local group of street names designated by the Department of City Planning as 'preferred' for display purposes for a specific location on a street.

DEPARTMENT OF SANITATION SNOW PRIORITY CODE - See DSNY SNOW PRIORITY CODE

DISTANCE BETWEEN DUPLICATE INTERSECTIONS

Functions:	2
Work Area Format:	MSW and COW
Length and Format:	5 bytes numeric
Description:	When the two input streets intersect exactly twice, this field contains the distance, in feet, between those two intersections.

DOGLEG FLAG

Functions:	3
Work Area Format:	MSW and COW
Length and Format:	1 byte
Description:	A dogleg is a street configuration in which a street has a displacement or offset as it crosses another street. A non-blank value in the Dogleg Flag indicates that at least one of the cross streets forms a dogleg as it crosses the 'on' street, in such a way that at least one side of the 'on' street has a blockface encompassing more than one segment.

When Function 3 returns a non-blank value in this flag, the work area represents the 'innermost' segment of the dogleg configuration.

The Dogleg Flag value indicates which side or sides of the street has (or have) the long blockface(s).

Code	Meaning
blank	Not a dogleg
'B'	Both sides of the 'on' street have long blockfaces formed by doglegs. This can only occur if both cross streets form doglegs as they cross the 'on' street.
'L'	The left side of the street has a long blockface formed by a dogleg
'R'	The right side of the street has a long blockface formed by a dogleg

A Function 3C call will return information on the long blockface when the user input data specifies a side of a street where there is a long blockface formed by a dogleg or doglegs. The Dogleg Flag will not be set in response to a function 3C call.

DOT STREET LIGHT CONTRACTOR AREA

Functions:	1, 1E, 2, 3, 3C, 1B (COW)
Work Area Format:	MSW and COW
Length and Format:	1 byte
Description:	

Code	Meaning
'1'	Street lights serviced by Manhattan contractors
'2'	Street lights serviced by Bronx contractors
'3'	Street lights serviced by Brooklyn contractors
'4'	Street lights serviced by Queens contractors
'5'	Street lights serviced by Staten Island contractors
'X'	Street light is located on the Brooklyn, Queens boundary
'N'	Street light is located in one borough, but serviced by a different borough

DSNY … - See also SANITATION …

DSNY SNOW PRIORITY CODE

Functions:	1/1E, 1/1E Extended, 1B, 3, 3 Extended, 3C, 3C Extended
Work Area Format:	COW
Length and Format:	1 byte character
Description:	DSNY (Department of Sanitation) Snow Priority code is used during snow emergencies. It helps DSNY to determine the snow removal schedule, routes and resources needed. .

The DSNY (Department of Sanitation) Snow Priority indicates the priority of the street with respect to snow removal.
New snow priority codes were assigned with Version 16.4 The snow priority codes are as follows:

Code Value	Meaning
C	Critical
S	Sector
H	Haulster
V	Non-DSNY Street (unchanged)

The DSNY definition of the new codes is as follows:

C - Critical Routes: These routes are comprised of highways (main beds, entrances, exits interchanges), arterial roadways, main travel thoroughfares (single lane and multi-lane), bus routes, that contain emergency services & first responder facilities (Hospitals, EMS, FDNY, NYPD) and schools.

S - Sector Routes: Designed to encompass all streets that are not classified as Critical Streets and are wide enough to accommodate a full size DSNY collection truck with a plow attached.

H - Haulster Routes: Designed to service dead ends and streets that cannot be serviced with a collection truck or salt spreader with a plow attached due to narrow street width or tight turning radius (either entering or exiting the street).

Important Note: The old code values (i.e. prior to Version 16.4) are no longer in use. They were P (Primary), S (Secondary) and T (Tertiary) **If a user application checks for specific Snow Priority Values, the application will need to be updated**

It is also important to note that the new Snow Priority values provided to DCP were for roadbed geography only. Snow Priority values will not be returned for generic geography, unless requested for a future release by DSNY.

DYNAMIC BLOCK – See ATOMIC POLYGON

ELECTION DISTRICT (ED)

Field Names:	LEFT ELECTION DISTRICT RIGHT ELECTION DISTRICT
Function:	1E, 3 (COW only), 3C (COW only), 1B (COW only)
Work Area Format:	MSW and COW
Length and Format:	3 bytes
Description:	A set of districts defined by the NYC Board of Elections to conduct elections. There are approximately 6,000 Election Districts (EDs) in NYC. Each ED is numbered uniquely within its Assembly District. All of NYC's higher-level political districts, namely Assembly Districts, City Council Districts, Municipal Court Districts, Congressional Districts and State Senatorial Districts, are defined as aggregates of Eds.

EXPANDED FORMAT FLAG - See CROSS STREET NAMES FLAG

EXTENDED MODE SWITCH - See MODE SWTICH

FACE CODE

Functions:	1, 1E, 3, 3C, 1B (COW only)
Work Area Format:	MSW and COW
Length and Format:	4 bytes. Numeric
Description:	A Face Code is assigned to each linear geographic feature represented in the LION file. These consist of streets and certain non-street features, such as census boundaries, shorelines and railroad tracks. Face Codes serve as part of LION keys, which identify a unique LION record. Face Code values are assigned uniquely within borough.

FEATURE TYPE CODE

Functions:	1, 1E, 3, 3C, 1B (COW only)
Work Area Format:	MSW and COW
Length and Format:	1 byte
Description:	Identifies the type of geographic feature represented by the work area

Code	Meaning
blank	Public street that exists physically, other than a type 'W' feature (see below)
'1'	Railroad
'2'	Shoreline
'3'	Census block boundary without physical existence
'4'	Other non-street feature
'5'	'Paper street', i.e., a public street that is legally 'mapped' but does not exist physically
'6'	Private street that exists physically
'7'	Physically nonexistent district boundary, other than a type '3' feature (see above)
'8'	Physical Boundary such as a cemetery wall
'9'	Paper street' that coincides with a non-physical

	boundary such as a Census block
'C'	CCO (Corporation Council Opinion). Street dedicated for public use (See Glossary)
'W'	Path, non-vehicular, addressable

Note: As of Release 16D, Physical Boundaries, such as cemetery walls, will no longer appear as cross streets in Functions 1/1E, 1B, 2, 3 and 3C

FIRE BATTALION
Functions: 1, 1E, 2, 3 (MSW: Long WA2), 3 (COW), 3C, 1B (COW only)
Work Area Format: MSW and COW
Length and Format: 2 bytes
Description: An administrative fire district composed of Fire Companies.

FIRE COMPANY NUMBER
Functions: 1, 1E, 2, 3 (MSW: Long WA2), 3 (COW), 3C, 1B (COW only)
Work Area Format: MSW and COW
Length and Format: 3 bytes. Numeric RJZF
Description: The smallest kind of administrative fire district defined by the NYC Fire Department. There are three types, indicated by the Fire Company Type: engine companies, Squad and ladder companies.

FIRE COMPANY TYPE
Functions: 1, 1E, 2, 3 (MSW: Long WA2), 3 (COW), 3C, 1B (COW only)
Work Area Format: MSW and COW
Length and Format: 1 byte
Description: Fire companies are characterized by the type of apparatus they use to fight fires.

Code	Meaning
'E'	Engine Company
'L'	Ladder Company
'Q'	Fire Squad Note: 'Q' may appear as 'SQ' on GOAT screens

FIRE DIVISION
Functions: 1, 1E, 2, 3 (MSW: Long WA2), 3 (COW), 3C, 1B (COW only)
Work Area Format: MSW and COW
Length and Format: 2 bytes
Description: An administrative fire district composed of Fire Battalions.

FROM NODE - See NODE NUMBER

FROM NODE ID - See NODE NUMBER

FUNCTION 1A/BL VERSION FLAG

Functions:	1A, BL	
Work Area Format:	MSW and COW	
Length and Format:	1 byte	
Description:	Code	Meaning
	'S'	Standard version - Required for MSW
	'L'	Invalid - No Longer Supported
	Blank	COW: Standard version MSW: Invalid

GAP FLAG

Functions:	3S	
Work Area Format:	MSW and COW	
Length and Format:	1 byte	
Description:	Code Value	Meaning
	Blank	No gap, i.e., the 'on' street connects this intersection with its predecessor in list. The gap flag in the 1st entry in the list is always blank.
	'G'	A gap exists along the 'on' street between this intersection and its predecessor
	'C'	Real Streets Only have been requested, resulting in segment lengths being 'Combined' and one or more nodes being omitted between this intersection and its predecessor in the list (COW Only).
	'D'	A dog-leg type gap exists along the 'on' street between this intersection and its predecessor
	'N'	A new stretch exists.

For more information on the types of 'gaps' that can be returned by Function 3S, see Section VII.6.

GENERATED RECORD FLAG

Functions: 3, 3C

Work Area Format: MSW and COW

Length and Format: 1 byte

Description: This flag indicates that the geography defined by the input 'on' street and two cross streets is not a conventional street segment. There are several cases: a segment one of whose cross-features is a pseudo-street name (codes C, D); a street stretch formed by consolidating more than one consecutive LION segment (codes B, L, M, R, S and T); or a segment that is part of such a street stretch (types F, G). If the input data simultaneously satisfy the criteria for a Generated Record Flag value of C or D and for some other value, the flag contains the value other than C or D.

'B'	Record has been generated by consolidating several LION segments to represent a stretch of a street where there is a node that is not at an intersection, such as a bending point (or a consecutive sequence of such nodes).
'C'	Record generated because one or both nodes of segment lie on the City Limit (Bronx-Westchester or Queens-Nassau border), but segment itself lies entirely within the City. The cross street list for a node on the City Limit contains the special street code assigned to the pseudo-street name CITY LIMIT in the Bronx or Queens, as appropriate.
'D'	Record has been generated for a dead end segment, i.e. a segment at least one of whose nodes either has no other segments incident at it, or has segments of non-street features only. The cross street list at such a node contains only the special street code assigned to the pseudo-street name DEAD END in the given borough.
'F'	Record represents a segment that is part of a street stretch that either contains a bending point at which there are no cross streets, or the left side of which is the long blockface of a T-intersection or a consecutive sequence of T-intersections.
'G'	Record represents a segment that is part of a street stretch, that either contains a bending point at which there are no cross streets, or the right side of which is the long blockface of a T-intersection or a consecutive sequence of T-intersections.
'L'	Record has been generated to represent the long blockface on the left side of a T-intersection.
'M'	Record has been generated by consolidating two or more LION segments to represent a stretch of a street containing a node or a consecutive sequence of nodes at which the 'on' feature intersects with no streets but intersects with more than one type of non-street feature.
'R'	Record has been generated to represent the long blockface on the right side of a T-intersection.
'S'	Record has been generated by consolidating two or more LION segments to represent a stretch of a street containing a node or a consecutive sequence of nodes at

which the ‘on’ feature intersects with no streets but intersects with one or more shorelines.

‘T’ Record has been generated by consolidating two or more LION segments to represent a stretch of a street containing a node or a consecutive sequence of nodes at which the ‘on’ feature intersects with no streets but intersects with one or more train tracks.

HEALTH AREA
Functions: 1, 1E, 2, 3, 3C, 1B
Work Area Format: MSW and COW
Length and Format: 4 bytes
Description: Districts defined by the NYC Department of Health and used to report statistics on births, deaths, communicable diseases etc. Health Areas are aggregates of Census Tracts.

HEALTH CENTER DISTRICT
Functions: 1, 1E, 2 (COW only), 3 Extended, 3C Extended
Work Area Format: MSW and COW
Length and Format: 2 bytes
Description: Districts defined by the NYC Department of Health for administrative purposes. Health Center Districts are aggregates of Health Areas.

HEZ – See HURRICANE EVACUATION ZONE

HIGH HOUSE NUMBER - See HOUSE NUMBER

HOUSE NUMBER a.k.a. ADDRESS NUMBER
Field Names: HOUSE NUMBER (WA1 input field, Functions 1, 1A, 1B, 1E,AP);
NORMALIZED HOUSE NUMBER (WA1 output field, Functions 1, 1A, 1B, 1E, AP);
LOW HOUSE NUMBER,
HIGH HOUSE NUMBER (WA2 output fields, Functions 1, 1A, 1B, 1E, 3C,AP);
LEFT LOW HOUSE NUMBER,
LEFT HIGH HOUSE NUMBER,
RIGHT LOW HOUSE NUMBER,
RIGHT HIGH HOUSE NUMBER (WA2 output fields, Function 3)
ALTERNATE LOW HOUSE NUMBER,
ALTERNATE HIGH HOUSE NUMBER (WA2 output fields, Function 3C)
UNDERLYING HOUSE NUMBER FOR VANITY ADDRESSES (WA2, 1 and 1E-MSW: Long WA2, 1, 1B, and 1EE-COW, AP?)
Functions: 1, 1A, 1E, 3, 3C, 1B COW only)
Work Area Format: MSW and COW
Length and Format: See Section V.2.
Description: If the field name indicates the house number is normalized, for MSW it is in HNI format, and for COW it is in HNS format; otherwise, it is in HND format (see Section V.2).

HOUSE NUMBER JUSTIFICATION FLAG

Functions:	1, 1E, 1A, D, DG, DN, 1B?
Work Area Format:	COW
Length and Format:	1 byte
Description:	Indicates whether the HOUSE NUMBERS IN DISPLAY format (HNDs) in the output area should be left-justified or right-justified.

Code Value	Meaning
'L' or Blank	Left-justify Normalized House Numbers (default)
'R'	Right-justify Normalized House Numbers

HOUSE NUMBER NORMALIZATION LENGTH

Functions:	1, 1E, 1A, 1B, D, DG, DN
Work Area Format:	COW
Length and Format:	2 bytes, numeric
Description:	Indicates the length requested for the HOUSE NUMBERS IN DISPLAY format (HNDs) in the output area. Valid values are between 12 and 16. If the field is left blank, the default is 12. For more information, see Section V.2.

HURRICANE EVACUATION ZONE (HEZ)

Functions:	1/1E, 1/1E Extended, 1B
Work Area Format:	COW
Length and Format:	2 bytes, numeric, LJBF
Description:	Information used by Emergency Management (previously known as Office of Emergency Management (OEM)) in emergency situations.

New York City's hurricane contingency plans are based on six evacuation zones: 1, 2, 3, 4, 5, 6. The value of 0 represents water polygons and the value of X indicates land that is not part of an evacuation zone.

Value	**Description**
0	Coastal Water polygon
1-6	Hurricane Evacuation Zone designation
X	Land not part of an evacuation zone

Additional information may be found at
http://www1.nyc.gov/site/em/ready/hurricane-evacuation.page

INSTRUCTIONAL DIVISION – See INSTRUCTIONAL REGION

INTERIM ASSISTANCE ELIGIBILITY INDICATOR (**IAEI**) - a.k.a. CD Eligibility Flag

Functions:	1, 1E, 2 (COW only), 3, 3C, 1B
Work Area Format:	MSW and COW
Length and Format:	1 byte
Description:	Indicates whether the input location is in a census tract that is eligible for Community Development Block Grant (CDBG) funding. A census tract is eligible for CDBG funding if at least 51.00% of the residents are low- and moderate-income persons (less than 80% of the Median Family Income) and 50% of its total floor area must be comprised of residential usage. All other census tracts are ineligible.

Note the new residential criteria mentioned above. In Release 16D, the 'CD Eligibility' values were updated to reflect the new criteria. The new values, recalculated by the Economic Development Corporation (EDC) and supplied to the Department of City Planning (DCP) by the New York City Office of Management and Budget (OMB), were revised to reflect new residential floor area data made available in DCP's PLUTO data (16v1)

Code Value	Meaning
'E'	Input location is in a CD-eligible census tract
'I'	Location is not in a CD-eligible census tract
Blank	Location is in a census tract, the CD-eligibility status of which is unknown to the Geosupport System. (Note: This is an error condition and should be reported).

INTERSECTING STREETS - See LIST OF INTERSECTING STREETS

INTERSECTION REPLICATION COUNTER

Functions:	2
Work Area Format:	MSW and COW
Length and Format:	1 byte, numeric
Description:	The Intersection Replication Counter is non-blank only if the two streets intersect more than once, in which case this field contains the number of such intersections.

INTERIOR LOT FLAG

Functions:	1A, BL, BN
Work Area Format:	MSW and COW
Length and Format:	1 byte
Description:	

Code Value	Meaning
'I'	Tax lot is interior to physical block, i.e., it has no street frontages.
Blank	Tax lot has at least one street frontage

INTERNAL LABEL POINT - See SPATIAL COORDINATES OF THE TAX LOT CENTROID

IRREGULARLY-SHAPED LOT FLAG

Functions:	1A, BL, BN	
Work Area Format:	MSW and COW	
Length and Format:	1 byte	
Description:	Code Value	Meaning
	'I'	Tax lot is irregularly-shaped, i.e., non-rectangular
	Blank	Tax lot is rectangular

JOINT INTEREST AREA (JIA) - See COMMUNITY DISTRICT

LATITUDE, LONGITUDE

Functions: 1/1E Extended, all variations of 1A/BL/BN (viz. Regular, Long and Extended), 1B, 2W, 3 Extended, 3C Extended

Work Area Format: COW

Length and Format: Latitude: 9 bytes
Longitude: 11 bytes

Description: Spatial coordinates based on the lines of latitude and longitude. Lines of latitude measure the north-south position between the poles with the equator defined as 0 degrees. Lines of longitude (or meridians) measure the east-west position, with the prime meridian running through Greenwich, England. For NYC, Latitude is always positive and Longitude is always negative.

The latitude and longitude of a location are calculated based on the spatial coordinates (x,y) returned for that location. As a result, the latitude and longitude returned by the Address Processing functions (e.g. 1/1E Extended) will be somewhat different from the values returned by Tax Lot and Building processing functions (e.g. 1A/BL/BN). See also SPATIAL COORDINATES and SPATIAL COORDINATES OF THE TAX LOT CENTROID.

LEFT 1990 CENSUS TRACT - See CENSUS TRACT.

LEFT 2000 CENSUS BLOCK - See CENSUS BLOCK.

LEFT 2000 CENSUS BLOCK SUFFIX - See CENSUS BLOCK SUFFIX.

LEFT 2000 CENSUS TRACT - See CENSUS TRACT.

LEFT 2010 CENSUS BLOCK - See CENSUS BLOCK.

LEFT 2010 CENSUS BLOCK SUFFIX - See CENSUS BLOCK SUFFIX.

LEFT 2010 CENSUS TRACT - See CENSUS TRACT.

LEFT ASSEMBLY DISTRICT - See ASSEMBLY DISTRICT.

LEFT BLOCKFACE ID - See BLOCKFACE ID.

LEFT ELECTION DISTRICT - See ELECTION DISTRICT.

LENGTH IN FEET FROM PREVIOUS NODE

Functions:	3S
Work Area Format:	MSW and COW
Length and Format:	MSW: 3 bytes packed; COW: 5 bytes numeric RJZF
Description:	The length between two nodes.

LGI – See LIST OF GEOGRAPHIC IDENTIFIERS

LGI OVERFLOW FLAG

Functions:	1A and BL - regular WA2, BN
Work Area Format:	MSW and COW
Length and Format:	1 byte
Description:	If set to 'E' indicates that the number of geographic identifiers for the given tax lot exceeds 21, the maximum capacity of the List of Geographic Identifiers (LGI); otherwise it is blank. If this flag is set to 'E', the user can obtain a comprehensive list of BINs for the tax lot by using the long Work Area 2 option when calling the same function with the same input data.

LION FACE CODE - See FACE CODE

LION KEY

Functions:	1, 1E, 3, 3C, 1B (COW only)
Work Area Format:	MSW and COW
Length and Format:	10 bytes. Numeric
Description:	The LION Key identifies a record in the CSCL file and relates to predecessor file known as LION. It consists of: BOROUGH CODE (1 byte) FACE CODE (4 bytes) SEQUENCE NUMBER (5 bytes)

LION NODE – See NODE NUMBER

LION NODE ID – See NODE NUMBER

LION NODE NUMBER – See NODE NUMBER

LION SEGMENT ID – See SEGMENT ID

LION SEQUENCE NUMBER – See SEQUENCE NUMBER

LIST OF ADDRESS RANGES - See LIST OF GEOGRAPHIC IDENTIFIERS

LIST OF BUILDINGS ON TAX LOT

Functions:	1A and BL - Long WA2 only

Work Area Format:	MSW and COW
Length and Format:	17,500 bytes, consisting of 2,500 slots for 7-byte BINs
Description:	List of the BUILDING IDENTIFICATION NUMBER (BIN) of each building on the tax lot. See Section VI.6.

LIST OF CROSS STREET CODES

Functions: 3S

Work Area Format: MSW and COW

Length and Format: MSW: 8 bytes, packed decimal, consisting of 2 slots for intersecting PB5SCs.
COW: 40 bytes, numeric, consisting of 5 slots for intersecting B7SCs.

Description: MSW: For each intersecting street, in general, this is the lowest and second lowest PB5SCs for the cross streets, as described below in COW.

COW: For each intersecting street, this is a list of up to five B7SCs, starting, in general (see Note below), with the lowest B7SC, followed by the next lowest, followed by the remaining B7SCs in ascending order.

The purpose of the ordering of the first two street codes is to facilitate the ability of users to form consistent keys for geographic retrieval of application data.

Note 1: In order to provide the user with the most meaningful information, 'normal' streets will be listed first, followed by 'special' streets, such as Ramps and Exits. Railroads, Shorelines and Borough Boundaries will appear next, followed by Named Intersections, CITY LIMITs, DEAD ENDs and BENDs. This will occur even if the 'special' streets have lower street codes than the 'normal'.

Note 2: To avoid unnecessary listing of BENDs, Function 3S lists a BEND only if the angle of the bend is 60 degrees or more. (Prior to Release 16D, a bend was listed if the angle was 20 degrees or more.) Also, a bend is not included in the list of cross streets when another real street intersects there as well.

Note 3: Since Function 3S returns B7SCs, it is now possible for two streets to have the same B5SCs and different B7SCs, e.g. in Brooklyn, at the intersection of Clinton Street with Livingston Street and Aitken Place, Livingston Street and Aitken Place have the same B5SC (3-56530) but different B7SCs (3-56530-01 and 3-56530-02 respectively).

LIST OF CROSS STREETS

Field Names: LIST OF CROSS STREETS AT LOW ADDRESS END
LIST OF CROSS STREETS AT HIGH ADDRESS END

Functions: 1/1E Regular, 1/1E Extended (COW), 3, 3C, 1B (COW only)

Work Area Format: MSW and COW

Length and Format: - MSW: 20 bytes, consisting of slots for up to five 4-byte PB5SCs. 'Empty' slots contain packed zeros.

- COW (Regular): 30 bytes, consisting of slots for up to five 6-byte B5SCs. 'Empty' slots contain either numeric zeros or blanks.
- COW (1/1E Extended): 40 bytes, consisting of slots for up to five 8-byte B7SCs. 'Empty' slots contain either numeric zeros or blanks. This list is in addition to the B5SC (30 bytes) list

Description: A list of PB5SCs for MSW and B5SCs (and B7SCs) for COW (and COW 1/1E Extended), for up to five streets incident upon a delimiting node (endpoint) of a blockface or street segment. The number of non-empty list entries is returned in the corresponding WA2 field NUMBER OF CROSS STREETS AT (LOW or HIGH) ADDRESS END. It is possible for the list to be entirely empty. If the node lies on a borough boundary, the list may contain streets from both boroughs. Subject to the space limitation, the list may include the pseudo-streets 'City Limit', 'Dead End' and 'Bend'. The inclusion of 'Bend' in the list indicates that the node is a bending point of the 'on' street, not that it is a bending point of a cross street (although that may also be true).
The purpose of the ordering of the first two street codes is to facilitate the ability of users to form consistent keys for geographic retrieval of application data.

Special handling has been given to Railroads, Shorelines, Coincident Streets and streets where two street names having different B5SCs are both valid (a.k.a. Special Address 'Type B' situation)

Note: As a result of this special handling, the first one or two street codes in the lists of intersecting streets may not always be the lowest two street codes. For example a railroad or shoreline would now be put last in the list, even if they have lower street codes than the other intersecting streets.

Some examples follow:

- Consider the situation of <u>coincident street features</u>, e.g. 3rd Avenue and Gowanus Expressway in Brooklyn. The Gowanus Expressway is above 3rd Avenue between approximately 18th Street and 65th Street.
    - If a user issues a Function 3 call requesting information about the segment of 3rd Avenue between 19th and 20th Streets, Geosupport will recognize that 3rd Avenue and the Gowanus Expressway are coincident streets and will not return Gowanus Expressway as an intersecting street. Please note that Geosupport will also accept as input Gowanus Expressway between 19th and 20th Streets. With this input, 3rd Avenue will not be listed as a cross street at either end.

    - If a user issues a Function 3S call, requesting the stretch on 3rd Avenue between 40th Street and 50th Street, Geosupport will recognize that 3rd Avenue and Gowanus Expressway are coincident streets and will not list them as intersecting.

- Consider the situation where a <u>railroad is determined to be one of the cross streets</u>. An example exists in Queens at Kneeland Street between Queens Boulevard and Dead End.
    - A Function 3 call will return QUEENS BOULEVARD and LONG ISLAND RAILROAD as cross streets at the low end. Even though the Long Island Railroad has a numerically smaller street code than Queens Boulevard, it is listed <u>after</u> Queens Boulevard.

- Consider the situation where <u>two street names, with different street codes, are valid for the same blockface</u>. An example exists in Queens where 207th Street and Clearview Expressway are both valid between 39th Avenue and Boyce Avenue.
  - A Function 3 call will be accepted with either street name (viz. 207th Street or Clearview Expressway) as the on-street.

LIST OF CROSS STREETS AT HIGH ADDRESS END - See LIST OF CROSS STREETS

LIST OF CROSS STREETS AT LOW ADDRESS END - See LIST OF CROSS STREETS

LIST OF GEOGRAPHIC IDENTIFIERS (LGI)

Functions:	1A and BL - regular WA2, BN
Work Area Format:	MSW and COW
Length and Format:	756 bytes total, consisting of space for 21 36-byte entries, each entry having fields for the following data items: Low House Number of Address Range High House Number of Address Range B5SC DCP-Preferred LGC BIN Entry Type Code Side of Street Indicator.
Description:	The List of Geographic Identifiers (LGI) is intended to provide a comprehensive geographic profile of a tax lot by listing, so far as the information is known and space allows, all of the lot's buildings; all of the street addresses and non-addressable street frontages of each building; all of the lot's 'vacant frontages' (i.e., street frontages of the lot not associated with buildings); and any NAPs associated with the lot. The LGI contains space for up to 21 entries. The number of non-empty entries is indicated in the WA2 field NUMBER OF GEOGRAPHIC IDENTIFIERS. The types of entries that the LGI can contain are as follows:

<u>List of Geographic Identifiers - Possible Entry Types</u>

Entry Type Code	Represents	Description
Blank	Address range	A real address range of a building on a given tax lot. There are values in the Low House Number, High House Number, B5SC, DCP-Preferred LGC, Side of Street Indicator and BIN fields. A single address is represented as an address range in which the low and high house numbers are identical.
B	NAUB	A Non-Addressable Un-named Building (NAUB) (see Section VI.3). The Low and High House Number and Side of Street Indicator fields are blank. The B5SC and DCP-Preferred LGC fields usually contain the street code and LGC, correspondingly, of

		the street nearest to or most accessible to the NAUB, but they may be blank. The BIN field contains a meaningful value. Note: If the NAUB has frontages on more than one street, there are multiple type B entries to represent all of the NAUB's street frontages.
F	Vacant Street Frontage	A street frontage of the tax lot at which there are no buildings (including NAUBs) and to which no pseudo-addresses have been assigned. The Low and High House Number, BIN and Side of Street Indicator fields are empty. There are values in the B5SC and DCP-Preferred LGC fields.
G	NAP of a Complex	A Non-Addressable Place name (NAP) of a complex of buildings and/or other geographic features, usually on a large site or superblock (see Section III.6). The house number and BIN fields are empty. The B5SC, DCP-Preferred LGC, and Side of Street Indicator fields contain the values of these items assigned to the NAP.
N	NAP of a Simplex	A NAP of a building or other geographic feature that is not part of a complex (see Section III.6). The house number fields are empty. The B5SC, DCP-Preferred LGC, and Side of Street Indicator fields contain the values of these items assigned to the given NAP. The BIN field is non-empty only if the NAP represents a building.
Q	Pseudo-Address Range	A pseudo-address range assigned to a vacant street frontage of the tax lot. There are values in the Low House Number, High House Number, B5SC, DCP-Preferred LGC and Side of Street Indicator fields. A single address is represented as an address range in which the low and high house numbers are identical. The BIN field is empty.
R	Real Street of a Vanity Address	Entry indicates the street and the side of that street on which the building entrance having a vanity address is really located and for which no other address for that building exists. For a discussion of vanity addresses, see Section V.9. In a type R entry, the Low and High House Number fields are empty, and there are non-empty values in the B5SC, DCP-Preferred LGC, Side of Street Indicator and BIN fields. Whenever the LGI contains a type R entry, it also contains a type V entry for the associated vanity address.
V	Vanity Address	A vanity address or address range. For a detailed discussion of vanity addresses, see Section V.9. There are non-empty values in the Low House Number, High House Number, B5SC, DCP-Preferred LGC, Side of Street Indicator and BIN fields. A single address is represented as an address range in which the low and high house numbers are identical. Whenever the LGI contains a type V entry, it also contains an either an address range entry or a type R entry that indicates the street on which the associated building entrance is really located.

W	Blank-Wall Bldg Frontage	A building frontage along a street that is not associated with any addresses, such as some building facades with no entrances. The Low and High House Number and Side of Street Indicator fields are blank. There are values in the B5SC and DCP-Preferred LGC fields. The BIN field contains a meaningful value. Note: Type W entries exist only for buildings that also have at least one real address range entry. If a building has no real address ranges, the building is a NAUB, and its street frontages, if any, are represented by type B entries rather than type W entries.
X	NAP of a Constituent Entity of a Complex	A NAP of a constituent entity of a complex. (The NAP of the entire complex is represented by a separate entry of type G.) The house number fields are empty. The B5SC, DCP-Preferred LGC and Side of Street Indicator fields contain the values of these items assigned to the NAP. The BIN field is non-empty only if the NAP represents a building.

The combination of fields in an LGI entry that contain information depends on the entry type, as indicated in the following table:

List of Geographic Identifiers - Which Fields Contain Values By Entry Type

Entry Type Code	Entry Type	Low & High House Numbers	B5SC	LGC	Side of Street Indicator	BIN
blank	Real Address Range	✓	✓	✓	✓	✓
B	NAUB		(*)	(*)		✓
F	Vacant Street Frontage		✓	✓		
G	NAP of a complex		✓	✓	✓	
N	NAP of a simplex		✓	✓	✓	(**)
Q	Pseudo-Address Range	✓	✓	✓	✓	
R	Real Street of Vanity Address		✓	✓	✓	✓

Entry Type Code	Entry Type	Low & High House Numbers	B5SC	LGC	Side of Street Indicator	BIN
V	Vanity Address	✓	✓	✓	✓	✓
W	Blank-Wall Building Façade		✓	✓		✓
X	NAP of a constituent entity of a complex		✓	✓	✓	(**)

(*) NAUB entries may or may not contain B5SC and LGC values. An entry for a NAUB contains a B5SC value and an LGC value only if the GSS staff has determined that the NAUB fronts on, is adjacent to or is principally accessible from a particular street.

(**) The BIN field is non-empty only if the NAP represents a building.

The LGI's entries are ordered so that entries with non-empty BINs are listed first, grouped by BIN. Except for a special case (alternative borough for Marble Hill and Rikers Island - see Section V.7), if the input address is a real address, the first group of entries in the LGI are those for the BIN corresponding to the input address, and (except for alternative street records for Ruby Street - see Section V.8) the address range encompassing the input address is the very first entry in the LGI. After all the entries with non-empty BINs are listed, any entries with empty BINs, such as entries for pseudo-address ranges, are listed in no particular order as space allows. If the input address is a pseudo-address range, it may or may not appear in the LGI, depending on space and on the order in which the non-BIN entries happen to be listed.

LIST OF GEOGRAPHIC IDENTIFIERS OVERFLOW FLAG - See LGI OVERFLOW FLAG

LIST OF INTERSECTING STREETS – See also LIST OF CROSS STREETS

Function:	2
Work Area Format:	MSW and COW
Length and Format:	MSW: 20 bytes, consisting of slots for up to five 4-byte PB5SCs. 'Empty' slots contain packed zeros. COW: 30 bytes, consisting of slots for up to five 6-byte B5SCs. 'Empty' slots contain numeric zeros or blanks.
Description:	A list of PB5SCS for MSWs and B5SCs for COWs for up to five streets incident upon the intersection. The field NUMBER OF INTERSECTING STREETS contains the number of non-empty entries in the list. If the intersection lies on a borough boundary, the list may contain streets from both boroughs. Subject to the space limitation, the list may include the two input streets, and may include the pseudo-streets 'City Limit' and 'Dead End'. The list never includes the pseudo-street 'Bend'. The list always contains at least one entry (it contains precisely one entry in the case of a bending point of a street at which there are no other streets). The street codes of the input streets may, or may not, be included in the list (depending upon their numerical value.) Note, special handling has been given to Railroads, Coincident Street Features, etc. As a result of this special handling, the first one or two street codes in the list of intersecting streets may not always be the lowest two street codes. See

LIST OF CROSS STREETS for further description and examples of the special handling.

LIST OF SEGMENT IDS

Functions:	3 and 3C
Work Area Format:	COW
Length and Format:	500 bytes, consisting of a count of segment ids and 70 slots for 7-byte Segment IDs
Description:	This list is generated only if Auxiliary Segment Switch is set to 'Y'. See Section VII.4 and Appendix13.

LIST OF STREET CODES

Functions:	1*, 2, 3*, BB, BF
Work Area Format:	COW
Length and Format:	80 bytes, consisting of 10 fields for B7SCs
Description:	List of borough and 7-byte street codes, corresponding to the LIST OF STREET NAMES. The number of street codes in the list is returned in the WA1 output field NUMBER OF STREET CODES AND STREET NAMES IN LIST.

LIST OF STREET NAMES (WA1 output field)

Functions:	1*, 2, 3*, BB, BF
Work Area Format:	MSW and COW
Length and Format:	320 bytes, consisting of 10 fields for street names, each 32 bytes.
Description:	This field is used by several Geosupport features (see below) to return a list of street names. The number of street names in the list is returned in the WA1 output field NUMBER OF STREET NAMES IN LIST for MSWs, and in the WA1 output field NUMBER OF STREET CODES AND STREET NAMES IN LIST for COWs.

The similar names feature uses the List of Street Names to return up to ten street names deemed 'similar' to a rejected input street name (see Section III.5).

The browse functions, Functions BB and BF, use the List of Street Names to return up to ten normalized street names in alphabetical order as part of a street name browse (see Section III.7).

The local street name validation feature uses the List of Street Names to return up to four locally valid alias street names corresponding to a street name rejected as locally invalid (see Section IV.5).

The cross street names feature (see CROSS STREET NAMES FLAG) uses the List of Street Names to return street names corresponding to the street codes in the LIST OF CROSS STREETS (Functions 1, 1E, 3 and 3C) or the LIST OF INTERSECTING STREETS (Function 2).
In the case of Functions 1, 1E, 3 and 3C, the first five 32-byte street name fields in the List of Street Names are used for the street names corresponding to the street codes in the LIST OF CROSS STREETS AT LOW ADDRESS END; the second five 32-byte street name fields in the List of Street Names are used for the

street names corresponding to the street codes in the LIST OF CROSS STREETS AT HIGH ADDRESS END. The actual number of street names is found in Work Area 2 in the fields which provide the number of cross streets at each end of the street segment.

In the case of Function 2, the first five 32-byte street name fields in the List of Street Names are used for the street names corresponding to the street codes in the LIST OF INTERSECTING STREETS. The actual number of street names is found in Work Area 2 in the field which provides the number of intersecting streets at the specified intersection.

LOCATIONAL STATUS OF SEGMENT

Functions:	3, 3C
Work Area Format:	MSW and COW
Length and Format:	1 byte
Description:	Indicates locational status of segment per codes below.

Code	Meaning
'H'	Segment internal to a block, but not a Dead End (A Land Hook)
'I'	Dead End Segment
'X'	Tract Boundary Segment (other than borough boundary)
'1'	Segment bordering Manhattan
'2'	Segment bordering Bronx
'3'	Segment bordering Brooklyn
'4'	Segment bordering Queens
'5'	Segment bordering Staten Island
'9'	Segment bordering City Limits

LONGITUDE - See LATITUDE

LOW HOUSE NUMBER - See HOUSE NUMBER

MARBLE HILL/RIKERS ISLAND FLAG - See ALTERNATIVE BOROUGH FLAG

MODE SWITCH

Functions:	1, 1E, 1A, 3, 3C, BL, BN
Work Area Format:	COW Only
Length and Format:	1 byte

Description:	Indicates request for Extended Work Area 2 for the supported functions. These extended work areas contain street names in addition to Street Codes. Users no longer have to make separate D, DG, or DN calls to get the street names. In addition, CSCL data is returned in the extended Work Area 2. See Appendix 13 for the Work Area layouts. Also, see Section II.7.

Code	Meaning
'X'	Extended information in Extended WA2 requested
Blank	Extended information not requested (default)

NEIGHBORHOOD TABULATION AREA (NTA) CODE

Field Names:	NTA or NTA CODE
Functions:	1, 1 Extended, 1E, 1E Extended, 1B, 3, 3 Extended, 3C, 3C Extended
Work Area Format:	COW
Length and Format:	4 bytes alphanumeric
Description:	The Neighborhood Tabulation Areas (NTAs) are aggregations of census tracts that reflect the 2010 Census. The NTAs are assigned a 4-byte code and a 75-byte name. They are used by the Population Division of the Department of City Planning. See Appendix 16 for a description of the NTA's history and significance.

The first two bytes of the NTA code are an alphabetic borough code as follows:

Code	Borough
MN	Manhattan
BX	Bronx
BK	Brooklyn
QN	Queens
SI	Staten Island

The remaining two bytes are numeric and uniquely define the NTA.

NODE ID - See NODE NUMBER

NODE NUMBER (a.k.a. NODE ID)

Field Names:	FROM NODE FROM NODE ID TO NODE TO NODE ID
Functions:	2, 3 (COW only), 3C (COW Only), 3S (COW Only), 1B (COW Only)
Work Area Format:	MSW and COW
Length and Format:	7 bytes. Numeric
Description:	A node is an endpoint of a geographic feature segment represented in CSCL/LION. Most nodes are points where a feature bends or terminates or where two features intersect in CSCL/LION. Each node has a node ID assigned to it, which is unique in the entire city. Node ID assignments are permanent; if a node is deleted from CSCL, its node ID is retired and is never reassigned to a different node.

A Node ID may be used to identify an intersection or the end points of a segment. An end point node is often referred to as a From Node or a To Node.

NORMALIZED HOUSE NUMBER - See HOUSE NUMBER

NTA - See NEIGHBORHOOD TABULATION AREA (NTA) CODE

NTA CODE - See NEIGHBORHOOD TABULATION AREA (NTA) CODE

NTA NAME - See also NEIGHBORHOOD TABULATION AREA (NTA) CODE

Field Names:	NTA NAME
Functions:	1 Extended, 1E Extended, 1B, 3 Extended, 3C Extended
Work Area Format:	COW
Length and Format:	75 bytes alphanumeric
Description:	See NEIGHBORHOOD TABULATION AREA (NTA) CODE

NUMBER OF BUILDINGS ON TAX LOT

Functions:	1A, BL - long WA2 only
Work Area Format:	MSW and COW
Length and Format:	4 bytes numeric.
Description:	Indicates the number of entries in the LIST OF BUILDINGS. Maximum value is 2,500.

NUMBER OF CROSS STREETS

Field Names:	NUMBER OF CROSS STREETS AT LOW ADDRESS END, NUMBER OF CROSS STREETS AT HIGH ADDRESS END
Functions:	1, 1E, 3, 3C, 1B (COW only)
Work Area Format:	MSW and COW
Length and Format:	One byte, containing a numeric digit from 0 to 5.
Description:	Indicates the number of non-empty entries in the corresponding LIST OF CROSS STREETS.

NUMBER OF CROSS STREETS AT HIGH ADDRESS END - See NUMBER OF CROSS STREETS

NUMBER OF CROSS STREETS AT LOW ADDRESS END - See NUMBER OF CROSS STREETS

NUMBER OF GEOGRAPHIC IDENTIFIERS

Functions:	1A and BL - regular WA2 only, BN, AP
Work Area Format:	MSW and COW
Length and Format:	2 bytes for MSW; 4 bytes for COW
Description:	Indicates the number of entries in the LIST OF GEOGRAPHIC IDENTIFIERS. For Function AP, the number is always ‘0001’.

NUMBER OF INTERSECTING STREETS

Functions:	2
Work Area Format:	MSW and COW
Length and Format:	One byte, containing a numeric digit from 1 to 5.

Description: Indicates the number of non-empty entries in the LIST OF INTERSECTING STREETS.

NUMBER OF PARKING LANES

Functions: 1/1E Extended, 1B, 3 Extended, 3C Extended
Work Area Format: COW
Length and Format: 2 bytes, RJBF.
Description: The number of lanes in a carriageway (roadway) that are reserved for parking of vehicles. The number of parking lanes were determined by DoITT's consultants working on the planimetric feature classes for NYC.

NUMBER OF STREET CODES AND STREET NAMES IN LIST

Functions: 1*, 2, 3*, BB, BF
Work Area Format: COW
Length and Format: 2 bytes, Numeric
Description: Indicates the number of street names returned in the LIST OF STREET NAMES, corresponding to the number of street codes returned in the LIST OF STREET CODES..

NUMBER OF STREET FRONTAGES OF LOT

Functions: 1A, BL, BN
Work Area Format: MSW and COW
Length and Format: 2 bytes, RJZF.
Description: Indicates the number of streets on which the given lot has at least one frontage.

NUMBER OF STREET NAMES IN LIST (WA1 output item)

Functions: 1*, 2, 3*, BB, BF
Work Area Format: MSW
Length and Format: 2 bytes, packed decimal
Description: Indicates the number of street names returned in the LIST OF STREET NAMES.

NUMBER OF TOTAL LANES

Functions: 1/1E Extended, 1B, 3 Extended, 3C Extended
Work Area Format: COW
Length and Format: 2 bytes, RJBF.
Description: The total number of lanes in a carriageway (roadway) including travel lanes and parking lanes. The total number of lanes were determined by DoITT's consultants working on the planimetric feature classes for NYC.

NUMBER OF TRAVEL LANES

Functions: 1/1E Extended, 1B, 3 Extended, 3C Extended
Work Area Format: COW
Length and Format: 2 bytes, RJBF.
Description: The number of lanes in a carriageway (roadway) that are designated for the movement of vehicles traveling from one destination to another. The number of travel lanes were determined by DoITT's consultants working on the planimetric feature classes for NYC.

PARKING LANES - See NUMBER OF PARKING LANES

PLATFORM INDICATOR - See WORK AREA FORMAT INDICATOR

POLICE PATROL BOROUGH

Functions:	1, 1X, 1E, 1EX, 2, 2W, 3, 3X, 3C, 3CX, 1B
Work Area Format:	COW Only
Length and Format:	2 bytes
Description:	Police Patrol Boroughs are sub-borough geographic areas defined by the Police Department. They are composed of Police Precincts. Since the Police Department is supporting the Police Patrol Borough field, it is recommended that it be used.. Geosupport still returns the 1-byte POLICE PATROL BOROUGH COMMAND field to support those existing applications that access it.

Code	Meaning
MS	Manhattan South
MN	Manhattan North
BX	Bronx
BS	Brooklyn South
BN	Brooklyn North
QN	Queens North
SI	Staten Island
QS	Queens South

POLICE PATROL BOROUGH COMMAND (See also POLICE PATROL BOROUGH)

Functions:	1, 1E, 2, 3, 3C, 1B (COW only)
Work Area Format:	MSW and COW
Length and Format:	1 byte
Description:	These are sub-borough geographic areas defined by the Police Department. They are composed of Police Precincts.

Code	Meaning
1	Manhattan South
2	Manhattan North
3	Bronx
4	Brooklyn South
5	Brooklyn North
6	Queens North
7	Staten Island
8	Queens South

Note: It is recommended that you use the POLICE PATROL BOROUGH field (not the POLICE PATROL BOROUGH COMMAND field) since the Police Department is supporting the POLICE PATROL BOROUGH field.

POLICE PRECINCT
Functions: 1, 1E, 2, 3, 3C, 1B (COW only)
Work Area Format: MSW and COW
Length and Format: 3 bytes. RJZF.
Description: Police Patrol Borough Commands are sub-divided into Police Precincts which are defined by the Police Department.

REAL STREET ONLY FLAG
Functions: 3S
Work Area Format: COW
Length and Format: 1 byte. Alphabetic
Description:

Code Value	Meaning
Blank	All streets are returned
R	Real streets only (not Bends or Non-Street Features

RIGHT 1990 CENSUS TRACT - See CENSUS TRACT.

RIGHT 2000 CENSUS BLOCK - See CENSUS BLOCK.

RIGHT 2000 CENSUS BLOCK SUFFIX - See CENSUS BLOCK SUFFIX.

RIGHT 2000 CENSUS TRACT - See CENSUS TRACT.

RIGHT 2010 CENSUS BLOCK - See CENSUS BLOCK.

RIGHT 2010 CENSUS BLOCK SUFFIX - See CENSUS BLOCK SUFFIX.

RIGHT 2010 CENSUS TRACT - See CENSUS TRACT.

RIGHT ASSEMBLY DISTRICT - See ASSEMBLY DISTRICT.

RIGHT BLOCKFACE ID - See BLOCKFACE ID.

RIGHT ELECTION DISTRICT - See ELECTION DISTRICT.

ROADBED REQUEST SWITCH
Functions: 1, 1E, 3S, 1B (COW only)
Work Area Format: MSW and COW
Length and Format: 1 byte

Description:	Indicates request for Roadbed information for roads that are divided into two or more roadbeds. If Roadbed information is requested for a street that is not divided, Geosupport returns the generic information. For functions 1 and 1E, the Segment Type Code will indicate the type of information that is being returned. For more information on function 3S see Section VII.6,

Code	Meaning
'R'	Roadbed information requested
Blank	Generic (non-roadbed) information requested (default)

RPAD BUILDING CLASSIFICATION CODE

Functions: 1A, BL, BN, 1B (COW only)
Work Area Format: MSW and COW
Length and Format: 2 bytes
Description: This is a set of land use/building classification codes defined by the Real Property Assessment Division (RPAD) of the Department of Finance. If a tax lot has more than one building or land use, RPAD assigns the building class code they deem to describe best the 'principal' building or the 'predominant' land use on the tax lot. The values and meanings of this set of codes can be obtained from the Department of Finance.

RPAD CONDO IDENTIFICATION NUMBER

Functions: 1A, BL, BN, 1B (COW only)
Work Area Format: MSW and COW
Length and Format: 4 bytes
Description: This is an identification number assigned by the Department of Finance to each condominium in the city. It identifies the condominium as a whole and not a specific condominium unit.

RPAD SELF-CHECK CODE (SCC) FOR BBL

Functions: 1A, BL, BN, 1B (COW only)
Work Area Format: MSW and COW
Length and Format: 1 byte
Description: For each BBL value, the Department of Finance has computed a Self-Check Code (SCC). This is a one-digit number computed from the BBL value using an algorithm chosen by DOF. The purpose of the SCC is to assist in validating key-entered BBLs. For more information on SCCs inquire to the information technology division of the Department of Finance.

SANBORN VOLUME AND PAGE

Functions: 1A, BL, BN, 2, 1B (COW only)
Work Area Format: MSW and COW
Length and Format: The Volume field is 3 bytes (2-digit volume number + 1-digit character suffix). The Page field is 4 bytes (3-digit page number + 1-digit character suffix).
Description: The Sanborn Map Company maintains a 79 volume atlas of New York City geography that is widely used by New York city agencies. The atlases contain approximately 6000 maps covering all five boroughs.

SANITATION BULK ITEMS PICKUP

Functions:	1/1E, 1/1E Extended, 1B
Work Area Format:	COW
Length and Format:	5 bytes
Description:	This field contains the schedule for the Department of Sanitation (DSNY) pilot program of *scheduled* Bulk Items Pickup. Release 16D includes the implementation of *scheduled* collection of disposed Bulk Items for specific locations across the City (previously, disposed bulk items were collected in these areas on regular refuse collection. This field indicates which days of the week the Department of Sanitation will pick up recycling at the given address. See SANITATION ORGANICS RECYCLING PICKUP for the codes.

SANITATION COLLECTION SCHEDULING SECTION AND SUBSECTION

Functions:	1, 1E, 1B (COW only), 2 (COW only??)
Work Area Format:	MSW and COW
Length and Format:	2 bytes
Description:	District Sections and Subsections defined by the Department of Sanitation for waste collection.

SANITATION DISTRICT

Functions:	1, 1E, 1B (COW only), 2 (COW only??)
Work Area Format:	MSW and COW
Length and Format:	3 bytes. Numeric. The first byte is the Borough Code, and the second and third bytes are the District Number.
Description:	Districts defined by the Department of Sanitation for waste collection.

SANITATION ORGANICS RECYCLING PICKUP

Functions:	1, 1E, 1/1E Extended, 1B
Work Area Format:	COW
Length and Format:	5 bytes
Description:	Indicates which days of the week the Department of Sanitation (DSNY) will pick up organics (compostable waste) recycling at the given address. Organics recycling is currently only available in pilot areas. In Release 16D, the pilot program was expanded to include more 'Large Buildings (+10 units)' (as defined by DSNY)

Value	Description
M	Monday
T	Tuesday
W	Wednesday
TH	Thursday
F	Friday
S	Saturday
E	'E' is used in combination with a day of the week (as noted above) to indicate that collection occurs 'every' week on that day.
Z	Recycling is collected privately

SANITATION RECYCLING PICKUP

Functions: 1, 1E, 1B (COW only)??
Work Area Format: MSW and COW
Length and Format: 3 bytes
Description: Indicates which days of the week the Department of Sanitation will pick up recycling at the given address.
See SANITATION ORGANICS RECYCLING PICKUP for the codes.

SANITATION REGULAR PICKUP

Functions: 1, 1E, 1B (COW only)
Work Area Format: MSW and COW
Length and Format: 5 bytes
Description: Indicates which days of the week the Department of Sanitation will pick up non-recycling waste at the given address.
See SANITATION ORGANICS RECYCLING PICKUP for the codes.

SCHOOL DISTRICT (previously known as Community School District)

Functions: 1, 1E, 2, 3, 3C, 1B (COW)
Work Area Format: MSW and COW
Length and Format: 2 bytes
Description: School district code.

SEGMENT AZIMUTH

Functions: 3, 3C
Work Area Format: MSW and COW
Length and Format: 3 bytes
Description: This item represents the direction in which the segment lies on the earth's surface, expressed as an angle in degrees measured counterclockwise from due east. The segment is considered to be pointing in the direction of increasing addresses, and the azimuth value can range from 0 to 359 degrees, inclusive. For example, a segment pointing due east has an azimuth of 0; one pointing due north has an azimuth of 90; one pointing due west has an azimuth of 180; one pointing halfway between due west and due south (i.e., pointing due southwest) has an azimuth of 225.

SEGMENT ID

Functions: 1 and 1E (MSW: Long WA2 only), 1 and 1E (COW), 3, 3C, 1B (COW only)
Work Area Format: MSW an d COW
Length and Format: 7 bytes. RJZF
Description: Identifies, uniquely within the entire city, a geographic feature segment represented in the CSCL/LION file.

SEGMENT LENGTH IN FEET

Functions: 1, 1E, 3, 3C, 1B (COW only)
Work Area Format: MSW and COW
Length and Format: MSW: Fns 1 and 1E - 5 bytes numeric, Fns 3 and 3C - 3 bytes packed decimal

	COW: Fns 1, 1E, 3, 3C - 5 bytes numeric
Description:	Except for curved segments (**see Curve Flag**), the Segment Length is computed from the **Spatial Coordinates** of the segment's endpoints, as digitized in the LION file. For curved segments, the Segment Length is computed by summing the lengths of the small straight line segments that approximate the curve in the GIS version of LION; this is a more accurate approximation to the true arc length of the curve than would be the segment's 'secant length', that is, the straight line distance between the curve's extreme endpoints. In the case of Functions 3 and 3C, if the input data define a street stretch encompassing more than one segment (because of a T-intersection or bend), the Segment Length returned is the sum of the lengths of the constituent segments of the stretch. Similarly for Functions 1 and 1E, if the input lies on a segment that is generated from multiple segments, the Segment Length returned is the sum of the lengths of the constituent segments. In all cases, the Segment Length has a very approximate level of accuracy only, and <u>should not be used in applications requiring high precision</u>.

SEGMENT ORIENTATION

Functions:	3, 3C
Work Area Format:	MSW and COW
Length and Format:	1 byte character
Description:	This item is a set of codes grouping the possible azimuth values of a segment into eight categories. The categories are "approximately" due north, south, east and west, and the four quadrants of the rectangular coordinate system for segments that do not lie approximately due north, south, east or west. "Approximately" as used here means "within 5 degrees". In Manhattan, all orientation codes are defined with a 30-degree clockwise shift (i.e., 30 is subtracted from the azimuth value) in order to conform to the conventional concept that the midtown streets and avenues lie due east-west and due north-south, respectively. For example, "approximately due north" means "within 5 degrees of due north"; for the boroughs other than Manhattan, this corresponds to the range of azimuth values from 85 to 95; in Manhattan, the corresponding azimuth value range is 55 to 65. There is a ninth orientation category, with a code value of 'U', meaning Geosupport could not determine the segment's orientation because of a problem with the segment's **Spatial Coordinates**. All occurrences of an orientation code of 'U' should be reported to Geographic Systems Section staff.

Code Value	Meaning	Corresponding Range of Azimuth Values: Manhattan	Corresponding Range of Azimuth Values: Other Boroughs
U	Orientation is undefined		
E	Approximately due east	325-335	0-5 and 355-359
1	First quadrant, i.e. northeasterly	336-359 and 0-54	6-84
N	Approximately due north	55-65	85-95
2	Second quadrant, i.e. northwesterly	66-144	96-174
W	Approximately due west	145-155	175-185
3	Third quadrant, i.e. southwesterly	156-234	186-264
S	Approximately due south	235-245	265-275
4	Fourth quadrant, i.e. southeasterly	246-324	276-354

SEGMENT TYPE CODE

Functions:	1, 1E, 3, 3C, 1B (COW only)
Work Area Format:	MSW and COW
Length and Format:	1 byte
Description:	Indicates type of segment.

Code Value	Meaning
‘U’	Undivided
‘G’	Generic
‘B’	Both Generic and Roadbed
‘R’	Roadbed
‘C’	Connector
‘E’	Exit/Entrance Ramp
‘T’	Terminator
‘F’	Faux segment (used when a street or ramp physically ends at a roadbed, but connectivity needs to be maintained with the generic segment.)

SEQUENCE NUMBER

Functions:	1, 1E, 3, 3C, 1B (COW only)
Work Area Format:	MSW and COW
Length and Format:	5 bytes
Description:	Identifies a CSCL/LION record uniquely within Face Code. Generally, Sequence Numbers are assigned in the geographic order in which the corresponding segments occur along the geographic feature identified by the given face code. The Borough Code, Face Code and Sequence Number concatenated form the LION key, which serves as a unique identifier for one CSCL/LION record.

SIDE OF STREET INDICATOR

Functions:	1, 1E, 1A - regular WA2, 3C
Work Area Format:	MSW and COW
Length and Format:	1 byte character
Description:	This field indicates on which side of the street, left or right, the blockface containing the input address lies. Left and right are defined with respect to the direction of increasing addresses along the ‘on’ street.

Code Value	Meaning
L	Block face is on left side of street with respect to direction of increasing address
R	Block face is on right with respect to direction of increasing address

SNOW PRIORITY - See DSNY SNOW PRIORITY CODE

SPATIAL COORDINATES (See also SPATIAL COORDINATES OF TAX LOT CENTROID)

Functions: 1, 1B (blockface information), 1E, 2, 3 Extended, 3C Extended, AP (For Function 1A, BL, BN, 1B (property level information) see also SPATIAL COORDINATES OF TAX LOT CENTROID)

Work Area Format: MSW and COW

Length and Format: Spatial coordinates consist of two fields, an X Coordinate and a Y Coordinate, each 7 bytes RJZF.

Description: Spatial coordinates are a pair of numbers that specify a location on the earth's surface. Geosupport returns spatial coordinates for an input address (Functions 1, 1B (blockface information), 1E, and AP), intersection (Function 2), and nodes at the end of a blockface (Functions 3 Extended and 3C Extended). Spatial coordinates are often used in conjunction with separate computer mapping and Geographic Information System (GIS) software to generate maps and for spatial analysis, although the Geosupport System does not itself provide users with such capabilities. **Note: For Functions 1, 1B (blockface information) and 1E, the spatial coordinates that Geosupport returns are imprecise approximations of real-world locations, and are not appropriate for use in applications that require a high level of spatial accuracy**.

Spatial coordinates are expressed various geodetic coordinate systems, of which latitude/longitude is a well-known example. The coordinate system that Geosupport uses is known as the State Plane Coordinate (SPC) system. The SPC system is based upon the fact that, in a small enough geographic area, the earth's surface can be assumed to be flat without introducing a significant error. In the SPC system, each state of the U.S. is subdivided into zones small enough to model as planar areas. In each SPC zone, a Cartesian coordinate system is established, with the X and Y coordinate axes oriented due east and due north, respectively, and the origin selected to be a point well to the southwest of the entire zone. (The origin is so selected to insure that the X and Y coordinates of all points within the zone are positive values.) The SPC zone that New York City is in, and which Geosupport uses, is called the New York-Long Island zone, NAD 83. In the SPC system, one unit of X or Y represents one foot of distance on the ground. A major advantage of the SPC system over other map projection systems is the ease of calculating the distance between two points.

In the case of Functions 1, 1B (blockface information) and 1E, if the street segment on which the input address lies is a straight line segment or an arc of a circle, Geosupport computes and returns output spatial coordinates using a complex algorithm, a detailed description of which is beyond the scope of this document. If, however, the input address lies on a irregularly curved geographic feature (see **Curve Flag**), Functions 1, 1B (blockface information), and 1E return blanks in the spatial coordinate fields.

Functions 1, 1B (blockface information), and1E's spatial coordinates algorithm produces a point position based on how the input address is prorated with respect to the administrative address range allocated to the entire blockface. In addition, the computed point is positioned slightly set off from the segment, on the side of the street where the input address is located. This offset is graphically desirable and also insures that the point will fall within the interiors of the proper political and administrative district boundary polygons for the given address. The computed point is a rough approximation to the location of the input address, intended to be used only for thematic mapping and other purposes that do not require a high level of spatial accuracy.

The spatial coordinates returned by Functions 1/1E/1B (blockface information) for NAPs and Vanity Addresses (see Section V.9) were an estimate calculated by Geosupport. As of Version 11.2, Geosupport will use the **Citywide Street Centerline file (CSCL)** X-Y Coordinates. The CSCL information guarantees that the X-Y coordinates fall within the actual location of the NAP or Vanity Address.

In the case of Function 2, the spatial coordinates returned are those of the LION node that corresponds to the input street intersection. Those coordinates represent an approximate center point of the intersection.

In the case of Function 3 Extended and Function 3C Extended, the spatial coordinates returned are those of the nodes at the end of the blockface. Those coordinates represent an approximate center point of the intersection.

In the case of Function AP, the spatial coordinates returned are those of the Address Point which is within 5 feet of the entrance(s) of the building.

In the case of Functions 1A, BL, BN, 1B (property level information),the spatial coordinates returned are those of the Tax Lot Centroid. See SPATIAL COORDINATES OF THE TAX LOT CENTROID.

SPATIAL COORDINATES OF THE TAX LOT CENTROID

Functions: 1A, BL, BN, 1B (COW only)

Work Area Format: MSW and COW

Length and Format: Spatial coordinates consist of two fields, an X Coordinate and a Y Coordinate, each 7 bytes RJZF.

Description: Note: Internal Label Points and Annotation Points are no longer used They are replaced by Tax Lot Centroid.

The Tax Lot Centroid is created in ESRI's ArcGIS software using the Department of Finance's Digital Tax Map (DTM). The coordinates associated with the Tax Lot Centroid are guaranteed to be within the property, unlike the coordinates returned by either Function 1 or Function 1E, where the Spatial Coordinates are an approximation based in the address range of the particular street the address is on. In addition, the Function 1/1E Spatial Coordinates always fall in the street bed and not within a tax lot, and most likely will not be adjacent to the tax lot the address is in. Additionally, when using Function 1A, the same coordinates will be returned no matter which of a tax lot's addresses is used as input. There are a few properties which do not have a Tax Lot Centroid; consequently, no coordinates will be returned for these properties.

See SPATIAL COORDINATES for a description of the coordinate system (SPC) used by Geosupport.

SPECIAL ADDRESS GENERATED RECORD FLAG (a.k.a. SAF FLAG or SPECIAL ADDRESS FLAG)

Functions:	1, 1E, 1B (COW only)
Work Area Format:	MSW and COW
Length and Format:	1 byte character
Description:	A non-blank value in this flag indicates one of a variety of special addressing situations.

Code Value	Meaning
'A'	The address range returned in this work area is alternative to the address range that is stored in LION for this blockface. This case arises most commonly when the input address is an old (superseded) address on a blockface on which the buildings were re-numbered at some time in the past. For such an input address, the address range returned in this work area is the old address range, whereas the current address range is stored in LION. Another situation in which this flag is 'A' is when the given street segment has continuous parity address ranges on both sides of the street, such as when buildings are numbered consecutively around the arc of a cul-de-sac.
'B'	The input street name or five-digit street code is different from that stored in LION for this blockface. This case arises when two street names having different B5SCs are both valid along a street or portion of a street. These are situations in which treating the two street names as aliases would result in an address range overlap.
'C'	The input address pertains to Ruby Street, a street along the Brooklyn-Queens border that has a unique addressing situation. See SectionV.8.
'D'	The input address involves a duplicate address situation. See Section V.6.
'E'	The input address is in one of the neighborhoods in which the name of the neighborhood can serve as an alternative street name for the streets in that neighborhood. Two Bronx neighborhoods, Edgewater Park and Harding Park, have this characteristic.
'G'	The input name or street code corresponds to a non-addressable place name of a complex. A complex is a geographic feature that contains constituent entities that are separately geographically identifiable. Typical examples of complexes include airports, housing projects and university and hospital campuses. See Section III.6.
'N'	The input name or street code corresponds to a non-addressable place name of a 'stand-alone' geographic feature (a geographic feature that is neither a complex nor a constituent entity of a complex). Typical examples are individual named buildings, such as Empire State Building, Shea Stadium, Carnegie Hall. See

Section III.6.

'O'	The blockface contains out-of-sequence and/or opposite-parity addresses. An out-of-sequence address contains a house number that is out of sequence with those of the immediately adjacent buildings. An opposite-parity address contains a house number that is of the opposite parity to the predominant parity on the blockface. See Section V.10.
'P'	The input address contains an addressable place name. Example: 2 Penn Plaza. See Section III.6.
'S'	The input address contains a house number suffix and is either the first or last address on this blockface.
'V'	The input address is a 'vanity address', that is, an address in which the street name refers to a different street than the one on which the referenced building entrance is actually located. See Section V.9.
'X'	The input data specify a non-addressable place name of a constituent entity of a complex. Examples: AVERY FISHER HALL and NEW YORK STATE THEATER are names of constituent entities of the complex LINCOLN CENTER. See Section III.6.

SPLIT ELECTION DISTRICT FLAG

Function: 1E, 1B (COW only)
Work Area Format: MSW and COW
Length and Format: 1 byte.
Description:

Code Value	Meaning
'S'	Block face is split among two or more election districts
blank	Block face lies entirely within an election district

STATE SENATORIAL DISTRICT

Function: 1E, 1B (COW only), 2 (COW only)
Work Area Format: MSW and COW
Length and Format: 2 bytes. Numeric.
Description: A district of the upper house of the New York State legislature. Consists of an aggregation of Election Districts

STREET ATTRIBUTE INDICATOR (a.k.a. ATTRIBUTE BYTE)

Functions: WA1 output field - 1, 1A, 1B, 1E, 1N, AP, D, DG, DN
Work Area Format: MSW and COW
Length and Format: 1 byte character
Description: Indicates certain characteristics of selected streets.

Code Value	Meaning
'C'	Building Improvement District (BID)

‘E’	Input street is entirely in Edgewater Park (a Bronx neighborhood that has special addressing characteristics).
‘F’	Input street is partly in Edgewater Park and partly outside of it.
‘G’	NAP of a complex.
‘H’	All house numbers on input street are hyphenated.
‘I’	Intersection Name
‘M’	House numbers on input street are of mixed hyphenation, i.e., some are hyphenated and some are not.
‘N’	Input street is a Non-Addressable Place Name (NAP).
‘S’	Front-Truncated Street Name.
‘X’	NAP Of a Constituent Entity of a Complex
Blank	None of the above. In particular, all addresses on the input street are un-hyphenated.

STREET NAME NORMALIZATION FORMAT FLAG

Functions: 1, 1A, 1E, 1N, 2, 3, 3C, 3S, D, DG, DN, 1B (COW only)
Work Area Format: MSW and COW
Length and Format: 1 byte.
Description: Specifies the format in which Geosupport is to return output normalized street names. The default is to return street names in the sort format.

Code Value	Meaning
blank	Return normalized street names in the sort format
‘C’	Return normalized street names in the compact format
‘S’	Return normalized street names in the sort format

STREET NAME NORMALIZATION LENGTH LIMIT (SNL)

Functions: WA1 input item, Functions 1, 1A, 1E, 1N, 2, 3, 3C, 3S, D, DG, DN, 1B (COW only)
Work Area Format: MSW and COW
Length and Format: 2 bytes, blank or numeric, either LJBF or RJZF.
Description: Specifies the maximum length in bytes within which Geosupport is to normalize street names. The minimum and maximum permissible SNL values are 4 and 32. The default that is in effect if the application does not specify an SNL value is 32.

STREET WIDTH
STREEET WIDTH MAXIMUM

Functions: 1/1E Extended, 1B, 3 Extended, 3C Extended
Work Area Format: COW
Length and Format: Street Width: 3 bytes, RJBF
Street Width Maximum, 3 bytes, RJBF
Description: The width, in feet, of the paved area of the street.
Street Width contains the width at the narrowest part of the street.
Street Width Maximum contains the width at the widest part of the street.
If the width is consistent along the street segment then both values are identical.

TAX BLOCK

Functions: 1A, BL, BN, 1B (COW only)
Work Area Format: MSW and COW
Length and Format: 5 bytes
Description: See Section VI.2.

TAX LOT

Functions: 1A, BL, BN, 1B (COW only)
Work Area Format: MSW and COW
Length and Format: 4 bytes
Description: See Section VI.2.

TAX LOT CENTROID - See SPACIAL COORDINATES OF THE TAX LOT CENTROID

TAX MAP SECTION

Functions: 1A, BL, BN, 1B (COW only)
Work Area Format: MSW and COW
Length and Format: 2 bytes
Description: The Department of Finance real property tax maps are organized into sections; each section is organized into volumes; and each volume consists of pages. Tax Map Section values are unique within borough.

TAX MAP VOLUME

Functions: 1A, BL, BN, 1B (COW only)
Work Area Format: MSW and COW
Length and Format: 2 bytes
Description: See description at **Tax Map Section.** Tax Map Volume values are unique within Tax Map Section.

TO NODE - See NODE NUMBER

TO NODE ID - See NODE NUMBER

TOTAL LANES - See NUMBER OF TOTAL LANES

TRAFFIC DIRECTION

Functions: 1/1E Extended, 1B, 3 Extended, 3C Extended
Work Area Format: COW
Length and Format: 1 byte
Description:

blank	Non-street feature (or unknown if not a non-street feature)
A	One way street, traffic flows against the segment's directionality, i.e., from the segment's TO node to the FROM node
P	Pedestrian path, non-vehicular
T	Two-way street
W	One way street, traffic flows with the segment's directionality, i.e., from the FROM node to the TO node

TRAVEL LANES - See NUMBER OF TRAVEL LANES

UNDERLYING B7SC OF TRUE STREET - See B7SC OF "TRUE" STREET

UNIT INFORMATION FIELDS

Field Names: UNIT INPUT
UNIT – SORT FORMAT
UNIT – TYPE
UNIT – IDENTIFIER
UNIT – DISPLAY FORMAT
Functions: 1* (COW only)
Work Area Format: COW
Length and Format: See Section V.15 Unit Information Feature
Description: See Section V.15 Unit Information Feature

USPS PREFERRED CITY NAME

Functions: 1/1E Extended, 1B
Work Area Format: COW
Length and Format: 25 bytes
Description: The USPS (United States Postal Service) Preferred City Name (e.g. Astoria, Jackson Heights) is of particular importance for Queens addresses.

For Queens, the USPS Preferred City Name is based on the ZIP code associated with the input address. Unless there is a special ZIP code, the following holds true for the other boroughs. For Manhattan, the USPS Preferred City Name is New York. For all the other boroughs, the USPS Preferred City Name is the borough name, viz. Bronx, Brooklyn, and Staten Island.

In the rare, and unexpected, instance where there is no city name available for a Queens location, then the city name will be set to a default of QUEENS and the following warning message will be issued:
GRC 01, Reason Code Y:
`ZIP NOT IN CITY NAME TABLE. GENERIC CITY NAME RETURNED. NOTIFY DCP/GSS`

VACANT LOT FLAG

Functions:	1A, BL, 1B (COW only)	
Work Area Format:	MSW and COW	
Length and Format:	1 byte.	
Description:	<u>Code Value</u>	<u>Meaning</u>
	'V'	Tax lot is currently vacant, i.e., it has no existing
buildings	Blank	Tax lot has at least one existing building

WORK AREA FORMAT INDICATOR

Functions:	All	
Work Area Format:	MSW and COW	
Length and Format:	1 byte	
Description:	This indicator specifies which work area layouts are to be used in an API call. Note: This indicator is also known as the Platform Indicator.	
	<u>Code</u>	<u>Meaning</u>
	blank	The IBM mainframe specific work areas (MSWs) are used. The MSWs contain packed decimal fields. In general, these work areas are the ones described throughout this manual.
	'C'	The platform-independent work areas known as the Character-Only Work Areas (COWs) are used. These contain no packed decimal fields. For information on using COWs on the mainframe and the differences from the MSWs, see Appendix 12. For the work area layouts of the COWs, see Appendix 13.

XY COORDINATES - see SPATIAL COORDINATES

X-Y COORDINATES - see SPATIAL COORDINATES

ZIP CODE

Functions:	1, 1A, 1E, 2, 3, 3C, 1B
Work Area Format:	MSW and COW
Length and Format:	5 bytes. Numeric
Description:	U.S. Postal Service's 5-digit ZIP code.

ZIP code may also be used as input with functions 1, 1A, 1B, and 1E to identify the borough or Duplicate Address Pseudo-Street name (DAPS).

APPENDIX 4: GEOSUPPORT RETURN CODES, REASON CODES AND MESSAGES

This appendix consists of a table listing all of the Geosupport Return Codes (GRCs), Reason Codes and Messages, and the Geosupport function(s) that can elicit each of them. The table is current as of the Geosupport software version indicated in the table heading. See Section II.2 for a detailed discussion of application reject handling using GRCs, Reason Codes and Messages.

In the table, an asterisk in the second byte position of a function code is a 'wildcard', signifying all function codes that begin with the character that is in the first byte position. For example, '3*' signifies all function codes that begin with '3' (namely, as of this writing, Functions 3, 3C and 3S).

An asterisk in the second position of a function code is used as a shorthand notation to represent all function codes having the indicated value in the first position, as follows

1* = 1, 1A, 1B, 1E, 1N, AP
3* = 3, 3C, 3S
B* = BB, BF, BL, BN
D* = D, DG, DN

Typically, any function listed with an asterisk also includes the various forms of the function, e.g. Extended, Long, Auxiliary Segments etc.

GEOSUPPORT SYSTEM RETURN CODES, REASON CODES AND MESSAGES
(As of Geosupport Software Version 17.2 - unchanged since V17.1)

GRC	REASON CODE	FUNCTIONS * = wildcard	MESSAGE (LITERAL TEXT IN UPPERCASE, <Variable values in angled brackets>, [Comments in Square Brackets & Mixed Case])
00		All	[Processing was unconditionally successful-no message issued]
01			**[GRC 01s are warnings]**
	1	1,1A,1B, 1E,AP	ADDR NUMBER ALTERED: RANGE ASSUMED. USING DIGITS BEFORE DASH ONLY ADDR NUMBER ALTERED: USING DIGITS BEFORE DASH ONLY
	2	1,1A,1B, 1E,AP	ADDR NUMBER ALTERED: HYPHEN INSERTED
	3	1,1A,1B, 1E,AP	ADDR NUMBER ALTERED: HYPHEN DELETED
	4	BB,BF	YOU HAVE REACHED THE <FIRST or LAST> STREET NAME IN THE BOROUGH OF <boro. name>
	5	1,1A,1B, 1E	INPUT IS A COMPLEX. OUTPUT DATA MAY PERTAIN TO ONLY PART OF THE COMPLEX
	6	1,1A,1B, 1E	OUTPUT STREET NAME/CODE DIFFER FROM INPUT [Browse Flag P/F/R and Ruby Street/Sapphire Street processing]
	7	1,1A,1B, 1E	OUTPUT STREET NAME/CODE DIFFER FROM INPUT. ADDR NUMBER ALTERED: RANGE ASSUMED OUTPUT STREET NAME/CODE DIFFER FROM INPUT. ADDR NUMBER ALTERED: HYPHEN INSERTED OUTPUT STREET NAME/CODE DIFFER FROM INPUT. ADDR NUMBER ALTERED: HYPHEN DELETED
	8	1A,1B	INPUT ADDRESS IS A PSEUDO-ADDRESS
	9	1A,1B	INPUT ADDRESS IS A PSEUDO-ADDRESS. ADDR NUMBER ALTERED: RANGE ASSUMED INPUT ADDRESS IS A PSEUDO-ADDRESS. ADDR NUMBER ALTERED: HYPHEN INSERTED INPUT ADDRESS IS A PSEUDO-ADDRESS. ADDR NUMBER ALTERED: HYPHEN DELETED

GEOSUPPORT SYSTEM RETURN CODES, REASON CODES AND MESSAGES
(As of Geosupport Software Version 17.2 - unchanged since V17.1)

GRC	REASON CODE	FUNCTIONS * = wildcard	MESSAGE (LITERAL TEXT IN UPPERCASE, <Variable values in angled brackets>, [Comments in Square Brackets & Mixed Case])
01 **(cont.)**	A	1A,1B,BL	LOT HAS MORE ITEMS THAN LISTED
	B	1A,1B	LOT HAS MORE ITEMS THAN LISTED.ADDR NUMBER ALTERED: RANGE ASSUMED LOT HAS MORE ITEMS THAN LISTED.ADDR NUMBER ALTERED: HYPHEN INSERTED LOT HAS MORE ITEMS THAN LISTED.ADDR NUMBER ALTERED: HYPHEN DELETED LOT HAS MORE ITEMS THAN LISTED.ADDR NUMBER ALTERED: INPUT ADDRESS IS A PSEUDO-ADDRESS
	C	1,1A,1B, 1E,2,3*	IN MARBLE HILL - LEGAL BORO IS MANHATTAN IN MARBLE HILL - LEGAL BORO IS MANHATTAN. ADDR NUMBER ALTERED: RANGE ASSUMED IN MARBLE HILL - LEGAL BORO IS MANHATTAN. ADDR NUMBER ALTERED: HYPHEN INSERTED IN MARBLE HILL - LEGAL BORO IS MANHATTAN. ADDR NUMBER ALTERED: HYPHEN DELETED
			ON RIKERS ISL - LEGAL BORO IS THE BRONX ON RIKERS ISL - LEGAL BORO IS THE BRONX. ADDR NUMBER ALTERED: RANGE ASSUMED ON RIKERS ISL - LEGAL BORO IS THE BRONX. ADDR NUMBER ALTERED: HYPHEN INSERTED ON RIKERS ISL - LEGAL BORO IS THE BRONX. ADDR NUMBER ALTERED: HYPHEN DELETED
	D	1*,2,3*, AP	PARTIAL STREET NAME USED TO MEET SNL REQUIREMENT
	E	1B,1E	OUTPUT ADDRESS RANGE IS SPLIT BY ELECTION DISTRICT BOUNDARY
	F	BN	THIS BIN IS TEMPORARY AND WILL BE REPLACED IN THE FUTURE
	G	1,1A,1B, 1E	ADDR NUMBER ALTERED: RANGE ASSUMED. NOTE: INCONSISTENT ODD/EVEN ADDR RANGE
	H	2,3S	THESE STREETS INTERSECT ONCE-COMPASS DIRECTION IGNORED
	I	1,1A,1B, 1E	INPUT IS NON-ADDRESSABLE PLACE NAME (NAP) - ADDRESS NUMBER IGNORED INPUT IS NAP WITH INVALID ADDRESS NUMBER. ADDRESS NUMBER IGNORED
	J	1,1A,1B, 1E,2,3*	<Full street name including EAST or WEST as first word> ASSUMED [An input Bronx or Manhattan street name is missing EAST or WEST as its first word, and the intended full street name is unambiguous]

GEOSUPPORT SYSTEM RETURN CODES, REASON CODES AND MESSAGES
(As of Geosupport Software Version 17.2 - unchanged since V17.1)

GRC	REASON CODE	FUNCTIONS * = wildcard	MESSAGE (LITERAL TEXT IN UPPERCASE, <Variable values in angled brackets>, [Comments in Square Brackets & Mixed Case])
01 (cont.)	J (cont.)	2,3*	<Full street name> AND <other full street name> ASSUMED [Two input Bronx or Manhattan street names are missing EAST or WEST as their first words, and the intended names are unambiguous]
		3*	ALL THREE STREET NAMES ASSUMED [Three input Bronx or Manhattan street names are missing EAST or WEST as their first words, and the intended names are unambiguous]
	K	1,1A,1B, 1E,AP	EMBEDDED BLANK IN ADDRESS NUMBER HAS BEEN REPLACED WITH A HYPHEN
	L or R	3,3C	<LEFT or RIGHT> SIDE OF SEGMENT IS IN <BROOKLYN or QUEENS> or <LEFT or RIGHT> SIDE OF SEGMENT IS IN <NASSAU or WESTCHESTER> - NO INFO RETURNED FOR THAT SIDE
	M	1,1A,1B, 1E	INPUT ADDRESS NUMBER IS ZERO
	N	1,1A,1B, 1E,2,3*, AP,D*	STREET NAME(S) AND STREET CODE(S) BOTH SPECIFIED AS INPUT - <CODE(S) or NAMES> IGNORED
		2,2W COW Only	STREET NAME/CODE(S) AND NODE BOTH SPECIFIED AS INPUT - NODE USED
	O	1,1A,1B, 1E	CAUTION: <BLOCK FACE or ADDR RANGE> CONTAINS OUT-OF-SEQUENCE AND/OR OPPOSITE PARITY ADDRESSES
	P	1,1B,1E	IRREGULARLY CURVED STREET SEGMENT - SPATIAL COORDINATES RETURNED AS BLANKS
	Q	3	THESE STREETS INVOLVE A ‘DOGLEG’ - SHORTEST STRETCH PROVIDED

GEOSUPPORT SYSTEM RETURN CODES, REASON CODES AND MESSAGES
(As of Geosupport Software Version 17.2 - unchanged since V17.1)

GRC	REASON CODE	FUNCTIONS * = wildcard	MESSAGE (LITERAL TEXT IN UPPERCASE, <Variable values in angled brackets>, [Comments in Square Brackets & Mixed Case])
01 (cont.)	S	1,1A,1B, 1E,AP	<HNI or HNS> AND DISPLAY ADDRESS NUMBER BOTH SPECIFIED AS INPUT-<HNI or HNS> IGNORED
	T	2	NON-INTERSECTION NAME IGNORED
	U	3S	STRETCH HAS MORE ITEMS THAN LISTED
	V	1,1B,1E	<Normalized input address number> <Norm'd input street name> IS ON <LEFT or RIGHT> SIDE OF <True street name> [This warning is issued for vanity addresses, addressable place names, NAPs other than complexes (for which an underlying address is not available), and certain alternative addresses known as type 'B' addresses.] or <Address number> <True street name> IS THE UNDERLYING ADDRESS OF <Normalized input NAP> [This warning is issued for NAPs other than complexes, for which an underlying address is available.]
	W	1,1A,1B, 1E,AP, 2,3*	INPUT STREET NAME HAS BEEN MODIFIED [a. MSW: Extraneous data were deleted from the end of a free-form address. COW: Same as MSW above, except that, in addition, the first 14 bytes of the extraneous data on a free-form address were processed as if they were in the UNIT input field (if there was no other data in the Unit input field).] [b. Neighborhood name was deleted from Duplicate Address Pseudo-Street Name (DAPS) for Functions 2, 3*.]
	X	1E,1B	THERE ARE NO POLITICAL DISTRICTS ASSIGNED TO THIS LOCATION

GEOSUPPORT SYSTEM RETURN CODES, REASON CODES AND MESSAGES
(As of Geosupport Software Version 17.2 - unchanged since V17.1)

GRC	REASON CODE	FUNCTIONS * = wildcard	MESSAGE (LITERAL TEXT IN UPPERCASE, <Variable values in angled brackets>, [Comments in Square Brackets & Mixed Case])
01 (cont.)	Y	1/1E Ext 1B COW Only	ZIP NOT IN CITY NAME TABLE. GENERIC CITY NAME RETURNED. NOTIFY DCP/GSS
	Z	1A,1B, BL,BN	A BILLING BBL HAS NOT YET BEEN ASSIGNED TO THIS CONDOMINIUM
	$	1* COW Only	UNIT IDENTIFIER HAS BEEN TRUNCATED [This warning is generated only when the Unit Input field is used.]
	*	1A,1B BL,BN COW Only	TPAD Warning will appear in message field. [See list of TPAD Warning messages and Reason Code Qualifiers /TPAD Conflict Flag after this table.]
			[GRCs greater than 01 are rejects or errors]
02		2	STREETS INTERSECT TWICE-<number of feet> FT BETWEEN INTERSECTIONS. COMPASS DIRECTION REQ'D
03	Blank	2 MSW Only	STREETS INTERSECT MORE THAN TWICE-CAN ONLY BE PROCESSED BY COW FUNCTION CALL [Reason Code value is blank]
	A	2 COW Only	STREETS INTERSECT MORE THAN TWICE-USE FUNCTION 2W TO FIND RELATED NODES
	B	2W COW Only	STREETS INTERSECT MORE THAN TWICE - USE NODE AS INPUT
04		1A,BL MSW Only	1A/BL VERSION SWITCH INVALID - MUST BE S. ONLY STANDARD IS SUPPORTED

GEOSUPPORT SYSTEM RETURN CODES, REASON CODES AND MESSAGES
(As of Geosupport Software Version 17.2 - unchanged since V17.1)

GRC	REASON CODE	FUNCTIONS * = wildcard	MESSAGE (LITERAL TEXT IN UPPERCASE, <Variable values in angled brackets>, [Comments in Square Brackets & Mixed Case])
05		3S	FOR FUNCTION 3S, ONLY FIRST BOROUGH CODE IS PERMITTED
07		1,1A,1B, 1E	FOR A NAME OF A COMPLEX, 5-DIGIT STREET CODE INPUT IS NOT PERMITTED
08		All but B*	INVALID STREET NAME NORMALIZATION FORMAT FLAG - MUST BE BLANK, C OR S
09		3C	<Compass direction> SIDE OF STREET SEGMENT IS NOT IN <borough name>
10		All but B*	INVALID SNL VALUE - MUST BE BETWEEN 4 AND 32 INCLUSIVE
11	0	1*,2,3*, AP	<Street name> NOT RECOGNIZED. THERE ARE NO SIMILAR NAMES
12		2	INTERSECTION NAME NOT FOUND
13	1	1,1A,1B, 1E,AP	ADDRESS NBR <value> CONTAINS AN INVALID CHARACTER <character> IN POSITION <position number>
	2	1,1A,1B, 1E,AP	ADDRESS NBR <value> HAS MORE THAN 3 DIGITS AFTER DASH
	3	1,1A,1B, 1E,AP	ADDRESS NBR <value> HAS TOO MANY DASHES
	4	1,1A,1B, 1E,AP	ADDRESS NBR <value> HAS NO DIGITS AFTER THE DASH
	6	1,1A,1B, 1E,AP	ADDRESS NBR <value> HAS TOO MANY DIGITS (MORE THAN 5)

GEOSUPPORT SYSTEM RETURN CODES, REASON CODES AND MESSAGES
(As of Geosupport Software Version 17.2 - unchanged since V17.1)

GRC	REASON CODE	FUNCTIONS * = wildcard	MESSAGE (LITERAL TEXT IN UPPERCASE, <Variable values in angled brackets>, [Comments in Square Brackets & Mixed Case])
13 (cont.)	7	1,1A,1B, 1E,AP	ADDRESS NBR <value> IS NOT COMPLETE AS ENTERED
	8	1,1A,1B, 1E,AP	ADDRESS NBR <value> - PORTION AFTER HYPHEN EXCEEDS ALLOWABLE MAXIMUM
	9	1,1A,1B, 1E,AP,D*	ADDRESS NBR <hse nr value> INVALID INTERNAL FORMAT
	A	1,1A,1B, 1E,AP,D*	ADDRESS NBR <value> HAS AN UNKNOWN OR INVALID SUFFIX/ENDING
	B	1,1A,1B, 1E,AP	INPUT CONTAINS NO ADDRESS NUMBER
	C	1,1A,1B, 1E,AP	ADDRESS NBR <value> HAS AN EMBEDDED BLANK
	D	1,1A,1B, 1E,AP	ADDRESS NBR HAS INVALID FORMAT FOR EDGEWATER PARK
	E	1,1A,1B, 1E,AP	THIS STREET HAS HYPHENATED ADDRESS NBRS ONLY. TRY <address nbr with hyphen ins erted to left of last two digits> OR <address nbr with hyphen inserted to left of last three digits>
	F	1,1A,1B, 1E,AP	THIS STREET HAS UNHYPHENATED ADDRESS NBRS ONLY. TRY <digits of address number to left of dash only> OR <digits to left and right of dash concatenated without the dash>
	G	1,1A,1B, 1E,AP	ADDRESS NUMBER HAS INVALID HYPHENATION FOR THIS STREET [Input address number is an unhyphenated 2-digit number, but the input street has hyphenated address numbers only.]

GEOSUPPORT SYSTEM RETURN CODES, REASON CODES AND MESSAGES
(As of Geosupport Software Version 17.2 - unchanged since V17.1)

GRC	REASON CODE	FUNCTIONS * = wildcard	MESSAGE (LITERAL TEXT IN UPPERCASE, <Variable values in angled brackets>, [Comments in Square Brackets & Mixed Case])
14	Blank	3S	INPUT DOES NOT DEFINE A STREET STRETCH, SINCE INPUT INTERSECTIONS ARE IDENTICAL
	A	3S	INPUT DOES NOT DEFINE A STREET STRETCH [e.g. On-street has a different 5-digit street code than the underlying street]
15		All but B*	STREET NAME CANNOT BE NORMALIZED
16		1*,AP	STREET NAME IS MISSING
17		All	BOROUGH CODE IS MISSING
18		BL	TAX BLOCK NOT NUMERIC
19		BL	TAX LOT NOT NUMERIC
20		BN	BUILDING IDENTIFICATION NUMBER (BIN) IS MISSING
21		BN	BUILDING IDENTIFICATION NUMBER (BIN) NOT FOUND
22		BN	INVALID BIN FORMAT: NON-NUMERIC, FIRST DIGIT NOT 1-5 OR REST OF DIGITS ALL ZERO
23		BN	TEMPORARY DEPARTMENT OF BUILDINGS BIN: EXISTS ONLY IN D.O.B FILES
24		3*	ON STREET IS MISSING
25		2,3*	CROSS STREET 1 IS MISSING
26		2,3*	CROSS STREET 2 IS MISSING
27		All	INVALID WORK AREA FORMAT INDICATOR - MUST BE C OR BLANK

GEOSUPPORT SYSTEM RETURN CODES, REASON CODES AND MESSAGES (As of Geosupport Software Version 17.2 - unchanged since V17.1)			
GRC	REASON CODE	FUNCTIONS * = wildcard	MESSAGE (LITERAL TEXT IN UPPERCASE, <Variable values in angled brackets>, [Comments in Square Brackets & Mixed Case])
28		1,1A,1B, 1E,AP	A PARTIAL STREET NAME MAY NOT BE USED IN A FREE-FORM ADDRESS
29		1,1A,1B, 1E,AP,3*	INTERSECTION <INTERSECTION NAME> MAY NOT SERVE AS ON-STREET
30		2	<STREET NAME> IS NOT PART OF <INTERSECTION NAME>
31	1	1A,BL COW Only	MODE SWITCH OF X NOT VALID WITH LONG-WORK-AREA-2 SET TO L
32		2,2W COW Only	INVALID NODE - NON-NUMERIC OR EMBEDDED BLANKS FOUND
33		2,2W COW Only	ACCESS BY NODE FAILED - NODE NOT FOUND
38		3S	<Compass direction value> IS AN INVALID COMPASS DIRECTION VALUE FOR <FIRST or SECOND> INPUT INTERSECTION
39		2,3C	INVALID COMPASS DIRECTION VALUE - MUST BE N, S, E OR W
40		2,3C	COMPASS DIRECTION VALUE IS INVALID FOR THIS INPUT LOCATION
41		1,1A,1B, 1E,AP	THIS STREET HAS NO ADDRESSES
42	blank	1,1A,1B, 1E,AP	ADDRESS NUMBER OUT OF RANGE
	1	1,1A,1B, 1E,AP	ADDRESS NUMBER OUT OF RANGE. CORRECT DIGITS OR INSERT HYPHEN AS <AB-CD> OR <A-BCD> [where input was of the form ABCD]

GEOSUPPORT SYSTEM RETURN CODES, REASON CODES AND MESSAGES
(As of Geosupport Software Version 17.2 - unchanged since V17.1)

GRC	REASON CODE	FUNCTIONS * = wildcard	MESSAGE (LITERAL TEXT IN UPPERCASE, <Variable values in angled brackets>, [Comments in Square Brackets & Mixed Case])
	2	1,1A,1B, 1E,AP	ADDRESS NUMBER OUT OF RANGE. CORRECT DIGITS OR TRY <AB> OR <ABCD> [where input was of the form AB-CD]
44		3C	INPUT DOES NOT DEFINE A BLOCK FACE
45		3	INPUT DOES NOT DEFINE A STREET SEGMENT
46		3,3C	STREET COMBINATION NOT UNIQUE [The input is ambiguous, i.e., it describes more than one valid street segment.]
47		1,1A,1B, 1E COW Only	INVALID HNL VALUE - MUST BE BETWEEN 12 AND 16 INCLUSIVE
48		1,1A,1B, 1E COW Only	INVALID HOUSE NUMBER JUSTIFICATION VALUE - MUST BE L, R OR BLANK
49		1,1A,1B, 1E COW Only	ADDRESS NUMBER CANNOT BE NORMALIZED WITHIN REQUESTED HNL
50	1 thru 4	1,1A,1B, 1E,2,3*, AP	<Input street name> IS AN INVALID STREET NAME FOR THIS LOCATION [The Reason Code indicates the number of valid street names returned in the Similar Names List.]
55		2,3*	NON-ADDRESSABLE PLACE NAME PROCESSING IS NOT AVAILABLE FOR THIS FUNCTION

GEOSUPPORT SYSTEM RETURN CODES, REASON CODES AND MESSAGES
(As of Geosupport Software Version 17.2 - unchanged since V17.1)

GRC	REASON CODE	FUNCTIONS * = wildcard	MESSAGE (LITERAL TEXT IN UPPERCASE, <Variable values in angled brackets>, [Comments in Square Brackets & Mixed Case])
56		1E	ADDRESS IS SPLIT AMONG MULTIPLE ELECTION DISTRICTS. ADDRESS NBR SUFFIX REQUIRED [The input address is associated with more than one Election District (ED). Function 1E requires an address number suffix to be included with this address to identify a portion of the building specific to one ED.]
57		3S	INPUT INCLUDES ROADBED NAME, BUT ROADBED REQUEST SWITCH IS OFF
58		1,1A,1B, 1E,AP	NON-ADDRESSABLE PLACE NAME, BRIDGE, TUNNEL OR MISC STRUCTURE NOT FOUND
59		1*,2,3*, AP	STREET NAME CANNOT BE NORMALIZED WITHIN REQUESTED SNL
61		3S	STREET STRETCH NOT FOUND
62		2,3S	<Street name> & <other street name> DO NOT INTERSECT
63	2 thru 4	2	INPUT STREET NAMES DO NOT FORM A UNIQUE INTERSECTION [Issued when there is more than one possibility for an assumed front-truncated street name (where EAST or WEST is added at the beginning of the name). Reason Code indicates the number of possible names. The possible names are returned in the List of Street Names in WA1.]
64		1,1A,1B, 1E,2,3*, AP,D*	STREET CODE NOT FOUND
65		All	INVALID ROADBED REQUEST SWITCH. MUST BE R OR BLANK
66		3S	<Street name> & <other street name> INTERSECT MORE THAN TWICE-CANNOT BE PROCESSED

GEOSUPPORT SYSTEM RETURN CODES, REASON CODES AND MESSAGES
(As of Geosupport Software Version 17.2 - unchanged since V17.1)

GRC	REASON CODE	FUNCTIONS * = wildcard	MESSAGE (LITERAL TEXT IN UPPERCASE, <Variable values in angled brackets>, [Comments in Square Brackets & Mixed Case])
67	A-Z	All	ERROR ACCESSING GEOSUPPORT FILE: <file name>. NOTIFY SYSTEM SUPPORT [This can be an installation error or a system error. Notify System Support.]
68		3S	<Street name> & <other street name> INTERSECT TWICE-COMPASS DIRECTION REQ'D
69	A	3,3C COW Only	INVALID AUXSEG REQUEST SWITCH. MUST BE Y, N OR BLANK
	B	1A,1B, BL,BN COW Only	INVALID TPAD REQUEST SWITCH. MUST BE Y, N OR BLANK
	C	1,1E,1A, 3,3C,AP BL,BN COW Only	INVALID MODE SWITCH VALUE. MUST BE X OR BLANK
	D	All COW Only	INVALID WTO SWITCH VALUE. MUST BE Y, N, OR BLANK

GEOSUPPORT SYSTEM RETURN CODES, REASON CODES AND MESSAGES
(As of Geosupport Software Version 17.2 - unchanged since V17.1)

GRC	REASON CODE	FUNCTIONS * = wildcard	MESSAGE (LITERAL TEXT IN UPPERCASE, <Variable values in angled brackets>, [Comments in Square Brackets & Mixed Case])
70	A	All but 3,3C COW Only	AUXSEG REQUEST SWITCH NOT VALID FOR THIS FUNCTION
	B	All but 1A,1B, BL,BN COW Only	TPAD REQUEST SWITCH NOT VALID FOR THIS FUNCTION
	C	All but 1,1E,1A, 3,3C,AP, BL,BN COW Only	MODE SWITCH OF X (EXTENDED) NOT VALID FOR THIS FUNCTION
71		1,1A,1B, 1E.AP	INPUT ZIP CODE IS NOT A NEW YORK CITY ZIP CODE
72		1,1A,1B, 1E.AP	INPUT ZIP CODE IS NOT ALL NUMERIC
73		1A,BL MSW Only	LEGACY VERSION OF FUNCTIONS 1A AND BL IS DISCONTINUED. SEE TECH BULLETIN 05-1
74		2,3*	ADDRESSABLE PLACE NAME PROCESSING IS NOT AVAILABLE FOR THIS FUNCTION
75		1,1A,1B, 1E	DUPLICATE ADDRESS-USE <pseudo-streetname1> OR <pseudo-streetname2>

GEOSUPPORT SYSTEM RETURN CODES, REASON CODES AND MESSAGES
(As of Geosupport Software Version 17.2 - unchanged since V17.1)

GRC	REASON CODE	FUNCTIONS * = wildcard	MESSAGE (LITERAL TEXT IN UPPERCASE, <Variable values in angled brackets>, [Comments in Square Brackets & Mixed Case])
76		All but 1,1B.1E, 3S	ROADBED REQUEST SWITCH NOT IMPLEMENTED FOR THIS FUNCTION
77		BL	TAX LOT NOT FOUND
78		All COW Only	INVALID BROWSE FLAG VALUE. MUST BE P, F, R, OR BLANK
79		3S,BL, BN,D* COW Only	BROWSE FLAG NOT VALID FOR THIS REQUEST
80		1,1A,1B, 1E,2,3*	BUSINESS IMPROVEMENT DISTRICT (BID) IS NOT VALID AS INPUT FOR THIS FUNCTION
88	blank	All	GEOSUPPORT ERROR. EMAIL GSS_FEEDBACK@PLANNING.NYC.GOV AND REPORT 88- [An internal Geosupport problem, not a user error.]
88 (cont.)	1-9, A-Z	All	GEOSUPPORT ERROR. EMAIL GSS_FEEDBACK@PLANNING.NYC.GOV AND REPORT 88-<value> ERROR [where <value> is the reason code.] [An internal Geosupport problem, not a user error.]
89		2,3C,3S, BN	LONG WORK-AREA-2 OPTION IS INVALID FOR THIS FUNCTION
		1,1B,1E, 3 COW Only	

GEOSUPPORT SYSTEM RETURN CODES, REASON CODES AND MESSAGES
(As of Geosupport Software Version 17.2 - unchanged since V17.1)

GRC	REASON CODE	FUNCTIONS * = wildcard	MESSAGE (LITERAL TEXT IN UPPERCASE, <Variable values in angled brackets>, [Comments in Square Brackets & Mixed Case])
90		1,1A,1E, 3,BL	LONG WORK-AREA-2 FLAG MUST BE L OR BLANK
96		All	FUNCTIONALITY UNDER CONSTRUCTION
97		BB,BF	INPUT IS BEYOND THE LAST STREET NAME IN THE BOROUGH OF <borough name>
98		All	NO INPUT DATA RECEIVED
99		All	INVALID BOROUGH CODE. MUST BE 1, 2, 3, 4 OR 5
EE	1	1*,2,3*, AP	<Street name> NOT RECOGNIZED. IS IT <similar street name>? [Issued when there is precisely one similar name.]
	2 thru 9,A	1*,2,3*, AP	<Street name> NOT RECOGNIZED. THERE ARE <number> SIMILAR NAMES [Issued when there is more than one similar name. Reason Code indicates number of similar names. Reason Code 'A' signifies 10 similar names. The similar names are returned in WA1.]
??	Blank	N/A	INVALID FUNCTION CODE
	1	1B,AP MSW Only	INVALID FUNCTION CODE - AVAILABLE IN COW FORMAT ONLY

See next page for TPAD warning messages.

TPAD WARNING MESSAGES and TPAD Conflict Flag / REASON CODE QUALIFIERS in ( )

"TPAD BBL USED, NO EXISTING PAD BBL"; (2)

"TPAD BBL USED, PAD PSEUDO-ADDRESS ON DIFFERENT BBL THAN TPAD NB BIN"; (3)

"TPAD BBL USED, EXISTING PAD BIN OF INPUT ADDR ON DIFF BBL THAN TPAD NB BIN"; (4)

"TPAD BBL USED, PAD BIN OF INPUT ADDR W/DM-5 ON DIFF BBL THAN TPAD NB BIN"; (6)

"TPAD BBL USED, PAD BIN OF INPUT ADDR W/DM-6 ON DIFF BBL THAN TPAD NB BIN"; (7)

"PAD BBL USED, TPAD NB BIN WITH NB-0 ON DIFFERENT BBL THAN PAD BIN"; (8)

"PAD BBL USED, TPAD NB BIN WITH NB-1 ON DIFFERENT BBL THAN PAD BIN"; (9)

"PAD BBL USED, TPAD NB BIN WITH NB-2 ON DIFFERENT BBL THAN PAD BIN"; (A)

"PAD BBL USED, TPAD NB BIN WITH NB-3 ON DIFFERENT BBL THAN PAD BIN"; (B)

"TPAD DATA FOUND, TPAD ADDRESS OVERLAPS PAD ADDRESS"; (C)

"ADDRESS FOUND IN TPAD, NOT FOUND IN PAD"; (D)

"BIN FOUND IN TPAD, NOT FOUND IN PAD"; (E)

APPENDIX 5: GEOSUPPORT COPY FILES (MSW)

This appendix contains printouts of the Geosupport MSW COPY files for COBOL, Assembler, PL/1, C and NATURAL. (For C, COPY files take the form of header files. For NATURAL, COPY files take the form of Local Data Areas.)

The Geosupport COPY files contain source code layouts of the Geosupport work areas. These files are stored in a COPY library that can be accessed by user application programs at compile time. Each supported programming language has an appropriate declarative statement for referencing COPY files at compile time. The Geosupport COPY files are listed below.

GEOSUPPORT SYSTEM COPY FILES (MSW)

MSW			- - - - - - - - - - - - - COPY File Name - - - - - - - - - - - - - -				
WORK AREA	FUNCTION(S)	LENGTH (bytes)	COBOL	ASSEMBLER	PL/1	C	NATURAL
WA1	All	884	W1COB	W1BAL	W1PL1	WAC	GEOLW1
WA2	1 (regular WA2), 1E (regular WA2), 2, 3 (regular WA2), 3C	200	W2COB	W2BAL	W2PL1	WAC	GEOLW2
WA2	1 (long WA2), 1E (long WA2), 3 (long WA2)	300	W2COBL	W2BALL	W2PL1L	WAC	GEOLW2L
WA2	1A&BL (regular WA2),BN (*)	939	W2COB1A	W2BAL1A	W2PL11A	WAC	GEOLW21A
WA2	1A&BL (long WA2) (**)	17,683	W2COB1AL	W2BAL1AL	W2PL11AL	WAC	GEOLW2AL
WA2	3S	4,224	W2COB3S	W2BAL3S	W2PL13S	WAC	GEOLW23S

(*) Functions 1A, BL and BN share a single regular WA2 layout.

(**) Functions 1A and BL share a single long WA2 layout. (Function BN does not have the long WA2 option.)

See Section VIII.4 for a detailed discussion of the Geosupport COPY feature.

COBOL COPY Files (MSW)

W1COB COPY File

```
***************************************************************** 00000100
*****  THIS IS GEOSUPPORT SYSTEM COPY FILE W1COB, CONTAINING   ***** 00000200
*****  LAYOUT OF WORK AREA 1.       COPYLIB2       04/07/98   ***** 00000300
***************************************************************** 00000400
*****              INPUT FIELDS                               ***** 00000500
***************************************************************** 00000600
         05  GEO-WA1-IN-FUNCTION-CODE.                              00000700
            10  GEO-WA1-IN-FUNCTION-1            PIC X.             00000800
            10  GEO-WA1-IN-FUNCTION-2            PIC X.             00000900
         05  GEO-WA1-IN-BORO                     PIC X.             00001000
   ** NOTE  GEO-WA1-IN-HOUSENUM - HIGH HSE# INPUT IF FUNC 5         00001100
         05  GEO-WA1-IN-HOUSENUM                 PIC X(12).         00001200
   ** NOTE  GEO-WA1-IN-HOUSENUM-INTERNAL - HIGH HSE# INPUT IF FUN5   00001300
         05  GEO-WA1-IN-HOUSENUM-INTERNAL        PIC X(6).          00001400
         05  GEO-WA1-IN-STREET-1                 PIC X(32).         00001500
         05  GEO-WA1-IN-STREET-2                 PIC X(32).         00001600
         05  GEO-WA1-IN-STREET-3                 PIC X(32).         00001700
         05  GEO-WA1-IN-COMPASS                  PIC X.             00001802
         05  GEO-WA1-IN-COMPASS2                 PIC X.             00001904
         05  GEO-WA1-IN-STREETCODE-1             PIC S9(6) COMP-3.  00002104
         05  GEO-WA1-IN-STREETCODE-2             PIC S9(6) COMP-3.  00002204
         05  GEO-WA1-IN-STREETCODE-3             PIC S9(6) COMP-3.  00002304
         05  GEO-WA1-IN-ROADBED-REQ-SWITCH       PIC X.             00002508
         05  GEO-WA1-IN-BORO-2                   PIC X.             00002604
         05  GEO-WA1-IN-BORO-3                   PIC X.             00002704
         05  GEO-WA1-IN-SNL                      PIC X(2).          00002804
         05  GEO-WA1-IN-10SC-1                   PIC X(11).         00002904
         05  GEO-WA1-IN-10SC-2                   PIC X(11).         00003004
         05  GEO-WA1-IN-10SC-3                   PIC X(11).         00003104
         05  GEO-WA1-IN-ZIPIN                    PIC X(5).          00003309
         05  GEO-WA1-IN-BBL.                                        00003404
            10  GEO-WA1-IN-BL-BORO               PIC X.             00003504
            10  GEO-WA1-IN-BLOCKNUM              PIC X(5).          00003604
            10  GEO-WA1-IN-LOTNUM                PIC X(4).          00003704
         05  FILLER                              PIC X.             00003804
         05  GEO-WA1-IN-BIN                      PIC X(7).          00004004
   **************************************************************   00004104
   ** NOTE: TO REQUEST COMPACT NAMES OPTION, SET                 **  00004204
   **       GEO-WA1-IN-COMPACT-NAME-FLAG TO "C".                 **  00004304
   ** NOTE: TO REQUEST THE LONG WORKAREA 2, SET                  **  00004404
   **       GEO-WA1-IN-LONG-WORKAREA2-FLAG TO "L".  AT PRESENT,  **  00004504
   **       ONLY FUNCTION 3 HAS THE LONG WA2 OPTION.             **  00004604
   ** NOTE: IF APPLICATION IS RUNNING ON A NON-IBM MAIN FRAME,   **  00004704
   **       SET GEO-WA1-IN-NON-IBM-MAIN-FRAME EQUAL TO "X"       **  00004804
   ** NOTE: FOR FUNCTIONS 1A AND BL, TO REQUEST THE STANDARD     **  00004904
   **       WORKAREA2 FORMAT, SET GEO-WA1-IN-1ABL-VERSION TO "S" **  00005004
   ** NOTE: TO REQUEST THE LEGACY WORKAREA2 FORMAT,              **  00005104
   **       SET GEO-WA1-IN-1ABL-VERSION TO " " OR "L".           **  00005204
   **************************************************************   00005704
         05  GEO-WA1-IN-COMPACT-NAME-FLAG        PIC X.             00005804
         05  GEO-WA1-IN-LONG-WORKAREA2-FLAG      PIC X.             00005904
         05  GEO-WA1-IN-LOW-HOUSENUM             PIC X(12).         00006004
         05  GEO-WA1-IN-LOW-HSENUM-INTERNAL      PIC X(6).          00006104
         05  GEO-WA1-IN-NON-IBM-MAIN-FRAME       PIC X(1).          00006204
         05  GEO-WA1-IN-1ABL-VERSION             PIC X(1).          00006304
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         05  GEO-WA1-IN-XSTREET-FLAG            PIC X(1).         00006404
         05  GEO-WA1-IN-NONEED-STNAME-FLAG      PIC X(1).         00006504
         05  FILLER                             PIC X(3).         00006604
****************************************************************** 00006704
*****              OUTPUT FIELDS                            ***** 00006804
****************************************************************** 00006904
         05  GEO-WA1-OUT-LOW-HOUSENUM           PIC X(12).        00007004
         05  GEO-WA1-OUT-BORONAME               PIC X(9).         00007104
         05  GEO-WA1-OUT-STREET-1               PIC X(32).        00007204
         05  GEO-WA1-OUT-STREET-2               PIC X(32).        00007304
         05  GEO-WA1-OUT-STREET-3               PIC X(32).        00007404
         05  GEO-WA1-OUT-HOUSENUM               PIC X(12).        00007504
         05  GEO-WA1-OUT-HOUSENUM-INTERNAL      PIC X(6).         00007604
         05  GEO-WA1-OUT-HOUSE-INT-FORMAT REDEFINES               00007704
             GEO-WA1-OUT-HOUSENUM-INTERNAL.                       00007804
             10  GEO-WA1-OUT-HOUSE-INT-PACKED   PIC X(5).         00007904
             10  GEO-WA1-OUT-HOUSE-INT-SUFFIX   PIC X.            00008004
         05  FILLER                             PIC X(7).         00008104
         05  GEO-WA1-OUT-PB5SC-1                PIC S9(6) COMP-3. 00008204
         05  GEO-WA1-OUT-PB-5SC-1 REDEFINES GEO-WA1-OUT-PB5SC-1.  00008304
             10  FILLER                         PIC X(1).         00008404
             10  GEO-WA1-OUT-STREETCODE-1-KEY   PIC S9(5) COMP-3. 00008504
         05  FILLER                             PIC X(2).         00008604
         05  GEO-WA1-OUT-PB5SC-2                PIC S9(6) COMP-3. 00008704
         05  GEO-WA1-OUT-PB-5SC-2 REDEFINES GEO-WA1-OUT-PB5SC-2.  00008804
             10  FILLER                         PIC X(1).         00008904
             10  GEO-WA1-OUT-STREETCODE-2-KEY   PIC S9(5) COMP-3. 00009004
         05  FILLER                             PIC X(2).         00009104
         05  GEO-WA1-OUT-PB5SC-3                PIC S9(6) COMP-3. 00009204
         05  GEO-WA1-OUT-PB-5SC-3 REDEFINES GEO-WA1-OUT-PB5SC-3.  00009304
             10  FILLER                         PIC X(1).         00009404
             10  GEO-WA1-OUT-STREETCODE-3-KEY   PIC S9(5) COMP-3. 00009504
         05  FILLER                             PIC X(3).         00009604
         05  GEO-WA1-BROWSE                     PIC X(40).        00009704
         05  GEO-WA1-OUT-10SC-1                 PIC X(11).        00009804
         05  GEO-WA1-OUT-10SC-2                 PIC X(11).        00009904
         05  GEO-WA1-OUT-10SC-3                 PIC X(11).        00010004
         05  GEO-WA1-OUT-CUI                    PIC X(5).         00010104
   ** NOTE: GEO-WA1-OUT-CUI       NOT IMPLEMENTED   **            00010204
         05  GEO-WA1-OUT-BBL.                                     00010304
            10  GEO-WA1-OUT-BL-BORO             PIC X.            00010404
            10  GEO-WA1-OUT-BLOCKNUM            PIC X(5).         00010504
            10  GEO-WA1-OUT-LOTNUM              PIC X(4).         00010604
         05  FILLER                             PIC X.            00010704
         05  GEO-WA1-OUT-BIN                    PIC X(7).         00010806
         05  GEO-WA1-OUT-SND-ATTR               PIC X.            00011304
         05  GEO-WA1-OUT-REASON-CODE            PIC X.            00011404
         05  FILLER                             PIC X(2).         00011504
         05  GEO-WA1-OUT-RETURN-CODE.                             00011604
            10  GEO-WA1-OUT-RC-1                PIC X.            00011704
            10  GEO-WA1-OUT-RC-2                PIC X.            00011804
         05  GEO-WA1-OUT-ERROR-MESSAGE          PIC X(80).        00011904
         05  GEO-WA1-OUT-NUM-SIMILAR-NAMES      PIC S999 COMP-3.  00012004
         05  GEO-WA1-OUT-SIMILAR-NAMES          PIC X(32)         00012104
                                                OCCURS 10 TIMES.  00013002
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W1COB COPY File

W2COB COPY File

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*****************************************************************  00010040
***  THIS IS GEOSUPPORT SYSTEM COPY FILE W2COB, CONTAINING THE ***  00020040
***  LAYOUT OF WORK AREA 2 FOR FUNCTIONS: 1, 1E, 2, 2C, 3, 3C, ***  00030040
***  5. PLEASE NOTE THAT FUNCTIONS 2 AND 2C SHARE A SINGLE WORK***  00040040
***  AREA 2 LAYOUT.                                     04/03/01 ***  00050040
*****************************************************************  00060040
***  LAST MODIFIED  06/08/10                                   ***  00070040
*****************************************************************  00080040
       05  GEO-WA2-FUNCTION1.                                       00090040
          10  FILLER                           PIC X(21).           00100040
          10  GEO-WA2-FN1-CONT-PARITY          PIC X.               00110040
          10  GEO-WA2-FN1-LOW-HOUSENUM-INT.                         00120040
             15  GEO-WA2-FN1-LOW-HOUSENUM      PIC X(5).            00130040
             15  GEO-WA2-FN1-LOW-HOUSENUMSFX   PIC X.               00140040
                                                                    00150040
          10  GEO-WA2-FN1-HI-HOUSENUM-INT.                          00160040
             15  GEO-WA2-FN1-HI-HOUSENUM       PIC X(5).            00170040
             15  GEO-WA2-FN1-HI-HOUSENUMSFX    PIC X.               00180040
                                                                    00190040
          10  GEO-WA2-FN1-ALX                  PIC X.               00200040
          10  GEO-WA2-FN1-NUM-X-ST-LOW-END     PIC X.               00210040
          10  GEO-WA2-FN1-LOW-PBSC             PIC S9(7) COMP-3     00220040
                                               OCCURS 5 TIMES.      00230040
          10  GEO-WA2-FN1-NUM-X-ST-HI-END      PIC X.               00240040
          10  GEO-WA2-FN1-HI-PBSC              PIC S9(7) COMP-3     00250040
                                               OCCURS 5 TIMES.      00260040
          10  GEO-WA2-FN1-COMDIST.                                  00270040
              15  GEO-WA2-FN1-COMDIST-BORO     PIC X.               00280040
              15  GEO-WA2-FN1-COMDIST-NUMBER   PIC X(2).            00290040
          10  GEO-WA2-FN1-ZIP                  PIC X(5).            00300040
          10  GEO-WA2-FN1-SLA                  PIC X.               00310040
          10  GEO-WA2-FN1-HCD                  PIC X(2).            00320047
          10  GEO-WA2-FN1-SOS                  PIC X.               00330040
          10  GEO-WA2-FN1-CONT-PARITY-IND      PIC X.               00340040
          10  GEO-WA2-FN1-2010-CENS-TRCT       PIC X(6).            00350042
          10  GEO-WA2-FN1-2010-CENS-BLK        PIC X(4).            00360042
          10  GEO-WA2-FN1-2010-CENS-BLK-SFX    PIC X.               00370042
          10  FILLER                           PIC X(3).            00380040
          10  GEO-WA2-FN1-HEALTHAREA           PIC X(4).            00390047
          10  GEO-WA2-FN1-SANI-REC             PIC X(3).            00400040
          10  GEO-WA2-FN1-FEATURE-TYPE         PIC X.               00410040
          10  GEO-WA2-FN1-RESDCP               PIC X.               00420040
          10  GEO-WA2-FN1-CURVE-FLAG           PIC X.               00430040
          10  GEO-WA2-FN1-POLICEDIST.                               00440040
             15  GEO-WA2-FN1-POL-PATR-BORO-CMD PIC X.               00450040
             15  GEO-WA2-FN1-POL-PRECINCT      PIC X(3).            00460040
          10  GEO-WA2-FN1-SCHOOLDIST           PIC X(2).            00470040
          10  FILLER                           PIC X(14).           00480040
          10  GEO-WA2-FN1-COINCIDENT-CNT       PIC X.               00490040
          10  GEO-WA2-FN1-SEGMENT-TYPE         PIC X.               00500040
          10  GEO-WA2-FN1-SANIDIST.                                 00510040
              15  GEO-WA2-FN1-SANIDIST-BORO    PIC X.               00520040
              15  GEO-WA2-FN1-SANIDIST-NUMBER  PIC X(2).            00530040
          10  GEO-WA2-FN1-SANITATION-SUBSEC    PIC X(2).            00540040
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W1COB COPY File

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** NOTE:10  GEO-WA2-FN1-FIRESEC ==> FIRE DIVISION **             00550040
        10  GEO-WA2-FN1-FIRESEC               PIC X(2).          00560040
        10  GEO-WA2-FN1-FIREBAT               PIC X(2).          00570040
        10  GEO-WA2-FN1-FIRECO.                                  00580040
            15  GEO-WA2-FN1-FIRECO-TYPE       PIC X.             00590040
            15  GEO-WA2-FN1-FIRECO-NUM        PIC X(3).          00600040
        10  GEO-WA2-FN1-SPECIAL-ADDR-FLAG     PIC X.             00610040
        10  GEO-WA2-FN1-MARBLE-RIKER-FLAG     PIC X.             00620040
        10  GEO-WA2-FN1-SPLIT-SCHOOL-FILL     PIC X.             00630044
        10  GEO-WA2-FN1-PREFERRED-LGC         PIC X(2).          00640040
        10  GEO-WA2-FN1-LIONFACECODE          PIC X(4).          00650040
        10  GEO-WA2-FN1-LIONSEQ               PIC X(5).          00660040
        10  GEO-WA2-FN1-1990-CENSUSTRACT      PIC X(6).          00670040
        10  FILLER                            PIC X(4).          00680040
        10  GEO-WA2-FN1-DYN-BLOCK             PIC X(3).          00690040
        10  GEO-WA2-FN1-XCOORD                PIC X(7).          00700040
        10  GEO-WA2-FN1-YCOORD                PIC X(7).          00710040
        10  GEO-WA2-FN1-SEGMENTLENGTH         PIC X(5).          00720040
        10  GEO-WA2-FN1-SANI-REG              PIC X(5).          00730040
     05  GEO-WA2-FUNCTION2   REDEFINES GEO-WA2-FUNCTION1.        00740040
        10  FILLER                            PIC X(21).         00750040
        10  GEO-WA2-FN2-DUPINTERFLAG          PIC X.             00760040
        10  FILLER                            PIC X(9).          00770040
        10  GEO-WA2-FN2-PREFERRED-LGC1        PIC X(2).          00780040
        10  GEO-WA2-FN2-PREFERRED-LGC2        PIC X(2).          00790040
        10  GEO-WA2-FN2-NUM-OF-INTERSECTS     PIC X.             00800040
        10  GEO-WA2-FN2-INTERSECT-PBSC        PIC 9(7) COMP-3    00810040
                                          OCCURS 5 TIMES.        00820040
        10  GEO-WA2-FN2-COMPDIR               PIC X.             00830040
        10  GEO-WA2-FN2-LEVEL-LIST OCCURS 5 TIMES.               00840040
            15 GEO-WA2-FN2-LEVEL-CODES                           00850040
               OCCURS 2 TIMES                 PIC X.             00860040
***     NEXT LINE WAS PREVIOUSLY INSTRUC-DIV                     00870040
        10  FILLER                            PIC X(2).          00880040
** NOTE:10  GEO-WA2-FN2-FIRESEC ==> FIRE DIVISION **             00890040
        10  GEO-WA2-FN2-FIRESEC               PIC X(2).          00900040
        10  GEO-WA2-FN2-FIREBAT               PIC X(2).          00910040
        10  GEO-WA2-FN2-FIRECO.                                  00920040
            15  GEO-WA2-FN2-FIRECO-TYPE       PIC X.             00930040
            15  GEO-WA2-FN2-FIRECO-NUM        PIC X(3).          00940040
        10  GEO-WA2-FN2-COMDIST.                                 00950040
            15  GEO-WA2-FN2-COMDIST-BORO      PIC X.             00960040
            15  GEO-WA2-FN2-COMDIST-NUMBER    PIC X(2).          00970040
        10  GEO-WA2-FN2-ZIP                   PIC X(5).          00980040
        10  GEO-WA2-FN2-SLA                   PIC X.             00990040
        10  GEO-WA2-FN2-2010-CENS-TRCT        PIC X(6).          01000042
        10  FILLER                            PIC X(3).          01010040
        10  GEO-WA2-FN2-HEALTHAREA            PIC X(4).          01020047
        10  FILLER                            PIC X(9).          01030040
        10  GEO-WA2-FN2-NODE-NUM              PIC X(7).          01040040
        10  GEO-WA2-FN2-XCOORD                PIC X(7).          01050040
        10  GEO-WA2-FN2-YCOORD                PIC X(7).          01060040
        10  FILLER                            PIC X(4).          01070040
        10  GEO-WA2-FN2-POLICEDIST.                              01080040
           15  GEO-WA2-FN2-POL-PATR-BORO-CMD  PIC X.             01090040
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             15  GEO-WA2-FN2-POL-PRECINCT       PIC X(3).           01100040
          10  GEO-WA2-FN2-SCHOOLDIST            PIC X(2).           01110040
          10  GEO-WA2-FN2-MARBLE-RIKER-FLAG     PIC X.              01120040
          10  GEO-WA2-FN2-1990-CENSUSTRACT      PIC X(6).           01130040
          10  GEO-WA2-FN2-SANBORN1-BVOLPAGE.                        01140040
             15  GEO-WA2-FN2-SANBORN1-BORO      PIC X.              01150040
             15  GEO-WA2-FN2-SANBORN1-VOL-NUM   PIC X(3).           01160040
             15  GEO-WA2-FN2-SANBORN1-PAGE-NUM  PIC X(4).           01170040
          10  GEO-WA2-FN2-SANBORN2-BVOLPAGE.                        01180040
             15  GEO-WA2-FN2-SANBORN2-BORO      PIC X.              01190040
             15  GEO-WA2-FN2-SANBORN2-VOL-NUM   PIC X(3).           01200040
             15  GEO-WA2-FN2-SANBORN2-PAGE-NUM  PIC X(4).           01210040
          10  GEO-WA2-FN2-DUP-INT-DISTANCE      PIC X(5).           01220040
          10  GEO-WA2-FN2-2000-CENS-TRACT       PIC X(6).           01240043
          10  FILLER                            PIC X(27).          01250040
       05  GEO-WA2-FUNCTION3   REDEFINES GEO-WA2-FUNCTION1.         01260040
          10  FILLER                            PIC X(21).          01270040
          10  GEO-WA2-FN3-DUP-KEY-FLAG          PIC X.              01280040
          10  GEO-WA2-FN3-CURVE-FLAG            PIC X.              01290040
          10  GEO-WA2-FN3-LOCATION-STATUS       PIC X.              01300040
          10  GEO-WA2-FN3-COUNTY-BOUNDARY       PIC X.              01310040
          10  GEO-WA2-FN3-COINCIDENT-CNT        PIC X.              01320040
          10  FILLER                            PIC X(3).           01330040
          10  GEO-WA2-FN3-PREFERRED-LGC1        PIC X(2).           01340040
          10  GEO-WA2-FN3-PREFERRED-LGC2        PIC X(2).           01350040
          10  GEO-WA2-FN3-PREFERRED-LGC3        PIC X(2).           01360040
          10  GEO-WA2-FN3-NUM-X-ST-LOW-END      PIC X.              01370040
          10  GEO-WA2-FN3-LOW-PBSC              PIC S9(7) COMP-3    01380040
                                                OCCURS 5 TIMES.     01390040
          10  GEO-WA2-FN3-NUM-X-ST-HI-END       PIC X.              01400040
          10  GEO-WA2-FN3-HI-PBSC               PIC S9(7) COMP-3    01410040
                                                OCCURS 5 TIMES.     01420040
          10  GEO-WA2-FN3-SLA                   PIC X.              01430040
          10  GEO-WA2-FN3-REVERSALFLAG          PIC X.              01440040
          10  GEO-WA2-FN3-LEFT-COMDIST.                             01450040
              15  GEO-WA2-FN3-LEFT-COMDIST-BORO PIC X.              01460040
              15  GEO-WA2-FN3-LEFT-COMDIST-NUM  PIC X(2).           01470040
          10  GEO-WA2-FN3-RIGHT-COMDIST.                            01480040
              15 GEO-WA2-FN3-RIGHT-COMDIST-BORO PIC X.              01490040
              15  GEO-WA2-FN3-RIGHT-COMDIST-NUM PIC X(2).           01500040
          10  GEO-WA2-FN3-LEFT-ZIP              PIC X(5).           01510040
          10  GEO-WA2-FN3-RIGHT-ZIP             PIC X(5).           01520040
          10  FILLER                            PIC X(18).          01530040
          10  GEO-WA2-FN3-LEFT-HEALTHAREA       PIC X(4).           01540047
          10  GEO-WA2-FN3-RIGHT-HEALTHAREA      PIC X(4).           01550047
***       NEXT LINE WAS PREVIOUSLY LEFT-INSTRUC-DIV                 01560040
          10  FILLER                            PIC X(2).           01570040
***       NEXT LINE WAS PREVIOUSLY RIGHT-INSTRUC-DIV                01580040
          10  FILLER                            PIC X(2).           01590040
          10  GEO-WA2-FN3-LEFT-LOW-HOUSENUM     PIC X(7).           01600040
          10  GEO-WA2-FN3-LEFT-HI-HOUSENUM      PIC X(7).           01610040
          10  GEO-WA2-FN3-RIGHT-LOW-HOUSENUM    PIC X(7).           01620040
          10  GEO-WA2-FN3-RIGHT-HI-HOUSENUM     PIC X(7).           01630040
          10  GEO-WA2-FN3-CONT-PARITY-IND       PIC X.              01640040
          10  GEO-WA2-FN3-LIONFACECODE          PIC X(4).           01650040
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           10  GEO-WA2-FN3-LIONSEQ              PIC X(5).          01660040
           10  GEO-WA2-FN3-GENRECFLAG           PIC X.             01670040
           10  GEO-WA2-FN3-SEGMENTLENGTH        PIC S9(5) COMP-3.  01680040
           10  GEO-WA2-FN3-SEGMENTSLOPE         PIC X(3).          01690040
           10  GEO-WA2-FN3-SEGMENTORIENT        PIC X.             01700040
           10  FILLER                           PIC X(4).          01710040
           10  GEO-WA2-FN3-RESDCP               PIC X(2).          01720040
           10  GEO-WA2-FN3-DOG-LEG              PIC X.             01730040
           10  GEO-WA2-FN3-FEATURE-TYPE         PIC X.             01740040
           10  GEO-WA2-FN3-LEFT-POLDIST.                           01750040
              15  GEO-WA2-FN3-L-POL-PATR-BOR-CMD PIC X.            01760040
              15  GEO-WA2-FN3-L-POL-PRECINCT     PIC X(3).         01770040
           10  GEO-WA2-FN3-RIGHT-POLDIST.                          01780040
              15  GEO-WA2-FN3-R-POL-PATR-BOR-CMD PIC X.            01790040
              15  GEO-WA2-FN3-R-POL-PRECINCT     PIC X(3).         01800040
           10  GEO-WA2-FN3-LEFT-SCHLDIST        PIC X(2).          01810040
           10  GEO-WA2-FN3-RIGHT-SCHLDIST       PIC X(2).          01820040
           10  GEO-WA2-FN3-MARBLE-RIKER-FLAG    PIC X.             01830040
           10  GEO-WA2-FN3-SEG-ID               PIC X(7).          01840040
           10  GEO-WA2-FN3-SEGMENT-TYPE         PIC X.             01850040
        05  GEO-WA2-FUNCTION3C  REDEFINES GEO-WA2-FUNCTION1.       01860040
           10  GEO-WA2-FN3C-ACCESS-KEY          PIC X(21).         01870040
           10  GEO-WA2-FN3C-CURVE-FLAG          PIC X.             01880040
           10  GEO-WA2-FN3C-SEGMENT-TYPE        PIC X.             01890040
           10  GEO-WA2-FN3C-LOCATION-STATUS     PIC X.             01900040
           10  GEO-WA2-FN3C-COUNTY-BOUNDARY     PIC X.             01910040
           10  GEO-WA2-FN3C-COINCIDENT-CNT      PIC X.             01920040
           10  FILLER                           PIC X(3).          01930040
           10  GEO-WA2-FN3C-PREFERRED-LGC1      PIC X(2).          01940040
           10  GEO-WA2-FN3C-PREFERRED-LGC2      PIC X(2).          01950040
           10  GEO-WA2-FN3C-PREFERRED-LGC3      PIC X(2).          01960040
           10  GEO-WA2-FN3C-NUM-X-ST-LOW-END    PIC X.             01970040
           10  GEO-WA2-FN3C-LOW-PBSC            PIC S9(7) COMP-3   01980040
                                                OCCURS 5 TIMES.    01990040
           10  GEO-WA2-FN3C-NUM-X-ST-HI-END     PIC X.             02000040
           10  GEO-WA2-FN3C-HI-PBSC             PIC S9(7) COMP-3   02010040
                                                OCCURS 5 TIMES.    02020040
           10  GEO-WA2-FN3C-COMDIST.                               02030040
               15  GEO-WA2-FN3C-COMDIST-BORO    PIC X.             02040040
               15  GEO-WA2-FN3C-COMDIST-NUMBER  PIC X(2).          02050040
           10  GEO-WA2-FN3C-ZIP                 PIC X(5).          02060040
           10  GEO-WA2-FN3C-SLA                 PIC X.             02070040
           10  GEO-WA2-FN3C-2000-CENS-TRACT     PIC X(6).          02090043
           10  FILLER                           PIC X.             02100040
           10  GEO-WA2-FN3C-2010-CENS-TRCT      PIC X(6).          02110042
           10  GEO-WA2-FN3C-2010-CENS-BLK       PIC X(4).          02120042
           10  GEO-WA2-FN3C-2010-CENS-BLK-SFX   PIC X.             02130042
           10  GEO-WA2-FN3C-HEALTHAREA          PIC X(4).          02140047
           10  GEO-WA2-FN3C-REVERSALFLAG        PIC X.             02150040
           10  GEO-WA2-FN3C-SOS                 PIC X.             02160040
    ** NOTE:10  GEO-WA2-FN3C-FIRESEC ==> FIRE DIVISION **          02170040
           10  GEO-WA2-FN3C-FIRESEC             PIC X(2).          02180040
           10  GEO-WA2-FN3C-FIREBAT             PIC X(2).          02190040
           10  GEO-WA2-FN3C-FIRECO.                                02200040
               15  GEO-WA2-FN3C-FIRECO-TYPE     PIC X.             02210040
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                15  GEO-WA2-FN3C-FIRECO-NUM       PIC X(3).           02220040
            10  GEO-WA2-FN3C-SEG-ID               PIC X(7).           02230040
            10  GEO-WA2-FN3C-LOW-HOUSENUM         PIC X(7).           02240040
            10  GEO-WA2-FN3C-HI-HOUSENUM          PIC X(7).           02250040
            10  GEO-WA2-FN3C-LOW-HOUSENUM2        PIC X(7).           02260040
            10  GEO-WA2-FN3C-HI-HOUSENUM2         PIC X(7).           02270040
      * HOUSENUM2 ONLY PRESENT IF ODD & EVEN RANGES ARE ON            02280040
      * SAME SIDE OF STREET.                                          02290040
            10  GEO-WA2-FN3C-CONT-PARITY-IND      PIC X.              02300040
            10  GEO-WA2-FN3C-LIONFACECODE         PIC X(4).           02310040
            10  GEO-WA2-FN3C-LIONSEQ              PIC X(5).           02320040
            10  GEO-WA2-FN3C-GENRECFLAG           PIC X.              02330040
            10  GEO-WA2-FN3C-SEGMENTLENGTH        PIC S9(5) COMP-3.   02340040
            10  GEO-WA2-FN3C-SEGMENTSLOPE         PIC X(3).           02350040
            10  GEO-WA2-FN3C-SEGMENTORIENT        PIC X.              02360040
      ***   NEXT LINE WAS PREVIOUSLY INSTRUC-DIV                      02370040
            10  FILLER                            PIC XX.             02380040
            10  GEO-WA2-FN3C-RESDCP               PIC X.              02390040
            10  GEO-WA2-FN3C-FEATURE-TYPE         PIC X.              02400040
            10  GEO-WA2-FN3C-POLICEDIST.                              02410040
               15  GEO-WA2-FN3C-POL-PATR-BORO-CMD PIC X.              02420040
               15  GEO-WA2-FN3C-POL-PRECINCT      PIC X(3).           02430040
            10  GEO-WA2-FN3C-SCHOOLDIST           PIC X(2).           02440040
            10  GEO-WA2-FN3C-MARBLE-RIKER-FLAG    PIC X.              02450040
            10  GEO-WA2-FN3C-1990-CENSUSTRACT     PIC X(6).           02460040
            10  FILLER                            PIC X(4).           02470040
            10  GEO-WA2-FN3C-DYN-BLOCK            PIC X(3).           02480040
            10  GEO-WA2-FN3C-2000-CENS-BLOCK      PIC X(4).           02500043
            10  GEO-WA2-FN3C-2000-CENS-BLK-SUF    PIC X.              02510043
         05  GEO-WA2-FUNCTION1E  REDEFINES GEO-WA2-FUNCTION1.         02520040
            10  FILLER                            PIC X(21).          02530040
            10  GEO-WA2-FN1E-CONT-PARITY          PIC X.              02540040
            10  GEO-WA2-FN1E-LOW-HOUSENUM-INT.                        02550040
                15  GEO-WA2-FN1E-LOW-HOUSENUM     PIC X(5).           02560040
                15  GEO-WA2-FN1E-LOW-HSENUMSFX    PIC X.              02570040
            10  GEO-WA2-FN1E-HI-HOUSENUM-INT.                         02580040
                15  GEO-WA2-FN1E-HI-HOUSENUM      PIC X(5).           02590040
                15  GEO-WA2-FN1E-HI-HSENUMSFX     PIC X.              02600040
            10  FILLER                            PIC X.              02610040
            10  GEO-WA2-FN1E-NUM-X-ST-LOW-END     PIC X.              02620040
            10  GEO-WA2-FN1E-LOW-PBSC             PIC S9(7) COMP-3    02630040
                                                  OCCURS 5 TIMES.     02640040
            10  GEO-WA2-FN1E-NUM-X-ST-HI-END      PIC X.              02650040
            10  GEO-WA2-FN1E-HI-PBSC              PIC S9(7) COMP-3    02660040
                                                  OCCURS 5 TIMES.     02670040
            10  GEO-WA2-FN1E-COMDIST.                                 02680040
                15  GEO-WA2-FN1E-COMDIST-BORO     PIC X.              02690040
                15  GEO-WA2-FN1E-COMDIST-NUMBER   PIC X(2).           02700040
            10  GEO-WA2-FN1E-ZIP                  PIC X(5).           02710040
            10  GEO-WA2-FN1E-SLA                  PIC X.              02720040
            10  GEO-WA2-FN1E-HCD                  PIC X(2).           02730047
            10  GEO-WA2-FN1E-SOS                  PIC X.              02740040
            10  GEO-WA2-FN1E-CONT-PARITY-IND      PIC X.              02750040
            10  GEO-WA2-FN1E-2010-CENS-TRCT       PIC X(6).           02760042
            10  GEO-WA2-FN1E-2010-CENS-BLK        PIC X(4).           02770042
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           10  GEO-WA2-FN1E-2010-CENS-BLK-SFX    PIC X.                02780042
           10  FILLER                            PIC X(3).             02790040
           10  GEO-WA2-FN1E-HEALTHAREA           PIC X(4).             02800047
           10  GEO-WA2-FN1E-SANI-REC             PIC X(3).             02810040
           10  GEO-WA2-FN1E-FEATURE-TYPE         PIC X.                02820040
           10  GEO-WA2-FN1E-RESDCP               PIC X.                02830040
           10  GEO-WA2-FN1E-CURVE-FLAG           PIC X.                02840040
           10  GEO-WA2-FN1E-POLICEDIST.                                02850040
              15  GEO-WA2-FN1E-POL-PATR-BORO-CMD PIC X.                02860040
              15  GEO-WA2-FN1E-POL-PRECINCT      PIC X(3).             02870040
           10  GEO-WA2-FN1E-SCHOOLDIST           PIC X(2).             02880040
           10  GEO-WA2-FN1E-ELECTDIST            PIC X(3).             02890040
           10  GEO-WA2-FN1E-ASSEMDIST            PIC X(2).             02900040
           10  GEO-WA2-FN1E-SPLIT-ED-FLAG        PIC X.                02910040
           10  GEO-WA2-FN1E-CONGDIST             PIC X(2).             02920040
           10  GEO-WA2-FN1E-SENATEDIST           PIC X(2).             02930040
           10  GEO-WA2-FN1E-COURTDIST            PIC X(2).             02940040
           10  GEO-WA2-FN1E-COUNCILDIST          PIC X(2).             02950040
           10  GEO-WA2-FN1E-COINCIDENT-CNT       PIC X.                02960040
           10  FILLER                            PIC X.                02970040
           10  GEO-WA2-FN1E-SANIDIST.                                  02980040
               15  GEO-WA2-FN1E-SANIDIST-BORO    PIC X.                02990040
               15  GEO-WA2-FN1E-SANIDIST-NUMBER  PIC X(2).             03000040
           10  GEO-WA2-FN1E-SANITATION-SUBSEC    PIC X(2).             03010040
   ** NOTE:10  GEO-WA2-FN1E-FIRESEC ==> FIRE DIVISION **               03020040
           10  GEO-WA2-FN1E-FIRESEC              PIC X(2).             03030040
           10  GEO-WA2-FN1E-FIREBAT              PIC X(2).             03040040
           10  GEO-WA2-FN1E-FIRECO.                                    03050040
               15  GEO-WA2-FN1E-FIRECO-TYPE      PIC X.                03060040
               15  GEO-WA2-FN1E-FIRECO-NUM       PIC X(3).             03070040
           10  GEO-WA2-FN1E-SPECIAL-ADDR-FLAG    PIC X.                03080040
           10  GEO-WA2-FN1E-MARBLE-RIKER-FLAG    PIC X.                03090040
           10  GEO-WA2-FN1E-SPLIT-SCHOOL-FILL    PIC X.                03100044
           10  GEO-WA2-FN1E-PREFERRED-LGC        PIC X(2).             03110040
           10  GEO-WA2-FN1E-LIONFACECODE         PIC X(4).             03120040
           10  GEO-WA2-FN1E-LIONSEQ              PIC X(5).             03130040
           10  GEO-WA2-FN1E-1990-CENSUSTRACT     PIC X(6).             03140040
           10  FILLER                            PIC X(4).             03150040
           10  GEO-WA2-FN1E-DYN-BLOCK            PIC X(3).             03160040
           10  GEO-WA2-FN1E-XCOORD               PIC X(7).             03170040
           10  GEO-WA2-FN1E-YCOORD               PIC X(7).             03180040
           10  GEO-WA2-FN1E-SEGMENTLENGTH        PIC X(5).             03190040
           10  GEO-WA2-FN1E-SANI-REG             PIC X(5).             03200040
        05  GEO-WA2-FUNCTION5   REDEFINES GEO-WA2-FUNCTION1.           03210040
           10  GEO-WA2-FN5-ADDR-MATCHING-KEY     PIC X(28).            03220040
           10  FILLER                            PIC X(172).           03230040
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W2COBL COPY File

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***************************************************************** 00010021
***  THIS IS GEOSUPPORT SYSTEM COPY FILE W2COBL, CONTAINING  ***    00020021
***  THE LAYOUT OF THE OPTIONAL LONG WORK AREA 2 FOR FUNCTIONS *    00030021
***  1/1E AND 3.  THIS WORK AREA SHOULD BE USED ONLY WHEN    ***    00040021
***  FUNCTION 1/1E,3 ARE CALLED WITH THE "LONG" WORK AREA2   ***    00050021
***                                    APRIL 3 2001          ***    00060021
***************************************************************** 00070021
***                  LAST MODIFIED    06/08/10               ***    00080021
***************************************************************** 00090021
       05  GEO-WA2-1L-FUNCTION1.                                    00100021
          10  FILLER                        PIC X(21).              00110021
          10  GEO-WA2-1L-CONT-PARITY        PIC X.                  00120021
          10  GEO-WA2-1L-LOW-HOUSENUM-INT.                          00130021
             15  GEO-WA2-1L-LOW-HOUSENUM    PIC X(5).               00140021
             15  GEO-WA2-1L-LOW-HOUSENUMSFX PIC X.                  00150021
          10  GEO-WA2-1L-HI-HOUSENUM-INT.                           00160021
             15  GEO-WA2-1L-HI-HOUSENUM     PIC X(5).               00170021
             15  GEO-WA2-1L-HI-HOUSENUMSFX  PIC X.                  00180021
          10  GEO-WA2-1L-ALX                PIC X.                  00190021
          10  GEO-WA2-1L-NUM-X-ST-LOW-END   PIC X.                  00200021
          10  GEO-WA2-1L-LOW-PBSC           PIC S9(7) COMP-3        00210021
                                            OCCURS 5 TIMES.         00220021
          10  GEO-WA2-1L-NUM-X-ST-HI-END    PIC X.                  00230021
          10  GEO-WA2-1L-HI-PBSC            PIC S9(7) COMP-3        00240021
                                            OCCURS 5 TIMES.         00250021
          10  GEO-WA2-1L-COMDIST.                                   00260021
              15  GEO-WA2-1L-COMDIST-BORO   PIC X(1).               00270021
              15  GEO-WA2-1L-COMDIST-NUMBER PIC X(2).               00280021
          10  GEO-WA2-1L-ZIP                PIC X(5).               00290021
          10  GEO-WA2-1L-SLA                PIC X.                  00300021
          10  GEO-WA2-1L-HCD                PIC X(2).               00310028
          10  GEO-WA2-1L-SOS                PIC X.                  00320021
          10  GEO-WA2-1L-CONT-PARITY-IND    PIC X.                  00330021
          10  GEO-WA2-1L-2010-CENS-TRCT     PIC X(6).               00340023
          10  GEO-WA2-1L-2010-CENS-BLK      PIC X(4).               00350023
          10  GEO-WA2-1L-2010-CENS-BLK-SFX  PIC X.                  00360023
          10  FILLER                        PIC X(3).               00370021
          10  GEO-WA2-1L-HEALTHAREA         PIC X(4).               00380028
          10  GEO-WA2-1L-SANI-REC           PIC X(3).               00390021
          10  GEO-WA2-1L-FEATURE-TYPE       PIC X(1).               00400021
          10  GEO-WA2-1L-RESDCP             PIC X(1).               00410021
          10  GEO-WA2-1L-CURVE-FLAG         PIC X(1).               00420021
          10  GEO-WA2-1L-POLICEDIST.                                00430021
             15  GEO-WA2-1L-POL-PATR-BORO-CMD  PIC X(1).            00440021
             15  GEO-WA2-1L-POL-PRECINCT    PIC X(3).               00450021
          10  GEO-WA2-1L-SCHOOLDIST         PIC X(2).               00460021
          10  FILLER                        PIC X(14).              00470021
          10  GEO-WA2-1L-COINCIDENT-CNT     PIC X.                  00480021
          10  GEO-WA2-1L-SEGMENT-TYPE       PIC X.                  00490021
          10  GEO-WA2-1L-SANIDIST.                                  00500021
              15  GEO-WA2-1L-SANIDIST-BORO  PIC X(1).               00510021
              15  GEO-WA2-1L-SANIDIST-NUMBER  PIC X(2).             00520021
          10  GEO-WA2-1L-SANITATION-SUBSEC  PIC X(2).               00530021
  ** NOTE:10  GEO-WA2-1L-FIRESEC ==> FIRE DIVISION **               00540021
          10  GEO-WA2-1L-FIRESEC            PIC X(2).               00550021
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W2COBL COPY File

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           10  GEO-WA2-1L-FIREBAT              PIC X(2).           00560021
           10  GEO-WA2-1L-FIRECO.                                  00570021
               15  GEO-WA2-1L-FIRECO-TYPE      PIC X(1).           00580021
               15  GEO-WA2-1L-FIRECO-NUM       PIC X(3).           00590021
           10  GEO-WA2-1L-SPECIAL-ADDR-FLAG    PIC X(1).           00600021
           10  GEO-WA2-1L-MARBLE-RIKER-FLAG    PIC X(1).           00610021
           10  GEO-WA2-1L-SPLIT-SCHOOL-FILL    PIC X.              00620025
           10  GEO-WA2-1L-PREFERRED-LGC        PIC X(2).           00630021
           10  GEO-WA2-1L-LIONFACECODE         PIC X(4).           00640021
           10  GEO-WA2-1L-LIONSEQ              PIC X(5).           00650021
           10  GEO-WA2-1L-1990-CENSUSTRACT     PIC X(6).           00660021
           10  FILLER                          PIC X(4).           00670021
           10  GEO-WA2-1L-DYN-BLOCK            PIC X(3).           00680021
           10  GEO-WA2-1L-XCOORD               PIC X(7).           00690021
           10  GEO-WA2-1L-YCOORD               PIC X(7).           00700021
           10  GEO-WA2-1L-SEGMENTLENGTH        PIC X(5).           00710021
           10  GEO-WA2-1L-SANI-REG             PIC X(5).           00720021
           10  GEO-WA2-1L-SEG-ID               PIC X(7).           00730021
           10  GEO-WA2-1L-TRUE-B7SC            PIC X(8).           00740021
           10  GEO-WA2-1L-TRUE-HNI             PIC X(6).           00750021
           10  GEO-WA2-1L-2000-CENS-TRACT      PIC X(6).           00770024
           10  GEO-WA2-1L-2000-CENS-BLOCK      PIC X(4).           00780024
           10  GEO-WA2-1L-2000-CENS-BLK-SUF    PIC X.              00790024
           10  FILLER                          PIC X(68).          00800021
        05  GEO-WA2-1EL-FUNCTION1E REDEFINES GEO-WA2-1L-FUNCTION1. 00810021
           10  FILLER                          PIC X(21).          00820021
           10  GEO-WA2-1EL-CONT-PARITY         PIC X.              00830021
           10  GEO-WA2-1EL-LOW-HOUSENUM-INT.                       00840021
              15  GEO-WA2-1EL-LOW-HOUSENUM     PIC X(5).           00850021
              15  GEO-WA2-1EL-LOW-HOUSENUMSFX  PIC X.              00860021
           10  GEO-WA2-1EL-HI-HOUSENUM-INT.                        00870021
              15  GEO-WA2-1EL-HI-HOUSENUM      PIC X(5).           00880021
              15  GEO-WA2-1EL-HI-HOUSENUMSFX   PIC X.              00890021
           10  FILLER                          PIC X.              00900021
           10  GEO-WA2-1EL-NUM-X-ST-LOW-END    PIC X.              00910021
           10  GEO-WA2-1EL-LOW-PBSC            PIC S9(7) COMP-3    00920021
                                               OCCURS 5 TIMES.     00930021
           10  GEO-WA2-1EL-NUM-X-ST-HI-END     PIC X.              00940021
           10  GEO-WA2-1EL-HI-PBSC             PIC S9(7) COMP-3    00950021
                                               OCCURS 5 TIMES.     00960021
           10  GEO-WA2-1EL-COMDIST.                                00970021
               15  GEO-WA2-1EL-COMDIST-BORO    PIC X(1).           00980021
               15  GEO-WA2-1EL-COMDIST-NUMBER  PIC X(2).           00990021
           10  GEO-WA2-1EL-ZIP                 PIC X(5).           01000021
           10  GEO-WA2-1EL-SLA                 PIC X.              01010021
           10  GEO-WA2-1EL-HCD                 PIC X(2).           01020028
           10  GEO-WA2-1EL-SOS                 PIC X.              01030021
           10  GEO-WA2-1EL-CONT-PARITY-IND     PIC X.              01040021
           10  GEO-WA2-1EL-2010-CENS-TRCT      PIC X(6).           01050023
           10  GEO-WA2-1EL-2010-CENS-BLK       PIC X(4).           01060023
           10  GEO-WA2-1EL-2010-CENS-BLK-SFX   PIC X.              01070023
           10  FILLER                          PIC X(3).           01080021
           10  GEO-WA2-1EL-HEALTHAREA          PIC X(4).           01090028
           10  GEO-WA2-1EL-SANI-REC            PIC X(3).           01100021
           10  GEO-WA2-1EL-FEATURE-TYPE        PIC X(1).           01110021
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           10  GEO-WA2-1EL-RESDCP                PIC X(1).          01120021
           10  GEO-WA2-1EL-CURVE-FLAG            PIC X(1).          01130021
           10  GEO-WA2-1EL-POLICEDIST.                              01140021
              15  GEO-WA2-1EL-POL-PATR-BORO-CMD PIC X(1).           01150021
              15  GEO-WA2-1EL-POL-PRECINCT      PIC X(3).           01160021
           10  GEO-WA2-1EL-SCHOOLDIST            PIC X(2).          01170021
           10  GEO-WA2-1EL-ELECTDIST             PIC X(3).          01180021
           10  GEO-WA2-1EL-ASSEMDIST             PIC X(2).          01190021
           10  GEO-WA2-1EL-SPLIT-ED-FLAG         PIC X(1).          01200021
           10  GEO-WA2-1EL-CONGDIST              PIC X(2).          01210021
           10  GEO-WA2-1EL-SENATEDIST            PIC X(2).          01220021
           10  GEO-WA2-1EL-COURTDIST             PIC X(2).          01230021
           10  GEO-WA2-1EL-COUNCILDIST           PIC X(2).          01240021
           10  GEO-WA2-1EL-COINCIDENT-CNT        PIC X.             01250021
           10  FILLER                            PIC X.             01260021
           10  GEO-WA2-1EL-SANIDIST.                                01270021
               15  GEO-WA2-1EL-SANIDIST-BORO    PIC X(1).           01280021
               15  GEO-WA2-1EL-SANIDIST-NUMBER  PIC X(2).           01290021
           10  GEO-WA2-1EL-SANITATION-SUBSEC    PIC X(2).           01300021
   ** NOTE:10  GEO-WA2-1EL-FIRESEC==> FIRE DIVISION **              01310021
           10  GEO-WA2-1EL-FIRESEC              PIC X(2).           01320021
           10  GEO-WA2-1EL-FIREBAT              PIC X(2).           01330021
           10  GEO-WA2-1EL-FIRECO.                                  01340021
               15  GEO-WA2-1EL-FIRECO-TYPE      PIC X(1).           01350021
               15  GEO-WA2-1EL-FIRECO-NUM       PIC X(3).           01360021
           10  GEO-WA2-1EL-SPECIAL-ADDR-FLAG    PIC X(1).           01370021
           10  GEO-WA2-1EL-MARBLE-RIKER-FLAG    PIC X(1).           01380021
           10  GEO-WA2-1EL-SPLIT-SCHOOL-FILL    PIC X.              01390025
           10  GEO-WA2-1EL-PREFERRED-LGC        PIC X(2).           01400021
           10  GEO-WA2-1EL-LIONFACECODE         PIC X(4).           01410021
           10  GEO-WA2-1EL-LIONSEQ              PIC X(5).           01420021
           10  GEO-WA2-1EL-1990-CENSUSTRACT     PIC X(6).           01430021
           10  FILLER                           PIC X(4).           01440021
           10  GEO-WA2-1EL-DYN-BLOCK            PIC X(3).           01450021
           10  GEO-WA2-1EL-XCOORD               PIC X(7).           01460021
           10  GEO-WA2-1EL-YCOORD               PIC X(7).           01470021
           10  GEO-WA2-1EL-SEGMENTLENGTH        PIC X(5).           01480021
           10  GEO-WA2-1EL-SANI-REG             PIC X(5).           01490021
           10  GEO-WA2-1EL-SEG-ID               PIC X(7).           01500021
           10  GEO-WA2-1EL-TRUE-B7SC            PIC X(8).           01510021
           10  GEO-WA2-1EL-TRUE-HNI             PIC X(6).           01520021
           10  GEO-WA2-1EL-2000-CENS-TRACT      PIC X(6).           01540024
           10  GEO-WA2-1EL-2000-CENS-BLOCK      PIC X(4).           01550024
           10  GEO-WA2-1EL-2000-CENS-BLK-SUF    PIC X.              01560024
           10  FILLER                           PIC X(68).          01570021
        05  GEO-WA2-3L-FUNCTION3 REDEFINES GEO-WA2-1L-FUNCTION1.    01580021
           10  FILLER                           PIC X(21).          01590021
           10  GEO-WA2-3L-DUP-KEY-FLAG          PIC X.              01600021
           10  GEO-WA2-3L-CURVE-FLAG            PIC X.              01610021
           10  GEO-WA2-3L-LOCATION-STATUS       PIC X.              01620021
           10  GEO-WA2-3L-COUNTY-BOUNDARY       PIC X.              01630021
           10  GEO-WA2-3L-COINCIDENT-CNT        PIC X.              01640021
           10  FILLER                           PIC X(3).           01650021
           10  GEO-WA2-3L-PREFERRED-LGC1        PIC X(2).           01660021
           10  GEO-WA2-3L-PREFERRED-LGC2        PIC X(2).           01670021
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          10  GEO-WA2-3L-PREFERRED-LGC3        PIC X(2).           01680021
          10  GEO-WA2-3L-NUM-X-ST-LOW-END      PIC X.              01690021
          10  GEO-WA2-3L-LOW-PBSC              PIC S9(7) COMP-3    01700021
                                                OCCURS 5 TIMES.    01710021
          10  GEO-WA2-3L-NUM-X-ST-HI-END       PIC X.              01720021
          10  GEO-WA2-3L-HI-PBSC               PIC S9(7) COMP-3    01730021
                                                OCCURS 5 TIMES.    01740021
          10  GEO-WA2-3L-SLA                   PIC X.              01750021
          10  GEO-WA2-3L-REVERSALFLAG          PIC X.              01760021
          10  GEO-WA2-3L-LEFT-COMDIST.                             01770021
              15  GEO-WA2-3L-LEFT-COMDIST-BORO PIC X(1).           01780021
              15  GEO-WA2-3L-LEFT-COMDIST-NUM  PIC X(2).           01790021
          10  GEO-WA2-3L-RIGHT-COMDIST.                            01800021
              15 GEO-WA2-3L-RIGHT-COMDIST-BORO PIC X(1).           01810021
              15  GEO-WA2-3L-RIGHT-COMDIST-NUM PIC X(2).           01820021
          10  GEO-WA2-3L-LEFT-ZIP              PIC X(5).           01830021
          10  GEO-WA2-3L-RIGHT-ZIP             PIC X(5).           01840021
          10  FILLER                           PIC X(18).          01850021
          10  GEO-WA2-3L-LEFT-HEALTHAREA       PIC X(4).           01860028
          10  GEO-WA2-3L-RIGHT-HEALTHAREA      PIC X(4).           01870028
***       NEXT LINE WAS PREVIOUSLY LEFT-INSTRUC-DIV                01880021
          10  FILLER                           PIC X(2).           01890021
***       NEXT LINE WAS PREVIOUSLY RIGHT-INSTRUC-DIV               01900021
          10  FILLER                           PIC X(2).           01910021
          10  GEO-WA2-3L-LEFT-LOW-HOUSENUM     PIC X(7).           01920021
          10  GEO-WA2-3L-LEFT-HI-HOUSENUM      PIC X(7).           01930021
          10  GEO-WA2-3L-RIGHT-LOW-HOUSENUM    PIC X(7).           01940021
          10  GEO-WA2-3L-RIGHT-HI-HOUSENUM     PIC X(7).           01950021
          10  GEO-WA2-3L-CONT-PARITY-IND       PIC X.              01960021
          10  GEO-WA2-3L-LIONFACECODE          PIC X(4).           01970021
          10  GEO-WA2-3L-LIONSEQ               PIC X(5).           01980021
          10  GEO-WA2-3L-GENRECFLAG            PIC X.              01990021
          10  GEO-WA2-3L-SEGMENTLENGTH         PIC S9(5) COMP-3.   02000021
          10  GEO-WA2-3L-SEGMENTSLOPE          PIC X(3).           02010021
          10  GEO-WA2-3L-SEGMENTORIENT         PIC X.              02020021
          10  FILLER                           PIC X(4).           02030021
          10  GEO-WA2-3L-RESDCP                PIC X(2).           02040021
          10  GEO-WA2-3L-DOG-LEG               PIC X.              02050021
          10  GEO-WA2-3L-FEATURE-TYPE          PIC X(1).           02060021
          10  GEO-WA2-3L-LEFT-POLDIST.                             02070021
             15  GEO-WA2-3L-L-POL-PATR-BOR-CMD PIC X(1).           02080021
             15  GEO-WA2-3L-L-POL-PRECINCT     PIC X(3).           02090021
          10  GEO-WA2-3L-RIGHT-POLDIST.                            02100021
             15  GEO-WA2-3L-R-POL-PATR-BOR-CMD PIC X(1).           02110021
             15  GEO-WA2-3L-R-POL-PRECINCT     PIC X(3).           02120021
          10  GEO-WA2-3L-LEFT-SCHLDIST         PIC X(2).           02130021
          10  GEO-WA2-3L-RIGHT-SCHLDIST        PIC X(2).           02140021
          10  GEO-WA2-3L-MARBLE-RIKER-FLAG     PIC X(1).           02150021
          10  GEO-WA2-3L-SEG-ID                PIC X(7).           02160021
          10  GEO-WA2-3L-SEGMENT-TYPE          PIC X.              02170021
*************************************************************      02180021
**  THE PORTION OF THIS WORK AREA ABOVE THIS POINT IS       **     02190021
**  IDENTICAL TO THE STANDARD WORK AREA 2 FOR FUNCTION 3.   **     02200021
**  THE PORTION BELOW THIS POINT IS PRESENT ONLY FOR THE    **     02210021
**  LONG WORK AREA 2 OPTION.                                **     02220021
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W2COBL COPY File

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      *************************************************************      02230021
              10  GEO-WA2-3L-L-1990-CENSUSTRACT    PIC X(6) .         02240021
              10  FILLER                           PIC X(4).          02250021
              10  GEO-WA2-3L-L-DYN-BLOCK           PIC X(3).          02260021
              10  GEO-WA2-3L-R-1990-CENSUSTRACT    PIC X(6).          02270021
              10  FILLER                           PIC X(4).          02280021
              10  GEO-WA2-3L-R-DYN-BLOCK           PIC X(3).          02290021
      ** NOTE:10  GEO-WA2-3L-L-FIRESEC ==> FIRE DIV **                02300021
      ** NOTE:10  GEO-WA2-3L-R-FIRESEC ==> FIRE DIV **                02310021
              10  GEO-WA2-3L-L-FIRESEC             PIC X(2).          02320021
              10  GEO-WA2-3L-L-FIREBAT             PIC X(2).          02330021
              10  GEO-WA2-3L-L-FIRECO.                                02340021
                  15  GEO-WA2-3L-L-FIRECO-TYPE     PIC X(1).          02350021
                  15  GEO-WA2-3L-L-FIRECO-NUM      PIC X(3).          02360021
              10  GEO-WA2-3L-R-FIRESEC             PIC X(2).          02370021
              10  GEO-WA2-3L-R-FIREBAT             PIC X(2).          02380021
              10  GEO-WA2-3L-R-FIRECO.                                02390021
                  15  GEO-WA2-3L-R-FIRECO-TYPE     PIC X(1).          02400021
                  15  GEO-WA2-3L-R-FIRECO-NUM      PIC X(3).          02410021
              10  GEO-WA2-3L-L-2010-CENS-TRCT      PIC X(6).          02420023
              10  GEO-WA2-3L-L-2010-CENS-BLK       PIC X(4).          02430023
              10  GEO-WA2-3L-L-2010-CENS-BLK-SFX   PIC X.             02440023
              10  GEO-WA2-3L-R-2010-CENS-TRCT      PIC X(6).          02450023
              10  GEO-WA2-3L-R-2010-CENS-BLK       PIC X(4).          02460023
              10  GEO-WA2-3L-R-2010-CENS-BLK-SFX   PIC X.             02470023
              10  GEO-WA2-3L-FROM-NODE             PIC X(7).          02480021
              10  GEO-WA2-3L-TO-NODE               PIC X(7).          02490021
              10  GEO-WA2-3L-L-2000-CENS-TRACT     PIC X(6).          02510024
              10  GEO-WA2-3L-L-2000-CENS-BLOCK     PIC X(4).          02520024
              10  GEO-WA2-3L-L-2000-CENS-BLK-SUF   PIC X.             02530024
              10  GEO-WA2-3L-R-2000-CENS-TRACT     PIC X(6).          02540024
              10  GEO-WA2-3L-R-2000-CENS-BLOCK     PIC X(4).          02550024
              10  GEO-WA2-3L-R-2000-CENS-BLK-SUF   PIC X.             02560024
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W2COB1A COPY File

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***************************************************************** 00000100
**  THIS IS GEOSUPPORT SYSTEM COPY FILE W2COB1A, CONTAINING   **   00000200
**  THE LAYOUT OF WORK AREA 2 FOR FUNCTIONS 1A AND BL WHICH   **   00000300
**  SHARE A SINGLE WORK AREA 2 LAYOUT.        10/18/96        **   00000400
***************************************************************** 00000500
 *  NEW FORMAT  *                                                  00000600
     05  GEO-WA2-1A-ACCESS-KEY               PIC X(21).            00000700
     05  GEO-WA2-1A-CONT-PARITY              PIC X.                00000800
     05  GEO-WA2-1A-LOW-HOUSENUM             PIC X(6).             00000900
     05  GEO-WA2-1A-ALTKEY-1.                                      00001000
        10 GEO-WA2-1A-ALTKEY-1-BORO          PIC X.                00001100
        10 GEO-WA2-1A-ALTKEY-1-TAXBLOCK      PIC X(5).             00001200
        10 GEO-WA2-1A-ALTKEY-1-TAXLOT        PIC X(4).             00001300
     05  FILLER                              PIC X.                00001400
     05  GEO-WA2-1A-SCC                      PIC X.                00001500
     05  FILLER                              PIC X.                00001600
     05  GEO-WA2-1A-GENERAL-LOT-INFO.                              00001700
        10 GEO-WA2-1A-RPAD-BLDG-CLASS        PIC X(2).             00001800
        10 GEO-WA2-1A-CORNER-CODE            PIC X(2).             00001900
        10 GEO-WA2-1A-NUM-OF-STRUCTURES      PIC X(2).             00002000
        10 GEO-WA2-1A-NUM-OF-BLOCKFACES      PIC X(2).             00002100
        10 GEO-WA2-1A-INTERIOR-FLAG          PIC X.                00002200
        10 GEO-WA2-1A-VACANT-FLAG            PIC X.                00002300
        10 GEO-WA2-1A-IRREG-FLAG             PIC X.                00002400
     05  GEO-WA2-1A-ALT-BORO-FLAG            PIC X.                00002500
     05  FILLER                              PIC X.                00002600
     05  GEO-WA2-1A-STROLL-KEY               PIC X(13).            00002700
     05  GEO-WA2-1A-OVERFLOW-FLAG            PIC X(1).             00002801
     05  FILLER-DCP                          PIC X(1).             00002900
     05  GEO-WA2-1A-BLDG-ID-NUM              PIC X(7).             00003000
     05  GEO-WA2-1A-CONDO-LOT-FLAG           PIC X.                00003100
     05  GEO-WA2-1A-RPAD-COND-NUM            PIC X(4).             00003200
     05  GEO-WA2-1A-CONDO-LOW-BBL            PIC X(10).            00003300
     05  FILLER                              PIC X.                00003400
     05  GEO-WA2-1A-CONDO-BILLING-BBL        PIC X(10).            00003500
     05  FILLER                              PIC X.                00003600
     05  GEO-WA2-1A-CONDO-BILL-BBL-SCC       PIC X.                00003700
     05  GEO-WA2-1A-CONDO-HIGH-BBL           PIC X(10).            00003800
     05  FILLER                              PIC X.                00003900
     05  GEO-WA2-1A-SANBORN-BVOLPAGE.                              00004000
         10  GEO-WA2-1A-SANBORN-BORO         PIC X(1).             00004100
         10  GEO-WA2-1A-SANBORN-VOL-PAGE.                          00004200
             15  GEO-WA2-1A-SANBORN-VOL-NUM  PIC X(3).             00004300
             15  GEO-WA2-1A-SANBORN-PAGE-NUM PIC X(4).             00004400
     05  GEO-WA2-1A-COMMERC-DIST             PIC X(5).             00004500
     05  GEO-WA2-1A-CO-OP-NBR                PIC X(4).             00004602
     05  FILLER                              PIC X(4).             00004703
     05  GEO-WA2-1A-TOT-NBR-BLDG             PIC X(4).             00004802
     05  GEO-WA2-1A-DOF-MAP-BOROUGH          PIC X.                00004904
     05  GEO-WA2-1A-TAX-MAP-NBR              PIC X(4).             00005004
     05  FILLER-FOR-TAX-MAP-PAGE             PIC X(4).             00005105
     05  GEO-WA2-1A-X-COORD                  PIC X(7).             00005205
     05  GEO-WA2-1A-Y-COORD                  PIC X(7).             00005305
     05  GEO-WA2-1A-BID                      PIC X(6).             00005406
     05  FILLER                              PIC X(2).             00005506
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W2COB1A COPY File

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    05  GEO-WA2-1A-FILLER-LGCS            PIC X(8).           00005607
    05  FILLER                            PIC X(2).           00005706
    05  GEO-WA2-1A-NUM-OF-ADDR-FOR-LOT    PIC X(2).           00005806
    05  GEO-WA2-1A-LIST-OF-ADDRESSES      OCCURS 21 TIMES.    00005906
       10  GEO-WA2-1A-LIST-LOW-HOUSENUM   PIC X(6).           00006006
       10  FILLER                         PIC X(3).           00006106
       10  GEO-WA2-1A-LIST-HI-HOUSENUM    PIC X(6).           00006206
       10  FILLER                         PIC X(3).           00006306
       10  GEO-WA2-1A-LIST-STREETCODE     PIC X(8).           00006406
       10  GEO-WA2-1A-LIST-BIN            PIC X(7).           00006506
       10  GEO-WA2-1A-ADDR-TYPE           PIC X.              00006606
       10  FILLER                         PIC X.              00006706
       10  GEO-WA2-1A-LIST-SOS            PIC X.              00007002
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W2COB1AL COPY File

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****************************************************************  00000100
**  THIS IS GEOSUPPORT SYSTEM COPY FILE W2COB1AL, CONTAINING   **  00000200
**  THE LAYOUT OF LONG WORK AREA 2 FOR FUNCTIONS 1A AND BL     **  00000300
**  WHICH SHARE A SINGLE WORK AREA 2 LAYOUT.      11/06/97     **  00000400
****************************************************************  00000500
 *  1A/BL LONG WORK AREA 2 *                                      00000600
     05  GEO-WA2-1AL-ACCESS-KEY              PIC X(21).           00000700
     05  GEO-WA2-1AL-CONT-PARITY             PIC X.               00000800
     05  GEO-WA2-1AL-LOW-HOUSENUM            PIC X(6).            00000900
     05  GEO-WA2-1AL-ALTKEY-1.                                    00001000
        10 GEO-WA2-1AL-ALTKEY-1-BORO         PIC X.               00001100
        10 GEO-WA2-1AL-ALTKEY-1-TAXBLOCK     PIC X(5).            00001200
        10 GEO-WA2-1AL-ALTKEY-1-TAXLOT       PIC X(4).            00001300
     05  FILLER                             PIC X.                00001400
     05  GEO-WA2-1AL-SCC                     PIC X.               00001500
     05  FILLER                             PIC X.                00001600
     05  GEO-WA2-1AL-GENERAL-LOT-INFO.                            00001700
        10 GEO-WA2-1AL-RPAD-BLDG-CLASS       PIC X(2).            00001800
        10 GEO-WA2-1AL-CORNER-CODE           PIC X(2).            00001900
        10 GEO-WA2-1AL-NUM-OF-STRUCTURES     PIC X(2).            00002000
        10 GEO-WA2-1AL-NUM-OF-BLOCKFACES     PIC X(2).            00002100
        10 GEO-WA2-1AL-INTERIOR-FLAG         PIC X.               00002200
        10 GEO-WA2-1AL-VACANT-FLAG           PIC X.               00002300
        10 GEO-WA2-1AL-IRREG-FLAG            PIC X.               00002400
     05  GEO-WA2-1AL-ALT-BORO-FLAG           PIC X.               00002500
     05  FILLER                             PIC X.                00002600
     05  GEO-WA2-1AL-STROLL-KEY              PIC X(13).           00002700
     05  FILLER                             PIC X(1).             00002800
     05  FILLER-DCP                         PIC X(1).             00002900
     05  GEO-WA2-1AL-BLDG-ID-NUM             PIC X(7).            00003000
     05  GEO-WA2-1AL-CONDO-LOT-FLAG          PIC X.               00003100
     05  GEO-WA2-1AL-RPAD-COND-NUM           PIC X(4).            00003200
     05  GEO-WA2-1AL-CONDO-LOW-BBL           PIC X(10).           00003300
     05  FILLER                             PIC X.                00003400
     05  GEO-WA2-1AL-CONDO-BILLING-BBL       PIC X(10).           00003500
     05  FILLER                             PIC X.                00003600
     05  GEO-WA2-1AL-CONDO-BILL-BBL-SCC      PIC X.               00003700
     05  GEO-WA2-1AL-CONDO-HIGH-BBL          PIC X(10).           00003800
     05  FILLER                             PIC X.                00003900
     05  GEO-WA2-1AL-SANBORN-BVOLPAGE.                            00004000
         10  GEO-WA2-1AL-SANBORN-BORO        PIC X(1).            00004100
         10  GEO-WA2-1AL-SANBORN-VOL-PAGE.                        00004200
             15  GEO-WA2-1AL-SANBORN-VOL-NUM   PIC X(3).          00004300
             15  GEO-WA2-1AL-SANBORN-PAGE-NUM  PIC X(4).          00004400
     05  GEO-WA2-1AL-COMMERC-DIST            PIC X(5).            00004500
     05  GEO-WA2-1AL-CO-OP-NBR               PIC X(4).            00004604
     05  FILLER                              PIC X(4).            00004705
     05  GEO-WA2-1AL-TOT-NBR-BLDG            PIC X(4).            00004804
     05  GEO-WA2-1AL-DOF-MAP-BORO            PIC X.               00004907
     05  GEO-WA2-1AL-DOF-MAP-SECVOL          PIC X(4).            00005007
 *******  GEO-WA2-1AL-DOF-MAP-PAGE  NOT IMPLEMENTED               00005107
     05  GEO-WA2-1AL-DOF-MAP-PAGE            PIC X(4).            00005207
     05  GEO-WA2-1AL-X-COORD                 PIC X(7).            00005308
     05  GEO-WA2-1AL-Y-COORD                 PIC X(7).            00005408
     05  GEO-WA2-1AL-BID                     PIC X(6).            00005509
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W2COB1AL COPY File

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       05  FILLER                              PIC X(2).        00005609
       05  GEO-WA2-1AL-FILLER-LGCS             PIC X(8).        00005709
       05  GEO-WA2-1AL-NUM-OF-BINS             PIC X(4).        00005809
       05  GEO-WA2-1AL-BINS                    PIC X(7)         00005909
                                              OCCURS 2500 TIMES.  00006004
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W2COB3S COPY File

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******************************************************************
***  THIS IS GEOSUPPORT SYSTEM COPY FILE W2COB3S, CONTAINING    **
***  THE LAYOUT OF WORK AREA 2 FOR FUNCTION 3S.          9/22/93 **
******************************************************************
       05  GEO-WA2-3S-ACCESS-KEY                  PIC X(21).
       05  GEO-WA2-3S-NUM-OF-INTERSECTS           PIC X(3).
       05  GEO-WA2-3S-LIST-OFINTERSECTS           OCCURS 350 TIMES.
          10 GEO-WA2-3S-SMALLEST-PBSC             PIC S9(7) COMP-3.
          10 GEO-WA2-3S-2ND-SMALLEST-PBSC         PIC S9(7) COMP-3.
          10 GEO-WA2-3S-DISTANCE                  PIC S9(5) COMP-3.
          10 GEO-WA2-3S-GAP-FLAG                  PIC X.
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ASSEMBLER COPY FILES (MSW)

W1BAL COPY File

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*/*******************************************************************/ 00000100
*/*****  THIS IS GEOSUPPORT INFORMATION SYSTEM COPY FILE W1BAL,    ***/ 00000200
*/*****  CONTAINING THE LAYOUT OF WORK AREA 1.                     ***/ 00000300
*/*******************************************************************/ 00000400
*/*****  Last Updated - 17 October 2006                            ***/ 00000410
*/*******************************************************************/ 00000420
W1BAL    DS   0H                                                     00000500
*/***************************                                        00000600
*/*****  INPUT FIELDS  *******                                       00000700
*/***************************                                        00000800
W1IFUNC  DS    0CL2      FUNCTION CODE                               00000900
W1IFUNC1 DS     CL1      FUNCTION CODE, BYTE 1                       00001000
W1IFUNC2 DS     CL1      FUNCTION CODE, BYTE 2                       00001100
W1IBORO  DS    0CL1                                                  00001200
W1IBORO1 DS     CL1      BORO CODE  (1=MN;2=BX;3=BK;4=QN;5=SI)       00001300
W1IHSE#  DS    CL12      UNFORMATED HSNUM FOR FUNCTION: 1; 1A; 1E.   00001400
W1IHSE#P DS    CL6       HOUSE NUM (INTERNAL FORMAT FOR FUNC D)      00001500
W1ISTRT1 DS    CL32      STREET NAME 1                               00001600
W1ISTRT2 DS    CL32      STREET NAME 2                               00001700
W1ISTRT3 DS    CL32      STREET NAME 3                               00001800
W1ICOMP  DS    CL1       COMPASS DIRECTION (TYPES 2, 3C & 3S)        00001900
W1ICOMP2 DS    CL1       COMPASS DIRECTION (TYPE 3S)                 00001950
W1ICDE1  DS    PL4       PB5SC FOR STREET 1                          00002000
W1ICDE2  DS    PL4       PB5SC FOR STREET 2                          00002100
W1ICDE3  DS    PL4       PB5SC FOR STREET 3                          00002200
W1IRBRQS DS    CL1       ROADBED REQUEST SWITCH                      00002300
W1IBORO2 DS    CL1       BORO CODE OF CROSS ST. 1                    00002400
W1IBORO3 DS    CL1       BORO CODE OF CROSS ST. 2                    00002500
W1ISNL   DS    CL2       LENGTH STREET NAME IS TO BE NORMALIZED TO   00002600
W1I10SC1 DS    CL11      BORO + 10 BYTE STREET CODE FOR CROSS STREET 1 00002700
W1I10SC2 DS    CL11      BORO + 10 BYTE STREET CODE FOR CROSS STREET 2 00002800
W1I10SC3 DS    CL11      BORO + 10 BYTE STREET CODE FOR CROSS STREET 3 00002900
W1IZIPIN DS    CL5       INPUT ZIP CODE                              00003000
W1IBBL   DS    0CL10     BORO,BLOCK,LOT FOR "BL" FUNCTION            00003100
W1IBLBOR DS     CL1      BORO FOR FUNCTION "BL"                      00003200
W1IBLOCK DS     CL5      TAX BLOCK - FOR  FUNCTION "BL"              00003300
W1ILOT   DS     CL4      TAX LOT   - FOR  FUNCTION "BL"              00003400
         DS    CL1       FILLER                                      00003410
W1IBIN   DS    CL7       BUILDING ID NUMBER                          00003500
W1ICMPCT DS    CL1       'C' IF STREET NAMES ARE TO BE COMPACTED     00003600
W1ILONG3 DS    CL1       'L' IF LONG WORKAREA 2 FOR FUNC 3 DESIRED   00003700
W1ILHSE  DS    CL12      UNFORMATED LOW HSNUM FOR FUNCTION: 1; 1A; 1E. 00003800
W1ILHSEP DS    CL6       LOW HOUSE NUM (INTERNAL FORMAT FOR FUNC D)  00003900
W1INIBMF DS    CL1       NON-IBM MAIN FRAMME FLAG                    00004000
W1I1ABLV DS    CL1       Set to "S" for St'd Func. 1A & BL WORKAREA  00004100
*                        Set to "L" or " " for Legacy 1A & BL Workarea 00004200
W1IXSTF  DS    CL1       CROSS STREET NAME FLAG                      00004300
         DS    CL4       FILLER                                      00004400
*/****************************                                       00004500
*/*****  OUTPUT FIELDS  *******                                      00004600
*/****************************                                       00004700
W1OLHSE  DS    CL12      LOW HOUSE NUMBER IN DISPLAY FORMAT
W1OBORO  DS    CL9       BORO NAME                                   00004800
W1OSTRT1 DS    CL32      STREET 1 NAME, NORMALIZED                   00004900
W1OSTRT2 DS    CL32      STREET 2 NAME, NORMALIZED                   00005000
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W1BAL COPY File

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W1OSTRT3 DS    CL32       STREET 3 NAME, NORMALIZED                    00005100
W1OHSE#  DS    CL12       HOUSE NUMBER, NORMALIZED, DISPLAY FORMAT     00005200
W1OHSE#P DS    CL6        HOUSE NUMBER (INTERNAL FORMAT)               00005300
         DS    CL7        FILLER                                       00005400
W1OPB51K DS    0PL4       Packed Borough and Street Code 1             00005500
W1OBOR1K DS    XL1        Packed unsigned Borough Code                 00005600
W1OCDE1K DS    PL3        STREET CODE 1 (KEY)                          00005700
         DS    PL2        Filler                                       00005800
W1OPB52K DS    0PL4       Packed Borough and Street Code 2             00005900
W1OBOR2K DS    XL1        Packed unsigned Borough Code                 00006000
W1OCDE2K DS    PL3        STREET CODE 2 (KEY)                          00006100
         DS    PL2        Filler                                       00006200
W1OPB53K DS    0PL4       Packed Borough and Street Code 3             00006300
W1OBOR3K DS    XL1        Packed unsigned Borough Code                 00006400
W1OCDE3K DS    PL3        STREET CODE 3 (KEY)                          00006500
W1OATTR  DS    CL3        Attribute Bytes - Internal Use Only          00006600
W1BROWSE DS    CL40       10 PB5SC'S FOR  FUNCTION: BB; BF.            00006700
W1O10SC1 DS    CL11       BORO + 10 BYTE STREET CODE FOR CROSS STREET 1  00006800
W1O10SC2 DS    CL11       BORO + 10 BYTE STREET CODE FOR CROSS STREET 2  00006900
W1O10SC3 DS    CL11       BORO + 10 BYTE STREET CODE FOR CROSS STREET 2  00007000
W1OCONDO DS    CL5        CONDO UNIT ID NUMBER - NOT IMPLEMENTED       00007100
W1OBBL   DS    0CL10      OUTPUT BORO,BLOCK,LOT FOR FUNCTION "BL"      00007200
W1OBLBOR DS     CL1       BORO FOR FUNCTION "BL"                       00007300
W1OBLOCK DS     CL5       TAX BLOCK - FOR FUNCTION "BL"                00007400
W1OLOT   DS     CL4       TAX LOT   - FOR FUNCTION "BL"                00007500
         DS    CL1      FILLER                                         00007510
W1OBIN   DS    CL7      BUILDING IDENTIFICATION Number                 00007600
W1OINTU1 DS    CL1        INTERNAL USE ONLY - ATTR BYTE
W1OREASN DS    CL1        REASON CODE                                  00007900
W1OINTR0 DS    CL1        INTERNAL USE ONLY - RETURN CODE              00008000
W1OINTRC DS    CL1        INTERNAL USE ONLY - RETURN CODE              00008100
W1ORC    DS    0CL2       RETURN CODE                                  00008200
W1ORC1   DS     CL1       RETURN CODE, BYTE 1                          00008300
W1ORC2   DS     CL1       RETURN CODE, BYTE 2                          00008400
W1OERROR DS    CL80       ERROR MESSAGE                                00008500
W1O#SIM  DS    PL2        NUMBER OF SIMILAR NAMES                      00008600
W1ONAMES DS  10CL32       UP TO 10 SIMILAR NAMES                       00008700
W1END    EQU   *                                                       00008800
W1LENGTH EQU   W1END-W1BAL    LENGTH OF W1BAL                          00008900
```

W2BAL COPY File

```
*/*******************************************************************/ 00010000
*/*****  THIS IS GEOSUPPORT INFORMATION SYSTEM COPY FILE W2BAL,    ***/ 00020000
*/*****  CONTAINING THE LAYOUT OF WORK AREA 2 FOR FUNCTIONS        ***/ 00030000
*/*****  1, 1E, 2, 2C, 3, 3C. PLEASE NOTE THAT FUNCTIONS 2 AND 2C  ***/ 00040000
*/*****  SHARE A SINGLE WORK AREA 2 LAYOUT.                        ***/ 00050000
*/*******************************************************************/ 00060000
*/*****              LAST MODIFIED JANUARY 2012                   ***/ 00070044
*/*******************************************************************/ 00080012
W2BAL    DS   0H                                                        00090000
W2ACCKEY DS    CL21          ACCESS KEY                                 00100000
W2LAYOUT DS   0CL179                                                    00110002
W2F1CPAR DS      CL1         CONTINUOUS PARITY INDICATOR                00120002
W2F1LHNI DS     0CL6         LOW HOUSE NUMBER                           00130000
W2F1HSEL DS      CL5         LOW HOUSE NUMBER ON BLOCK FACE             00140000
W2F1SFXL DS      CL1         LOW HOUSE NUMBER SUFFIX                    00150013
W2F1HHNI DS     0CL6         HIGH HOUSE NUMBER                          00160000
W2F1HSEH DS      CL5         HIGH HOUSE NUMBER ON BLOCK FACE            00170000
W2F1SFXH DS      CL1         HI HOUSE NUMBER SUFFIX                     00180013
W2F1ALX  DS    CL1           A=ALLEYS INTERSECT SEGMENT                 00190025
*                            X=CROSS STREETS MODIFIED                   00191025
W2F1#STL DS    CL1           NUMBER OF CROSS STREETS AT LOW END         00200000
W2F1CDEL DS    CL20          UP TO FIVE PB5SC'S FOR LOW END             00210000
W2F1#STH DS    CL1           NUMBER OF CROSS STREETS AT HIGH END        00220000
W2F1CDEH DS    CL20          UP TO FIVE PB5SC'S FOR HIGH END            00230000
W2F1CD   DS    0CL3          COMMUNITY DISTRICT                         00240000
W2F1CDB  DS     CL1          COMMUNITY DISTRICT BORO                    00250000
W2F1CDN  DS     CL2          COMMUNITY DISTRICT NUMBER                  00260000
W2F1ZIP  DS    CL5           ZIP CODE                                   00270000
W2F1SLA  DS    CL1           STREET LIGHT AREA                          00280000
W2F1HCD  DS    CL2           HEALTH CODE DISTRICT                       00290045
W2F1SOS  DS    CL1           SIDE OF STREET INDICATOR                   00300000
W2F1PAR  DS    CL1           CONTINUOUS PARITY INDICATOR                00310000
W2F1CT10 DS    CL6           2010 CENSUS TRACT                          00320037
W2F1CB10 DS    CL4           2010 CENSUS BLOCK                          00350037
W2F1CBS1 DS    CL1           2010 CENSUS BLOCK SUFFIX NOT IMPLEMENTED   00351042
         DS    CL3           FILLER                                     00352032
W2F1HA   DS    CL4           HEALTH AREA                                00360045
W2F1SREC DS    CL3           SANITATION RECYCLE PICK-UP                 00370007
W2F1FEAT DS    CL1           FEATURE TYPE CODE                          00380023
RES1     DS    CL1           RESERVED FOR DCP/GSS USE                   00400000
         ORG   RES1                                                     00401030
W2F1ELCD DS    CL1           COMMUNITY DEVELOPMENT ELIGIBILITY          00402031
W2F1CURV DS    CL1           CURVE FLAG                                 00410014
W2F1POL  DS    0CL4          POLICE DISTRICT                            00420000
W2F1PBC  DS     CL1          POLICE PATROL BORO COMMAND                 00430000
W2F1POP  DS     CL3          POLICE PRECINCT                            00440000
W2F1SCH  DS    CL2           SCHOOL DISTRICT                            00450000
         DS    CL14         RESERVED FOR POLITICAL INFORMATION          00460028
W2F1CSC  DS    CL1           COINCIDENT SEGMENT COUNT                   00460128
W2F1STC  DS    CL1           SEGMENT TYPE CODE                          00461026
W2F1SAND DS    CL3           SANITATION DISTRICT                        00470002
W2F1SANT DS    CL2           SANITATION DEPT SUBSECTION                 00480000
W2F1FS   DS    CL2           FIRE DIVISION                              00490001
W2F1FB   DS    CL2           FIRE BATTALION                             00500000
W2F1FC   DS    0CL4          FIRE COMPANY                               00510000
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W2BAL COPY File

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W2F1FCT  DS      CL1           FIRE COMPANY TYPE                            00520000
W2F1FCN  DS      CL3           FIRE COMPANY NUMBER                          00530000
W2F1SPAD DS     CL1            SPECIAL ADDRESS FLAG                         00540000
W2F1MHRI DS     CL1            MARBLE HILL/RIKERS ISLAND FLAG               00550000
W2F1FILS DS     CL1            FILLER-WAS SPLIT SCHOOL DISTRICT FLAG        00560039
W2F1LGC  DS     CL2            LOGICAL GROUP CODE (PREFERRED)               00570000
W2F1FACE DS     CL4            LION FACE CODE                               00580000
W2F1SEQ  DS     CL5            LION SEQUENCE NUMBER                         00590000
W2F1CT90 DS     CL6            1990 CENSUS TRACT                            00600000
         DS     CL4            FILLER                                       00610015
W2F1CPB  DS     CL3            DYNAMIC BLOCK/ATOMIC POLYGON                 00640038
W2F1XCOR DS     CL7            X COORDINATE                                 00650000
W2F1YCOR DS     CL7            Y COORDINATE                                 00660000
W2F1SEGL DS     CL5            SEGMENT LEGNTH                               00670000
W2F1SREG DS     CL5            SANITATION REGULAR PICK-UP                   00680012
*                                                                           00690000
********************************************************************        00700000
         ORG    W2F1SCH+2      PATCH FOR FUNCTION 1E FIELDS                 00710000
********************************************************************        00720000
*                                                                           00730000
W2F1EED  DS     CL3            ELECTION DISTRICT                            00740000
W2F1EAD  DS     CL2            ASSEMBLY DISTRICT                            00750000
W2F1ESED DS     CL1            SPLIT E.D. FLAG                              00760000
W2F1ECON DS     CL2            CONGRESSIONAL DISTRICT                       00770000
W2F1ESEN DS     CL2            SENATORIAL DISTRICT                          00780000
W2F1ECIV DS     CL2            CIVIL COURT DISTRICT                         00790000
W2F1ECOU DS     CL2            CITY COUNCIL DISTRICT                        00800000
         DS     CL18                                                        00810000
W2F1ELGC DS     CL2            LOGICAL GROUP CODE (PREFERRED)               00820000
*                                                                           00830000
********************************************************************        00840000
         ORG    W2LAYOUT       RESET LOCATION COUNTER FOR FUNCTION 2        00850000
********************************************************************        00860000
*                                                                           00870000
W2F2DUPI DS     CL1            DUPLICATE INTERSECT FLAG                     00880000
         DS     CL9            FILLER                                       00890000
W2F2LGC1 DS     CL2            STREET 1 PREFERRED LGC                       00900013
W2F2LGC2 DS     CL2            STREET 2 PREFERRED LGC                       00910013
W2F2#INT DS     CL1            NUMBER OF INTERSECTING STREETS               00920000
W2F2CODE DS     CL20           INTERSECTING PB5SC'S                         00930000
W2F2CDIR DS     CL1            COMPASS DIRECTION OF TWO LOWEST STREETS      00940011
W2F2LEVC DS     CL10           LEVEL CODES ASSOCIATED WITH CROSS STREETS    00941022
         DS     CL2            WAS INSTRUCTIONAL DIVISION                   00950046
W2F2FS   DS     CL2            FIRE DIVISION                                00960003
W2F2FB   DS     CL2            FIRE BATTALION                               00970000
W2F2FC   DS     0CL4           FIRE COMPANY                                 00980000
W2F2FCT  DS      CL1           FIRE COMPANY TYPE                            00990000
W2F2FCN  DS      CL3           FIRE COMPANY NUMBER                          01000000
W2F2CD   DS     0CL3           COMMUNITY DISTRICT                           01010000
W2F2CDB  DS      CL1           COMMUNITY DISTRICT BORO                      01020000
W2F2CDN  DS      CL2           COMMUNITY DISTRICT NUMBER                    01030000
W2F2ZIP  DS     CL5            ZIP CODE                                     01040000
W2F2SLA  DS     CL1            STREET LIGHT AREA                            01050000
W2F2CT10 DS     CL6            2010 CENSUS TRACT                            01060037
         DS     CL3            FILLER                                       01080000
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W2BAL COPY File

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W2F2HA   DS    CL4           HEALTH AREA                              01090045
         DS    CL9           FILLER                                   01100010
W2F2NDNB DS    CL7           LION NODE NUMBER                         01110010
W2F2XCOR DS    CL7           X COORDINATE                             01120000
W2F2YCOR DS    CL7           Y COORDINATE                             01130000
         DS    CL4           FILLER                                   01150013
W2F2POL  DS    0CL4          POLICE DISTRICT                          01160000
W2F2PBC  DS     CL1          POLICE PATROL BORO COMMAND               01170000
W2F2POP  DS     CL3          POLICE PRECINCT                          01180000
W2F2SCH  DS    CL2           SCHOOL DISTRICT                          01190000
W2F2MHRI DS    CL1           MARBLE HILL/RIKERS ISLAND FLAG           01200000
W2F2CT90 DS    CL6           1990 CENSUS TRACT                        01210000
W2F2SVP1 DS    0CL8          FIRST SANBORN BOROUGH, PAGE, VOLUME      01220003
W2F2SB1  DS    CL1           FIRST SANBORN BOROUGH CODE               01230003
W2F2SP1  DS    CL3           FIRST SANBORN PAGE                       01240003
W2F2SV1  DS    CL4           FIRST SANBORN VOLUME                     01250003
W2F2SVP2 DS    0CL8          SECOND SANBORN BOROUGH, PAGE, VOLUME     01260003
W2F2SB2  DS    CL1           SECOND SANBORN BOROUGH CODE              01270003
W2F2SP2  DS    CL3           SECOND SANBORN PAGE                      01280003
W2F2SV2  DS    CL4           SECOND SANBORN VOLUME                    01290003
W2F2DID  DS    CL5           DUPLICATE INTERSECTION DISTANCE          01291034
W2F2T00  DS    CL6           2000 CENSUS TRACT                        01292040
         DS    CL27          FILLER                                   01300034
*                                                                     01310000
********************************************************************  01320000
         ORG   W2LAYOUT      RESET LOCATION COUNTER FOR FUNCTION 3    01330000
********************************************************************  01340000
*                                                                     01350000
W2F3DUPF DS    CL1           DUPLICATE KEY FLAG                       01360013
W2F3CURV DS    CL1           CURVE FLAG                               01361014
W2F3LST  DS    CL1           LOCATIONAL STATUS                        01362018
W2F3CBI  DS    CL1           COUNTY BOUNDARY INDICATOR                01363017
W2F3CSC  DS    CL1           COINCIDENT SEGMENT COUNT                 01364028
         DS    CL3                                                    01370028
W2F3LGC1 DS    CL2           STREET 1 PREFERRED LGC                   01380013
W2F3LGC2 DS    CL2           STREET 2 PREFERRED LGC                   01390013
W2F3LGC3 DS    CL2           STREET 3 PREFERRED LGC                   01400013
W2F3#STL DS    CL1           NUMBER OF CROSS STREETS AT LOW END       01410000
W2F3CDEL DS    CL20          CROSS STREET PB5SC'S AT LOW END          01420000
W2F3#STH DS    CL1           NUMBER OF CROSS STREETS AT HIGH END      01430000
W2F3CDEH DS    CL20          CROSS STREET PB5SC'S AT HIGH END         01440000
W2F3SLA  DS    CL1           STREET LIGHT AREA                        01450000
W2F3REVF DS    CL1           REVERSAL FLAG                            01460000
W2F3CDL  DS    0CL3          LEFT COMMUNITY DISTRICT                  01470000
W2F3CDBL DS    CL1           LEFT COMMUNITY DISTRICT BORO             01480006
W2F3CDNL DS    CL2           LEFT COMMUNITY DISTRICT NUMBER           01490006
W2F3CDR  DS    0CL3          RIGHT COMMUNITY DISTRICT                 01500000
W2F3CDBR DS     CL1          RIGHT COMMUNITY DISTRICT BORO            01510006
W2F3CDNR DS     CL2          RIGHT COMMUNITY DISTRICT NUMBER          01520006
W2F3ZIPL DS    CL5           LEFT ZIP CODE                            01530000
W2F3ZIPR DS    CL5           RIGHT ZIP CODE                           01540000
         DS    CL18          FILLER - FORMER 1980 CENSUS GEOGRAPHY    01541015
W2F3HAL  DS    CL4           LEFT HEALTH AREA                         01610045
W2F3HAR  DS    CL4           RIGHT HEALTH AREA                        01620045
         DS    CL2           WAS LEFT INSTRUCTIONAL DIVISION          01630046
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         DS    CL2           WAS RIGHT INSTRUCTIONAL DIVISION          01631046
W2F3LO#L DS    CL7           LEFT LOW HOUSE NUMBER                     01640000
W2F3HI#L DS    CL7           LEFT HIGH HOUSE NUMBER                    01650000
W2F3LO#R DS    CL7           RIGHT LOW HOUSE NUMBER                    01660000
W2F3HI#R DS    CL7           RIGHT HIGH HOUSE NUMBER                   01670000
W2F3PAR  DS    CL1           CONTINUOUS PARITY INDICATOR               01680000
W2F3FACE DS    CL4           LION FACE CODE                            01690000
W2F3SEQ  DS    CL5           LION SEQUENCE NUMBER                      01700000
W2F3GEN  DS    CL1           GENERATED RECORD FLAG                     01710000
W2F3SEGL DS    PL3           SEGMENT LENGTH IN FEET                    01720000
W2F3SLOP DS    CL3           SEGMENT SLOPE IN DEGREES                  01730000
W2F3ORNT DS    CL1           SEGMENT ORIENTATION                       01740000
         DS    CL4           FILLER                                    01750013
RES2     DS    CL2           RESERVED FOR DCP/GSS USE                  01770000
         ORG   RES2                                                    01770130
W2F3ELCD DS    CL2           COMMUNITY DEVELOPMENT ELIGIBILITY         01770231
W2F3DGLG DS    CL1           DOG LEG FLAG                              01771015
W2F3FEAT DS    CL1           FEATURE TYPE CODE                         01780024
W2F3POLL DS    0CL4          LEFT POLICE DISTRICT                      01790000
W2F3PBCL DS     CL1          LEFT POLICE PATROL BORO COMMAND           01800000
W2F3POPL DS     CL3          LEFT POLICE PRECINCT                      01810000
W2F3POLR DS    0CL4          RIGHT POLICE DISTRICT                     01820000
W2F3PBCR DS     CL1          RIGHT POLICE PATROL BORO COMMAND          01830000
W2F3POPR DS     CL3          RIGHT POLICE PRECINCT                     01840000
W2F3SCHL DS    CL2           LEFT SCHOOL DISTRICT                      01850000
W2F3SCHR DS    CL2           RIGHT SCHOOL DISTRICT                     01860000
W2F3MHRI DS    CL1           MARBLE HILL/RIKERS ISLAND FLAG            01870000
W2F3SEGT DS    CL7           SEGMENT IDENTIFIER                        01871015
W2F3STC  DS    CL1           SEGMENT TYPE CODE                         01880026
*                                                                      01890000
*******************************************************************    01900000
         ORG   W2LAYOUT      RESET LOCATION COUNTER FOR FUNCTION 3C    01910000
*******************************************************************    01920000
*                                                                      01930000
W23CCURV DS    CL1           CURVE FLAG                                01931014
W23CSTC  DS    CL1           SEGMENT TYPE CODE                         01932026
W23CLST  DS    CL1           LOCATIONAL STATUS                         01933018
W23CCBI  DS    CL1           COUNTY BOUNDARY INDICATOR                 01934017
W23CCSC  DS    CL1           COINCIDENT SEGMENT COUNT                  01935028
         DS    CL3           FILLER                                    01940028
W23CLGC1 DS    CL2           STREET 1 PREFERRED LGC                    01950013
W23CLGC2 DS    CL2           STREET 2 PREFERRED LGC                    01960013
W23CLGC3 DS    CL2           STREET 3 PREFERRED LGC                    01970013
W23C#STL DS    CL1           NUMBER OF CROSS STREETS AT LOW END        01980000
W23CCDEL DS    CL20          UP TO FIVE PB5SC'S FOR LOW END            01990000
W23C#STH DS    CL1           NUMBER OF CROSS STREETS AT HIGH END       02000000
W23CCDEH DS    CL20          UP TO FIVE PB5SC'S FOR HIGH END           02010000
W23CCD   DS    0CL3          COMMUNITY DISTRICT                        02020000
W23CCDB  DS     CL1          COMMUNITY DISTRICT BORO                   02030000
W23CCDN  DS     CL2          COMMUNITY DISTRICT NUMBER                 02040000
W23CZIP  DS    CL5           ZIP CODE                                  02050000
W23CSLA  DS    CL1           STREET LIGHT AREA                         02060000
W23CT00  DS    CL6           2000 CENSUS TRACT -                       02070040
         DS    CL1           FILLER                                    02080034
W23CCT10 DS    CL6           2010 CENSUS TRACT                         02100037
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W2BAL COPY File

```
W23CCB10 DS    CL4           2010 CENSUS BLOCK                          02110037
W23CCBS1 DS    CL1           2010 CENSUS BLOCK SUFFIX NOT IMPLEMENTED   02111042
W23CHA   DS    CL4           HEALTH AREA                                02120045
W23CREVF DS    CL1           CROSS STREET REVERSAL FLAG                 02130005
W23CSOS  DS    CL1           SIDE OF STREET INDICATOR                   02140005
W23CFS   DS    CL2           FIRE DIVISION                              02150003
W23CFB   DS    CL2           FIRE BATTALION                             02160000
W23CFC   DS    0CL4          FIRE COMPANY                               02170000
W23CFCT  DS     CL1          FIRE COMPANY TYPE                          02180000
W23CFCN  DS     CL3          FIRE COMPANY NUMBER                        02190000
W23CSEGT DS    CL7           SEGMENT IDENTIFIER                         02200015
W23CHSEL DS    CL7           LOW HOUSE NUMBER                           02210000
W23CHSEH DS    CL7           HIGH HOUSE NUMBER                          02220000
W23CHS2L DS    CL7           2ND LOW HSE # - USED IF ODD & EVEN RANGES  02230000
W23CHS2H DS    CL7           2ND HI HSE #    ARE ON SAME SIDE OF STREET 02240000
W23CPAR  DS    CL1           CONTINUOUS PARITY INDICATOR                02250000
W23CFACE DS    CL4           LION FACE CODE                             02260000
W23CSEQ  DS    CL5           LION SEQUENCE NUMBER                       02270000
W23CGEN  DS    CL1           GENERATED RECORD FLAG                      02280000
W23CSEGL DS    PL3           SEGMENT LENGTH IN FEET                     02290000
W23CSLOP DS    CL3           SEGMENT SLOPE IN DEGREES                   02300000
W23CORNT DS    CL1           SEGMENT ORIENTATION                        02310000
         DS    CL2           WAS INSTRUCTIONAL DIVISION                 02320046
RES3     DS    CL1           RESERVED FOR DCP/GSS USE                   02330000
         ORG   RES3                                                     02331030
W23CELCD DS    CL1           COMMUNITY DEVELOPMENT ELIGIBILITY          02332031
W23CFEAT DS    CL1           FEATURE TYPE CODE                          02340024
W23CPOL  DS    0CL4          POLICE DISTRICT                            02350000
W23CPBC  DS     CL1          POLICE PATROL BORO COMMAND                 02360000
W23CPOP  DS     CL3          POLICE PRECINCT                            02370000
W23CSCH  DS    CL2           SCHOOL DISTRICT                            02380000
W23CMHRI DS    CL1           MARBLE HILL/RIKERS ISLAND FLAG             02390000
W23CCT90 DS    CL6           1990 CENSUS TRACT                          02400000
         DS    CL4           FILLER                                     02410015
W23CCPB  DS    CL3           DYNAMIC BLOCK/ATOMIC POLYGON               02440038
W23CB00  DS    CL4           2000 CENSUS BLOCK                          02441040
W23CS00  DS    CL1           2000 CENSUS BLOCK SUFFIX                   02442040
*                                                                       02460000
*********************************************************************** 02470000
         ORG   W2BAL         RESET LOCATION COUNTER FOR FUNCTION 5      02480000
*********************************************************************** 02490000
*                                                                       02500000
W2F5AMK  DS    CL28          ACCESS MATCHING KEY                        02510000
         DS    CL172         FILLER                                     02520000
W2END    EQU   *                                                        02530000
W2LENGTH EQU   W2END-W2BAL   LENGTH OF W2BAL                            02540000
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W2BALL COPY File

```
*/*****************************************************************/ 00000100
*/*****  THIS IS GEOSUPPORT INFORMATION SYSTEM COPY FILE W2BALL,   ***/ 00000200
*/*****  CONTAINING THE LAYOUT OF THE OPTIONAL LONG WORK AREA 2    ***/ 00000300
*/*****  FOR FUNCTIONS 1 AND 3.                                    ***/ 00000400
*/*****************************************************************/ 00000500
*/*****         LAST UPDATED JANUARY 2012                         ***/ 00000603
*/*****************************************************************/ 00000702
W2BALL   DS   0H                                                    00000802
W2LACKEY DS    CL21          ACCESS KEY                             00100000
W21LCPAR DS     CL1          CONTINUOUS PARITY INDICATOR            00120002
W21LLHNI DS    0CL6          LOW HOUSE NUMBER                       00130000
W21LHSEL DS     CL5          LOW HOUSE NUMBER ON BLOCK FACE         00140000
W21LSFXL DS     CL1          LOW HOUSE NUMBER SUFFIX                00150013
W21LHHNI DS    0CL6          HIGH HOUSE NUMBER                      00160000
W21LHSEH DS     CL5          HIGH HOUSE NUMBER ON BLOCK FACE        00170000
W21LSFXH DS     CL1          HI HOUSE NUMBER SUFFIX                 00180013
W21LALX  DS    CL1           A=ALLEYS INTERSECT SEGMENT             00190000
*                            X=CROSS STREETS MODIFIED
W21L#STL DS    CL1           NUMBER OF CROSS STREETS AT LOW END     00200000
W21LCDEL DS    CL20          UP TO FIVE PB5SC'S FOR LOW END         00210000
W21L#STH DS    CL1           NUMBER OF CROSS STREETS AT HIGH END    00220000
W21LCDEH DS    CL20          UP TO FIVE PB5SC'S FOR HIGH END        00230000
W21LCD   DS    0CL3          COMMUNITY DISTRICT                     00240000
W21LCDB  DS     CL1          COMMUNITY DISTRICT BORO                00250000
W21LCDN  DS     CL2          COMMUNITY DISTRICT NUMBER              00260000
W21LZIP  DS    CL5           ZIP CODE                               00270000
W21LSLA  DS    CL1           STREET LIGHT AREA                      00280000
W21LHCD  DS    CL2           HEALTH CODE DISTRICT                   00290000
W21LSOS  DS    CL1           SIDE OF STREET INDICATOR               00300000
W21LPAR  DS    CL1           CONTINUOUS PARITY INDICATOR            00310000
W21LCT10 DS    CL6           2010 CENSUS TRACT                      00320015
W21LCB10 DS    CL4           2010 CENSUS BLOCK                      00350015
W21LCBS1 DS    CL1           2010 CENSUS BLOCK SUFFIX               00351015
         DS    CL3           FILLER                                 00352015
W21LHA   DS    CL4           HEALTH AREA                            00360000
W21LSREC DS    CL3           SANITATION RECYCLE PICK-UP             00370007
W21LFEAT DS    CL1           FEATURE TYPE CODE                      00380007
RES1L    DS    CL1           RESERVED FOR DCP/GSS USE               00400000
         ORG   RES1L
W21LELCD DS    CL1           COMMUNITY DEVELOPMENT ELIGIBILITY
W21LCURV DS    CL1           CURVE FLAG                             00410014
W21LPOL  DS    0CL4          POLICE DISTRICT                        00420000
W21LPBC  DS     CL1          POLICE PATROL BORO COMMAND             00430000
W21LPOP  DS     CL3          POLICE PRECINCT                        00440000
W21LSCH  DS    CL2           SCHOOL DISTRICT                        00450000
         DS    CL14         RESERVED FOR POLITICAL INFORMATION      00460013
W21LCSC  DS    CL1           COINCIDENT SEGMENT COUNT
W21LSTC  DS    CL1           SEGMENT TYPE CODE
W21LSAND DS    CL3           SANITATION DISTRICT                    00470002
W21LSANT DS    CL2           SANITATION DEPT SUBSECTION             00480000
W21LFS   DS    CL2           FIRE DIVISION                          00490001
W21LFB   DS    CL2           FIRE BATTALION                         00500000
W21LFC   DS    0CL4          FIRE COMPANY                           00510000
W21LFCT  DS     CL1          FIRE COMPANY TYPE                      00520000
W21LFCN  DS     CL3          FIRE COMPANY NUMBER                    00530000
```

W2BALL COPY File

```
W21LSPAD DS    CL1           SPECIAL ADDRESS FLAG                       00540000
W21LMHRI DS    CL1           MARBLE HILL/RIKERS ISLAND FLAG             00550000
W21LFILS DS    CL1           FILLER-WAS SPLIT SCHOOL DISTRICT FLAG      00560000
W21LLGC  DS    CL2           LOGICAL GROUP CODE (PREFERRED)             00570000
W21LFACE DS    CL4           LION FACE CODE                             00580000
W21LSEQ  DS    CL5           LION SEQUENCE NUMBER                       00590000
W21LCT90 DS    CL6           1990 CENSUS TRACT                          00600000
         DS    CL4           FILLER                                     00610015
W21LCPB  DS    CL3           DYNAMIC BLOCK/ATOMIC POLYGON               00640000
W21LXCOR DS    CL7           X COORDINATE                               00650000
W21LYCOR DS    CL7           Y COORDINATE                               00660000
W21LSEGL DS    CL5           SEGMENT LEGNTH                             00670000
W21LSREG DS    CL5           SANITATION REGULAR PICK-UP                 00680012
W21LSEGT DS    CL7           SEGMENT IDENTIFIER
W21LB7SC DS    CL8           "TRUE" BOROUGH AND 7 DIGIT STREET CODE
W21LHNI  DS    CL6           UNDERLYING HOUSE NUMBER
W21LT00  DS    CL6           2000 CENSUS TRACT                          00320015
W21LB00  DS    CL4           2000 CENSUS BLOCK                          00350015
W21LS00  DS    CL1           2000 CENSUS BLOCK SUFFIX                   00351015
         DS    CL68          FILLER - FUTURE USE
*                                                                       00690000
********************************************************************    00700000
         ORG   W21LSCH+2     PATCH FOR FUNCTION 1E FIELDS               00710000
********************************************************************    00720000
*                                                                       00730000
W21LEED  DS    CL3           ELECTION DISTRICT                          00740000
W21LEAD  DS    CL2           ASSEMBLY DISTRICT                          00750000
W21LESED DS    CL1           SPLIT E.D. FLAG                            00760000
W21LECON DS    CL2           CONGRESSIONAL DISTRICT                     00770000
W21LESEN DS    CL2           SENATORIAL DISTRICT                        00780000
W21LECIV DS    CL2           CIVIL COURT DISTRICT                       00790000
W21LECOU DS    CL2           CITY COUNCIL DISTRICT                      00800000
         DS    CL18                                                     00810000
W21LELGC DS    CL2           LOGICAL GROUP CODE (PREFERRED)             00820000
*                                                                       00830000
********************************************************************    00840000
         ORG   W2LACKEY      RESET LOCATION COUNTER FOR FUNCTION 3      00850000
********************************************************************    00860000
*                                                                       00870000
         DS    CL21                                                     00000902
W23LDUPF DS    CL1           DUPLICATE KEY FLAG                         00001002
W23LCURV DS    CL1           CURVE FLAG                                 00001103
W23LLST  DS    CL1           LOCATION STATUS OF SEGMENT
W23LCBI  DS    CL1           COUNTY BOUNDARY INDICATOR
W23LCSC  DS    CL1           COINCIDENT SEGMENT COUNT
         DS    CL3                                                      00001203
W23LLGC1 DS    CL2           STREET 1 PREFERRED LGC                     00001302
W23LLGC2 DS    CL2           STREET 2 PREFERRED LGC                     00001402
W23LLGC3 DS    CL2           STREET 3 PREFERRED LGC                     00001502
W23L#STL DS    CL1           NUMBER OF CROSS STREETS AT LOW END         00001602
W23LCDEL DS    CL20          CROSS STREET PB5SC'S AT LOW END            00001702
W23L#STH DS    CL1           NUMBER OF CROSS STREETS AT HIGH END        00001802
W23LCDEH DS    CL20          CROSS STREET PB5SC'S AT HIGH END           00001902
W23LSLA  DS    CL1           STREET LIGHT AREA                          00002002
W23LREVF DS    CL1           REVERSAL FLAG                              00002102
```

W2BALL COPY File

```
W23LCDL  DS    0CL3          LEFT COMMUNITY DISTRICT                   00002202
W23LCDBL DS     CL1          LEFT COMMUNITY DISTRICT BORO              00002302
W23LCDNL DS     CL2          LEFT COMMUNITY DISTRICT NUMBER            00002402
W23LCDR  DS    0CL3          RIGHT COMMUNITY DISTRICT                  00002502
W23LCDBR DS     CL1          RIGHT COMMUNITY DISTRICT BORO             00002602
W23LCDNR DS     CL2          RIGHT COMMUNITY DISTRICT NUMBER           00002702
W23LZIPL DS    CL5           LEFT ZIP CODE                             00002802
W23LZIPR DS    CL5           RIGHT ZIP CODE                            00002902
         DS    CL18
W23LHAL  DS    CL4           LEFT HEALTH AREA                          00003602
W23LHAR  DS    CL4           RIGHT HEALTH AREA                         00003702
         DS    CL2           WAS LEFT INSTRUCTIONAL DIVISION           00003802
         DS    CL2           WAS RIGHT INSTRUCTIONAL DIVISION
W23LLO#L DS    CL7           LEFT LOW HOUSE NUMBER                     00003902
W23LHI#L DS    CL7           LEFT HIGH HOUSE NUMBER                    00004002
W23LLO#R DS    CL7           RIGHT LOW HOUSE NUMBER                    00004102
W23LHI#R DS    CL7           RIGHT HIGH HOUSE NUMBER                   00004202
W23LPAR  DS    CL1           CONTINUOUS PARITY INDICATOR               00004302
W23LFACE DS    CL4           LION FACE CODE                            00004402
W23LSEQ  DS    CL5           LION SEQUENCE NUMBER                      00004502
W23LGEN  DS    CL1           GENERATED RECORD FLAG                     00004602
W23LSEGL DS    PL3           SEGMENT LENGTH IN FEET                    00004702
W23LSLOP DS    CL3           SEGMENT SLOPE IN DEGREES                  00004802
W23LORNT DS    CL1           SEGMENT ORIENTATION                       00004902
         DS    CL4           FILLER                                    00005002
RESL1    DS    CL2           RESERVED FOR DCP/GSS USE                  00005102
         ORG   RESL1
W23LELCD DS    CL2           COMMUNITY DEVELOPMENT ELIGIBILITY
W23LDGLG DS    CL1           DOG LEG FLAG
W23LFEAT DS    CL1           FEATURE TYPE CODE                         00005202
W23LPOLL DS    0CL4          LEFT POLICE DISTRICT                      00005302
W23LPBCL DS     CL1          LEFT POLICE PATROL BORO COMMAND           00005402
W23LPOPL DS     CL3          LEFT POLICE PRECINCT                      00005502
W23LPOLR DS    0CL4          RIGHT POLICE DISTRICT                     00005602
W23LPBCR DS     CL1          RIGHT POLICE PATROL BORO COMMAND          00005702
W23LPOPR DS     CL3          RIGHT POLICE PRECINCT                     00005802
W23LSCHL DS    CL2           LEFT SCHOOL DISTRICT                      00005902
W23LSCHR DS    CL2           RIGHT SCHOOL DISTRICT                     00006002
W23LMHRI DS    CL1           MARBLE HILL / RIKERS ISLAND               00006102
W23LSEGT DS    CL7           SEGMENT IDENTIFIER
W23LSTC  DS    CL1           SEGMENT TYPE CODE                         00006202
W23LT90L DS    CL6           1990 LEFT CENSUS TRACT                    00006302
         DS    CL4           FILLER
W23LCPBL DS    CL3           CURRENT LEFT DYNAMIC BLOCK/ATOMIC POLYGON 00006702
W23LT90R DS    CL6           1990 RIGHT CENSUS TRACT                   00006802
         DS    CL4           FILLER
W23LCPBR DS    CL3           CURRENT RIGHT DYNAMIC BLOCK/ATOMIC POLYGON 00007202
W23LFSL  DS    CL2           LEFT FIRE DIVISION                        00007302
W23LFBL  DS    CL2           LEFT FIRE BATTALION                       00007402
W23LFCL  DS    0CL4          LEFT FIRE COMPANY                         00007502
W23LFCTL DS     CL1          LEFT FIRE COMPANY TYPE                    00007602
W23LFCNL DS     CL3          LEFT FIRE COMPANY NUMBER                  00007702
W23LFSR  DS    CL2           RIGHT FIRE DIVISION                       00007802
W23LFBR  DS    CL2           RIGHT FIRE BATTALION                      00007902
W23LFCR  DS    0CL4          RIGHT FIRE COMPANY                        00008002
```

W2BALL COPY File

```
W23LFCTR DS      CL1           RIGHT FIRE COMPANY TYPE                  00008102
W23LFCNR DS      CL3           RIGHT FIRE COMPANY NUMBER                00008202
W23LT10L DS     CL6            LEFT 2010 CENSUS TRACT
W23LB10L DS     CL4            LEFT 2010 CENSUS BLOCK
W23LBS1L DS     CL1            LEFT 2010 CENSUS BLOCK SUFFIX
W23LT10R DS     CL6            RIGHT 2010 CENSUS TRACT
W23LB10R DS     CL4            RIGHT 2010 CENSUS BLOCK
W23LBS1R DS     CL1            RIGHT 2010 CENSUS BLOCK SUFFIX
W23FNODE DS     CL7            FROM NODE
W23TNODE DS     CL7            TO NODE
W23L00TL DS     CL6            LEFT 2000 CENSUS TRACT
W23L00BL DS     CL4            LEFT 2000 CENSUS BLOCK
W23L00SL DS     CL1            LEFT 2000 CENSUS BLOCK SUFFIX
W23L00TR DS     CL6            RIGHT 2000 CENSUS TRACT
W23L00BR DS     CL4            RIGHT 2000 CENSUS BLOCK
W23L00SR DS     CL1            RIGHT 2000 CENSUS BLOCK SUFFIX
W23LEND  EQU    *                                                       00008402
W23LLEN  EQU    W23LEND-W2BALL     LENGTH OF W2BALL                     00008502
```

W2BAL1A COPY File

```
*/*******************************************************************/ 00000100
*/*****  THIS IS GEOSUPPORT INFORMATION SYSTEM COPY FILE W2BAL1A,  ***/ 00000200
*/*****  CONTAINING THE LAYOUT OF WORK AREA 2 FOR FUNCTION          ***/ 00000300
*/*****  1A, BL AND BN WHICH SHARE A SINGLE WORK AREA 2 LAYOUT.    ***/ 00000408
*/*******************************************************************/ 00000500
*/*****          LAST UPDATED 5 MARCH 2009                         ***/ 00000608
*/*******************************************************************/ 00000703
W2BAL1A  DS   0H                                                       00000803
         DS    CL21                                                    00000903
W21ACPAR DS    CL1            CONTINUOUS PARITY INDICATOR              00001003
W21AHSEL DS    CL6            LOW HOUSE NUMBER ON BLOCK                00001103
W21AALT1 DS   0CL10           ALTERNATE KEY                            00001203
W21ABOR1 DS    CL1            ALTERNATE KEY - BORO                     00001303
W21ATXB1 DS    CL5            ALTERNATE KEY - TAX BLOCK                00001403
W21ATXL1 DS    CL4            ALTERNATE KEY - TAX LOT                  00001503
         DS    CL1               FILLER                                00001603
W21ARSCC DS    CL1            RPAD SCC                                 00001703
         DS    CL1            FILLER                                   00001803
W21AGLI  DS   0CL11           GENERAL LOT INFO                         00001903
W21ARBLC DS    CL2            RPAD BUILDING CLASSIFICATION             00002003
W21ACORC DS    CL2            CORNER CODE                              00002103
W21A#STC DS    CL2            TOTAL NUMBER STRUCTURES                  00002203
W21A#BFA DS    CL2            TOTAL NUMBER BLOCKFACES                  00002303
W21AINTF DS    CL1            INTERIOR LOT FLAG                        00002403
W21AVACF DS    CL1            VACANT LOT FLAG                          00002503
W21AIRLF DS    CL1            IRREGULARLY-SHAPED LOT FLAG              00002603
W21AMHRI DS    0CL1           MARBLE HILL/RIKERS ISLAND FLAG           00002703
W21AABFL DS    CL1            ALTERNATE BORO FLAG                      00002803
         DS    CL1            STROLLING FLAG  (W21ASTRF)               00002903
W21ASTRK DS    CL13           STROLLING KEY                            00003003
W21AOVFL DS    CL1            ADDRESS RANGE LIST OVERFLOW FLAG         00003103
W21ARFIU DS    CL1            RESERVED FOR INTERNAL USE                00003203
W21ABIN  DS    CL7            BUILDING IDENTIFICATION NUMBER (BIN)     00003303
W21ACONF DS    CL1            CONDO LOT FLAG                           00003403
W21ARCO# DS    CL4            RPAD CONDO NUMBER                        00003503
W21ACLBL DS    CL10           CONDO LOW BBL                            00003603
         DS    CL1               FILLER                                00003703
W21ACBBL DS    CL10           CONDO BILLING BBL                        00003803
         DS    CL1               FILLER                                00003903
W21ACBBS DS    CL1            CONDO BILLING BBL SCC                    00004003
W21ACHBL DS    CL10           CONDO HIGH BBL                           00004103
         DS    CL1               FILLER                                00004203
W21ASBVP DS    CL8            SANDBORN BOROUGH/VOLUME/PAGE             00004303
W21ABUSA DS    CL5            BUSINESS AREA                            00004403
W21ACOOP DS    CL4            COOP ID NUMBER                           00004503
         DS    CL4               FILLER                                00004605
W21ANBST DS    CL4            ACTUAL TOTAL NBR OF BLDGS ON LOT         00004704
W21ATAXB DS    CL1            TAX MAP BOROUGH                          00004805
W21ATAXM DS    CL4            TAX MAP NBR - SECTION AND VOLUME         00004905
         DS    CL4            RESERVED FOR TAX MAP PAGE NUMBER         00005005
W21AXCO  DS    CL7            X COORDINATE OF ANNOTATION POINT         00005107
W21AYCO  DS    CL7            Y COORDINATE OF ANNOTATION POINT         00005207
W21ABID  DS    CL6            BUSINESS IMPROVEMENT DISTRICT            00005308
         DS    CL2               FILLER                                00005408
W21AINT  DS    CL10           INTERNAL USE                             00005508
```

W2BAL1A COPY File

```
W21A#ADR DS    CL2           TOTAL ADDRESSES FOR LOT                      00005603
W21ALIST DS   0CL756         LIST OF ADDRESSES, MAXIMUM OF 21             00005703
W21ALOW# DS    CL6           LOW HOUSE NUMBER                             00005803
         DS    CL3              FILLER                                    00005903
W21AHI#  DS    CL6           HIGH HOUSE NUMBER                            00006003
         DS    CL3           FILLER                                       00006103
W21ACODE DS    CL8           STREET CODE                                  00006203
W21ALBIN DS    CL7           LIST BIN                                     00006303
W21AATYP DS    CL1           ADDRESS TYPE                                 00006403
         DS    CL1           FILLER                                       00006503
W21ALSOS DS    CL1           LIST SOS                                     00006603
*  STORAGE IS RESERVED FOR THE REMAINING 20 ADDRESS STRUCTURES.           00006703
*  EACH STRUCTURE IS IDENTICAL TO THE ONE DEFINED ABOVE.                  00006803
         DS    CL720         REMAINING ADDRESSES                          00006903
W21AEND  EQU   *                                                          00007003
W21ALEN  EQU   W21AEND-W2BAL1A    LENGTH OF W2BAL1A                       00008003
```

W2BAL1AL COPY File

```
*/*****************************************************************/ 00000100
*/*****  THIS IS GEOSUPPORT INFORMATION SYSTEM COPY FILE W2BAL1AL, ***/ 00000200
*/*****  CONTAINING THE LONG LAYOUT OF WORK AREA 2 FOR FUNCTION    ***/ 00000300
*/*****  1A, BL and BN WHICH SHARE A SINGLE WORK AREA 2 LAYOUT.    ***/ 00000416
*/*****************************************************************/ 00000500
*/*****        Last Updated 5 March 2009                          ***/ 00000616
*/*****************************************************************/ 00000710
W2BAL1AL DS   0H                                                     00000810
         DS    CL21                                                  00000910
W21ALCPA DS    CL1           CONTINUOUS PARITY INDICATOR             00001010
W21ALHSE DS    CL6           LOW HOUSE NUMBER ON BLOCK               00001110
W21ALALT DS   0CL10          ALTERNATE KEY                           00001210
W21ALBOR DS    CL1           ALTERNATE KEY - BORO                    00001310
W21ALTXB DS    CL5           ALTERNATE KEY - TAX BLOCK               00001410
W21ALTXL DS    CL4           ALTERNATE KEY - TAX LOT                 00001510
         DS    CL1              FILLER                               00001610
W21ALRSC DS    CL1           RPAD SCC                                00001710
         DS    CL1           FILLER                                  00001810
W21ALGLI DS   0CL11          GENERAL LOT INFO                        00001910
W21ALRBL DS    CL2           RPAD BUILDING CLASSIFICATION            00002010
W21ALCOR DS    CL2           CORNER CODE                             00002110
W21AL#ST DS    CL2           TOTAL NUMBER STRUCTURES                 00002210
W21AL#BF DS    CL2           TOTAL NUMBER BLOCKFACES                 00002310
W21ALINT DS    CL1           INTERIOR LOT FLAG                       00002410
W21ALVAC DS    CL1           VACANT LOT FLAG                         00002510
W21ALIRL DS    CL1           IRREGULARLY-SHAPED LOT FLAG             00002610
W21ALMHR DS    0CL1          Marble Hill/Rikers Island Flag          00002710
W21ALABF DS    CL1           ALTERNATE BORO FLAG                     00002810
         DS    CL1           STROLLING FLAG  (W21ALSTRF)             00002910
W21ALSTR DS    CL13          STROLLING KEY                           00003010
         DS    CL1              FILLER                               00003110
W21ALRFI DS    CL1           RESERVED FOR INTERNAL USE               00003210
W21ALNGB DS    CL7           BUILDING IDENTIFICATION NUMBER (BIN)    00003310
W21ALCON DS    CL1           CONDO LOT FLAG                          00003410
W21ALRCO DS    CL4           RPAD CONDO NUMBER                       00003510
W21ALCLB DS    CL10          CONDO LOW BBL                           00003610
         DS    CL1              FILLER                               00003710
W21ALCBB DS    CL10          CONDO BILLING BBL                       00003810
         DS    CL1              FILLER                               00003910
W21ALCBS DS    CL1           CONDO BILLING BBL SCC                   00004010
W21ALCHB DS    CL10          CONDO HIGH BBL                          00004110
         DS    CL1              FILLER                               00004210
W21ALSBV DS    CL8           SANDBORN BOROUGH/VOLUME/PAGE            00004310
W21ALBUS DS    CL5           BUSINESS AREA                           00004410
W21ALCOO DS    CL4           COOP ID NUMBER                          00004510
         DS    CL4                                                   00004613
W21ALNBS DS    CL4           Actual Nbr of Bldgs on Lot              00004711
W21ALTMB DS    CL1           TAX MAP BOROUGH                         00004814
W21ALTAX DS    CL4           Tax Map NBR - Section and Volume        00004913
         DS    CL4           RESERVED FOR TAX PAGE NUMBER            00005013
W21ALXCO DS    CL7           X COORDINATE OF ANNOTATION POINT        00005115
W21ALYCO DS    CL7           Y COORDINATE OF ANNOTATION POINT        00005215
W21ALBID DS    CL6           Business Improvement District           00005316
         DS    CL2              FILLER                               00005416
W21ALINU DS    CL8           Internal Use Only                       00005517
```

W2BAL1AL COPY File

```
W21AL#BN DS     CL4            TOTAL Number of BINS for Lot            00005610
W21ALLST DS     2500CL7        LIST OF BINS, MAXIMUM OF 2500           00005709
W21ALEND EQU    *                                                      00005802
W21ALLEN EQU    W21ALEND-W2BAL1AL    Length of W2BAL1AL                00006002
```

W2BAL3S COPY File

```
*/*****************************************************************/
*/*****  THIS IS GEOSUPPORT INFORMATION SYSTEM COPY FILE W2BAL3S,  ***/
*/*****  CONTAINING THE LAYOUT OF WORK AREA 2 FOR FUNCTION 3S.     ***/
*/*****************************************************************/
W2BAL3S  DS   0H
W23SAKEY DS    CL21          ACCESS KEY
W23S#INT DS    CL3           NUMBER OF INTERSECTIONS ON STRETCH
W23SINT  DS   0CL12          INTERSECTION LAYOUT
W23SCDE1 DS    PL4           NUMERICALLY SMALLEST PB5SC
W23SCDE2 DS    PL4           NUMERICALLY 2ND SMALLEST PB5SC
W23SDIST DS    PL3           DISTANCE IN FEET FROM PREVIOUS INTERSECT.
W23SGAPF DS    CL1           GAP FLAG ("G" IF NO SEGMENT CONNECTS THIS
*                            INTERSECTION TO THE PREVIOUS ONE)
*
*     THE MAXIMUM NUMBER OF INTERSECTIONS IS 350. THE LAYOUT OF EACH
*  INTERSECTION IS IDENTICAL TO THE 12 BYTES DEFINED BY "W23SINT".
*  RATHER THAN DEFINE 349 MORE INTERSECTIONS, WE ALLOCATE THE STORAGE
*  NECESSSARY SHOULD THE MAXIMUM NUMBER OF INTERSECTIONS BY FOUND.
*     ALL INTERSECTIONS BUT THE FIRST ONE MUST BE REFERENCED BY
*  DISPLACEMENT.
*
W23SREST DS    CL4188        REMAINING INTERSECTIONS
W23SEND  EQU   *
W23SLEN  EQU   W23SEND-W2BAL3S     LENGTH OF W2BAL3S
```

PL/1 COPY Files (MSW)

W1PL1 COPY File

```
/******************************************************************/  00000100
/***  THIS IS GEOSUPPORT SYSTEM COPY FILE W1PL1, CONTAINING THE ***/  00000200
/***  LAYOUT OF WORK AREA 1.     COPYLIB2            04/07/98  ***/  00000300
/******************************************************************/  00000400
 DCL PW1 POINTER;                                                     00000500
 DCL                                                                  00000600
   1 W1PL1,                                                           00000700
     /***************************************************/            00000802
     /*****              INPUT  FIELDS               *****/            00000902
     /***************************************************/            00001002
     2 GEO_WA1_IN_FUNCTION_CODE,                                      00001100
       3 GEO_WA1_IN_FUNCTION_1          CHAR(1),                      00001200
       3 GEO_WA1_IN_FUNCTION_2          CHAR(1),                      00001300
     2 GEO_WA1_IN_BORO                  CHAR(1),                      00001400
     2 GEO_WA1_IN_HOUSENUM              CHAR(12),/*HIGH HSE# INPUT*/  00001500
     2 GEO_WA1_IN_HOUSENUM_INTERNAL     CHAR(6), /*IF FUNCTION 5  */  00001600
     2 GEO_WA1_IN_STREET_1              CHAR(32),                     00001700
     2 GEO_WA1_IN_STREET_2              CHAR(32),                     00001800
     2 GEO_WA1_IN_STREET_3              CHAR(32),                     00001900
     2 GEO_WA1_IN_COMPASS               CHAR(01),                     00002008
     2 GEO_WA1_IN_COMPASS2              CHAR(01),                     00002110
     2 GEO_WA1_IN_STREETCODE_1          FIXED DEC(6),                 00002200
     2 GEO_WA1_IN_STREETCODE_2          FIXED DEC(6),                 00002300
     2 GEO_WA1_IN_STREETCODE_3          FIXED DEC(6),                 00002400
     2 GEO_WA1_IN_ROADBED_REQ_SWITCH    CHAR(1),                      00002514
     2 GEO_WA1_IN_BORO_2                CHAR(1),                      00002600
     2 GEO_WA1_IN_BORO_3                CHAR(1),                      00002700
     2 GEO_WA1_IN_SNL                   CHAR(2),                      00002800
     2 GEO_WA1_IN_10SC_1                CHAR(11),                     00002900
     2 GEO_WA1_IN_10SC_2                CHAR(11),                     00003000
     2 GEO_WA1_IN_10SC_3                CHAR(11),                     00003100
     2 GEO_WA1_IN_ZIPIN                 CHAR(5),                      00003215
     2 GEO_WA1_IN_BBL,                                                00003300
       3 GEO_WA1_IN_BL_BORO             CHAR(1),                      00003400
       3 GEO_WA1_IN_BLOCKNUM            CHAR(5),                      00003500
       3 GEO_WA1_IN_LOTNUM              CHAR(4),                      00003600
     2 FILLER_W1_010                    CHAR(1),                      00003700
     2 GEO_WA1_IN_BIN                   CHAR(7),                      00003802
     /*********************************************************/      00003903
     /*******------ USAGE NOTES FOR SELECTED FIELDS -------*******/    00004004
     /*********************************************************/      00004103
     /** GEO_WA1_IN_COMPACT_NAME_FLAG: SET TO "C" TO REQUEST    **/   00004203
     /**     COMPACT NAMES OPTION.                              **/   00004303
     /** GEO_WA1_IN_LONG_WORKAREA2_FLAG: SET TO "L" TO REQUEST  **/   00004403
     /**     THE LONG WORKAREA 2. AT PRESENT, ONLY FUNCTIONS    **/   00004503
     /**     1A AND 3 HAVE THE LONG WA2 OPTION.                 **/   00004603
     /** GEO_WA1_IN_NON_IBM_MAIN_FRAME: SET TO "X" IF           **/   00004703
     /**     APPLICATION IS RUNNING ON A NON-IBM MAIN FRAME.    **/   00004803
     /** GEO_WA1_IN_1ABL_VERSION: SET TO "L" OR " " TO REQUEST  **/   00004903
     /**     THE LEGACY WORKAREA2 FORMAT FOR FUNCTION 1A OR BL. **/   00005003
     /** GEO_WA1_IN_1ABL_VERSION: SET TO "S" TO REQUEST THE     **/   00005103
     /**     STANDARD WORKAREA2 FORMAT FOR FUNCTION 1A OR BL.   **/   00005203
     /*********************************************************/      00005903
     2 GEO_WA1_IN_COMPACT_NAME_FLAG     CHAR(1),                      00006000
     2 GEO_WA1_IN_LONG_WORKAREA2_FLAG   CHAR(1),                      00006100
```

W1PL1 COPY File

```
    2 GEO_WA1_IN_LOW_HOUSENUM          CHAR(12),                  00006200
    2 GEO_WA1_IN_LOW_HSENUM_INTERNAL   CHAR(6),                   00006300
    2 GEO_WA1_IN_NON_IBM_MAIN_FRAME    CHAR(1),                   00006400
    2 GEO_WA1_IN_1ABL_VERSION          CHAR(1),                   00006500
    2 GEO_WA1_IN_XSTREET_FLAG          CHAR(1),                   00006610
    2 FILLER_W1_100                    CHAR(04),                  00006809
    /*****************************************************/      00006902
    /*****               OUTPUT  FIELDS               *****/      00007002
    /*****************************************************/      00007102
    2 GEO_WA1_OUT_LOW_HOUSENUM         CHAR(12),                  00007209
    2 GEO_WA1_OUT_BORONAME             CHAR(9),                   00007300
    2 GEO_WA1_OUT_STREET_1             CHAR(32),                  00007400
    2 GEO_WA1_OUT_STREET_2             CHAR(32),                  00007500
    2 GEO_WA1_OUT_STREET_3             CHAR(32),                  00007600
    2 GEO_WA1_OUT_HOUSENUM             CHAR(12), /*HI-HND*/       00007709
    2 GEO_WA1_OUT_HOUSENUM_INTERNAL    CHAR(6),                   00007800
    2 FILLER_W1_200                    CHAR(7),                   00007900
    2 GEO_WA1_OUT_PB5SC_1              FIXED DEC(6),              00008006
    2 FILLER_W1_210                    CHAR(2),                   00008300
    2 GEO_WA1_OUT_PB5SC_2              FIXED DEC(6),              00008406
    2 FILLER_W1_220                    CHAR(2),                   00008800
    2 GEO_WA1_OUT_PB5SC_3              FIXED DEC(6),              00008906
    2 GEO_WA1_OUT_STREET_ATTR(3)       CHAR(1),                   00009312
    2 GEO_WA1_BROWSE                   CHAR(40),                  00009400
    2 GEO_WA1_OUT_10SC_1               CHAR(11),                  00009500
    2 GEO_WA1_OUT_10SC_2               CHAR(11),                  00009600
    2 GEO_WA1_OUT_10SC_3               CHAR(11),                  00009700
    2 GEO_WA1_OUT_CUI                  CHAR(5), /*NOT IMPLEMENTED*/ 00009800
    2 GEO_WA1_OUT_BBL,                                            00009900
      3 GEO_WA1_OUT_BL_BORO            CHAR(1),                   00010000
      3 GEO_WA1_OUT_BLOCKNUM           CHAR(5),                   00010100
      3 GEO_WA1_OUT_LOTNUM             CHAR(4),                   00010200
    2 FILLER_W1_240                    CHAR(1),                   00010300
    2 GEO_WA1_OUT_BIN                  CHAR(7),                   00010411
    2 GEO_WA1_OUT_SND_ATTR             CHAR(1), /*DCP/GSS USE*/   00010705
    2 GEO_WA1_OUT_REASON_CODE          CHAR(1),                   00010800
    2 FILLER_W1_400                    CHAR(2),                   00010900
    2 GEO_WA1_OUT_RETURN_CODE,                                    00011007
      3 GEO_WA1_OUT_RC_1               CHAR(1),                   00011107
      3 GEO_WA1_OUT_RC_2               CHAR(1),                   00011207
    2 GEO_WA1_OUT_ERROR_MESSAGE        CHAR(80),                  00011400
    2 GEO_WA1_OUT_NUM_SIMILAR_NAMES    FIXED DEC(3),              00011500
    2 GEO_WA1_OUT_SIMILAR_NAMES(10)    CHAR(32);                  00011600
                                                                  00011702
/************************************************************/   00011801
                                                                  00011902
DCL 1 GEO_WA1_OUT_PB_5SC_1                                        00012006
        BASED (ADDR(GEO_WA1_OUT_PB5SC_1)),                        00012106
      3 GEO_WA1_OUT_PACKBORO_NOSIGN_1  CHAR(1),                   00012206
      3 GEO_WA1_OUT_STREETCODE_1_KEY   FIXED DEC(5),              00012306
    1 GEO_WA1_OUT_PB_5SC_2                                        00012406
        BASED (ADDR(GEO_WA1_OUT_PB5SC_2)),                        00012506
      3 GEO_WA1_OUT_PACKBORO_NOSIGN_2  CHAR(1),                   00012606
      3 GEO_WA1_OUT_STREETCODE_2_KEY   FIXED DEC(5),              00012706
    1 GEO_WA1_OUT_PB_5SC_3                                        00012806
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```
          BASED (ADDR(GEO_WA1_OUT_PB5SC_3)),                            00012906
      3 GEO_WA1_OUT_PACKBORO_NOSIGN_3   CHAR(1),                        00013006
      3 GEO_WA1_OUT_STREETCODE_3_KEY    FIXED DEC(5);                   00013106
                                                                        00013202
/***************************************************************/     00013301
                                                                        00013402
DCL GEO_WA1_OUT_GRC                     CHAR(02)                        00013507
                     BASED(ADDR(GEO_WA1_OUT_RETURN_CODE));              00013607
                                                                        00013902
/***************************************************************/     00014001
                                                                        00014102
DCL 1 WORK1PL1   BASED(PW1)               CHAR(884);                    00014201
                                                                        00014302
/***************************************************************/     00014401
                                                                        00014502
PW1=ADDR(W1PL1);                                                        00015000
```

W2PL1 COPY File

```
/****************************************************************/   00000100
/***  THIS IS GEOSUPPORT SYSTEM COPY FILE W2PL1, CONTAINING THE ***/   00000300
/***  LAYOUT OF WORK AREA 2 FOR FUNCTIONS: 1, 1E, 2, 2C, 3, 3C, ***/   00000400
/***  5.  PLEASE NOTE THAT FUNCTIONS 2 AND 2C SHARE A SINGLE    ***/   00000500
/***  WORK AREA 2 LAYOUT.                            12/30/97  ***/   00000600
/***  LAST UPDATED JANUARY 2012                                ***/   00000749
/****************************************************************/   00000800
DCL PW2 POINTER;                                                        00000900
                                                                        00001001
DCL 1 W2PL1             CHAR(200) INIT(' ');                            00001101
                                                                        00001201
DCL                                                                     00001300
  1 GEO_WA2_FUNCTION1   BASED(PW2),                                     00001400
    2 GEO_WA2_FN1_ACCESS_KEY              CHAR(21),                     00001500
    2 GEO_WA2_FN1_CONT_PARITY             CHAR(1),                      00001600
    2 GEO_WA2_FN1_LOW_HOUSENUM_INT        CHAR(6),                      00001700
    2 GEO_WA2_FN1_HI_HOUSENUM_INT         CHAR(6),                      00001800
    2 GEO_WA2_FN1_ALX                     CHAR(1),                      00001931
    2 GEO_WA2_FN1_NUM_X_ST_LOW_END        CHAR(1),                      00002000
    2 GEO_WA2_FN1_LOW_PBSC(5)             FIXED DEC(7),                 00002100
    2 GEO_WA2_FN1_NUM_X_ST_HI_END         CHAR(1),                      00002200
    2 GEO_WA2_FN1_HI_PBSC(5)              FIXED DEC(7),                 00002300
    2 GEO_WA2_FN1_COMMUN_DIST,                                          00002400
      3 GEO_WA2_FN1_COMDIST_BORO          CHAR(1),                      00002500
      3 GEO_WA2_FN1_COMDIST_NUMBER        CHAR(2),                      00002600
    2 GEO_WA2_FN1_ZIP                     CHAR(5),                      00002700
    2 GEO_WA2_FN1_SLA                     CHAR(1),                      00002800
    2 GEO_WA2_FN1_HCD                     CHAR(2),                      00002951
    2 GEO_WA2_FN1_SOS                     CHAR(1),                      00003150
    2 GEO_WA2_FN1_CONT_PARITY_IND         CHAR(1),                      00003250
    2 GEO_WA2_FN1_2010_CENSUS_TRACT       CHAR(6),                      00003350
    2 GEO_WA2_FN1_2010_CENSUS_BLOCK       CHAR(4),                      00003450
    2 GEO_WA2_FN1_2010_CENSUS_BLK_SF      CHAR(1), /*NOT IMPLEMENTED*/00003550
    2 GEO_WA2_FN1_FILLER_INDV             CHAR(1),                      00003650
    2 FILLER_W2_260                       CHAR(2),                      00003750
    2 GEO_WA2_FN1_HEALTHAREA              CHAR(4),                      00003851
    2 GEO_WA2_FN1_SANI_REC                CHAR(3),                      00003950
    2 GEO_WA2_FN1_FEATURE_TYPE            CHAR(1),                      00004050
    2 GEO_WA2_FN1_RESDCP /*RESERVED FOR*/  CHAR(1), /*DCP/GSS USE*/    00004150
    2 GEO_WA2_FN1_CURVE_FLAG              CHAR(1),                      00004250
    2 GEO_WA2_FN1_POLICE_DIST,                                          00004350
      3  GEO_WA2_FN1_POL_PAT_B_CMD        CHAR(1),                      00004450
      3  GEO_WA2_FN1_POL_PRECINCT         CHAR(3),                      00004550
    2 GEO_WA2_FN1_SCHOOLDIST              CHAR(2),                      00004650
    2 FILLER_W2_250                       CHAR(14), /*1E POL DIST*/    00004750
    2 GEO_WA2_FN1_COINCIDENT_SEG_CTR      CHAR(1),                      00004850
    2 GEO_WA2_FN1_SEGMENT_TYPE            CHAR(1),                      00004950
    2 GEO_WA2_FN1_SANI_DIST,                                            00005050
      3 GEO_WA2_FN1_SANIDIST_BORO         CHAR(1),                      00005150
      3 GEO_WA2_FN1_SANIDIST_NUMBER       CHAR(2),                      00005250
    2 GEO_WA2_FN1_SANITATION_SUBSEC       CHAR(2),                      00005350
    2 GEO_WA2_FN1_FIRESEC   /*FIRE DIV*/   CHAR(2),                     00005450
    2 GEO_WA2_FN1_FIREBAT                 CHAR(2),                      00005550
    2 GEO_WA2_FN1_FIRECO,                                               00005650
      3 GEO_WA2_FN1_FIRECO_TYPE           CHAR(1),                      00005750
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      3 GEO_WA2_FN1_FIRECO_NUM            CHAR(3),                  00005850
    2 GEO_WA2_FN1_SPECIAL_ADDR_FLAG       CHAR(1),                  00005950
    2 GEO_WA2_FN1_MARBLE_RIKERS_FLAG      CHAR(1),                  00006050
    2 GEO_WA2_FN1_SPLIT_SCHOOL_FILL       CHAR(1),                  00006150
    2 GEO_WA2_FN1_PREFERRED_LGC           CHAR(2),                  00006250
    2 GEO_WA2_FN1_LIONFACECODE            CHAR(4),                  00006350
    2 GEO_WA2_FN1_LIONSEQ                 CHAR(5),                  00006450
    2 GEO_WA2_FN1_1990_CENSUSTRACT        CHAR(6),                  00006550
    2 FILLER_W2_260B                      CHAR(4),                  00006650
    2 GEO_WA2_FN1_DYN_BLOCK               CHAR(3), /*ATOMIC POLYGON*/ 00006750
    2 GEO_WA2_FN1_XCOORD                  CHAR(7),                  00006850
    2 GEO_WA2_FN1_YCOORD                  CHAR(7),                  00006950
    2 GEO_WA2_FN1_SEGMENTLENGTH           CHAR(5),                  00007050
    2 GEO_WA2_FN1_SANI_REG                CHAR(5);                  00007150
                                                                    00007250
/*******************************************************************/ 00007350
                                                                    00007450
DCL 1 GEO_WA2_FN1_LOW_HOUSE_NUM                                     00007550
        BASED(ADDR(GEO_WA2_FN1_LOW_HOUSENUM_INT)),                  00007650
      3 GEO_WA2_FN1_LOW_HOUSENUM          CHAR(5),                  00007750
      3 GEO_WA2_FN1_LOW_HOUSENUMSFX       CHAR(1);                  00007850
                                                                    00008001
DCL 1 GEO_WA2_FN1_HI_HOUSE_NUM                                      00008100
        BASED(ADDR(GEO_WA2_FN1_HI_HOUSENUM_INT)),                   00008200
      3 GEO_WA2_FN1_HI_HOUSENUM           CHAR(5),                  00008300
      3 GEO_WA2_FN1_HI_HOUSENUMSFX        CHAR(1);                  00008425
                                                                    00008501
DCL 1 GEO_WA2_FN1_COMDIST                 CHAR(3)                   00008600
        BASED(ADDR(GEO_WA2_FN1_COMMUN_DIST));                       00008700
                                                                    00008801
DCL 1 GEO_WA2_FN1_SANIDIST                 CHAR(3)                  00008900
        BASED(ADDR(GEO_WA2_FN1_SANI_DIST));                         00009000
                                                                    00009101
DCL 1 GEO_WA2_FN1_POLICEDIST              CHAR(4)                   00009200
        BASED(ADDR(GEO_WA2_FN1_POLICE_DIST));                       00009300
                                                                    00009401
/*******************************************************************/ 00009801
                                                                    00009901
DCL                                                                 00010000
  1 GEO_WA2_FUNCTION2   BASED(PW2),                                 00010100
    2 GEO_WA2_FN2_ACCESS_KEY              CHAR(21),                 00010200
    2 GEO_WA2_FN2_DUPINTERFLAG            CHAR(1),                  00010300
    2 FILLER_W2_270                       CHAR(9),                  00010400
    2 GEO_WA2_FN2_PREFERRED_LGC1          CHAR(2),                  00010500
    2 GEO_WA2_FN2_PREFERRED_LGC2          CHAR(2),                  00010600
    2 GEO_WA2_FN2_NUM_OF_INTERSECTS       CHAR(1),                  00010700
    2 GEO_WA2_FN2_INTERSECT_PBSC(5)       FIXED DEC(7),             00010800
    2 GEO_WA2_FN2_COMPDIR                 CHAR(01),                 00010906
    2 GEO_WA2_FN2_LEVEL_CODES(5,2)        CHAR(01),                 00011020
    2 GEO_WA2_FN2_FILLER_INDV             CHAR(02),                 00011134
    2 GEO_WA2_FN2_FIRESEC   /*FIRE DIV*/  CHAR(2),                  00011200
    2 GEO_WA2_FN2_FIREBAT                 CHAR(2),                  00011300
    2 GEO_WA2_FN2_FIRECO,                                           00011400
      3 GEO_WA2_FN2_FIRECO_TYPE           CHAR(1),                  00011500
      3 GEO_WA2_FN2_FIRECO_NUM            CHAR(3),                  00011600
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    2 GEO_WA2_FN2_COMMUN_DIST,
      3 GEO_WA2_FN2_COMDIST_BORO          CHAR(1),
      3 GEO_WA2_FN2_COMDIST_NUMBER        CHAR(2),
    2 GEO_WA2_FN2_ZIP                     CHAR(5),
    2 GEO_WA2_FN2_SLA                     CHAR(1),
    2 GEO_WA2_FN2_2010_CENSUS_TRACT       CHAR(6),
    2 FILLER_W2_290                       CHAR(3),
    2 GEO_WA2_FN2_HEALTHAREA              CHAR(4),
    2 FILLER_W2_300                       CHAR(9),
    2 GEO_WA2_FN2_LIONNODENUM             CHAR(7),
    2 GEO_WA2_FN2_XCOORD                  CHAR(7),
    2 GEO_WA2_FN2_YCOORD                  CHAR(7),
    2 FILLER_W2_320                       CHAR(4),
    2 GEO_WA2_FN2_POLICE_DIST,
      3  GEO_WA2_FN2_POL_PAT_B_CMD        CHAR(1),
      3  GEO_WA2_FN2_POL_PRECINCT         CHAR(3),
    2 GEO_WA2_FN2_SCHOOLDIST              CHAR(2),
    2 GEO_WA2_FN2_MARBLE_RIKERS_FLAG      CHAR(1),
    2 GEO_WA2_FN2_1990_CENSUSTRACT        CHAR(6),
    2 GEO_WA2_FN2_SANBORN1_BORO           CHAR(1),
    2 GEO_WA2_FN2_SANBORN1_VOL_PAGE,
      3 GEO_WA2_FN2_SANBORN1_VOL_NUM      CHAR(3),
      3 GEO_WA2_FN2_SANBORN1_PAGE_NUM     CHAR(4),
    2 GEO_WA2_FN2_SANBORN2_BORO           CHAR(1),
    2 GEO_WA2_FN2_SANBORN2_VOL_PAGE,
      3 GEO_WA2_FN2_SANBORN2_VOL_NUM      CHAR(3),
      3 GEO_WA2_FN2_SANBORN2_PAGE_NUM     CHAR(4),
    2 GEO_WA2_FN2_DUP_INTRSCT_DISTNCE     CHAR(5),
    2 GEO_WA2_FN2_2000_CENS_TRACT         CHAR(6),
    2 FILLER_W2_330                       CHAR(27);

/*********************************************************************/

DCL 1 GEO_WA2_FN2_COMDIST                 CHAR(3)
        BASED(ADDR(GEO_WA2_FN2_COMMUN_DIST));

DCL 1 GEO_WA2_FN2_POLICEDIST              CHAR(4)
        BASED(ADDR(GEO_WA2_FN2_POLICE_DIST));

DCL 1 GEO_WA2_FN2_SANBORN1_BVOLPAGE       CHAR(8)
        BASED(ADDR(GEO_WA2_FN2_SANBORN1_BORO)),
    1 GEO_WA2_FN2_SANBORN2_BVOLPAGE       CHAR(8)
        BASED(ADDR(GEO_WA2_FN2_SANBORN2_BORO));

/*********************************************************************/

DCL
  1 GEO_WA2_FUNCTION3   BASED(PW2),
    2 GEO_WA2_FN3_ACCESS_KEY              CHAR(21),
    2 GEO_WA2_FN3_DUP_KEY_FLAG            CHAR(1),
    2 GEO_WA2_FN3_CURVE_FLAG              CHAR(1),
    2 GEO_WA2_FN3_LOCATION_STATUS         CHAR(1),
    2 GEO_WA2_FN3_COUNTY_BOUNDARY         CHAR(1),
    2 GEO_WA2_FN3_COINCIDENT_SEG_CTR      CHAR(1),
    2 FILLER_W2_340                       CHAR(3),
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    2 GEO_WA2_FN3_PREFERRED_LGC1          CHAR(2),                    00017632
    2 GEO_WA2_FN3_PREFERRED_LGC2          CHAR(2),                    00017732
    2 GEO_WA2_FN3_PREFERRED_LGC3          CHAR(2),                    00017832
    2 GEO_WA2_FN3_NUM_X_ST_LOW_END        CHAR(1),                    00017932
    2 GEO_WA2_FN3_LOW_PBSC(5)             FIXED DEC(7),               00018032
    2 GEO_WA2_FN3_NUM_X_ST_HI_END         CHAR(1),                    00018132
    2 GEO_WA2_FN3_HI_PBSC(5)              FIXED DEC(7),               00018232
    2 GEO_WA2_FN3_SLA                     CHAR(1),                    00018332
    2 GEO_WA2_FN3_REVERSALFLAG            CHAR(1),                    00018432
    2 GEO_WA2_FN3_LEFT_COMMUN_DIST,                                   00018532
      3 GEO_WA2_FN3_LEFT_COMDIST_BORO     CHAR(1),                    00018632
      3 GEO_WA2_FN3_LEFT_COMDIST_NUM      CHAR(2),                    00018732
    2 GEO_WA2_FN3_RIGHT_COMMUN_DIST,                                  00018832
      3 GEO_WA2_FN3_RIGHT_COMDIST_BORO    CHAR(1),                    00018932
      3 GEO_WA2_FN3_RIGHT_COMDIST_NUM     CHAR(2),                    00019032
    2 GEO_WA2_FN3_LEFT_ZIP                CHAR(5),                    00019132
    2 GEO_WA2_FN3_RIGHT_ZIP               CHAR(5),                    00019232
    2 FILLER_WA2_350A                     CHAR(18),                   00019332
    2 GEO_WA2_FN3_LEFT_HEALTHAREA         CHAR(4),                    00019451
    2 GEO_WA2_FN3_RIGHT_HEALTHAREA        CHAR(4),                    00019551
    2 GEO_WA2_FN3_LEFT_FILLER_INDV        CHAR(2),                    00019634
    2 GEO_WA2_FN3_RIGHT_FILLER_INDV       CHAR(2),                    00019734
    2 GEO_WA2_FN3_LEFT_LOW_HOUSENUM       CHAR(7),                    00019800
    2 GEO_WA2_FN3_LEFT_HI_HOUSENUM        CHAR(7),                    00019900
    2 GEO_WA2_FN3_RIGHT_LOW_HOUSENUM      CHAR(7),                    00020000
    2 GEO_WA2_FN3_RIGHT_HI_HOUSENUM       CHAR(7),                    00020100
    2 GEO_WA2_FN3_CONT_PARITY_IND         CHAR(1),                    00020200
    2 GEO_WA2_FN3_LIONFACECODE            CHAR(4),                    00020300
    2 GEO_WA2_FN3_LIONSEQ                 CHAR(5),                    00020400
    2 GEO_WA2_FN3_GENRECFLAG              CHAR(1),                    00020500
    2 GEO_WA2_FN3_SEGMENTLENGTH           FIXED DEC(5),               00020600
    2 GEO_WA2_FN3_SEGMENTSLOPE            CHAR(3),                    00020700
    2 GEO_WA2_FN3_SEGMENTORIENT           CHAR(1),                    00020800
    2 FILLER_W2_355                       CHAR(4),                    00020900
    2 GEO_WA2_FN3_RESDCP /*RESERVED FOR */ CHAR(2), /*DCP/GSS USE*/   00021000
    2 GEO_WA2_FN3_DOG_LEG                 CHAR(1),                    00021111
    2 GEO_WA2_FN3_FEATURE_TYPE            CHAR(1),                    00021221
    2 GEO_WA2_FN3_LEFT_POLICE_DIST,                                   00021300
      3  GEO_WA2_FN3_LEFT_POL_PAT_B_CMD   CHAR(1),                    00021400
      3  GEO_WA2_FN3_LEFT_POL_PRECINCT     CHAR(3),                   00021500
    2 GEO_WA2_FN3_RIGHT_POLICE_DIST,                                  00021600
      3  GEO_WA2_FN3_RIGHT_POL_PAT_B_CMD  CHAR(1),                    00021700
      3  GEO_WA2_FN3_RIGHT_POL_PRECINCT     CHAR(3),                  00021800
    2 GEO_WA2_FN3_LEFT_SCHLDIST           CHAR(2),                    00021900
    2 GEO_WA2_FN3_RIGHT_SCHLDIST          CHAR(2),                    00022000
    2 GEO_WA2_FN3_MARBLE_RIKERS_FLAG      CHAR(1),                    00022100
    2 GEO_WA2_FN3_SEGMENT_ID              CHAR(7),                    00022211
    2 GEO_WA2_FN3_SEGMENT_TYPE            CHAR(1);                    00022329
                                                                      00022501
/********************************************************************/ 00022601
                                                                      00022701
DCL 1 GEO_WA2_FN3_LEFT_COMDIST                 CHAR(3)                00022800
        BASED(ADDR(GEO_WA2_FN3_LEFT_COMMUN_DIST));                    00022900
                                                                      00023001
DCL 1 GEO_WA2_FN3_RIGHT_COMDIST                CHAR(3)                00023100
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        BASED(ADDR(GEO_WA2_FN3_RIGHT_COMMUN_DIST));                     00023200
                                                                        00023301
DCL 1 GEO_WA2_FN3_LEFT_POLICEDIST               CHAR(4)                 00023400
        BASED(ADDR(GEO_WA2_FN3_LEFT_POLICE_DIST));                      00023500
                                                                        00023601
DCL 1 GEO_WA2_FN3_RIGHT_POLICEDIST               CHAR(4)                00023700
        BASED(ADDR(GEO_WA2_FN3_RIGHT_POLICE_DIST));                     00023800
                                                                        00023901
DCL                                                                     00024000
  1 GEO_WA2_FUNCTION3C  BASED(PW2),                                     00024100
    2 GEO_WA2_FN3C_ACCESS_KEY              CHAR(21),                    00024200
    2 GEO_WA2_FN3C_CURVE_FLAG              CHAR(1),                     00024308
    2 GEO_WA2_FN3C_SEGMENT_TYPE            CHAR(1),                     00024430
    2 GEO_WA2_FN3C_LOCATION_STATUS         CHAR(1),                     00024630
    2 GEO_WA2_FN3C_COUNTY_BOUNDARY         CHAR(1),                     00024730
    2 GEO_WA2_FN3C_COINCIDENT_SEG_CTR      CHAR(1),                     00024832
    2 FILLER_W2_380                        CHAR(3),                     00024932
    2 GEO_WA2_FN3C_PREFERRED_LGC1          CHAR(2),                     00025032
    2 GEO_WA2_FN3C_PREFERRED_LGC2          CHAR(2),                     00025132
    2 GEO_WA2_FN3C_PREFERRED_LGC3          CHAR(2),                     00025232
    2 GEO_WA2_FN3C_NUM_X_ST_LOW_END        CHAR(1),                     00025332
    2 GEO_WA2_FN3C_LOW_PBSC(5)             FIXED DEC(7),                00025432
    2 GEO_WA2_FN3C_NUM_X_ST_HI_END         CHAR(1),                     00025532
    2 GEO_WA2_FN3C_HI_PBSC(5)              FIXED DEC(7),                00025632
    2 GEO_WA2_FN3C_COMMUN_DIST,                                         00025732
      3 GEO_WA2_FN3C_COMDIST_BORO          CHAR(1),                     00025832
      3 GEO_WA2_FN3C_COMDIST_NUMBER        CHAR(2),                     00025932
    2 GEO_WA2_FN3C_ZIP                     CHAR(5),                     00026032
    2 GEO_WA2_FN3C_SLA                     CHAR(1),                     00026132
    2 GEO_WA2_FN3C_2000_CENS_TRACT         CHAR(6),                     00026244
    2 FILLER_W2_390                        CHAR(1),                     00026338
    2 GEO_WA2_FN3C_2010_CENSUS_TRACT       CHAR(6),                     00026441
    2 GEO_WA2_FN3C_2010_CENSUS_BLOCK       CHAR(4),                     00026541
    2 GEO_WA2_FN3C_2010_CENSUS_BLK_SF      CHAR(1), /*NOTIMPLEMENTED*/  00026647
    2 GEO_WA2_FN3C_HEALTHAREA              CHAR(4),                     00026751
    2 GEO_WA2_FN3C_REVERSALFLAG            CHAR(1),                     00026835
    2 GEO_WA2_FN3C_SOS                     CHAR(1),                     00026935
    2 GEO_WA2_FN3C_FIRESEC  /*FIRE DIV*/   CHAR(2),                     00027035
    2 GEO_WA2_FN3C_FIREBAT                 CHAR(2),                     00027135
    2 GEO_WA2_FN3C_FIRECO,                                              00027235
      3 GEO_WA2_FN3C_FIRECO_TYPE           CHAR(1),                     00027335
      3 GEO_WA2_FN3C_FIRECO_NUM            CHAR(3),                     00027435
    2 GEO_WA2_FN3C_SEGMENT_ID              CHAR(7),                     00027535
    2 GEO_WA2_FN3C_LOW_HOUSENUM            CHAR(7),                     00027635
    2 GEO_WA2_FN3C_HI_HOUSENUM             CHAR(7),                     00027735
    2 GEO_WA2_FN3C_LOW_HOUSENUM2           CHAR(7),                     00027835
    2 GEO_WA2_FN3C_HI_HOUSENUM2            CHAR(7),                     00027935
/*   2 HOUSENUM2 ONLY PRESENT IF ODD & EVEN RANGES ARE ON     */        00028035
/*   2 SAME SIDE OF STREET                                    */        00028135
    2 GEO_WA2_FN3C_CONT_PARITY_IND         CHAR(1),                     00028235
    2 GEO_WA2_FN3C_LIONFACECODE            CHAR(4),                     00028335
    2 GEO_WA2_FN3C_LIONSEQ                 CHAR(5),                     00028435
    2 GEO_WA2_FN3C_GENRECFLAG              CHAR(1),                     00028535
    2 GEO_WA2_FN3C_SEGMENTLENGTH           FIXED DEC(5),                00028635
    2 GEO_WA2_FN3C_SEGMENTSLOPE            CHAR(3),                     00028735
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    2 GEO_WA2_FN3C_SEGMENTORIENT           CHAR(1),                     00028835
    2 GEO_WA2_FN3C_FILLER_INDV             CHAR(2),                     00028935
    2 GEO_WA2_FN3C_RESDCP /*RESERVED FOR*/ CHAR(1), /*DCP/GSS USE*/     00029035
    2 GEO_WA2_FN3C_FEATURE_TYPE            CHAR(1),                     00029135
    2 GEO_WA2_FN3C_POLICE_DIST,                                         00029235
      3  GEO_WA2_FN3C_POL_PAT_B_CMD        CHAR(1),                     00029335
      3  GEO_WA2_FN3C_POL_PRECINCT         CHAR(3),                     00029435
    2 GEO_WA2_FN3C_SCHOOLDIST              CHAR(2),                     00029535
    2 GEO_WA2_FN3C_MARBLE_RIKERS_FLAG      CHAR(1),                     00029635
    2 GEO_WA2_FN3C_1990_CENSUSTRACT        CHAR(6),                     00029735
    2 FILLER_W2_410B                       CHAR(4),                     00029835
    2 GEO_WA2_FN3C_DYN_BLOCK               CHAR(3), /*ATOMIC POLYGON*/  00029942
    2 GEO_WA2_FN3C_2000_CENS_BLOCK         CHAR(4),                     00030044
    2 GEO_WA2_FN3C_2000_CENS_BL_SFX        CHAR(1);                     00030144
                                                                        00030335
/*******************************************************************/  00030435
                                                                        00030535
DCL 1 GEO_WA2_FN3C_COMDIST                 CHAR(3)                      00030635
        BASED(ADDR(GEO_WA2_FN3C_COMMUN_DIST));                          00030735
DCL 1 GEO_WA2_FN3C_POLICEDIST              CHAR(4)                      00030835
        BASED(ADDR(GEO_WA2_FN3C_POLICE_DIST));                          00030935
                                                                        00031035
/*******************************************************************/  00031135
                                                                        00031235
DCL                                                                     00031335
  1 GEO_WA2_FUNCTION1E  BASED(PW2),                                     00031435
    2 GEO_WA2_FN1E_ACCESS_KEY              CHAR(21),                    00031535
    2 GEO_WA2_FN1E_CONT_PARITY             CHAR(1),                     00031635
    2 GEO_WA2_FN1E_LOW_HOUSENUM_INT        CHAR(6),                     00031735
    2 GEO_WA2_FN1E_HI_HOUSENUM_INT         CHAR(6),                     00031835
    2 FILLER_W2_435                        CHAR(1),                     00031935
    2 GEO_WA2_FN1E_NUM_X_ST_LOW_END        CHAR(1),                     00032035
    2 GEO_WA2_FN1E_LOW_PBSC(5)             FIXED DEC(7),                00032135
    2 GEO_WA2_FN1E_NUM_X_ST_HI_END         CHAR(1),                     00032235
    2 GEO_WA2_FN1E_HI_PBSC(5)              FIXED DEC(7),                00032335
    2 GEO_WA2_FN1E_COMMUN_DIST,                                         00032435
      3 GEO_WA2_FN1E_COMDIST_BORO          CHAR(1),                     00032535
      3 GEO_WA2_FN1E_COMDIST_NUMBER        CHAR(2),                     00032635
    2 GEO_WA2_FN1E_ZIP                     CHAR(5),                     00032735
    2 GEO_WA2_FN1E_SLA                     CHAR(1),                     00032835
    2 GEO_WA2_FN1E_HCD                     CHAR(2),                     00032951
    2 GEO_WA2_FN1E_SOS                     CHAR(1),                     00033150
    2 GEO_WA2_FN1E_CONT_PARITY_IND         CHAR(1),                     00033250
    2 GEO_WA2_FN1E_2010_CENSUS_TRACT       CHAR(6),                     00033350
    2 GEO_WA2_FN1E_2010_CENSUS_BLOCK       CHAR(4),                     00033450
    2 GEO_WA2_FN1E_2010_CENSUS_BLK_SF      CHAR(1), /*NOTIMPLEMENTED*/  00033550
    2 GEO_WA2_FN1E_FILLER_INDV             CHAR(1),                     00033650
    2 FILLER_W2_440                        CHAR(2),                     00033750
    2 GEO_WA2_FN1E_HEALTHAREA              CHAR(4),                     00033851
    2 GEO_WA2_FN1E_SANI_REC                CHAR(3),                     00033950
    2 GEO_WA2_FN1E_FEATURE_TYPE            CHAR(1),                     00034050
    2 GEO_WA2_FN1E_RESDCP /*RESERVED FOR*/ CHAR(1), /*DCP/GSS USE*/     00034150
    2 GEO_WA2_FN1E_CURVE_FLAG              CHAR(1),                     00034250
    2 GEO_WA2_FN1E_POLICE_DIST,                                         00034350
      3  GEO_WA2_FN1E_POL_PAT_B_CMD        CHAR(1),                     00034450
```

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```
      3  GEO_WA2_FN1E_POL_PRECINCT         CHAR(3),
    2 GEO_WA2_FN1E_SCHOOLDIST              CHAR(2),
    2 GEO_WA2_FN1E_ELECTDIST               CHAR(3),
    2 GEO_WA2_FN1E_ASSEMDIST               CHAR(2),
    2 GEO_WA2_FN1E_SPLIT_ED_FLAG           CHAR(1),
    2 GEO_WA2_FN1E_CONGDIST                CHAR(2),
    2 GEO_WA2_FN1E_SENATEDIST              CHAR(2),
    2 GEO_WA2_FN1E_COURTDIST               CHAR(2),
    2 GEO_WA2_FN1E_COUNCILDIST             CHAR(2),
    2 GEO_WA2_FN1E_COINCIDENT_SEG_CTR      CHAR(1),
    2 GEO_WA2_FN1E_SEGMENT_TYPE_CODE       CHAR(1),
    2 GEO_WA2_FN1E_SANI_DIST,
      3 GEO_WA2_FN1E_SANIDIST_BORO         CHAR(1),
      3 GEO_WA2_FN1E_SANIDIST_NUMBER       CHAR(2),
    2 GEO_WA2_FN1E_SANITATION_SUBSEC       CHAR(2),
    2 GEO_WA2_FN1E_FIRESEC  /*FIRE DIV*/   CHAR(2),
    2 GEO_WA2_FN1E_FIREBAT                 CHAR(2),
    2 GEO_WA2_FN1E_FIRECO,
      3 GEO_WA2_FN1E_FIRECO_TYPE           CHAR(1),
      3 GEO_WA2_FN1E_FIRECO_NUM            CHAR(3),
    2 GEO_WA2_FN1E_SPECIAL_ADDR__FLAG      CHAR(1),
    2 GEO_WA2_FN1E_MARBLE_RIKERS_FLAG      CHAR(1),
    2 GEO_WA2_FN1E_SPLIT_SCHOOL_FILL       CHAR(1),
    2 GEO_WA2_FN1E_PREFERRED_LGC           CHAR(2),
    2 GEO_WA2_FN1E_LIONFACECODE            CHAR(4),
    2 GEO_WA2_FN1E_LIONSEQ                 CHAR(5),
    2 GEO_WA2_FN1E_1990_CENSUSTRACT        CHAR(6),
    2 FILLER_W2_480B                       CHAR(4),
    2 GEO_WA2_FN1E_DYN_BLOCK               CHAR(3), /*ATOMIC POLYGON*/
    2 GEO_WA2_FN1E_XCOORD                  CHAR(7),
    2 GEO_WA2_FN1E_YCOORD                  CHAR(7),
    2 GEO_WA2_FN1E_SEGMENTLENGTH           CHAR(5),
    2 GEO_WA2_FN1E_SANI_REG                CHAR(5);

/*******************************************************************/

DCL 1 GEO_WA2_FN1E_LOW_HOUSE_NUM
        BASED(ADDR(GEO_WA2_FN1E_LOW_HOUSENUM_INT)),
      3 GEO_WA2_FN1E_LOW_HOUSENUM          CHAR(5),
      3 GEO_WA2_FN1E_LOW_HOUSENUMSFX       CHAR(1);

DCL 1 GEO_WA2_FN1E_HI_HOUSE_NUM
        BASED(ADDR(GEO_WA2_FN1E_HI_HOUSENUM_INT)),
      3 GEO_WA2_FN1E_HI_HOUSENUM           CHAR(5),
      3 GEO_WA2_FN1E_HI_HOUSENUMSFX        CHAR(1);

DCL 1 GEO_WA2_FN1E_COMDIST                 CHAR(3)
        BASED(ADDR(GEO_WA2_FN1E_COMMUN_DIST));

DCL 1 GEO_WA2_FN1E_SANIDIST                  CHAR(3)
        BASED(ADDR(GEO_WA2_FN1E_SANI_DIST));

DCL 1 GEO_WA2_FN1E_POLICEDIST              CHAR(4)
        BASED(ADDR(GEO_WA2_FN1E_POLICE_DIST));
```

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/*********************************************************************/

DCL
  1 GEO_WA2_FUNCTION5   BASED(PW2),
    2 GEO_WA2_FN5_ADDR_MATCHING_KEY        CHAR(28),
    2 FILLER_W2_210                        CHAR(172);

/*********************************************************************/

PW2=ADDR(W2PL1);
```

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```
/*****************************************************************/ 00000100
/***  THIS IS GEOSUPPORT SYSTEM COPY FILE W2PL1L, CONTAINING      ***/ 00000200
/***  THE LAYOUT OF THE OPTIONAL LONG WORK AREA 2 FOR             ***/ 00000300
/***  FUNCTION 1,1E, & 3. THIS WORK AREA SHOULD BE USED ONLY WHEN ***/ 00000400
/***  FUNCTION IS CALLED WITH THE "LONG" WORK AREA2 OPTION.       ***/ 00000500
/***                                           07/23/2001    ***/ 00000600
/***  LAST MODIFIED JANUARY 2012                              ***/ 00000739
/*****************************************************************/ 00000824
DCL PW2L POINTER;                                                   00000924
DCL 1 W2PL1L            CHAR(300) INIT(' ');                        00001024
DCL                                                                 00001124
  1 GEO_WA2_1L_FUNCTION1   BASED(PW2L),                             00001224
    2 GEO_WA2_1L_ACCESS_KEY              CHAR(21),                  00001324
    2 GEO_WA2_1L_CONT_PARITY             CHAR(1),                   00001424
    2 GEO_WA2_1L_LOW_HOUSENUM_INT        CHAR(6),                   00001524
    2 GEO_WA2_1L_HI_HOUSENUM_INT         CHAR(6),                   00001624
    2 GEO_WA2_1L_ALX                     CHAR(1),                   00001724
    2 GEO_WA2_1L_NUM_X_ST_LOW_END        CHAR(1),                   00001824
    2 GEO_WA2_1L_LOW_PBSC(5)             FIXED DEC(7),              00001924
    2 GEO_WA2_1L_NUM_X_ST_HI_END         CHAR(1),                   00002024
    2 GEO_WA2_1L_HI_PBSC(5)              FIXED DEC(7),              00002124
    2 GEO_WA2_1L_COMMUN_DIST,                                       00002224
      3 GEO_WA2_1L_COMDIST_BORO          CHAR(1),                   00002324
      3 GEO_WA2_1L_COMDIST_NUMBER        CHAR(2),                   00002424
    2 GEO_WA2_1L_ZIP                     CHAR(5),                   00002524
    2 GEO_WA2_1L_SLA                     CHAR(1),                   00002624
    2 GEO_WA2_1L_HCD                     CHAR(2),                   00002740
    2 GEO_WA2_1L_SOS                     CHAR(1),                   00002939
    2 GEO_WA2_1L_CONT_PARITY_IND         CHAR(1),                   00003039
    2 GEO_WA2_1L_2010_CENSUS_TRACT       CHAR(6),                   00003139
    2 GEO_WA2_1L_2010_CENSUS_BLOCK       CHAR(4),                   00003239
    2 GEO_WA2_1L_2010_CENSUS_BLK_SF      CHAR(1), /*NOTIMPLEMENTED*/  00003339
    2 GEO_WA2_1L_FILLER_INDV             CHAR(1),                   00003439
    2 FILLER_W2_230                      CHAR(2),                   00003539
    2 GEO_WA2_1L_HEALTHAREA              CHAR(4),                   00003640
    2 GEO_WA2_1L_SANI_REC                CHAR(3),                   00003739
    2 GEO_WA2_1L_FEATURE_TYPE            CHAR(1),                   00003839
    2 GEO_WA2_1L_RESDCP /*RESERVED FOR*/  CHAR(1), /*DCP/GSS USE*/  00003939
    2 GEO_WA2_1L_CURVE_FLAG              CHAR(1),                   00004039
    2 GEO_WA2_1L_POLICE_DIST,                                       00004139
      3  GEO_WA2_1L_POL_PAT_B_CMD        CHAR(1),                   00004239
      3  GEO_WA2_1L_POL_PRECINCT         CHAR(3),                   00004339
    2 GEO_WA2_1L_SCHOOLDIST              CHAR(2),                   00004439
    2 FILLER_W2_250                      CHAR(14), /*1E POL DIST*/  00004539
    2 GEO_WA2_1L_COINCIDENT_SEG_CTR      CHAR(1),                   00004620
    2 GEO_WA2_1L_SEGMENT_TYPE            CHAR(1),                   00004720
    2 GEO_WA2_1L_SANI_DIST,                                         00004820
      3 GEO_WA2_1L_SANIDIST_BORO         CHAR(1),                   00004920
      3 GEO_WA2_1L_SANIDIST_NUMBER       CHAR(2),                   00005020
    2 GEO_WA2_1L_SANITATION_SUBSEC       CHAR(2),                   00005120
    2 GEO_WA2_1L_FIRESEC   /*FIRE DIV*/  CHAR(2),                   00005220
    2 GEO_WA2_1L_FIREBAT                 CHAR(2),                   00005320
    2 GEO_WA2_1L_FIRECO,                                            00005420
      3 GEO_WA2_1L_FIRECO_TYPE           CHAR(1),                   00005520
      3 GEO_WA2_1L_FIRECO_NUM            CHAR(3),                   00005620
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    2 GEO_WA2_1L_SPECIAL_ADDR_FLAG        CHAR(1),                     00005720
    2 GEO_WA2_1L_MARBLE_RIKERS_FLAG       CHAR(1),                     00005820
    2 GEO_WA2_1L_SPLIT_SCHOOL_FILL        CHAR(1),                     00005938
    2 GEO_WA2_1L_PREFERRED_LGC            CHAR(2),                     00006020
    2 GEO_WA2_1L_LIONFACECODE             CHAR(4),                     00006120
    2 GEO_WA2_1L_LIONSEQ                  CHAR(5),                     00006220
    2 GEO_WA2_1L_1990_CENSUSTRACT         CHAR(6),                     00006320
    2 FILLER_W2_260B                      CHAR(4),                     00006423
    2 GEO_WA2_1L_DYN_BLOCK                CHAR(3), /*ATOMIC POLYGON*/  00006534
    2 GEO_WA2_1L_XCOORD                   CHAR(7),                     00006620
    2 GEO_WA2_1L_YCOORD                   CHAR(7),                     00006720
    2 GEO_WA2_1L_SEGMENTLENGTH            CHAR(5),                     00006820
    2 GEO_WA2_1L_SANI_REG                 CHAR(5),                     00006920
    2 GEO_WA2_1L_SEGMENT_ID               CHAR(7),                     00007020
    2 GEO_WA2_1L_REAL_B7SC                CHAR(08),                    00007120
    2 GEO_WA2_1L_UNDERLY_HOUSENUM_INT     CHAR(6),                     00007223
    2 GEO_WA2_1L_2000_CENS_TRACT          CHAR(6),                     00007336
    2 GEO_WA2_1L_2000_CENS_BLOCK          CHAR(4),                     00007436
    2 GEO_WA2_1L_2000_CENS_BLK_SUF        CHAR(1),                     00007536
    2 FILLER_W2_260C                      CHAR(68);                    00007629
                                                                       00007723
/*********************************************************************/ 00007823
                                                                       00007923
DCL 1 GEO_WA2_1L_LOW_HOUSE_NUM                                         00008023
        BASED(ADDR(GEO_WA2_1L_LOW_HOUSENUM_INT)),                      00008123
      3 GEO_WA2_1L_LOW_HOUSENUM           CHAR(5),                     00008223
      3 GEO_WA2_1L_LOW_HOUSENUMSFX        CHAR(1);                     00008323
                                                                       00008423
DCL 1 GEO_WA2_1L_HI_HOUSE_NUM                                          00008523
        BASED(ADDR(GEO_WA2_1L_HI_HOUSENUM_INT)),                       00008623
      3 GEO_WA2_1L_HI_HOUSENUM            CHAR(5),                     00008723
      3 GEO_WA2_1L_HI_HOUSENUMSFX         CHAR(1);                     00008823
                                                                       00008923
DCL 1 GEO_WA2_1L_UNDERLY_HOUSE_NUM                                     00009023
        BASED(ADDR(GEO_WA2_1L_UNDERLY_HOUSENUM_INT)),                  00009123
      3 GEO_WA2_1L_UNDERLY_HOUSENUM       CHAR(5),                     00009223
      3 GEO_WA2_1L_UNDERLY_HOUSENUMSFX    CHAR(1);                     00009323
                                                                       00009423
DCL 1 GEO_WA2_1L_COMDIST                  CHAR(3)                      00009523
        BASED(ADDR(GEO_WA2_1L_COMMUN_DIST));                           00009623
                                                                       00009723
DCL 1 GEO_WA2_1L_SANIDIST                  CHAR(3)                     00009823
        BASED(ADDR(GEO_WA2_1L_SANI_DIST));                             00009923
                                                                       00010023
DCL 1 GEO_WA2_1L_POLICEDIST               CHAR(4)                      00010123
        BASED(ADDR(GEO_WA2_1L_POLICE_DIST));                           00010223
                                                                       00010323
/*********************************************************************/ 00010423
                                                                       00010523
DCL                                                                    00010623
  1 GEO_WA2_1EL_FUNCTION1E  BASED(PW2L),                               00010723
    2 GEO_WA2_1EL_ACCESS_KEY              CHAR(21),                    00010823
    2 GEO_WA2_1EL_CONT_PARITY             CHAR(1),                     00010923
    2 GEO_WA2_1EL_LOW_HOUSENUM_INT        CHAR(6),                     00011023
    2 GEO_WA2_1EL_HI_HOUSENUM_INT         CHAR(6),                     00011123
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      2 GEO_WA2_1EL_ALX                    CHAR(1),                      00011223
      2 GEO_WA2_1EL_NUM_X_ST_LOW_END       CHAR(1),                      00011323
      2 GEO_WA2_1EL_LOW_PBSC(5)            FIXED DEC(7),                 00011423
      2 GEO_WA2_1EL_NUM_X_ST_HI_END        CHAR(1),                      00011523
      2 GEO_WA2_1EL_HI_PBSC(5)             FIXED DEC(7),                 00011623
      2 GEO_WA2_1EL_COMMUN_DIST,                                         00011723
        3 GEO_WA2_1EL_COMDIST_BORO         CHAR(1),                      00011823
        3 GEO_WA2_1EL_COMDIST_NUMBER       CHAR(2),                      00011923
      2 GEO_WA2_1EL_ZIP                    CHAR(5),                      00012023
      2 GEO_WA2_1EL_SLA                    CHAR(1),                      00012123
      2 GEO_WA2_1EL_HCD                    CHAR(2),                      00012240
      2 GEO_WA2_1EL_SOS                    CHAR(1),                      00012439
      2 GEO_WA2_1EL_CONT_PARITY_IND        CHAR(1),                      00012539
      2 GEO_WA2_1EL_2010_CENSUS_TRACT      CHAR(6),                      00012639
      2 GEO_WA2_1EL_2010_CENSUS_BLOCK      CHAR(4),                      00012739
      2 GEO_WA2_1EL_2010_CENSUS_BLK_SF     CHAR(1), /*NOTIMPLEMENTED*/   00012839
      2 GEO_WA2_1EL_FILLER_INDV            CHAR(1),                      00012939
      2 FILLER_W2_240                      CHAR(2),                      00013039
      2 GEO_WA2_1EL_HEALTHAREA             CHAR(4),                      00013140
      2 GEO_WA2_1EL_SANI_REC               CHAR(3),                      00013239
      2 GEO_WA2_1EL_FEATURE_TYPE           CHAR(1),                      00013339
      2 GEO_WA2_1EL_RESDCP /*RESERVED FOR*/ CHAR(1), /*DCP/GSS USE*/     00013439
      2 GEO_WA2_1EL_CURVE_FLAG             CHAR(1),                      00013539
      2 GEO_WA2_1EL_POLICE_DIST,                                         00013639
        3  GEO_WA2_1EL_POL_PAT_B_CMD       CHAR(1),                      00013739
        3  GEO_WA2_1EL_POL_PRECINCT        CHAR(3),                      00013839
      2 GEO_WA2_1EL_SCHOOLDIST             CHAR(2),                      00013939
      2 GEO_WA2_1EL_ELECTDIST              CHAR(3),                      00014039
      2 GEO_WA2_1EL_ASSEMDIST              CHAR(2),                      00014139
      2 GEO_WA2_1EL_SPLIT_ED_FLAG          CHAR(1),                      00014239
      2 GEO_WA2_1EL_CONGDIST               CHAR(2),                      00014339
      2 GEO_WA2_1EL_SENATEDIST             CHAR(2),                      00014439
      2 GEO_WA2_1EL_COURTDIST              CHAR(2),                      00014539
      2 GEO_WA2_1EL_COUNCILDIST            CHAR(2),                      00014639
      2 GEO_WA2_1EL_COINCIDENT_SEG_CTR     CHAR(1),                      00014739
      2 GEO_WA2_1EL_SEGMENT_TYPE_CODE      CHAR(1),                      00014839
      2 GEO_WA2_1EL_SANI_DIST,                                           00014939
        3 GEO_WA2_1EL_SANIDIST_BORO        CHAR(1),                      00015039
        3 GEO_WA2_1EL_SANIDIST_NUMBER      CHAR(2),                      00015139
      2 GEO_WA2_1EL_SANITATION_SUBSEC      CHAR(2),                      00015239
      2 GEO_WA2_1EL_FIRESEC  /*FIRE DIV*/  CHAR(2),                      00015339
      2 GEO_WA2_1EL_FIREBAT                CHAR(2),                      00015439
      2 GEO_WA2_1EL_FIRECO,                                              00015539
        3 GEO_WA2_1EL_FIRECO_TYPE          CHAR(1),                      00015639
        3 GEO_WA2_1EL_FIRECO_NUM           CHAR(3),                      00015739
      2 GEO_WA2_1EL_SPECIAL_ADDR__FLAG     CHAR(1),                      00015839
      2 GEO_WA2_1EL_MARBLE_RIKERS_FLAG     CHAR(1),                      00015939
      2 GEO_WA2_1EL_SPLIT_SCHOOL_FILL      CHAR(1),                      00016039
      2 GEO_WA2_1EL_PREFERRED_LGC          CHAR(2),                      00016139
      2 GEO_WA2_1EL_LIONFACECODE           CHAR(4),                      00016239
      2 GEO_WA2_1EL_LIONSEQ                CHAR(5),                      00016339
      2 GEO_WA2_1EL_1990_CENSUSTRACT       CHAR(6),                      00016439
      2 FILLER_W2_480B                      CHAR(4),                     00016539
      2 GEO_WA2_1EL_DYN_BLOCK              CHAR(3), /*ATOMIC POLYGON*/   00016639
      2 GEO_WA2_1EL_XCOORD                 CHAR(7),                      00016739
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```
    2 GEO_WA2_1EL_YCOORD                  CHAR(7),
    2 GEO_WA2_1EL_SEGMENTLENGTH           CHAR(5),
    2 GEO_WA2_1EL_SANI_REG                CHAR(5),
    2 GEO_WA2_1EL_SEGMENT_ID              CHAR(7),
    2 GEO_WA2_1EL_TRUE_B7SC               CHAR(8),
    2 GEO_WA2_1EL_UNDER_HOUSENUM_INT      CHAR(6),
    2 GEO_WA2_1EL_2000_CENS_TRACT         CHAR(6),
    2 GEO_WA2_1EL_2000_CENS_BLOCK         CHAR(4),
    2 GEO_WA2_1EL_2000_CENS_BLK_SUF       CHAR(1),
    2 FILLER_W2_480                       CHAR(68);

/*******************************************************************/

DCL 1 GEO_WA2_1EL_LOW_HOUSE_NUM
        BASED(ADDR(GEO_WA2_1EL_LOW_HOUSENUM_INT)),
      3 GEO_WA2_1EL_LOW_HOUSENUM          CHAR(5),
      3 GEO_WA2_1EL_LOW_HOUSENUMSFX       CHAR(1);

DCL 1 GEO_WA2_1EL_HI_HOUSE_NUM
        BASED(ADDR(GEO_WA2_1EL_HI_HOUSENUM_INT)),
      3 GEO_WA2_1EL_HI_HOUSENUM           CHAR(5),
      3 GEO_WA2_1EL_HI_HOUSENUMSFX        CHAR(1);

DCL 1 GEO_WA2_1EL_UNDER_HOUSE_NUM
        BASED(ADDR(GEO_WA2_1EL_UNDER_HOUSENUM_INT)),
      3 GEO_WA2_1EL_UNDER_HOUSENUM      CHAR(5),
      3 GEO_WA2_1EL_UNDER_HOUSENUMSFX   CHAR(1);

DCL 1 GEO_WA2_1EL_COMDIST                 CHAR(3)
        BASED(ADDR(GEO_WA2_1EL_COMMUN_DIST));

DCL 1 GEO_WA2_1EL_SANIDIST                  CHAR(3)
        BASED(ADDR(GEO_WA2_1EL_SANI_DIST));

DCL 1 GEO_WA2_1EL_POLICEDIST              CHAR(4)
        BASED(ADDR(GEO_WA2_1EL_POLICE_DIST));

/*******************************************************************/

DCL
  1 GEO_WA2_FUNCTION3L  BASED(PW2L),
    2 GEO_WA2_3L_ACCESS_KEY               CHAR(21),
    2 GEO_WA2_3L_DUP_KEY_FLAG             CHAR(1),
    2 GEO_WA2_3L_CURVE_FLAG               CHAR(1),
    2 GEO_WA2_3L_LOCATION_STATUS          CHAR(1),
    2 GEO_WA2_3L_COUNTY_BOUNDARY          CHAR(1),
    2 GEO_WA2_3L_COINCIDENT_SEG_CTR       CHAR(1),
    2 FILLER_W340                         CHAR(3),
    2 GEO_WA2_3L_PREFERRED_LGC1           CHAR(2),
    2 GEO_WA2_3L_PREFERRED_LGC2           CHAR(2),
    2 GEO_WA2_3L_PREFERRED_LGC3           CHAR(2),
    2 GEO_WA2_3L_NUM_X_ST_LOW_END         CHAR(1),
    2 GEO_WA2_3L_LOW_PBSC(5)              FIXED DEC(7),
    2 GEO_WA2_3L_NUM_X_ST_HI_END          CHAR(1),
    2 GEO_WA2_3L_HI_PBSC(5)               FIXED DEC(7),
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    2 GEO_WA2_3L_SLA                      CHAR(1),
    2 GEO_WA2_3L_REVERSALFLAG             CHAR(1),
    2 GEO_WA2_3L_LEFT_COMMUN_DIST,
      3 GEO_WA2_3L_LEFT_COMDIST_BORO      CHAR(1),
      3 GEO_WA2_3L_LEFT_COMDIST_NUMBER    CHAR(2),
    2 GEO_WA2_3L_RIGHT_COMMUN_DIST,
      3 GEO_WA2_3L_RIGHT_COMDIST_BORO     CHAR(1),
      3 GEO_WA2_3L_RIGHT_COMDIST_NUMBER   CHAR(2),
    2 GEO_WA2_3L_LEFT_ZIP                 CHAR(5),
    2 GEO_WA2_3L_RIGHT_ZIP                CHAR(5),
    2 FILLER_W340B                        CHAR(18),
    2 GEO_WA2_3L_LEFT_HEALTHAREA          CHAR(4),
    2 GEO_WA2_3L_RIGHT_HEALTHAREA         CHAR(4),
    2 GEO_WA2_3L_LEFT_FILLER_INDV         CHAR(2),
    2 GEO_WA2_3L_RIGHT_FILLER_INDV        CHAR(2),
    2 GEO_WA2_3L_LEFT_LOW_HOUSENUM        CHAR(7),
    2 GEO_WA2_3L_LEFT_HI_HOUSENUM         CHAR(7),
    2 GEO_WA2_3L_RIGHT_LOW_HOUSENUM       CHAR(7),
    2 GEO_WA2_3L_RIGHT_HI_HOUSENUM        CHAR(7),
    2 GEO_WA2_3L_CONT_PARITY_IND          CHAR(1),
    2 GEO_WA2_3L_LIONFACECODE             CHAR(4),
    2 GEO_WA2_3L_LIONSEQ                  CHAR(5),
    2 GEO_WA2_3L_GENRECFLAG               CHAR(1),
    2 GEO_WA2_3L_SEGMENTLENGTH            FIXED DEC(5),
    2 GEO_WA2_3L_SEGMENTSLOPE             CHAR(3),
    2 GEO_WA2_3L_SEGMENTORIENT            CHAR(1),
    2 FILLER_W355                         CHAR(4),
    2 GEO_WA2_3L_RESDCP                   CHAR(2),
    2 GEO_WA2_3L_DOG_LEG                  CHAR(1),
    2 GEO_WA2_3L_FEATURE_TYPE             CHAR(1),
    2 GEO_WA2_3L_LEFT_POLICE_DIST,
      3  GEO_WA2_3L_LEFT_POL_PAT_B_CMD    CHAR(1),
      3  GEO_WA2_3L_LEFT_POL_PRECINCT     CHAR(3),
    2 GEO_WA2_3L_RIGHT_POLICE_DIST,
      3  GEO_WA2_3L_RIGHT_POL_PAT_B_CMD   CHAR(1),
      3  GEO_WA2_3L_RIGHT_POL_PRECINCT    CHAR(3),
    2 GEO_WA2_3L_LEFT_SCHLDIST            CHAR(2),
    2 GEO_WA2_3L_RIGHT_SCHLDIST           CHAR(2),
    2 GEO_WA2_3L_MARBLE_RIKERS_FLAG       CHAR(1),
    2 GEO_WA2_3L_SEGMENT_ID               CHAR(7),
    2 GEO_WA2_3L_SEGMENT_TYPE             CHAR(1),
/*************************************************************/
/**  THE PORTION OF THIS WORK AREA ABOVE THIS POINT IS      **/
/**  IDENTICAL TO THE STANDARD WORK AREA 2 FOR FUNCTION 3.  **/
/**  THE PORTION BELOW THIS POINT IS PRESENT ONLY FOR THE   **/
/**  LONG WORK AREA 2 OPTION.                               **/
/*************************************************************/
    2 GEO_WA2_3L_L_1990_CENSUSTRACT       CHAR(6),
    2 FILLER_W370B                        CHAR(4),
    2 GEO_WA2_L_3L_DYN_BLOCK              CHAR(3),/*ATOMIC POLYGON*/
    2 GEO_WA2_3L_R_1990_CENSUSTRACT       CHAR(6),
    2 FILLER_W370C                        CHAR(4),
    2 GEO_WA2_R_3L_DYN_BLOCK              CHAR(3),/*ATOMIC POLYGON*/
    2 GEO_WA2_3L_LEFT_FIRESEC             CHAR(2),/*FIRE DIV*/
    2 GEO_WA2_3L_LEFT_FIREBAT             CHAR(2),
```

W2PL1L COPY File

```
    2 GEO_WA2_3L_LEFT_FIRECO,                                           00027839
      3 GEO_WA2_3L_LEFT_FIRECO_TYPE       CHAR(1),                      00027939
      3 GEO_WA2_3L_LEFT_FIRECO_NUM        CHAR(3),                      00028039
    2 GEO_WA2_3L_RIGHT_FIRESEC            CHAR(2),/*FIRE DIV*/          00028139
    2 GEO_WA2_3L_RIGHT_FIREBAT            CHAR(2),                      00028239
    2 GEO_WA2_3L_RIGHT_FIRECO,                                          00028339
      3 GEO_WA2_3L_RIGHT_FIRECO_TYPE      CHAR(1),                      00028439
      3 GEO_WA2_3L_RIGHT_FIRECO_NUM       CHAR(3),                      00028539
    2 GEO_WA2_3L_L_2010_CENSUS_TRACT      CHAR(6),                      00028639
    2 GEO_WA2_3L_L_2010_CENSUS_BLOCK      CHAR(4),                      00028739
    2 GEO_WA2_3L_L_2010_CENSUS_BLK_SF     CHAR(1), /*NOTIMPLEMENTED*/   00028839
    2 GEO_WA2_3L_R_2010_CENSUS_TRACT      CHAR(6),                      00028939
    2 GEO_WA2_3L_R_2010_CENSUS_BLOCK      CHAR(4),                      00029039
    2 GEO_WA2_3L_R_2010_CENSUS_BLK_SF     CHAR(1), /*NOTIMPLEMENTED*/   00029139
    2 GEO_WA2_3L_FROM_NODE                CHAR(7),                      00029239
    2 GEO_WA2_3L_TO_NODE                  CHAR(7),                      00029339
    2 GEO_WA2_3L_L_2000_CENS_TRACT        CHAR(6),                      00029439
    2 GEO_WA2_3L_L_2000_CENS_BLOCK        CHAR(4),                      00029539
    2 GEO_WA2_3L_L_2000_CENS_BL_SUF       CHAR(1),                      00029639
    2 GEO_WA2_3L_R_2000_CENS_TRACT        CHAR(6),                      00029739
    2 GEO_WA2_3L_R_2000_CENS_BLOCK        CHAR(4),                      00029839
    2 GEO_WA2_3L_R_2000_CENS_BL_SUF       CHAR(1);                      00029939
DCL 1 GEO_WA2_3L_LEFT_COMDIST             CHAR(3)                       00030025
        BASED(ADDR(GEO_WA2_3L_LEFT_COMMUN_DIST));                       00030125
DCL 1 GEO_WA2_3L_RIGHT_COMDIST            CHAR(3)                       00030225
        BASED(ADDR(GEO_WA2_3L_RIGHT_COMMUN_DIST));                      00030325
DCL 1 GEO_WA2_3L_LEFT_POLICEDIST          CHAR(4)                       00030425
        BASED(ADDR(GEO_WA2_3L_LEFT_POLICE_DIST));                       00030525
DCL 1 GEO_WA2_3L_RIGHT_POLICEDIST         CHAR(4)                       00030625
        BASED(ADDR(GEO_WA2_3L_RIGHT_POLICE_DIST));                      00030725
PW2L=ADDR(W2PL1L);                                                      00030825
                                                                        00031025
/*******************************************************************/   00040012
```

W2PL11A COPY File

```
/*******************************************************************/ 00000100
/***  THIS IS GEOSUPPORT SYSTEM COPY FILE W2PL11A, CONTAINING THE ***/ 00000200
/***  LAYOUT OF WORK AREA 2 FOR FUNCTIONS 1A AND BL WHICH SHARE   ***/ 00000300
/***  A SINGLE WORK AREA 2 LAYOUT.                      11/28/00  ***/ 00000403
/*******************************************************************/ 00000500
                                                                      00000600
 /*  STANDARD FORMAT  */                                              00000701
                                                                      00000800
 DCL                                                                  00000900
   1 W2PL11A,                                                         00001000
     2 GEO_WA2_1A_ACCESS_KEY              CHAR(21),                   00001100
     2 GEO_WA2_1A_CONT_PARITY             CHAR(1),                    00001200
     2 GEO_WA2_1A_LOW_HOUSENUM            CHAR(6),                    00001300
     2 GEO_WA2_1A_ALTKEY_1,                                           00001400
       3 GEO_WA2_1A_ALTKEY_1_BORO         CHAR(1),                    00001500
       3 GEO_WA2_1A_ALTKEY_1_TAXBLOCK     CHAR(5),                    00001600
       3 GEO_WA2_1A_ALTKEY_1_TAXLOT       CHAR(4),                    00001700
     2 GEO_WA2_1A_FILLER_230              CHAR(1),                    00001800
     2 GEO_WA2_1A_SCC                     CHAR(1),                    00001900
     2 GEO_WA2_1A_FILLER_240              CHAR(1),                    00002000
     2 GEO_WA2_1A_GENERAL_LOT_INFO,                                   00002100
       3 GEO_WA2_1A_RPAD_BLDG_CLASS       CHAR(2),                    00002200
       3 GEO_WA2_1A_CORNER_CODE           CHAR(2),                    00002300
       3 GEO_WA2_1A_NUM_OF_STRUCTURES     CHAR(2),                    00002400
       3 GEO_WA2_1A_NUM_OF_BLOCKFACES     CHAR(2),                    00002500
       3 GEO_WA2_1A_INTERIOR_FLAG         CHAR(1),                    00002600
       3 GEO_WA2_1A_VACANT_FLAG           CHAR(1),                    00002700
       3 GEO_WA2_1A_IRREG_LOT_FLAG        CHAR(1),                    00002800
     2 GEO_WA2_1A_ALT_BORO_FLAG           CHAR(1),                    00002900
     2 GEO_WA2_1A_FILLER_245              CHAR(1),                    00003000
     2 GEO_WA2_1A_STROLL_KEY              CHAR(13),                   00003100
     2 GEO_WA2_1A_OVERFLOW_FLAG           CHAR(1),                    00003202
     2 GEO_WA2_1A_FILLER_251              CHAR(1), /*USED FOR DCP*/   00003300
     2 GEO_WA2_1A_BIN                     CHAR(7),                    00003400
     2 GEO_WA2_1A_CONDO_FLAG              CHAR(1),                    00003500
     2 GEO_WA2_1A_RPAD_CONDO_ID_NUM       CHAR(4),                    00003600
     2 GEO_WA2_1A_CONDO_LOW_BBL           CHAR(10),                   00003700
     2 GEO_WA2_1A_FILLER_260              CHAR(1),                    00003800
     2 GEO_WA2_1A_CONDO_BILL_BBL          CHAR(10),                   00003900
     2 GEO_WA2_1A_FILLER_270              CHAR(1),                    00004000
     2 GEO_WA2_1A_CONDO_BILL_BBL_SCC      CHAR(1),                    00004100
     2 GEO_WA2_1A_CONDO_HIGH_BBL          CHAR(10),                   00004200
     2 GEO_WA2_1A_FILLER_275              CHAR(1),                    00004300
     2 GEO_WA2_1A_SANBORN_BORO            CHAR(1),                    00004400
     2 GEO_WA2_1A_SANBORN_VOL_PAGE,                                   00004500
       3 GEO_WA2_1A_SANBORN_VOL_NUM       CHAR(3),                    00004600
       3 GEO_WA2_1A_SANBORN_PAGE_NUM      CHAR(4),                    00004700
     2 GEO_WA2_1A_COMMERC_DIST            CHAR(5),                    00004800
     2 GEO_WA2_1A_COOP_NUM                CHAR(4),                    00004904
     2 GEO_WA2_1A_FILLER_276              CHAR(4),                    00005007
     2 GEO_WA2_1A_ACTUAL_NUM_OF_STRUCT    CHAR(4),                    00005106
     2 GEO_WA2_1A_DOF_MAP_BORO            CHAR(1),                    00005207
     2 GEO_WA2_1A_DOF_MAP_SECVOL          CHAR(4),                    00005307
     2 GEO_WA2_1A_DOF_MAP_PAGE            CHAR(4),                    00005407
     2 GEO_WA2_1A_X_COORD                 CHAR(7),                    00005508
```

W2PL11A COPY File

```
      2 GEO_WA2_1A_Y_COORD                  CHAR(7),                00005608
      2 GEO_WA2_1A_BID                      CHAR(6),                00005809
      2 GEO_WA2_1A_FILLER_280               CHAR(2),                00005909
      2 GEO_WA2_1A_FILLER_LGCS              CHAR(8),                00006010
      2 GEO_WA2_1A_FILLER_280A              CHAR(2),                00006109
      2 GEO_WA2_1A_NUM_OF_ADDR_FOR_LOT      CHAR(2),                00006209
      2 GEO_WA2_1A_LIST_OF_ADDRESSES(21),                           00006309
        3 GEO_WA2_1A_LIST_LOW_HOUSENUM      CHAR(6),                00006409
        3 GEO_WA2_1A_FILLER_290             CHAR(3),                00006509
        3 GEO_WA2_1A_LIST_HI_HOUSENUM       CHAR(6),                00006609
        3 GEO_WA2_1A_FILLER_300             CHAR(3),                00006709
        3 GEO_WA2_1A_LIST_STREETCODE        CHAR(8),                00006809
        3 GEO_WA2_1A_LIST_BIN               CHAR(7),                00006909
        3 GEO_WA2_1A_ADDR_TYPE              CHAR(1),                00007009
        3 GEO_WA2_1A_FILLER_310             CHAR(1),                00007109
        3 GEO_WA2_1A_LIST_SOS               CHAR(1);                00007209
 DCL  GEO_WA2_1A_SANBORN_BVOLPAGE           CHAR(8)                 00007309
        BASED(ADDR(GEO_WA2_1A_SANBORN_BORO));                       00008009
```

W2PL11AL COPY File

```
/******************************************************************/
/***  THIS IS GEOSUPPORT SYSTEM COPY FILE W2PL11AL, CONTAINING THE***/
/***  LAYOUT OF LONG WORK AREA 2 FOR FUNCTIONS 1A AND BL WHICH    ***/
/***  SHARE A SINGLE WORK AREA 2 LAYOUT.              11/28/00   ***/
/******************************************************************/

 /*  1A/BL LONG WORK AREA 2 */

 DCL
   1 W2PL11AL,
     2 GEO_WA2_1AL_ACCESS_KEY               CHAR(21),
     2 GEO_WA2_1AL_CONT_PARITY              CHAR(1),
     2 GEO_WA2_1AL_LOW_HOUSENUM             CHAR(6),
     2 GEO_WA2_1AL_ALTKEY_1,
       3 GEO_WA2_1AL_ALTKEY_1_BORO          CHAR(1),
       3 GEO_WA2_1AL_ALTKEY_1_TAXBLOCK      CHAR(5),
       3 GEO_WA2_1AL_ALTKEY_1_TAXLOT        CHAR(4),
     2 GEO_WA2_1AL_FILLER_230               CHAR(1),
     2 GEO_WA2_1AL_SCC                      CHAR(1),
     2 GEO_WA2_1AL_FILLER_240               CHAR(1),
     2 GEO_WA2_1AL_GENERAL_LOT_INFO,
       3 GEO_WA2_1AL_RPAD_BLDG_CLASS        CHAR(2),
       3 GEO_WA2_1AL_CORNER_CODE            CHAR(2),
       3 GEO_WA2_1AL_NUM_OF_STRUCTURES      CHAR(2),
       3 GEO_WA2_1AL_NUM_OF_BLOCKFACES      CHAR(2),
       3 GEO_WA2_1AL_INTERIOR_FLAG          CHAR(1),
       3 GEO_WA2_1AL_VACANT_FLAG            CHAR(1),
       3 GEO_WA2_1AL_IRREG_LOT_FLAG         CHAR(1),
     2 GEO_WA2_1AL_ALT_BORO_FLAG            CHAR(1),
     2 GEO_WA2_1AL_FILLER_245               CHAR(1),
     2 GEO_WA2_1AL_STROLL_KEY               CHAR(13),
     2 GEO_WA2_1AL_FILLER_250               CHAR(1),
     2 GEO_WA2_1AL_FILLER_251               CHAR(1), /*USED FOR DCP*/
     2 GEO_WA2_1AL_BIN                      CHAR(7),
     2 GEO_WA2_1AL_CONDO_FLAG               CHAR(1),
     2 GEO_WA2_1AL_RPAD_CONDO_ID_NUM        CHAR(4),
     2 GEO_WA2_1AL_CONDO_LOW_BBL            CHAR(10),
     2 GEO_WA2_1AL_FILLER_260               CHAR(1),
     2 GEO_WA2_1AL_CONDO_BILL_BBL           CHAR(10),
     2 GEO_WA2_1AL_FILLER_270               CHAR(1),
     2 GEO_WA2_1AL_CONDO_BILL_BBL_SCC       CHAR(1),
     2 GEO_WA2_1AL_CONDO_HIGH_BBL           CHAR(10),
     2 GEO_WA2_1AL_FILLER_275               CHAR(1),
     2 GEO_WA2_1AL_SANBORN_BORO             CHAR(1),
     2 GEO_WA2_1AL_SANBORN_VOL_PAGE,
       3 GEO_WA2_1AL_SANBORN_VOL_NUM        CHAR(3),
       3 GEO_WA2_1AL_SANBORN_PAGE_NUM       CHAR(4),
     2 GEO_WA2_1AL_COMMERC_DIST             CHAR(5),
     2 GEO_WA2_1AL_COOP_NUM                 CHAR(4),
     2 GEO_WA2_1AL_FILLER_276               CHAR(4),
     2 GEO_WA2_1AL_ACTUAL_NUM_STRUCTS       CHAR(4),
     2 GEO_WA2_1AL_DOF_MAP_BORO             CHAR(1),
     2 GEO_WA2_1AL_DOF_MAP_SECVOL           CHAR(4),
     2 GEO_WA2_1AL_DOF_MAP_PAGE             CHAR(4),
     2 GEO_WA2_1AL_X_COORD                  CHAR(7),
```

W2PL11AL COPY File

```
      2 GEO_WA2_1AL_Y_COORD                   CHAR(7),                    00005609
      2 GEO_WA2_1AL_BID                       CHAR(6),                    00005710
      2 GEO_WA2_1AL_FILLER_280                CHAR(2),                    00005810
      2 GEO_WA2_1AL_FILLER_LGCS               CHAR(8),                    00005911
      2 GEO_WA2_1AL_NUM_OF_BINS_FOR_LOT       CHAR(4),                    00006110
      2 GEO_WA2_1AL_BINS(2500)                CHAR(7);                    00006210
                                                                          00006310
 DCL  GEO_WA2_1AL_SANBORN_BVOLPAGE            CHAR(8)                     00006410
        BASED(ADDR(GEO_WA2_1AL_SANBORN_BORO));                            00007009
```

W2PL13S COPY File

```
/*******************************************************************/
/** THIS IS GEOSUPPORT SYSTEM COPY FILE W2PL13S, CONTAINING THE   **/
/** LAYOUT OF WORK AREA 2 FOR FUNCTION 3S.               9/22/93  **/
/*******************************************************************/
 DCL
   1 W2PL13S,
     2 GEO_WA2_3S_ACCESS_KEY                CHAR(21),
     2 GEO_WA2_3S_NUM_OF_INTERSECTS         CHAR(3),
     2 GEO_WA2_3S_LIST_OF_INTERSECTS(350),
       3 GEO_WA2_3S_SMALLEST_PBSC           FIXED DEC(7),
       3 GEO_WA2_3S_2ND_SMALLEST_PBSC       FIXED DEC(7),
       3 GEO_WA2_3S_DISTANCE                FIXED DEC(5),
       3 GEO_WA2_3S_GAP_FLAG                CHAR(1);
```

C COPY File (MSW)

WAC COPY File

```
/******************************************************************/
/* Modified - 2 June  2011 (added fields: 2010 Census Tract,Block   */
/*                          and Suffix for funcions 1,1E,2,3,3c).   */
/* Modified - 5 March 2009                                          */
/******************************************************************/
typedef struct {
         struct {
                 char func_code[2];      /* Function Code            */
                 char boro_1;            /* Borough Code of First St */
                 char hse_nbr_disp[12];  /* House nbr in Disp form   */
                 char hse_nbr_hni[6];    /* House nbr in HNI form    */
                 char street_name_1[32]; /* First Street Name        */
                 char street_name_2[32]; /* Second Street Name       */
                 char street_name_3[32]; /* Third Street Name        */
                 char comp_direction;    /* Compass Direction        */
                 char comp_direction2;   /* Compass Direction-Fn 3S  */
                 char PB5SC_1[4];        /* Packd Boro 5 digt St Code*/
                 char PB5SC_2[4];        /* Packd Boro 5 digt St Code*/
                 char PB5SC_3[4];        /* Packd Boro 5 digt St Code*/
                 char roadbedreq;        /* Roadbed Request Switch   */
                 char boro_2;            /* Boro Code of Second Strt */
                 char boro_3;            /* Boro Code of Third Street*/
                 char snl[2];            /* Street Name Norm Length  */
                 char B10SC_1[11];       /* 1st Boro & 10 Digt St Cod*/
                 char B10SC_2[11];       /* 2nd Boro & 10 Digt St Cod*/
                 char B10SC_3[11];       /* 3rd Boro & 10 Digt St Cod*/
                 char zipin[5];          /* Input Zip Code           */
                 char BBL[10];           /* Boro(len=1), Block(len=5)*/
                                         /* and Lot (len=4)          */
                 char filler04;
                 char bld_id[7];         /* Bld Id Number (BIN)      */
                 char compact_flag;      /* Compact Street Names flag*/
                 char long_WA_flag;      /* Long Work Area 2 Flag    */
                 char lo_range_hnd[12];  /* Low HND of Range         */
                 char lo_range_hni[6];   /* Low HNI of Range         */
                 char not_IBM_flag;      /* Non-IBM Mainframe Flag   */
                 char BL1A;              /* 1A/BL Version Switch     */
                 char xstreet_flag;      /* Cross Street Names Flag  */
                 char filler06[4 ];
                } input;
         struct {
                 char lo_hse_nbr_disp[12]; /* Low HND of Range       */
                 char boro_name[9];      /* Boro Name of First Street*/
                 char street_name_1[32]; /* 1st St Name - Normalized */
                 char street_name_2[32]; /* 2nd St Name - Normalized */
                 char street_name_3[32]; /* 3rd St Name - Normalized */
                 char hse_nbr_disp[12];  /* House nbr in Normalized  */
                                         /* Display form             */
                 char hse_nbr_hni[6];    /* House number in HNI form */
                 char filler01[7];
                 char PB5SC_1[4];        /* Packd Boro 5 digt St Code*/
                 char filler02[2];
                 char PB5SC_2[4];        /* Packd Boro 5 digt St Code*/
                 char filler03[2];
                 char PB5SC_3[4];        /* Packd Boro 5 digt St Code*/
```

```
                  char attrbytes[3];      /* Attribute Bytes - int use*/
                  char br_pb5sc[10][4];   /* Up to 10 PB5SCs-Browse fn*/
                  char B10SC_1[11];       /* 1st Boro & 10 Digt St Cod*/
                  char B10SC_2[11];       /* 2nd Boro & 10 Digt St Cod*/
                  char B10SC_3[11];       /* 3rd Boro & 10 Digt St Cod*/
                  char condo_nbr[5];      /* Condo Number             */
                  char BBL[10];           /* Boro(len=1), Block(len=5)*/
                                          /* and Lot (len=4)-Normalizd*/
                  char filler06[1];
                  char bld_id[7];         /* Building Id Number       */
                  char intuse1;           /* Internal Use Only        */
                  char reject_reason_code;/* Reject Reason Code       */
                  char filler07[2];
                  char ret_code[2];       /* GeoSupport Return Code   */
                  char msg[80];           /* GeoSupport Message       */
                  char nbr_sim_names[2];  /* Nbr of Similar St Names  */
                  char sim_names[10][32]; /* Up to 10 Similar St Names*/
                 } output;
                } C_WA1;

typedef struct { char filler01[21];
                  char cont_parity_ind;   /* Continuous Parity Ind.   */
                  char lo_hse_nbr[6];     /* Low House nbr in HNI form*/
                  char hi_hse_nbr[6];     /* Hi House Nbr in HNI form */
                  char alx;               /* A=Alley intersects segmnt*/
                                          /* X=Cross Streets modified */
                  char lo_nbr_x_sts;      /* Nbr of cross streets at  */
                                          /* low house nbr end of st  */
                  char l_x_sts[5][4];     /* PB5SCs of lo end cross st*/
                  char hi_nbr_x_sts;      /* Nbr of cross streets at  */
                                          /* low house nbr end of st  */
                  char h_x_sts[5][4];     /* PB5SCs of lo end cross st*/
                  char com_dist[3];       /* Community District       */
                                          /* Position 0 contains the  */
                                          /* Legacy Boro Code & Pos 1 */
                                          /* & 2, the district nbr    */
                  char zip_code[5];       /* Zip code for st seg      */
                  char DOT_slca;          /* DOT St Lght Contractr Are*/
                  char health_cent[2];    /* Health Center District   */
                  char sos_ind;           /* Side of Street Indicator */
                  char cont_par;          /* Continuous Parity Ind.   */
                  char cen_tract_10[6];   /* 2010 Census Tract        */
                  char cen_blk_10[4];     /* 2010 Census Block        */
                  char cen_blk_10_sufx;   /* 2010 Census Block Suffix */
                  char filler_indv;       /* Was Instructional Divisn */
                  char filler07[2];       /* Filler                   */
                  char health_area[4];    /* Health Area              */
                  char sanit_recycle[3];  /* Recycling Sanit pick-up  */
                  char feature_type;      /* Feature Type Code        */
                  char iaei;              /* Community Development    */
                                          /* Eligibility Indicator    */
                  char curve_flag;        /* Curve Flag               */
                  char police_boro_com;   /* Police Patrol Boro Commnd*/
                  char police_pre[3];     /* Police Precinct          */
                  char com_schl_dist[2];  /* Community School District*/
```

```
                              /* Following 7 fields are   */
                              /* used for Function 1E only*/
              char ed[3];             /* Election District        */
              char ad[2];             /* Assembly District        */
              char sped_flag;         /* Split Elect District Flag*/
              char congress_dist[2];  /* Congressional District   */
              char state_sen_dist[2]; /* State Senatorial District*/
              char civil_court[2];    /* Civil Court District     */
              char civil_council[2];  /* City Council District    */
              char coincident_seg_cnt; /* Coincident Segment      */
                                      /*   Count                  */
              char segtypecode;       /* Segment Type Code        */
              char sanit_dist[3];     /* Sanitation District      */
              char sanit_sub_sect[2]; /* Sanit Collect Scheduling */
                                      /* Section and Subsection   */
              char fire_divisn[2];    /* Fire Division            */
              char fire_bat[2];       /* Fire Battalion           */
              char fire_co_type;      /* Fire Company Type        */
              char fire_co_nbr[3];    /* Fire Company Number      */
              char sagr_flag;         /* Special Address Generated*/
                                      /* Record flag              */
              char mh_ri_flag;        /* Marble Hill/Rikers Island*/
                                      /* Alternative Borough flag */
              char scsd_flag;         /* Split Com School District*/
                                      /* flag                     */
              char DCP_lgc[2];        /* DCP preferred LGC        */
              char face_code[4];      /* LION Face Code           */
              char seq_nbr[5];        /* LION Sequence Number     */
              char cen_tract_90[6];   /* 1990 Census Tract        */
              char filler09  [4];     /* Filler                   */
              char dynam_blk[3];      /* Dynamic Block            */
              char X_coord[7];        /* X coordinate             */
              char Y_coord[7];        /* Y coordinate             */
              char seg_len[5];        /* Segment Length in Feet   */
              char sanit_reg_sched[5];/* Regularly Sanit pick-up  */
            } C_WA2_F1;

typedef struct { C_WA2_F1 c_wa2_f1;     /* First 200 Bytes          */
              char seg_id[7];         /* Segment Identifier       */
              char true_b7sc[8];      /* "true" Boro 7 Str code   */
              char true_hni [6];      /* Underlying HNI           */
              char cen_tract_2000[6]; /* 2000 Census Tract        */
              char cen_blk_2000[4];   /* 2000 Census Block        */
              char cen_blk_2000_sufx; /* 2000 Census Block Suffix */
              char filler01[68];      /* Filler - Future Use      */
        /*    char filler01[79];      /* Filler - Future Use      */
            } C_WA2_F1L;

typedef struct { char lo_hse_nbr[6];    /* Low House nbr in HNI form*/
              char filler01[3];
              char hi_hse_nbr[6];     /* Hi House Nbr in HNI form */
              char filler02[3];
              char B5SC[6];           /* Boro & 5 digit Str Code  */
              char lgc[2];            /* LGC of Street            */
              char bld_id[7];         /* BIN of address range     */
```

```
                 char addr_type;        /* Address Type             */
                 char filler04;
                 char sos_ind;          /* Side of Street Indicator */
               } ADDR_RANGE;

typedef struct { char sanborn_boro;     /* Sanborn Borough Code     */
                 char sanborn_vol[3];   /* Sanborn Volume           */
                 char sanborn_page[4];  /* Sanborn Page             */
               } SANBORN;

typedef struct { char filler01[21];
                 char cont_parity_ind;  /* Continuous Parity Ind    */
                 char lo_hse_nbr[6];    /* Low House Number         */
                 char BBL[10];          /* Boro(len=1), Block(len=5)*/
                                        /* and Lot (len=4)          */
                 char tax_lot_ver_nbr;  /* Tax Lot Version Number   */
                 char RPAD_scc;         /* RPAD Self_Check Code(SCC)*/
                 char filler02;
                 char RPAD_lucc[2];     /* RPAD Land Use Class. Code*/
                 char corner[2];        /* Corner Code              */
                 char nbr_blds[2];      /* Nbr of buildings on lot  */
                 char nbr_str[2];       /* Nbr Street Frontages     */
                 char inter_flag;       /* Interior Lot Flag        */
                 char vacant_flag;      /* Vacant Lot Flag          */
                 char irreg_flag;       /* Irregularly-Shaped Lot Fl*/
                 char mh_ri_flag;       /* Marble Hill/Rikers Island*/
                 char filler03;         /* Former Pseudo-Address Flg*/
                 char stroll_key[13];   /* Strolling key            */
                 char overflow_flag;    /* More than 21 Addresses   */
                 char res_internal_use; /* Reserved for Internal Use*/
                 char bld_id[7];        /* Bld Identification Nbr   */
                                        /* (BIN) of Input Address of*/
                                        /* Existing Building, If any*/
                 char condo_flag;       /* Condominium Flag         */
                 char RPAD_cin[4];      /* RPAD Condo Id Number     */
                 char condo_lo_BBL[10]; /* Low BBL of Condo         */
                 char filler05;
                 char condo_bill_BBL[10];/* Condo Billing BBL       */
                 char filler06;
                 char condo_bill_BBL_scc;/* Condo Billing BBL       */
                                        /* Self-Check Code          */
                 char condo_hi_BBL[10]; /* High BBL of Condo        */
                 char filler07;
                 SANBORN fn1A_Sanborn;  /* Sanborn Information      */
                 char business_area[5]; /* Business Area            */
                 char co_op_nbr[4 ];    /* Co-op Number             */
                 char filler08[4 ];
                 char tot_nbr_bldgs[4 ]; /* Actual Nbr Bldgs on lot  */
                 char tax_map_nbr[5 ];  /* Tax Map Nbr-Sect and Vol */
                 char filler09[04];
                 char X_coord[7];       /* X coordinate-Annotation p*/
                 char Y_coord[7];       /* Y coordinate-Annotation p*/
                 char bid_id[6];        /* Business Improvement Dist*/
                 char filler10[2];
                 char int_use[8];
```

```
                  char filler11[2];
                  char nbr_addr[2];       /* Nbr of Addr Ranges on Lot*/
                  ADDR_RANGE addr_range[21]; /* Addr Range structure  */
                } C_WA2_F1A;

typedef struct { char filler01[21];
                  char cont_parity_ind;   /* Continuous Parity Ind    */
                  char lo_hse_nbr[6];     /* Low House Number         */
                  char BBL[10];           /* Boro(len=1), Block(len=5)*/
                                          /* and Lot (len=4)          */
                  char tax_lot_ver_nbr;   /* Tax Lot Version Number   */
                  char RPAD_scc;          /* RPAD Self_Check Code(SCC)*/
                  char filler02;
                  char RPAD_lucc[2];      /* RPAD Land Use Class. Code*/
                  char corner[2];         /* Corner Code              */
                  char nbr_blds[2];       /* Nbr of buildings on lot  */
                  char nbr_str[2];        /* Nbr Street Frontages     */
                  char inter_flag;        /* Interior Lot Flag        */
                  char vacant_flag;       /* Vacant Lot Flag          */
                  char irreg_flag;        /* Irregularly-Shaped Lot Fl*/
                  char mh_ri_flag;        /* Marble Hill/Rikers Island*/
                  char filler03;          /* Former Pseudo-Address Flg*/
                  char stroll_key[13];    /* Strolling key            */
                  char filler04;
                  char res_internal_use;  /* Reserved for Internal Use*/
                  char bld_id[7];         /* Bld Identification Nbr   */
                                          /* (BIN) of Input Address of*/
                                          /* Existing Building, If any*/
                  char condo_flag;        /* Condominium Flag         */
                  char RPAD_cin[4];       /* RPAD Condo Id Number     */
                  char condo_lo_BBL[10];  /* Low BBL of Condo         */
                  char filler05;
                  char condo_bill_BBL[10];/* Condo Billing BBL        */
                  char filler06;
                  char condo_bill_BBL_scc;/* Condo Billing BBL        */
                                          /* Self-Check Code          */
                  char condo_hi_BBL[10];  /* High BBL of Condo        */
                  char filler07;
                  SANBORN fn1A_Sanborn;   /* Sanborn Information      */
                  char business_area[5];  /* Business Area            */
                  char co_op_nbr[4 ];     /* Co-op number             */
                  char filler08[4 ];
                  char tot_nbr_bldgs[4 ]; /* Actual Nbr Bldgs on lot  */
                  char tax_map_nbr[5 ];   /* Tax Map Nbr-Sect and Vol */
                  char filler09[04];
                  char X_coord[7];        /* X coordinate-Annotation p*/
                  char Y_coord[7];        /* Y coordinate-Annotation p*/
                  char bid_id[6];         /* Business Improvement Dist*/
                  char filler10[2];
                  char int_use[8];
                  char nbr_bins[4];       /* Nbr of BINS on Lot       */
                  char bin_list[2500][7]; /* List of BINS on Lot      */
                } C_WA2_F1AL;

typedef struct { char filler01[31];
```

```
                  char lgc[2][2];         /* Preferred LGCs           */
                  char nbr_x_sts;         /* Number of Intersecting St*/
                  char x_sts[5][4];       /* PB5SCs of Intersection St*/
                  char compdir[1];        /* Compass Direction if 2   */
                                          /* lowest str codes cross   */
                                          /* exactly twice            */
                  char level_codes[10];   /* Level Codes of X Streets */
                  char instruc_div[2];    /* Instructional Division   */
                  char fire_sector[2];    /* Fire Sector              */
                  char fire_bat[2];       /* Fire Battalion           */
                  char fire_co_type;      /* Fire Company Type        */
                  char fire_co_nbr[3];    /* Fire Company Number      */
                  char com_dist[3];       /* Community District       */
                                          /* Pos 0 contains the Boro  */
                                          /* Code and Positions 1 & 2 */
                                          /* contain the district nbr */
                  char zip_code[5];       /* Zip code for st segment  */
                  char DOT_slca;          /* DOT St Lght Contractr Are*/
                  char cen_tract_10[6];   /* 2010 Census Tract        */
                  char filler03[3];
                  char health_area[4];    /* Health Area              */
                  char filler04[9];
                  char node_nbr[7 ];      /* Node Number              */
                  char X_coord[7];        /* X coordinate             */
                  char Y_coord[7];        /* Y coordinate             */
                  char filler04a[2];      /*                          */
                  char filler05[2];
                  char police_boro_com;   /* Police Patrol Boro Commnd*/
                  char police_pre[3];     /* Police Precinct          */
                  char com_schl_dist[2];  /* Community School District*/
                                          /* Following 7 fields are   */
                                          /* used forFunction 1E only */
                  char mh_ri_flag;        /* Marble Hill/Rikers Island*/
                  char cen_tract_90[6];   /* 1990 Census Tract        */
                  SANBORN fn2_Sanborn[2]; /* Sanborn Information      */
                  char dup_intersect_distance[5];  /* Distance in Feet*/
                                          /* Bet Duplicate Intersects */
                  char cen_tract_2000[6]; /* 2000 Census Tract        */
                  char filler06[27];
              /*  char filler06[33]; */
                } C_WA2_F2;

 typedef struct { char filler01[21];
                  char dup_key_flag;      /* Duplicate Key Flag      */
                  char curve_flag;        /* Curve Flag              */
                  char loc_stat_seg;      /* Locational Status of Seg*/
                  char cnty_bnd_ind;      /* County Boundary Indicat */
                  char coincident_seg_cnt; /* Coincident Segment      */
                                          /*   Count                  */
                  char filler03[3];       /* Future Use               */
                  char lgc[3][2];         /* Preferred LGCs           */
                  char lo_nbr_x_sts;      /* Nbr of cross sts at low  */
                                          /* house nbr end of street  */
                  char l_x_sts[5][4];     /* PB5SCs of lo end X sts   */
                  char hi_nbr_x_sts;      /* Number of X streets at lo*/
```

```
                                /* house nbr end of street  */
                char h_x_sts[5][4];    /* PB5SCs of low end X sts  */
                char DOT_slca;         /* DOT St Lght Contractr Are*/
                char x_street_reversal_flag; /* X St Reversal Flag  */
                char l_com_dist[3];    /* Left Community District  */
                                       /* Position 0 contains the  */
                                       /* Boro Code and Pos 1 & 2  */
                                       /* contain the district nbr */
                char r_com_dist[3];    /* Right Community District */
                                       /* Position 0 contains the  */
                                       /* Boro Code and Pos 1 & 2  */
                                       /* contain the district nbr */
                char l_zip_code[5];    /* Left Zip code for st seg */
                char r_zip_code[5];    /* Right Zip code for st seg*/
                char filler07 [18];
                char l_health_area[4]; /* Left Health Area         */
                char r_health_area[4]; /* Right Health Area        */
                char l_fill_in_div[2]; /* Was Left Instructionl Div*/
                char r_fill_in_div[2]; /* Was Right Instructnl Div */
                char l_lo_hse_nbr[7];  /* Left Lo Hse nbr in Disp  */
                char l_hi_hse_nbr[7];  /* Left Hi Hse Nbr in Disp  */
                char r_lo_hse_nbr[7];  /* rght Lo Hse nbr in Disply*/
                char r_hi_hse_nbr[7];  /* rght Hi Hse Nbr in Disply*/
                char cont_par;         /* Continuous Parity Ind    */
                char face_code[4];     /* LION Face Code           */
                char seq_nbr[5];       /* LION Sequence Nbr        */
                char genr_flag;        /* Generated Record Flag    */
                char seg_len[3];       /* Segment Length in Feet   */
                char seg_azm[3];       /* Segment Azimuth          */
                char seg_orient;       /* Segment Orientation      */
                char filler04a[2];     /*                          */
                char filler04b[2];     /*                          */
                char l_iaei;           /* Community Development    */
                                       /* Eligibility Indicator for*/
                                       /* left side                */
                char r_iaei;           /* Community Development    */
                                       /* Eligibility Indicator for*/
                                       /* right side               */
                char dog_leg;          /* Dog Leg Flag             */
                char feature_type;     /* Feature Type Code        */
                char l_police_boro_com; /* Lft Police Patrl Boro Com*/
                char l_police_pre[3];  /* Left Police Precinct     */
                char r_police_boro_com; /* Rght Police Patrl Boro Cm*/
                char r_police_pre[3];  /* Right Police Precinct    */
                char l_com_schl_dist[2];/* Lft Com School District  */
                char r_com_schl_dist[2];/* Rght Com School District */
                char mh_ri_flag;       /* Marble Hill/Rikers Island*/
                                       /* Alternative Boro flag    */
                char seg_id[7];        /* Segment Identifier       */
                char segtypecode;      /* Segment Type Code        */
              } C_WA2_F3;

typedef struct { C_WA2_F3 c_wa2_f3;    /* First 200 Bytes          */
                char l_cen_tract_90[6]; /* Left 1990 Census Tract   */
                char filler01[4];      /* Filler                   */
```

```
                   char l_dynam_blk[3];     /* Left Dynamic Block       */
                   char r_cen_tract_90[6]; /* Right 1990 Census Tract  */
                   char filler03[4];       /* Filler                   */
                   char r_dynam_blk[3];    /* Right Dynamic Block      */
                   char l_fire_sector[2];  /* Left Fire Sector         */
                   char l_fire_bat[2];     /* Left Fire Battalion      */
                   char l_fire_co_type;    /* Left Fire Company Type   */
                   char l_fire_co_nbr[3];  /* Left Fire Company Nbr    */
                   char r_fire_sector[2];  /* Right Fire Sector        */
                   char r_fire_bat[2];     /* Right Fire Battalion     */
                   char r_fire_co_type;    /* Right Fire Company Type  */
                   char r_fire_co_nbr[3];  /* Right Fire Company Nbr   */
                   char l_cen_tract_10[6]; /* Left 2010 Census Tract   */
                   char l_cen_blk_10[4];   /* Left 2010 Census Block   */
                   char l_cen_blk_10_sufx; /* Left 2010 Census Blk Sufx*/
                   char r_cen_tract_10[6]; /* Right 2010 Census Tract  */
                   char r_cen_blk_10[4];   /* Right 2010 Census Block  */
                   char r_cen_blk_10_sufx; /* Right 2010 Census Blk Sfx*/
                   char nodes[2][7];       /* From and To Nodes        */
                   char l_cen_tract_2000[6];/*Left 2000 Census Tract   */
                   char l_cen_blk_2000[4];  /*Left 2000 Census Block   */
                   char l_cen_blk_2000_sufx;/*Left 2000 Census Blk Sufx*/
                   char r_cen_tract_2000[6];/*Right 2000 Census Tract  */
                   char r_cen_blk_2000[4];  /*Right 2000 Census Block  */
                   char r_cen_blk_2000_sufx;/*Right 2000 Census Blk Sfx*/
              //   char filler02[22];
                 } C_WA2_F3L;

typedef struct { char filler01[21];
                 char curve_flag;        /* curve flag               */
                 char segtypecode;       /* Segment Type Code        */
                 char loc_stat_seg;      /* Location Status of Seg.  */
                 char cnty_bnd_ind;      /* County Boundary Indicator*/
                 char coincident_seg_cnt; /* Coincident Segment      */
                                         /*   Count                  */
                 char filler0A[3]; /* Future Use              */
                 char lgc[3][2];         /* Preferred LGCs           */
                 char lo_nbr_x_sts;      /* Nbr of cross sts at low  */
                                         /* house nbr end of street  */
                 char l_x_sts[5][4];     /* PB5SCs of lo end cross st*/
                 char hi_nbr_x_sts;      /* Nbr of cross sts at low  */
                                         /* house nbr end of street  */
                 char h_x_sts[5][4];     /* PB5SCs of lo end X sts   */
                 char com_dist[3];       /* Community District Pos 0 */
                                         /* contains the Boro Code & */
                                         /* Positions 1&2 contain the*/
                                         /* district nbr             */
                 char zip_code[5];       /* Zip code for street seg  */
                 char DOT_slca;          /* DOT St Lght Contractr Are*/
                 char cen_tract_2000[6]; /* 2000 Census Tract        */
                 char filler02[1];
              // char filler02[7];
                 char cen_tract_10[6];   /* 2010 Census Tract        */
                 char cen_blk_10[4];     /* 2010 Census Block        */
                 char cen_blk_10_sufx;   /* 2010 Census Block Suffix */
```

```
                  char health_area[4];     /* Health Area              */
                  char x_street_reversal_flag; /* X St Reversal Flag  */
                  char sos_ind;            /* Side of Street Indicator */
                  char fire_sector[2];     /* Fire Sector              */
                  char fire_bat[2];        /* Fire Battalion           */
                  char fire_co_type;       /* Fire Company Type        */
                  char fire_co_nbr[3];     /* Fire Company Nbr         */
                  char seg_id[7];          /* Segment Identifier       */
                  char lo_hse_nbr[7];      /* Low House nbr in Display */
                  char hi_hse_nbr[7];      /* High House Nbr in Display*/
                  char a_lo_hse_nbr[7];    /* Alt. Lo Hse nbr in Disply*/
                  char a_hi_hse_nbr[7];    /* Alt.Hi Hse Nbr in Display*/
                  char cont_par;           /* Continuous Parity Ind    */
                  char face_code[4];       /* LION Face Code           */
                  char seq_nbr[5];         /* LION Sequence Nbr        */
                  char genr_flag;          /* Generated Record Flag    */
                  char seg_len[3];         /* Segment Length in Feet   */
                  char seg_azm[3];         /* Segment Azimuth          */
                  char seg_orient;         /* Segment Orientation      */
                  char instruc_div[2];     /* Instructional Division   */
                  char iaei;               /* Community Development    */
                                           /* Eligibility Indicator    */
                  char feature_type;       /* Feature Type Code        */
                  char police_boro_com;    /* Police Patrol Boro Com.  */
                  char police_pre[3];      /* Police Precinct          */
                  char com_schl_dist[2];   /* Community School District*/
                  char mh_ri_flag;         /* Marble Hill/Rikers Island*/
                                           /* Alternative Boro flag    */
                  char cen_tract_90[6];    /* 1990 Census Tract        */
                  char filler03[4];        /* Filler                   */
                  char dynam_blk[3];       /* Dynamic Block            */
                  char cen_blk_2000[4];    /* 2000 Census Block        */
                  char cen_blk_2000_sufx;  /* 2000 Census Block Suffix */
              //  char filler06[5];
                } C_WA2_F3C;

typedef struct { char lo_x_PB5SC[4];     /* Lowest PB5SC at Intersect*/
                  char lo2x_PB5SC[4];      /* 2nd Lowest PB5SC at Inter*/
                  char len[3];             /* Len in ft from prev node */
                  char gap_flag;           /* Gap Flag                 */
                } CROSS_STRS;

typedef struct { char filler01[21];
                  char nbr_x_str[3];       /* Nbr of X sts in list     */
                  CROSS_STRS cross_strs[350];/* Cross Street structure*/
                } C_WA2_F3S;
```

NATURAL LDAs (MSW)

GEOLW1 COPY File \

```
*    USER PROGRAMS MUST RESET GEOLW1        BEFORE PRIMING WORKAREA 1
   1 GEOLW1                                        /* LRECL=200
*    THE FIELD W1NAT IS USED AS A        PARAMETER TO CALL GEOSUPPORT        RT
   2 W1NAT                        A           2
R  2 W1NAT
*  * * * *   INPUT FIELDS    * * * *  *  * * * * * /* WORK AREA 1 FOR
*  *                                               /* ALL FUNCTIONS
   3 GEO-WA1-IN-FUNCTION-CODE     A           2
R  3 GEO-WA1-IN-FUNCTION-CODE
   4 GEO-WA1-IN-FUNCTION-1        A           1
   4 GEO-WA1-IN-FUNCTION-2        A           1
   2 GEO-WA1-IN-BORO              A           1
   2 GEO-WA1-IN-HOUSENUM          A          12 /* FOR FCT 5, INPUT HIGH HSE NUM
   2 GEO-WA1-IN-HOUSENUM-INTERNAL A           6 /* FOR FCT 5, INPUT HIGH HSE NUM
   2 GEO-WA1-IN-STREET-1          A          32
   2 GEO-WA1-IN-STREET-2          A          32
   2 GEO-WA1-IN-STREET-3          A          32
   2 GEO-WA1-IN-COMPASS           A           1
   2 GEO-WA1-IN-COMPASS2          A           1
   2 GEO-WA1-IN-STREETCODE-1      P           6
   2 GEO-WA1-IN-STREETCODE-2      P           6
   2 GEO-WA1-IN-STREETCODE-3      P           6
   2 GEO-WA1-IN-ROADBED-REQ-SWITCH-SF A       1
   2 GEO-WA1-IN-BORO-2            A           1
   2 GEO-WA1-IN-BORO-3            A           1
   2 GEO-WA1-IN-SNL               A           2
   2 GEO-WA1-IN-10SC-1            A          11
   2 GEO-WA1-IN-10SC-2            A          11
   2 GEO-WA1-IN-10SC-3            A          11
   2 GEO-WA1-IN-ZIPCODE           A           5
   2 GEO-WA1-IN-BBL               A          10
R  2 GEO-WA1-IN-BBL
   3 GEO-WA1-IN-BBL-BORO          A           1
   3 GEO-WA1-IN-BLOCKNUM          A           5
   3 GEO-WA1-IN-LOTNUM            A           4
   2 FILLER-WA1-10                A           1
   2 GEO-WA1-IN-BIN               A           7
   2 GEO-WA1-IN-COMPACT-NAME-FLAG A           1 /* TO REQUEST THE COMPACT NAMES
*                                                  OPTION,
*                                                  MOVE 'C' TO THIS FIELD.
*
   2 GEO-WA1-IN-LONG-WORKAREA2-FLAG A         1 /* TO REQUEST THE LONG WORKAREA
*                                                  OPTION,
*                                                  MOVE 'L' TO THIS FIELD.
*                                                  ONLY FCT 3 HAS THIS OPTION.
*
   2 GEO-WA1-IN-LOW-HOUSENUM      A          12
   2 GEO-WA1-IN-LOW-HSENUM-INTERNAL A         6
   2 GEO-WA1-IN-NON-IBM-MAIN-FRAME A          1 /* NOT IMPLEMENTED
*                                                  FOR ANY APPLICATION RUNNING
*                                                  ON NON-IBM MAINFRAM,
*                                                  MOVE 'X' TO THIS FIELD.
*
   2 GEO-WA1-IN-1ABL-VERSION      A           1 /* FOR FCT 1A & BL, TO REQUEST
*                                                  THE STANDARD WA2 FORMAT, SET
*                                                  THIS FIELD TO 'S'. TO REQUEST
*                                                  THE LEGACY WA2 FORMAT, SET
```

GEOLW1 COPY File \

```
*                                                      THIS FILED TO ' ' OR 'L'.
*
   2 GEO-WA1-IN-XSTREET-FLAG          A          1
   2 FILLER-WA1-100                   A          4
*  * * * *   OUTPUT FIELDS   * * * *  *
   2 GEO-WA1-OUT-LOW-HOUSENUM         A         12
   2 GEO-WA1-OUT-BORONAME             A          9
   2 GEO-WA1-OUT-STREET-1             A         32
   2 GEO-WA1-OUT-STREET-2             A         32
   2 GEO-WA1-OUT-STREET-3             A         32
   2 GEO-WA1-OUT-HOUSENUM             A         12 /* HI HND
   2 GEO-WA1-OUT-HOUSENUM-INTERNAL    A          6
   2 FILLER-WA1-200                   A          7
   2 GEO-WA1-OUT-PB5SC-1              P          6 /* 4 BYTES
R  2 GEO-WA1-OUT-PB5SC-1
   3 GEO-WA1-OUT-PACKBORO-NOSIGN-1    N          1
   3 GEO-WA1-OUT-STREETCODE-1-KEY     P          5 /* 3 BYTES
   2 FILLER-WA1-210                   A          2
   2 GEO-WA1-OUT-PB5SC-2              P          6 /* 4 BYTES
R  2 GEO-WA1-OUT-PB5SC-2
   3 GEO-WA1-OUT-PACKBORO-NOSIGN-2    N          1
   3 GEO-WA1-OUT-STREETCODE-2-KEY     P          5 /* 3 BYTES
   2 FILLER-WA1-220                   A          2
   2 GEO-WA1-OUT-PB5SC-3              P          6 /* 4 BYTES
R  2 GEO-WA1-OUT-PB5SC-3
   3 GEO-WA1-OUT-PACKBORO-NOSIGN-3    N          1
   3 GEO-WA1-OUT-STREETCODE-3-KEY     P          5 /* 3 BYTES
   2 GEO-WA1-OUT-STREET-ATTR          A          1 (1:3) /* INTERNAL USE
   2 GEO-WA1-BROWSE                   A         40
   2 GEO-WA1-OUT-10SC-1               A         11
   2 GEO-WA1-OUT-10SC-2               A         11
   2 GEO-WA1-OUT-10SC-3               A         11
   2 GEO-WA1-OUT-CUI                  A          5 /* NOT IMPLEMENTED
   2 GEO-WA1-OUT-BBL                  A         10
R  2 GEO-WA1-OUT-BBL
   3 GEO-WA1-OUT-BBL-BORO             A          1
   3 GEO-WA1-OUT-BLOCKNUM             A          5
   3 GEO-WA1-OUT-LOTNUM               A          4
   2 FILLER-WA1-240                   A          1
   2 GEO-WA1-OUT-BIN                  A          7
   2 GEO-WA1-OUT-SND-ATTR             A          1 /* DCP/GSS USE
   2 GEO-WA1-OUT-REASON-CODE          A          1
   2 FILLER-WA1-400                   A          2 /* INTERNAL USE
   2 GEO-WA1-OUT-RETURN-CODE          A          2
R  2 GEO-WA1-OUT-RETURN-CODE
   3 GEO-WA1-OUT-RC-1                 A          1
   3 GEO-WA1-OUT-RC-2                 A          1
   2 GEO-WA1-OUT-ERROR-MESSAGE        A         80
   2 GEO-WA1-OUT-NUM-SIMILAR-NAMES    P          3
   2 GEO-WA1-OUT-SIMILAR-NAMES        A         32 (1:10)
```

GEOLW2 COPY File

```
   1 GEOLW2
*    THE FIELD W2NAT IS USED AS A        PARAMETER TO CALL GEOSUPPORT FOR ALLLL
*        FUNCTIONS THAT ARE REDEFINED           ON GEOLW2
   2 W2NAT                            A          21
R  2 W2NAT
*  *  BEGINNING OF FUNCTION 1 LAYOUT  *        **** *******
   3 GEO-WA2-FN1-ACCESS-KEY           A          21
   2 GEO-WA2-FN1-CONT-PARITY          A           1
   2 GEO-WA2-FN1-LOW-HOUSENUM-INT     A           6
R  2 GEO-WA2-FN1-LOW-HOUSENUM-INT
   3 GEO-WA2-FN1-LOW-HOUSENUM         A           5
   3 GEO-WA2-FN1-LOW-HOUSENUMSFX      A           1
   2 GEO-WA2-FN1-HI-HOUSENUM-INT      A           6
R  2 GEO-WA2-FN1-HI-HOUSENUM-INT
   3 GEO-WA2-FN1-HI-HOUSENUM          A           5
   3 GEO-WA2-FN1-HI-HOUSENUMSFX       A           1
   2 GEO-WA2-FN1-ALX                  A           1 /*ALLEYS INTERSECT SEGMENT
   2 GEO-WA2-FN1-NUM-X-ST-LOW-END     N           1
   2 GEO-WA2-FN1-LOW-PBSC             P           6 (1:5) /* 4 BYTES X 5 = 20
   2 GEO-WA2-FN1-NUM-X-ST-HI-END      N           1
   2 GEO-WA2-FN1-HI-PBSC              P           6 (1:5)
   2 GEO-WA2-FN1-COMDIST              A           3
R  2 GEO-WA2-FN1-COMDIST
   3 GEO-WA2-FN1-COMDIST-BORO         A           1
   3 GEO-WA2-FN1-COMDIST-NUM          A           2
   2 GEO-WA2-FN1-ZIP                  A           5
   2 GEO-WA2-FN1-SLA                  A           1
   2 GEO-WA2-FN1-HCD                  A           2
   2 GEO-WA2-FN1-SOS                  A           1
   2 GEO-WA2-FN1-CONT-PARITY-IND      A           1
   2 GEO-WA2-FN1-2010-CENSUSTRACT     A           6
   2 GEO-WA2-FN1-2010-CENSUSBLOCK     A           4
   2 GEO-WA2-FN1-2010-CENSUSBLKSFX    A           1
   2 GEO-WA2-FN1-FILLER_INDV          A           1
   2 FILLER-WA2-260                   A           2
   2 GEO-WA2-FN1-HEALTHAREA           A           4
   2 GEO-WA2-FN1-SANI-REC             A           3
   2 GEO-WA1-FN1-FEATURE-TYPE         A           1
   2 GEO-WA2-FN1-RESDCP               A           1 /* RESERVED FOR DCP/GSS USE
   2 GEO-WA2-FN1-CURVE-FLAG           A           1
   2 GEO-WA2-FN1-POLICEDIST           A           4
R  2 GEO-WA2-FN1-POLICEDIST
   3 GEO-WA2-FN1-POL-PATR-BORO-CMD    A           1
   3 GEO-WA2-FN1-POL-PRECINCT         A           3
   2 GEO-WA2-FN1-SCHOOLDIST           A           2
   2 FILLER-WA2-250                   A          15
   2 GEO-WA2-FN1-SEGMENT-TYPE         A           1
   2 GEO-WA2-FN1-SANIDIST             A           3
R  2 GEO-WA2-FN1-SANIDIST
   3 GEO-WA2-FN1-SANIDIST-BORO        A           1
   3 GEO-WA2-FN1-SANIDIST-NUM         A           2
   2 GEO-WA2-FN1-SANITATION-SUBSEC    A           2
   2 GEO-WA2-FN1-FIRESEC              A           2 /* FIRE DIVISION
   2 GEO-WA2-FN1-FIREBAT              A           2
   2 GEO-WA2-FN1-FIRECO               A           4
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GEOLW2 COPY File

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R  2 GEO-WA2-FN1-FIRECO
   3 GEO-WA2-FN1-FIRECO-TYPE          A          1
   3 GEO-WA2-FN1-FIRECO-NUM           A          3
   2 GEO-WA2-FN1-SPECIAL-ADDR-FLAG    A          1
   2 GEO-WA2-FN1-MARBLE-RIKERS-FLAG   A          1
   2 GEO-WA2-FN1-SPLIT-SCHOOL-FLAG    A          1
   2 GEO-WA2-FN1-PREFERRED-LGC        A          2
   2 GEO-WA2-FN1-LIONFACECODE         A          4
   2 GEO-WA2-FN1-LIONSEQ              A          5
   2 GEO-WA2-FN1-1990-CENSUSTRACT     A          6
   2 FILLER-WA2-260B                  A          4
   2 GEO-WA2-FN1-DYN-BLOCK            A          3
   2 GEO-WA2-FN1-XCOORD               A          7
   2 GEO-WA2-FN1-YCOORD               A          7
   2 GEO-WA2-FN1-SEGMENTLENGTH        A          5
   2 GEO-WA2-FN1-SANI-REG             A          5
*  *  END OF FUNCTION 1 LAYOUT        *       **** *******
*  - -------------------------------- -       ---- ---------------------------
*  *  BEGINNING OF FUNCTION 2 LAYOUT  *       **** *******
R  1 GEOLW2
   2 GEO-WA2-FN2-ACCESS-KEY           A         21 /*FCT 2,2C SHARE SAME WA2 LAYO
   2 GEO-WA2-FN2-DUPINTERFLAG         A          1 /*
   2 FILLER-WA2-270                   A          9
   2 GEO-WA2-FN2-PREFERRED-LGC1       A          2
   2 GEO-WA2-FN2-PREFERRED-LGC2       A          2
   2 GEO-WA2-FN2-NUM-OF-INTERSECTS    N          1
   2 GEO-WA2-FN2-INTERSECT-PBSC       P          6 (1:5)
   2 GEO-WA2-FN2-COMPDIR              A          1
   2 GEO-WA2-FN2-LEVEL-CODES-TBL      A         10
R  2 GEO-WA2-FN2-LEVEL-CODES-TBL
   3 GEO-WA2-FN2-LEVEL-CODES          A          1 (5,2)
   2 GEO-WA2-FN2-INSTRUCT-REG         A          2
   2 GEO-WA2-FN2-FIRESEC              A          2
   2 GEO-WA2-FN2-FIREBAT              A          2
   2 GEO-WA2-FN2-FIRECO               A          4
R  2 GEO-WA2-FN2-FIRECO
   3 GEO-WA2-FN2-FIRECO-TYPE          A          1
   3 GEO-WA2-FN2-FIRECO-NUM           A          3
   2 GEO-WA2-FN2-COMDIST              A          3
R  2 GEO-WA2-FN2-COMDIST
   3 GEO-WA2-FN2-COMDIST-BORO         A          1
   3 GEO-WA2-FN2-COMDIST-NUM          A          2
   2 GEO-WA2-FN2-ZIP                  A          5
   2 GEO-WA2-FN2-SLA                  A          1
   2 GEO-WA2-FN2-2010-CENSUSTRACT     A          6
   2 FILLER-WA2-290                   A          3
   2 GEO-WA2-FN2-HEALTHAREA           A          4
   2 FILLER-WA2-300                   A          9
   2 GEO-WA2-FN2-LIONNODENUM          A          7
   2 GEO-WA2-FN2-XCOORD               A          7
   2 GEO-WA2-FN2-YCOORD               A          7
   2 FILLER-WA2-320                   A          4
   2 GEO-WA2-FN2-POLICEDIST           A          4
R  2 GEO-WA2-FN2-POLICEDIST
   3 GEO-WA2-FN2-POL-PATR-BORO-CMD    A          1
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GEOLW2 COPY File

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    3 GEO-WA2-FN2-POL-PRECINCT         A          3
    2 GEO-WA2-FN2-SCHOOLDIST           A          2
    2 GEO-WA2-FN2-MARBLE-RIKERS-FLAG   A          1
    2 GEO-WA2-FN2-1990-CENSUSTRACT     A          6
    2 GEO-WA2-FN2-SANBORN1-BVOLPAGE    A          8
R   2 GEO-WA2-FN2-SANBORN1-BVOLPAGE
    3 GEO-WA2-FN2-SANBORN1-BORO        A          1
    3 GEO-WA2-FN2-SANBORN1-VOLPAGE     A          7
R   3 GEO-WA2-FN2-SANBORN1-VOLPAGE
    4 GEO-WA2-FN2-SANBORN1-VOL-NUM     A          3
    4 GEO-WA2-FN2-SANBORN1-PAGE-NUM    A          4
    2 GEO-WA2-FN2-SANBORN2-BVOLPAGE    A          8
R   2 GEO-WA2-FN2-SANBORN2-BVOLPAGE
    3 GEO-WA2-FN2-SANBORN2-BORO        A          1
    3 GEO-WA2-FN2-SANBORN2-VOLPAGE     A          7
R   3 GEO-WA2-FN2-SANBORN2-VOLPAGE
    4 GEO-WA2-FN2-SANBORN2-VOL-NUM     A          3
    4 GEO-WA2-FN2-SANBORN2-PAGE-NUM    A          4
    2 GEO-WA2-FN2-DUP-INTRSCT-DISTNCE  A          5
    2 GEO-WA2-FN2-2000-CENSUSTRACT     A          6
    2 FILLER-WA2-330                   A         27
*   *  END OF FUNCTION 2 LAYOUT        *       **** *******
*   - -------------------------------- -       ---- ------------------------------
*   *  BEGINNING OF FUNCTION 3 LAYOUT  *       **** *******
R   1 GEOLW2
    2 GEO-WA2-FN3-ACCESS-KEY           A         21
    2 GEO-WA2-FN3-DUP-KEY-FLAG         A          1 /* OR FN3 CONTI PARITY
    2 GEO-WA2-FN3-CURVE-FLAG           A          1
    2 GEO-WA2-FN3-LOCATION-STATUS      A          1
    2 GEO-WA2-FN3-COUNTY-BOUNDARY      A          1
    2 FILLER-WA2-340                   A          4
    2 GEO-WA2-FN3-PREFERRED-LGC1       A          2
    2 GEO-WA2-FN3-PREFERRED-LGC2       A          2
    2 GEO-WA2-FN3-PREFERRED-LGC3       A          2
    2 GEO-WA2-FN3-NUM-X-ST-LOW-END     N          1
    2 GEO-WA2-FN3-LOW-PBSC             P          6 (1:5)
    2 GEO-WA2-FN3-NUM-X-ST-HI-END      N          1
    2 GEO-WA2-FN3-HI-PBSC              P          6 (1:5)
    2 GEO-WA2-FN3-SLA                  A          1
    2 GEO-WA2-FN3-REVERSALFLAG         A          1
    2 GEO-WA2-FN3-LEFT-COMDIST         A          3
R   2 GEO-WA2-FN3-LEFT-COMDIST
    3 GEO-WA2-FN3-LEFT-COMDIST-BORO    A          1
    3 GEO-WA2-FN3-LEFT-COMDIST-NUM     A          2
    2 GEO-WA2-FN3-RIGHT-COMDIST        A          3
R   2 GEO-WA2-FN3-RIGHT-COMDIST
    3 GEO-WA2-FN3-RIGHT-COMDIST-BORO   A          1
    3 GEO-WA2-FN3-RIGHT-COMDIST-NUM    A          2
    2 GEO-WA2-FN3-LEFT-ZIP             A          5
    2 GEO-WA2-FN3-RIGHT-ZIP            A          5
    2 FILLER-WA2-350A                  A         18
    2 GEO-WA2-FN3-LEFT-HEALTHAREA      A          4
    2 GEO-WA2-FN3-RIGHT-HEALTHAREA     A          4
    2 GEO-WA2-FN3-LEFT-INSTRUCT-REG    A          2
    2 GEO-WA2-FN3-RIGHT-INSTRUCT-REG   A          2
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GEOLW2 COPY File

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    2 GEO-WA2-FN3-LEFT-LOW-HOUSENUM    A          7
    2 GEO-WA2-FN3-LEFT-HI-HOUSENUM     A          7
    2 GEO-WA2-FN3-RIGHT-LOW-HOUSENUM   A          7
    2 GEO-WA2-FN3-RIGHT-HI-HOUSENUM    A          7
    2 GEO-WA2-FN3-CONT-PARITY-IND      A          1
    2 GEO-WA2-FN3-LIONFACECODE         A          4
    2 GEO-WA2-FN3-LIONSEQ              A          5
    2 GEO-WA2-FN3-GENRECFLAG           A          1
    2 GEO-WA2-FN3-SEGMENTLENGTH        P          5
    2 GEO-WA2-FN3-SEGMENTSLOPE         A          3
    2 GEO-WA2-FN3-SEGMENTORIENT        A          1
    2 FILLER-WA2-355                   A          4
    2 GEO-WA2-FN3-RESSDCP              A          2 /* RESERVED FOR DCP/GSS USE
    2 GEO-WA2-FN3-DOG-LEG              A          1
    2 GEO-WA2-FN3-FEATURE-TYPE         A          1
    2 GEO-WA2-FN3-LEFT-POLICEDIST      A          4
R   2 GEO-WA2-FN3-LEFT-POLICEDIST
    3 GEO-WA2-FN3-L-POL-PATR-BORO-CMD  A          1
    3 GEO-WA2-FN3-LEFT-POL-PRECINCT    A          3
    2 GEO-WA2-FN3-RIGHT-POLICEDIST     A          4
R   2 GEO-WA2-FN3-RIGHT-POLICEDIST
    3 GEO-WA2-FN3-R-POL-PATR-BORO-CMD  A          1
    3 GEO-WA2-FN3-RIGHT-POL-PRECINCT   A          3
    2 GEO-WA2-FN3-LEFT-SCHOOLDIST      A          2
    2 GEO-WA2-FN3-RIGHT-SCHOOLDIST     A          2
    2 GEO-WA2-FN3-MARBLE-RIKERS-FLAG   A          1
    2 GEO-WA2-FN3-SEGMENT-ID           A          7
    2 GEO-WA2-FN3-SEGMENT-TYPE         A          1
*   *  END OF FUNCTION 3 LAYOUT               **** ********
*   - -------------------------------- -      ---- ------------------------------
*   *  BEGINNING OF FUNCTION 3C LAYOUT        **** ********
R   1 GEOLW2
    2 GEO-WA2-FN3C-ACCESS-KEY          A         21
    2 GEO-WA2-FN3C-CURVE-FLAG          A          1
    2 GEO-WA2-FN3C-SEGMENT-TYPE        A          1
    2 GEO-WA2-FN3C-LOCATION-STATUS     A          1
    2 GEO-WA2-FN3C-COUNTY-BOUNDARY     A          1
    2 FILLER-WA2-380                   A          4
    2 GEO-WA2-FN3C-PREFERRED-LGC1      A          2
    2 GEO-WA2-FN3C-PREFERRED-LGC2      A          2
    2 GEO-WA2-FN3C-PREFERRED-LGC3      A          2
    2 GEO-WA2-FN3C-NUM-X-ST-LOW-END    N          1
    2 GEO-WA2-FN3C-LOW-PBSC            P          6 (1:5)
    2 GEO-WA2-FN3C-NUM-X-ST-HI-END     N          1
    2 GEO-WA2-FN3C-HI-PBSC             P          6 (1:5)
    2 GEO-WA2-FN3C-COMDIST             A          3
R   2 GEO-WA2-FN3C-COMDIST
    3 GEO-WA2-FN3C-COMDIST-BORO        A          1
    3 GEO-WA2-FN3C-COMDIST-NUM         A          2
    2 GEO-WA2-FN3C-ZIP                 A          5
    2 GEO-WA2-FN3C-SLA                 A          1
    2 GEO-WA2-FN3C-2000-CENSUSTRACT    A          6
    2 FILLER-WA2-390                   A          1
    2 GEO-WA2-FN3C-2010-CENSUSTRACT    A          6
    2 GEO-WA2-FN3C-2010-CENSUSBLOCK    A          4
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GEOLW2 COPY File

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    2 GEO-WA2-FN3C-2010-CENSUSBLKSFX   A           1 /* NOT IMPLEMENTED */
    2 GEO-WA2-FN3C-HEALTHAREA          A           4
    2 GEO-WA2-FN3C-REVERSALFLAG        A           1
    2 GEO-WA2-FN3C-SOS                 A           1
    2 GEO-WA2-FN3C-FIRESEC             A           2
    2 GEO-WA2-FN3C-FIREBAT             A           2
    2 GEO-WA2-FN3C-FIRECO              A           4
R   2 GEO-WA2-FN3C-FIRECO
    3 GEO-WA2-FN3C-FIRECO-TYPE         A           1
    3 GEO-WA2-FN3C-FIRECO-NUM          A           3
    2 GEO-WA2-FN3C-SEGMENT-ID          A           7
    2 GEO-WA2-FN3C-LOW-HOUSENUM        A           7
    2 GEO-WA2-FN3C-HI-HOUSENUM         A           7
    2 GEO-WA2-FN3C-LOW-HOUSENUM2       A           7 /* HOUSENUM2 ONLY PRESENT IF
    2 GEO-WA2-FN3C-HI-HOUSENUM2        A           7 /* ODD & EVEN ARE ON SAME SIDE
    2 GEO-WA2-FN3C-CONT-PARITY-IND     A           1
    2 GEO-WA2-FN3C-LIONFACECODE        A           4
    2 GEO-WA2-FN3C-LIONSEQ             A           5
    2 GEO-WA2-FN3C-GENRECFLAG          A           1
    2 GEO-WA2-FN3C-SEGMENTLENGTH       P           5
    2 GEO-WA2-FN3C-SEGMENTSLOPE        A           3
    2 GEO-WA2-FN3C-SEGMENTORIENT       A           1
    2 FILLER-WA2-408                   A           2
    2 GEO-WA2-FN3C-RESDCP              A           1 /* RESERVED FOR DCP/GSS USE
    2 GEO-WA2-FN3C-FEATURE-TYPE        A           1
    2 GEO-WA2-FN3C-POLICEDIST          A           4
R   2 GEO-WA2-FN3C-POLICEDIST
    3 GEO-WA2-FN3C-POL-PATR-BORO-CMD   A           1
    3 GEO-WA2-FN3C-POL-PRECINCT        A           3
    2 GEO-WA2-FN3C-SCHOOLDIST          A           2
    2 GEO-WA2-FN3C-MARBLE-RIKERS-FLAG  A           1
    2 GEO-WA2-FN3C-1990-CENSUSTRACT    A           6
    2 FILLER-WA2-410B                  A           4
    2 GEO-WA2-FN3C-DYN-BLOCK           A           3
    2 GEO-WA2-FN3C-2000-CENSUSBLOCK    A           4
    2 GEO-WA2-FN3C-2000-CENSUSBLKSFX   A           1
*   *  END OF FUNCTION 3C LAYOUT       *        **** *******
*   - -------------------------------- -        ---- ------------------------------
*   *  BEGINNING OF FUNCTION 1E LAYOUT *        **** *******
R   1 GEOLW2
    2 GEO-WA2-FN1E-ACCESS-KEY          A          21
    2 GEO-WA2-FN1E-CONT-PARITY         A           1
    2 GEO-WA2-FN1E-LOW-HOUSENUM-INT    A           6
R   2 GEO-WA2-FN1E-LOW-HOUSENUM-INT
    3 GEO-WA2-FN1E-LOW-HOUSENUM        A           5
    3 GEO-WA2-FN1E-LOW-HOUSENUMSFX     A           1 /* NOT IMPLEMENTED
    2 GEO-WA2-FN1E-HI-HOUSENUM-INT     A           6
R   2 GEO-WA2-FN1E-HI-HOUSENUM-INT
    3 GEO-WA2-FN1E-HI-HOUSENUM         A           5
    3 GEO-WA2-FN1E-HI-HOUSENUMSFX      A           1 /* NOT IMPLEMENTED
    2 FILLER-WA2-435                   A           1
    2 GEO-WA2-FN1E-NUM-X-ST-LOW-END    N           1
    2 GEO-WA2-FN1E-LOW-PBSC            P           6 (1:5)
    2 GEO-WA2-FN1E-NUM-X-ST-HI-END     N           1
    2 GEO-WA2-FN1E-HI-PBSC             P           6 (1:5)
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GEOLW2 COPY File

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   2 GEO-WA2-FN1E-COMDIST             A          3
R  2 GEO-WA2-FN1E-COMDIST
   3 GEO-WA2-FN1E-COMDIST-BORO        A          1
   3 GEO-WA2-FN1E-COMDIST-NUM         A          2
   2 GEO-WA2-FN1E-ZIP                 A          5
   2 GEO-WA2-FN1E-SLA                 A          1
   2 GEO-WA2-FN1E-HCD                 A          2
   2 GEO-WA2-FN1E-SOS                 A          1
   2 GEO-WA2-FN1E-CONT-PARITY-IND     A          1
   2 GEO-WA2-FN1E-2010-CENSUSTRACT    A          6
   2 GEO-WA2-FN1E-2010-CENSUSBLOCK    A          4
   2 GEO-WA2-FN1E-2010-CENSUSBLKSFX   A          1
   2 FILLER-WA2-FN1E-FILLER-INDV      A          1
   2 FILLER-WA2-440                   A          2
   2 GEO-WA2-FN1E-HEALTHAREA          A          4
   2 GEO-WA2-FN1E-SANI-REC            A          3
   2 GEO-WA2-FN1E-FEATURE-TYPE        A          1
   2 GEO-WA2-FN1E-RESDCP              A          1 /* RESERVED FOR DCP/GSS USE
   2 GEO-WA2-FN1E-CURVE-FLAG          A          1
   2 GEO-WA2-FN1E-POLICEDIST          A          4
R  2 GEO-WA2-FN1E-POLICEDIST
   3 GEO-WA2-FN1E-POL-PATR-BORO-CMD   A          1
   3 GEO-WA2-FN1E-POL-PRECINCT        A          3
   2 GEO-WA2-FN1E-SCHOOLDIST          A          2
   2 GEO-WA2-FN1E-ELECTDIST           A          3
   2 GEO-WA2-FN1E-ASSEMDIST           A          2
   2 GEO-WA2-FN1E-SPLIT-ED-FLAG       A          1
   2 GEO-WA2-FN1E-CONGDIST            A          2
   2 GEO-WA2-FN1E-SENATEDIST          A          2
   2 GEO-WA2-FN1E-COURTDIST           A          2
   2 GEO-WA2-FN1E-COUNCILDIST         A          2
   2 FILLER-WA2-470                   A          2
   2 GEO-WA2-FN1E-SANIDIST            A          3
R  2 GEO-WA2-FN1E-SANIDIST
   3 GEO-WA2-FN1E-SANIDIST-BORO       A          1
   3 GEO-WA2-FN1E-SANIDIST-NUM        A          2
   2 GEO-WA2-FN1E-SANITATION-SUBSEC   A          2
   2 GEO-WA2-FN1E-FIRESEC             A          2
   2 GEO-WA2-FN1E-FIREBAT             A          2
   2 GEO-WA2-FN1E-FIRECO              A          4
R  2 GEO-WA2-FN1E-FIRECO
   3 GEO-WA2-FN1E-FIRECO-TYPE         A          1
   3 GEO-WA2-FN1E-FIRECO-NUM          A          3
   2 GEO-WA2-FN1E-SPECIAL-ADDR-FLAG   A          1
   2 GEO-WA2-FN1E-MARBLE-RIKERS-FLAG  A          1
   2 GEO-WA2-FN1E-SPLIT-SCHOOL-FLAG   A          1
   2 GEO-WA2-FN1E-PREFERRED-LGC       A          2
   2 GEO-WA2-FN1E-LIONFACECODE        A          4
   2 GEO-WA2-FN1E-LIONSEQ             A          5
   2 GEO-WA2-FN1E-1990-CENSUSTRACT    A          6
   2 FILLER-WA2-480B                  A          4
   2 GEO-WA2-FN1E-DYN-BLOCK           A          3
   2 GEO-WA2-FN1E-XCOORD              A          7
   2 GEO-WA2-FN1E-YCOORD              A          7
   2 GEO-WA2-FN1E-SEGMENTLENGTH       A          5
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GEOLW2 COPY File

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   2 GEO-WA2-FN1E-SANI-REG            A          5
*  *  END OF FUNCTION 1E LAYOUT       *       **** *******
*  - -------------------------------- -       ---- ------------------------------
*  *  BEGINNING OF FUNCTION 5 LAYOUT  *       **** *******
R  1 GEOLW2
   2 GEO-WA2-FN5-ADDR-MATCHING-KEY    A         28
   2 FILLER-WA2-490                   A        172
*  *  END OF FUNCTION 5 LAYOUT        *       **** *******
*  - -------------------------------- -       ---- ------------------------------
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GEOLW2L COPY File

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    1 GEOLW2L
*   * THE FIELD W2NATL IS USED AS A       PARAMETER TO CALL GEOSUPPORT
    2 W2NATL                        A          21
R   2 W2NATL
*   * BEGINNING OF FUNCTION 1                    LONG  WORKAREA LAYOUT ******
    3 GEO-WA2-1L-ACCESS-KEY         A          21
    2 GEO-WA2-1L-CONT-PARITY        A           1
    2 GEO-WA2-1L-LOW-HOUSENUM-INT   A           6
R   2 GEO-WA2-1L-LOW-HOUSENUM-INT
    3 GEO-WA2-1L-LOW-HOUSENUM       A           5
    3 GEO-WA2-1L-LOW-HOUSENUMSFX    A           1
    2 GEO-WA2-1L-HI-HOUSENUM-INT    A           6
R   2 GEO-WA2-1L-HI-HOUSENUM-INT
    3 GEO-WA2-1L-HI-HOUSENUM        A           5
    3 GEO-WA2-1L-HI-HOUSENUMSFX     A           1
    2 FILLER-WA2-215                A           1
    2 GEO-WA2-1L-NUM-X-ST-LOW-END   N           1
    2 GEO-WA2-1L-LOW-PBSC           P           6 (1:5)
    2 GEO-WA2-1L-NUM-X-ST-HI-END    N           1
    2 GEO-WA2-1L-HI-PBSC            P           6 (1:5)
    2 GEO-WA2-1L-COMDIST            A           3
R   2 GEO-WA2-1L-COMDIST
    3 GEO-WA2-1L-COMDIST-BORO       A           1
    3 GEO-WA2-1L-COMDIST-NUM        A           2
    2 GEO-WA2-1L-ZIP                A           5
    2 GEO-WA2-1L-SLA                A           1
    2 GEO-WA2-1L-HCD                A           2
    2 GEO-WA2-1L-SOS                A           1
    2 GEO-WA2-1L-CONT-PARITY-IND    A           1
    2 GEO-WA2-1L-2010-CENSUSTRACT   A           6
    2 GEO-WA2-1L-2010-CENSUSBLOCK   A           4
    2 GEO-WA2-1L-2010-CENSUSBLKSFX  A           1
    2 FILLER-1L-INDV                A           1
    2 FILLER-1L-260                 A           2
    2 GEO-WA2-1L-HEALTHAREA         A           4
    2 GEO-WA2-1L-SANI-REC           A           3
    2 GEO-WA2-1L-FEATURE-TYPE       A           1
    2 GEO-WA2-1L-RESDCP             A           1 /* RESERVED FOR DCP/GSS USE
    2 GEO-WA2-1L-CURVE-FLAG         A           1
    2 GEO-WA2-1L-POLICEDIST         A           4
R   2 GEO-WA2-1L-POLICEDIST
    3 GEO-WA2-1L-POL-PATR-BORO-CMD  A           1
    3 GEO-WA2-1L-POL-PRECINCT       A           3
    2 GEO-WA2-1L-SCHOOLDIST         A           2
    2 FILLER-WA2-250                A          16 /* 1E POL DIST
    2 GEO-WA2-1L-SANIDIST           A           3
R   2 GEO-WA2-1L-SANIDIST
    3 GEO-WA2-1L-SANIDIST-BORO      A           1
    3 GEO-WA2-1L-SANIDIST-NUM       A           2
    2 GEO-WA2-1L-SANITATION-SUBSEC  A           2
    2 GEO-WA2-1L-FIRESEC            A           2 /* FIRE DIVISION
    2 GEO-WA2-1L-FIREBAT            A           2
    2 GEO-WA2-1L-FIRECO             A           4
R   2 GEO-WA2-1L-FIRECO
    3 GEO-WA2-1L-FIRECO-TYPE        A           1
```

GEOLW2L COPY File

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    3 GEO-WA2-1L-FIRECO-NUM            A         3
    2 GEO-WA2-1L-SPECIAL-ADDR-FLAG     A         1
    2 GEO-WA2-1L-MARBLE-RIKERS-FLAG    A         1
    2 GEO-WA2-1L-SPLIT-SCHOOL-FLAG     A         1
    2 GEO-WA2-1L-PREFERRED-LGC         A         2
    2 GEO-WA2-1L-LIONFACECODE          A         4
    2 GEO-WA2-1L-LIONSEQ               A         5
    2 GEO-WA2-1L-1990-CENSUSTRACT      A         6
    2 FILLER-WA2-260B                  A         4
    2 GEO-WA2-1L-DYN-BLOCK             A         3
    2 GEO-WA2-1L-XCOORD                A         7
    2 GEO-WA2-1L-YCOORD                A         7
    2 GEO-WA2-1L-SEGMENTLENGTH         A         5
    2 GEO-WA2-1L-SANI-REG              A         5
    2 GEO-WA2-1L-SEGMENT-ID            A         7
    2 GEO-WA2-1L-TRUE-B7SC             A         8
    2 GEO-WA2-1L-UNDERLY-HOUSENUM-INT  A         6
R   2 GEO-WA2-1L-UNDERLY-HOUSENUM-INT
    3 GEO-WA2-1L-UNDERLY-HOUSENUM      A         5
    3 GEO-WA2-1L-UNDERLY-HOUSENUMSFX   A         1
    2 GEO-WA2-1L-2000-CENSUSTRACT      A         6
    2 GEO-WA2-1L-2000-CENSUSBLOCK      A         4
    2 GEO-WA2-1L-2000-CENSUSBLKSFX     A         1
    2 FILLER-WA2-260C                  A        68
*   * END OF FUNCTION 1                       LONG  WORKAREA LAYOUT ******
*   - -------------------------------- -      ---- ----------------------------
*   * BEGINNING OF FUNCTION 1E                LONG  WORKAREA LAYOUT ******
R   1 GEOLW2L
    2 GEO-WA2-1EL-ACCESS-KEY           A        21
    2 GEO-WA2-1EL-CONT-PARITY          A         1
    2 GEO-WA2-1EL-LOW-HOUSENUM-INT     A         6
R   2 GEO-WA2-1EL-LOW-HOUSENUM-INT
    3 GEO-WA2-1EL-LOW-HOUSENUM         A         5
    3 GEO-WA2-1EL-LOW-HOUSENUMSFX      A         1 /* NOT IMPLEMENTED
    2 GEO-WA2-1EL-HI-HOUSENUM-INT      A         6
R   2 GEO-WA2-1EL-HI-HOUSENUM-INT
    3 GEO-WA2-1EL-HI-HOUSENUM          A         5
    3 GEO-WA2-1EL-HI-HOUSENUMSFX       A         1 /* NOT IMPLEMENTED
    2 FILLER-WA2-435                   A         1
    2 GEO-WA2-1EL-NUM-X-ST-LOW-END     N         1
    2 GEO-WA2-1EL-LOW-PBSC             P         6 (1:5)
    2 GEO-WA2-1EL-NUM-X-ST-HI-END      N         1
    2 GEO-WA2-1EL-HI-PBSC              P         6 (1:5)
    2 GEO-WA2-1EL-COMDIST              A         3
R   2 GEO-WA2-1EL-COMDIST
    3 GEO-WA2-1EL-COMDIST-BORO         A         1
    3 GEO-WA2-1EL-COMDIST-NUM          A         2
    2 GEO-WA2-1EL-ZIP                  A         5
    2 GEO-WA2-1EL-SLA                  A         1
    2 GEO-WA2-1EL-HCD                  A         2
    2 GEO-WA2-1EL-SOS                  A         1
    2 GEO-WA2-1EL-CONT-PARITY-IND      A         1
    2 GEO-WA2-1EL-2010-CENSUSTRACT     A         6
    2 GEO-WA2-1EL-2010-CENSUSBLOCK     A         4
    2 GEO-WA2-1EL-2010-CENSUSBLKSFX    A         1
```

GEOLW2L COPY File

```
    2 FILLER-WA2-1EL-INDV              A          1
    2 FILLER-WA2-440C                  A          2
    2 GEO-WA2-1EL-HEALTHAREA           A          4
    2 GEO-WA2-1EL-SANI-REC             A          3
    2 GEO-WA2-1EL-FEATURE-TYPE         A          1
    2 GEO-WA2-1EL-RESDCP               A          1 /* RESERVED FOR DCP/GSS USE
    2 GEO-WA2-1EL-CURVE-FLAG           A          1
    2 GEO-WA2-1EL-POLICEDIST           A          4
R   2 GEO-WA2-1EL-POLICEDIST
    3 GEO-WA2-1EL-POL-PATR-BORO-CMD    A          1
    3 GEO-WA2-1EL-POL-PRECINCT         A          3
    2 GEO-WA2-1EL-SCHOOLDIST           A          2
    2 GEO-WA2-1EL-ELECTDIST            A          3
    2 GEO-WA2-1EL-ASSEMDIST            A          2
    2 GEO-WA2-1EL-SPLIT-ED-FLAG        A          1
    2 GEO-WA2-1EL-CONGDIST             A          2
    2 GEO-WA2-1EL-SENATEDIST           A          2
    2 GEO-WA2-1EL-COURTDIST            A          2
    2 GEO-WA2-1EL-COUNCILDIST          A          2
    2 FILLER-WA2-470                   A          2
    2 GEO-WA2-1EL-SANIDIST             A          3
R   2 GEO-WA2-1EL-SANIDIST
    3 GEO-WA2-1EL-SANIDIST-BORO        A          1
    3 GEO-WA2-1EL-SANIDIST-NUM         A          2
    2 GEO-WA2-1EL-SANITATION-SUBSEC    A          2
    2 GEO-WA2-1EL-FIRESEC              A          2
    2 GEO-WA2-1EL-FIREBAT              A          2
    2 GEO-WA2-1EL-FIRECO               A          4
R   2 GEO-WA2-1EL-FIRECO
    3 GEO-WA2-1EL-FIRECO-TYPE          A          1
    3 GEO-WA2-1EL-FIRECO-NUM           A          3
    2 GEO-WA2-1EL-SPECIAL-ADDR-FLAG    A          1
    2 GEO-WA2-1EL-MARBLE-RIKERS-FLAG   A          1
    2 GEO-WA2-1EL-SPLIT-SCHOOL-FLAG    A          1
    2 GEO-WA2-1EL-PREFERRED-LGC        A          2
    2 GEO-WA2-1EL-LIONFACECODE         A          4
    2 GEO-WA2-1EL-LIONSEQ              A          5
    2 GEO-WA2-1EL-1990-CENSUSTRACT     A          6
    2 FILLER-WA2L-480B                 A          4
    2 GEO-WA2-1EL-DYN-BLOCK            A          3
    2 GEO-WA2-1EL-XCOORD               A          7
    2 GEO-WA2-1EL-YCOORD               A          7
    2 GEO-WA2-1EL-SEGMENTLENGTH        A          5
    2 GEO-WA2-1EL-SANI-REG             A          5
    2 GEO-WA2-1EL-SEGMENT-ID           A          7
    2 GEO-WA2-1EL-TRUE-B7SC            A          8
    2 GEO-WA2-1EL-UNDER-HOUSENUM-INT   A          6
    2 GEO-WA2-1EL-2000-CENSUSTRACT     A          6
    2 GEO-WA2-1EL-2000-CENSUSBLOCK     A          4
    2 GEO-WA2-1EL-2000-CENSUSBLKSFX    A          1
    2 FILLER-WA2-480                   A         68
*   * END OF FUNCTION 1E                       LONG WORKAREA LAYOUT ******
*   - -------------------------------- -       ---- ---------------------------
*   * BEGINNING OF FUNCTION 3                  LONG WORKAREA LAYOUT ******
R   1 GEOLW2L
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GEOLW2L COPY File

```
    2 GEO-WA2-3L-ACCESS-KEY           A         21
    2 GEO-WA2-3L-DUP-KEY-FLAG         A          1 /* NOT IMPLEMENTED
    2 GEO-WA2-3L-CURVE-FLAG           A          1
    2 GEO-WA2-3L-LOCATION-STATUS      A          1
    2 GEO-WA2-3L-COUNTY-BOUNDARY      A          1
    2 FILLER-WA2-340                  A          4
    2 GEO-WA2-3L-PREFERRED-LGC1       A          2
    2 GEO-WA2-3L-PREFERRED-LGC2       A          2
    2 GEO-WA2-3L-PREFERRED-LGC3       A          2
    2 GEO-WA2-3L-NUM-X-ST-LOW-END     N          1
    2 GEO-WA2-3L-LOW-PBSC             P          6 (1:5)
    2 GEO-WA2-3L-NUM-X-ST-HI-END      N          1
    2 GEO-WA2-3L-HI-PBSC              P          6 (1:5)
    2 GEO-WA2-3L-SLA                  A          1
    2 GEO-WA2-3L-REVERSALFLAG         A          1
    2 GEO-WA2-3L-LEFT-COMDIST         A          3
 R  2 GEO-WA2-3L-LEFT-COMDIST
    3 GEO-WA2-3L-LEFT-COMDIST-BORO    A          1
    3 GEO-WA2-3L-LEFT-COMDIST-NUM     A          2
    2 GEO-WA2-3L-RIGHT-COMDIST        A          3
 R  2 GEO-WA2-3L-RIGHT-COMDIST
    3 GEO-WA2-3L-RIGHT-COMDIST-BORO   A          1
    3 GEO-WA2-3L-RIGHT-COMDIST-NUM    A          2
    2 GEO-WA2-3L-LEFT-ZIP             A          5
    2 GEO-WA2-3L-RIGHT-ZIP            A          5
    2 FILLER-WA2-340B                 A         18
    2 GEO-WA2-3L-LEFT-HEALTHAREA      A          4
    2 GEO-WA2-3L-RIGHT-HEALTHAREA     A          4
    2 GEO-WA2-3L-LEFT-INSTRUCT-REG    A          2
    2 GEO-WA2-3L-RIGHT-INSTRUCT-REG   A          2
    2 GEO-WA2-3L-LEFT-LOW-HOUSENUM    A          7
    2 GEO-WA2-3L-LEFT-HI-HOUSENUM     A          7
    2 GEO-WA2-3L-RIGHT-LOW-HOUSENUM   A          7
    2 GEO-WA2-3L-RIGHT-HI-HOUSENUM    A          7
    2 GEO-WA2-3L-CONT-PARITY-IND      A          1
    2 GEO-WA2-3L-LIONFACECODE         A          4
    2 GEO-WA2-3L-LIONSEQ              A          5
    2 GEO-WA2-3L-GENRECFLAG           A          1
    2 GEO-WA2-3L-SEGMENTLENGTH        P          5
    2 GEO-WA2-3L-SEGMENTSLOPE         A          3
    2 GEO-WA2-3L-SEGMENTORIENT        A          1
    2 FILLER-WA2-3L-355               A          4
    2 GEO-WA2-3L-RESDCP               A          2 /* RESERVED FOR DCP/GSS USE
    2 GEO-WA2-3L-DOG-LEG              A          1
    2 GEO-WA2-3L-FEATURE-TYPE         A          1
    2 GEO-WA2-3L-LEFT-POLICEDIST      A          4
 R  2 GEO-WA2-3L-LEFT-POLICEDIST
    3 GEO-WA2-3L-L-POL-PATR-BORO-CMD  A          1
    3 GEO-WA2-3L-LEFT-POL-PRECINCT    A          3
    2 GEO-WA2-3L-RIGHT-POLICEDIST     A          4
 R  2 GEO-WA2-3L-RIGHT-POLICEDIST
    3 GEO-WA2-3L-R-POL-PATR-BORO-CMD  A          1
    3 GEO-WA2-3L-RIGHT-POL-PRECINCT   A          3
    2 GEO-WA2-3L-LEFT-SCHOOLDIST      A          2
    2 GEO-WA2-3L-RIGHT-SCHOOLDIST     A          2
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    2 GEO-WA2-3L-MARBLE-RIKERS-FLAG    A          1
    2 GEO-WA2-3L-SEGMENT-ID            A          7
    2 FILLER-WA2-3L-370                A          1
*   * ******************************** *        **** ****************************
*     THE   PORTION   OF   THIS   WORK          AREA ABOVE THIS POINT IS
*     IDENTICAL  TO  THE STANDARD WORK          AREA 2 FOR FUNCTION 3.
*     THE  PORTION  BELOW  THIS  POINT            IS PRESENT ONLY FOR THE
*     LONG WORK AREA 2 OPTION.
*   * ******************************** *        **** ****************************
    2 GEO-WA2-3L-L-1990-CENSUSTRACT    A          6
    2 FILLER-WA2-370B                  A          4
    2 GEO-WA2-3L-LEFT-DYN-BLK          A          3
    2 GEO-WA2-3L-R-1990-CENSUSTRACT    A          6
    2 GEO-WA2-370C                     A          4
    2 GEO-WA2-3L-RIGHT-DYN-BLK         A          3
    2 GEO-WA2-3L-LEFT-FIRESEC          A          2
    2 GEO-WA2-3L-LEFT-FIREBAT          A          2
    2 GEO-WA2-3L-LEFT-FIRECO           A          4
R   2 GEO-WA2-3L-LEFT-FIRECO
    3 GEO-WA2-3L-LEFT-FIRECO-TYPE      A          1
    3 GEO-WA2-3L-LEFT-FIRECO-NUM       A          3
    2 GEO-WA2-3L-RIGHT-FIRESEC         A          2
    2 GEO-WA2-3L-RIGHT-FIREBAT         A          2
    2 GEO-WA2-3L-RIGHT-FIRECO          A          4
R   2 GEO-WA2-3L-RIGHT-FIRECO
    3 GEO-WA2-3L-RIGHT-FIRECO-TYPE     A          1
    3 GEO-WA2-3L-RIGHT-FIRECO-NUM      A          3
    2 GEO-WA2-3L-L-2010-CENSUSTRACT    A          6
    2 GEO-WA2-3L-L-2010-CENSUSBLOCK    A          4
    2 GEO-WA2-3L-L-2010-CENSUSBLKSFX   A          1
    2 GEO-WA2-3L-R-2010-CENSUSTRACT    A          6
    2 GEO-WA2-3L-R-2010-CENSUSBLOCK    A          4
    2 GEO-WA2-3L-R-2010-CENSUSBLKSFX   A          1
    2 GEO-WA2-3L-FROM-NODE             A          7
    2 GEO-WA2-3L-TO-NODE               A          7
    2 GEO-WA2-3L-L-2000-CENSUSTRACT    A          6
    2 GEO-WA2-3L-L-2000-CENSUSBLOCK    A          4
    2 GEO-WA2-3L-L-2000-CENSUSBLKSFX   A          1
    2 GEO-WA2-3L-R-2000-CENSUSTRACT    A          6
    2 GEO-WA2-3L-R-2000-CENSUSBLOCK    A          4
    2 GEO-WA2-3L-R-2000-CENSUSBLKSFX   A          1
*   * END OF FUNCTION 3                         LONG WORKAREA LAYOUT ******
*   - -------------------------------- -        ---- ----------------------------
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GEOLW21A COPY File

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    1 GEOLW21A                                       /*FCT 1A,BL USE SAME WA2
                                                       LAYOUT
*   * THE FIELD W2NAT1A IS USED AS A      PARAMETER TO CALL GEOSUPPORT
    2 W2NAT1A                         A          21
R   2 W2NAT1A
    3 GEO-WA2-1A-ACCESS-KEY           A          21
    2 GEO-WA2-1A-CONT-PARITY          A           1
    2 GEO-WA2-1A-LOW-HOUSENUM         A           6
    2 GEO-WA2-1A-ALTKEY-1             A          10
R   2 GEO-WA2-1A-ALTKEY-1
    3 GEO-WA2-1A-ALTKEY-1-BORO        A           1
    3 GEO-WA2-1A-ALTKEY-1-TAXBLOCK    A           5
    3 GEO-WA2-1A-ALTKEY-1-TAXLOT      A           4
    2 FILLER-WA2-1A-230               A           1
    2 GEO-WA2-1A-SCC                  A           1
    2 FILLER-WA2-1A-240               A           1
    2 GEO-WA2-1A-GENERAL-LOT-INFO
    3 GEO-WA2-1A-RPAD-BLDG-CLASS      A           2
    3 GEO-WA2-1A-CORNER-CODE          A           2
    3 GEO-WA2-1A-NUM-OF-STRUCTURES    A           2
    3 GEO-WA2-1A-NUM-OF-BLOCKFACES    A           2
    3 GEO-WA2-1A-INTERIOR-FLAG        A           1
    3 GEO-WA2-1A-VACANT-FLAG          A           1
    3 GEO-WA2-1A-IRREG-FLAG           A           1
    2 GEO-WA2-1A-ALT-BORO-FLAG        A           1
    2 FILLER-WA2-1A-245               A           1
    2 GEO-WA2-1A-STROLL-KEY           A          13
    2 GEO-WA2-1A-OVERFLOW-FLAG        A           1
    2 FILLER-WA2-1A-251               A           1 /* USED FOR DCP
    2 GEO-WA2-1A-BIN                  A           7
    2 GEO-WA2-1A-CONDO-FLAG           A           1
    2 GEO-WA2-1A-RPAD-CONDO-NUM       A           4
    2 GEO-WA2-1A-CONDO-LOW-BBL        A          10
    2 FILLER-WA2-1A-260               A           1
    2 GEO-WA2-1A-CONDO-BILL-BBL       A          10
    2 FILLER-WA2-1A-270               A           1
    2 GEO-WA2-1A-CONDO-BILL-BBL-SCC   A           1
    2 GEO-WA2-1A-CONDO-HIGH-BBL       A          10
    2 FILLER-WA2-1A-275               A           1
    2 GEO-WA2-1A-SANBORN-BVOLPAGE     A           8
R   2 GEO-WA2-1A-SANBORN-BVOLPAGE
    3 GEO-WA2-1A-SANBORN-BORO         A           1
    3 GEO-WA2-1A-SANBORN-VOLPAGE      A           7
R   3 GEO-WA2-1A-SANBORN-VOLPAGE
    4 GEO-WA2-1A-SANBORN-VOL-NUM      A           3
    4 GEO-WA2-1A-SANBORN-VOL-PAGE     A           4
    2 GEO-WA2-1A-COMMERC-DIST         A           5
    2 GEO-WA2-1A-COOP-NUM             A           4
    2 FILLER-WA2-1A-276               A           4
    2 GEO-WA2-1A-ACTUAL-NUM-STRUCTS   A           4
    2 GEO-WA2-1A-DOF-MAP-BORO         A           1
    2 GEO-WA2-1A-DOF-MAP-SECVOL       A           4
    2 GEO-WA2-1A-DOF-MAP-PAGE         A           4
    2 GEO-WA2-1A-X-COORD              A           7
    2 GEO-WA2-1A-Y-COORD              A           7
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GEOLW21A COPY File				
2	FILLER-WA2-1A-280	A	18	
2	GEO-WA2-1A-NUM-OF-ADDR-FOR-LOT	N	2	
2	GEO-WA2-1A-LIST-OF-ADDRESSES			(1:21)
3	GEO-WA2-1A-LIST-LOW-HOUSENUM	A	6	
3	FILLER-WA2-1A-290	A	3	
3	GEO-WA2-1A-LIST-HI-HOUSENUM	A	6	
3	FILLER-WA2-1A-300	A	3	
3	GEO-WA2-1A-LIST-STREETCODE	A	8	
3	GEO-WA2-1A-LIST-BIN	A	7	
3	GEO-WA2-1A-LIST-ADDR-TYPE	A	1	
3	FILLER-WA2-1A-310	A	1	
3	GEO-WA2-1A-LIST-SOS	A	1	

GEOLW2AL COPY File

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  1 GEOLW2AL                               /*FCT 1A,BL USE SAME LONG WA2
* * THE FIELD W2NAT1AL IS USED AS A  P  ARA METER TO CALL GEOSUPPORT
  2 W2NAT1AL                         A   21
R 2 W2NAT1AL
  3 GEO-WA2-1AL-ACCESS-KEY           A   21
  2 GEO-WA2-1AL-CONT-PARITY          A    1
  2 GEO-WA2-1AL-LOW-HOUSENUM         A    6
  2 GEO-WA2-1AL-ALTKEY-1             A   10
R 2 GEO-WA2-1AL-ALTKEY-1
  3 GEO-WA2-1AL-ALTKEY-1-BORO        A    1
  3 GEO-WA2-1AL-ALTKEY-1-TAXBLOCK    A    5
  3 GEO-WA2-1AL-ALTKEY-1-TAXLOT      A    4
  2 FILLER-WA2-1AL-230               A    1
  2 GEO-WA2-1AL-SCC                  A    1
  2 FILLER-WA2-1AL-240               A    1
  2 GEO-WA2-1AL-GENERAL-LOT-INFO
  3 GEO-WA2-1AL-RPAD-BLDG-CLASS      A    2
  3 GEO-WA2-1AL-CORNER-CODE          A    2
  3 GEO-WA2-1AL-NUM-OF-STRUCTURES    A    2
  3 GEO-WA2-1AL-NUM-OF-BLOCKFACES    A    2
  3 GEO-WA2-1AL-INTERIOR-FLAG        A    1
  3 GEO-WA2-1AL-VACANT-FLAG          A    1
  3 GEO-WA2-1AL-IRREG-LOT-FLAG       A    1
  2 GEO-WA2-1AL-ALT-BORO-FLAG        A    1
  2 FILLER-WA2-1AL-245               A    1
  2 GEO-WA2-1AL-STROLL-KEY           A   13
  2 FILLER-WA2-1AL-250               A    1
  2 FILLER-WA2-1AL-251               A    1 /* USED FOR DCP
  2 GEO-WA2-1AL-BIN                  A    7
  2 GEO-WA2-1AL-CONDO-FLAG           A    1
  2 GEO-WA2-1AL-RPAD-CONDO-NUM       A    4
  2 GEO-WA2-1AL-CONDO-LOW-BBL        A   10
  2 FILLER-WA2-1AL-260               A    1
  2 GEO-WA2-1AL-CONDO-BILL-BBL       A   10
  2 FILLER-WA2-1AL-270               A    1
  2 GEO-WA2-1AL-CONDO-BILL-BBL-SCC   A    1
  2 GEO-WA2-1AL-CONDO-HIGH-BBL       A   10
  2 FILLER-WA2-1AL-275               A    1
  2 GEO-WA2-1AL-SANBORN-BVOLPAGE     A    8
R 2 GEO-WA2-1AL-SANBORN-BVOLPAGE
  3 GEO-WA2-1AL-SANBORN-BORO         A    1
  3 GEO-WA2-1AL-SANBORN-VOLPAGE      A    7
R 3 GEO-WA2-1AL-SANBORN-VOLPAGE
  4 GEO-WA2-1AL-SANBORN-VOL-NUM      A    3
  4 GEO-WA2-1AL-SANBORN-VOL-PAGE     A    4
  2 GEO-WA2-1AL-COMMERC-DIST         A    5
  2 GEO-WA2-1AL-COOP-NUM             A    4
  2 FILLER-WA2-1AL-276               A    4
  2 GEO-WA2-1AL-ACTUAL-NUM-STRUCTS   A    4
  2 GEO-WA2-1AL-DOF-MAP-BORO         A    1
  2 GEO-WA2-1AL-DOF-MAP-SECVOL       A    4
  2 GEO-WA2-1AL-DOF-MAP-PAGE         A    4
  2 GEO-WA2-1AL-X-COORD              A    7
  2 GEO-WA2-1AL-Y-COORD              A    7
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GEOLW2AL COPY File

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2 FILLER-WA2-1AL-280              A   16
2 GEO-WA2-1AL-NUM-OF-BINS-FOR-LOT N    4
2 GEO-WA2-1AL-LIST-OF-BINS               (1:2500)
3 GEO-WA2-1AL-BINS                N    7
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GEOLW23S COPY File

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   1 GEOLW23S
*  * THE FIELD W2NAT3S IS USED AS A      PARAMETER TO CALL GEOSUPPORT
   2 W2NAT3S                         A          21
R  2 W2NAT3S
   3 GEO-WA2-3S-ACCESS-KEY           A          21
   2 GEO-WA2-3S-NUM-OF-INTERSECTS    N           3
   2 GEO-WA2-3S-LIST-OF-INTERSECTS                 (1:350)
   3 GEO-WA2-3S-SMALLEST-PBSC        P           6
   3 GEO-WA2-3S-2ND-SMALLEST-PBSC    P           6
   3 GEO-WA2-3S-DISTANCE             P           5
   3 GEO-WA2-3S-GAP-FLAG             A           1
```

APPENDIX 6: USER FEEDBACK PROCEDURES

This appendix describes the procedures for users to provide feedback to GSS of geographic data that have either been rejected by the Geosupport System or produced unexpected results. Only items that the user has reviewed and believes to be valid geographic data should be provided as feedback to GSS.

These feedback procedures should also be used for reporting software issues.

Feedback from users is a crucial resource in GSS's efforts to maintain accurate and up-to-date Geosupport data files. The staff of GSS's Geographic Research Unit researches the feedback received from users and corrects errors and omissions in Geosupport files as appropriate. Those corrections become accessible to users when the next release of Geosupport is installed on the computer where the user's application is running.

The user should review all items and screen out those caused by obvious user data coding or data entry errors, such as an obvious street name misspelling, the specification of the intersection of two streets that are obviously parallel, etc.

The user should provide feedback on those items that the user considers to be valid data, or is uncertain about, to GSS's Geographic Research Unit by submitting one or more completed Geosupport System User Feedback Forms. There are spaces to report up to three items on a single form. A sample form is included in this appendix and the user can replicate it as needed.

Printouts, sketch maps and/or any other material documenting the validity and location of the items should be attached to the form if possible. The user should provide any available information that would assist the GSS staff to research the issue. For example, if an address is rejected, the user should provide, if it is known, alternate addresses for the building, the names of the adjacent cross streets, the BBL (tax lot identifiers) etc.

In the case of large computer-generated reject reports, the user may submit the User Feedback Form as a transmittal form attached to the printout. In that case, it is not necessary for the user to transcribe all the reject information onto the form. If possible, the printout should display only the user input geographic data that Geosupport has rejected, not application-related data that is not passed to Geosupport. In addition, the printout should display the Geosupport Return Code, the Reason Code, and if there is space in the report, the Geosupport Message. When designing the reject report, it is advisable for the user to contact GSS Manager of Geographic Research to ascertain how the report should be sorted. Appropriate sorting of user reject reports greatly facilitates GSS's research.

Feedback materials and inquiries about feedback procedures should be submitted to:

Email: GSS_Feedback@planning.nyc.gov

Email is the preferred mode of communication. If email is not feasible, feedback may be submitted to:

Manager of Geographic Research, Department of City Planning
120 Broadway, 31st Floor
New York, New York 10271
Phone: (212)720-3441
FAX: (212)720-3488

Software issues may be directed to:

Email: GSS_Software@planning.nyc.gov

APPENDIX 7: MAINFRAME DATA CENTERS WHERE GEOSUPPORT IS INSTALLED
Current as of December, 2016

NAME OF AGENCY	LOCATION	LPARs at DOITT
DoITT/CSC - Department of Information Technology and Telecommunications / Computer Service Center	2 Metro Tech Center, Brooklyn	See below
DEP - Department of Environment Protection	DoITT	MVSW
DOE - Department of Education	DoITT	EDU*
DOF - Department of Finance	DoITT	DOF*
FISA – Financial Information Services Agency	450 West 33 Street, Manhattan	n/a
HHC - Health and Hospitals Corporation	230 West 41 Street, Manhattan	n/a
HRA – Human Resources Administration	DoITT	HRAP
NYCHA - New York City Housing Authority	250 Broadway, Manhattan	n/a
NYPD – New York Police Department	1 Police Plaza, Manhattan	n/a
All other city agencies	DoITT	MVSP

APPENDIX 8: SAMPLE APPLICATION PROGRAMS AND JCL

This appendix exhibits sample batch user application programs written in COBOL, Assembler, PL/1, C and NATURAL. These programs exemplify how a user-written application program may be coded to interact with Geosupport via its Application Programming Interface (API).

For each sample program, this appendix contains a printout of the job-stream input for an MSW application, the job-stream input for a COW application, and a printout of the program execution output report. The job-stream input contains the JCL to compile, link-edit and execute the program and, embedded in the JCL, the program source code (except for NATURAL) and a few in-stream records of sample input data. The NATURAL program source code is not embedded in the job-stream, and is printed separately. The MSW and COW sample programs both generate the same output report.

Please note that the sample application programs are not guaranteed to run exactly as shown in this appendix. The samples are here as an aid in developing Geosupport application programs.

All of the sample programs use the Geosupport COPY facility. Since this appendix displays un-compiled source code rather than compilation output listings, the source code is shown without the COPY file expansions. Therefore, the source code as shown contains references to fields in Geosupport work areas but does not contain the definitions of those fields. To see those definitions, refer to the listings of the COPY file contents in Appendix 5 (for MSW) and Appendix 14 (for COW).

There are two sample programs in each programming language, referred to as Sample Programs #1 and #2. The processing performed in Sample Program #1 is similar for all of the programming languages, as is the processing performed in Sample Program #2. Note: there is an MSW and COW version of each of the sample programs.

In brief, Sample Program #1 reads a record containing an address from the in-stream input file; calls Functions 1 and D, checking the Geosupport Return Code (GRC) generated by each call; and writes a record into a formatted output report. The report displays the input address data and, as appropriate, selected output data obtained from Geosupport and/or the GRC, Reason Code and Message.

Sample Program #2 performs similar processing, but its input file contains street intersections instead of addresses, and accordingly it calls Function 2 instead of Function 1.

Both sample programs use the Compact Names feature to direct Geosupport to return street names in a format suitable for display in the output report. In addition, Sample Program #1, but not Sample Program #2, uses the Street Name Normalization Length Limit (SNL) feature to limit the lengths of normalized street names so they will fit into that program's output report.

In both sample programs, Function D is called to generate the cross street names. Note, that Geosupport will generate all the cross street names automatically if the user specifies the Cross Street Names Flag in the initial Function 1 or Function 2 call or if the user calls Functions 1/1E Extended or Function 1B. (See Cross Street Names Flag in Appendix 3.) The Function D call, however, is used in the sample programs to demonstrate use of Function D and a one work-area-call.

In detail, the processing performed by Sample Program #1 is as follows:

- Read a record from the in-stream input file.
- Prime Work Area 1 with the function code, the Work Area Format Indicator (required for COW), the address information (Borough Code, House Number and Street Name) from the input record, the appropriate SNL value, and the code required to request street names in the compact format.
- Call Function 1.
- Examine the Geosupport Return Code (GRC).
- If the GRC indicates a successful call or a warning, use the street codes of the cross streets retrieved in WA2 as input to a Function D call to obtain their street names for display in the output report[14]. The Function D processing is performed as follows:
- Prime Work Area 1 with the function code value, the Work Area Format Indicator (required for COW), and the street codes of the cross streets obtained from the Function 1 call.
- Call Function D.
- Note: If the Cross Street Names Flag is used in the original call to Function 1 (or if Extended Mode of Function1 is used or if Function 1B is used), all the cross street names will be returned.
- Examine the GRC.
- If the GRC is zeros, include the street names obtained from Function D in the output report. Otherwise, include the GRC, the Reason Code and the warning/reject message in the output report.
- Write an output report line containing the input information and, selected output information obtained from Work Area 2 (e.g., the ZIP code, Community District, and cross streets) and/or the Geosupport Return Code, Reason Code and Message.

---

[14] Note: The sample programs have been written in a skeletal fashion to illustrate the use of the Geosupport API as clearly as possible. Thus, for example, Sample Program #1 assumes, when it gets a ’hit’= for an input address, that WA2 contains at least one cross street at each end of the block face containing the address. In reality, this is not necessarily the case; in a real application, the program would check for the presence of cross street codes before calling Function D.

COBOL SAMPLE PROGRAM #1

- Input Job Stream - MSW

- Input Job Stream - COW

- Output Report

COBOL SAMPLE PROGRAM #1-JOB Stream-MSW

```
//COBF1SRC JOB   YOUR-JOB-CARD-INFORMATION
//*
//*******************************************************************
//***  COBOL SAMPLE BATCH GEOSUPPORT USER APPLICATION PROGRAM #1  ****
//***                     MSW FORMAT                              ****
//*******************************************************************
//STEP1 EXEC   IGYWCLG,PARM.COBOL=(NOWORD,OPTIMIZE)
//COBOL.SYSLIB DD DSN=A030.GEO.COPYLIB2,DISP=SHR
//             DD DSN=A030.GEO.COPYLIB,DISP=SHR
//COBOL.SYSIN  DD *
      *****************************************************************
      * THIS PROGRAM MAKES FUNCTION 1 AND D CALLS TO GEOSUPPORT USING *
      * BORO, HOUSE NUMBER & STREET NAME SUPPLIED BY AN INSTREAM FILE.*
      * FUNCTION 1 RETURNS GEOGRAPHIC INFORMATION FOR AN ADDRESS.     *
      * FUNCTION D TRANSLATES AN INPUT STREET CODE TO A STREET NAME.  *
      * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
      *       NOTE: IF THE CROSS STREET NAMES FLAG WERE USED IN THE   *
      *             ORIGINAL CALL TO FUNCTION 1, ALL THE CROSS STREET *
      *             NAMES WOULD HAVE BEEN RETURNED BY FUNCTION 1.     *
      *****************************************************************
      *
       IDENTIFICATION DIVISION.
         PROGRAM-ID. COBS1JOB.

      ****************************************

       ENVIRONMENT DIVISION.
         INPUT-OUTPUT SECTION.
         FILE-CONTROL.
           SELECT IN-FILE ASSIGN TO INFILE.
           SELECT RPT-FILE ASSIGN TO RPTFILE.

      ****************************************

       DATA DIVISION.
         FILE SECTION.

      **** REPLACE CODE BELOW WITH YOUR OWN INPUT FILE DEFINTION *****
         FD  IN-FILE
             RECORDING MODE IS F
             RECORD CONTAINS 80 CHARACTERS
             LABEL RECORDS ARE OMITTED.

       01  INPUT-TO-GEOSUPPORT.
           05  IN-BORO-CODE        PIC X.
           05  FILLER              PIC X.
           05  IN-HOUSE-NUMBER     PIC X(12).
           05  FILLER              PIC X.
           05  IN-STREET           PIC X(32).
           05  FILLER              PIC X(33).

         FD  RPT-FILE
             RECORDING MODE IS F
```

```
       RECORD CONTAINS 132 CHARACTERS
       LABEL RECORDS ARE OMITTED.

 01  RPT-LINE                PIC X(132).
 WORKING-STORAGE SECTION.
 **************************************************************
*** USE OF GEOSUPPORT COPY LIBRARIES (REFERENCED BELOW BY THE ***
*** COPY STATEMENTS) IS STRONGLY ENCOURAGED.                  ***
*****************************************************************
 01  WORK1.    COPY  W1COB.
 01  WORK2.    COPY  W2COB.

**** REPLACE CODE BELOW WITH YOUR OWN REPORT LAYOUT    *********

 01  RPT-DATA-LINE1.
     05  OUT-BOR             PIC X.
     05  FILLER              PIC X         VALUE ' '.
     05  OUT-HN              PIC X(12).
     05  FILLER              PIC X         VALUE ' '.
     05  OUT-ST              PIC X(32).
     05  FILLER              PIC X         VALUE ' '.
     05  OUT-ZIP             PIC X(5).
     05  FILLER              PIC X         VALUE ' '.
     05  OUT-CD              PIC X(2).
     05  FILLER              PIC X         VALUE ' '.
     05  OUT-NYPD-PCT        PIC X(3).
     05  FILLER              PIC X(6)      VALUE ' '.
     05  OUT-SCHLDIST        PIC X(2).
     05  FILLER              PIC X(58)     VALUE ' '.

 01  RPT-DATA-LINE2.
     05  FILLER              PIC X(74)     VALUE ' '.
     05  OUT-LO-X-STREET     PIC X(25).
     05  FILLER              PIC X VALUE ' '.
     05  OUT-HI-X-STREET     PIC X(25).

 01  RPT-ERR-LINE-1.
     05  ERR-BOR             PIC X.
     05  FILLER              PIC X         VALUE ' '.
     05  ERR-HN              PIC X(12).
     05  FILLER              PIC X         VALUE ' '.
     05  ERR-ST              PIC X(32).
     05  FILLER              PIC X(14)
         VALUE ' *** FUNCTION '.
     05  ERR-FUNCTION        PIC X.
     05  FILLER              PIC X(7)
         VALUE ' GRC = '.
     05  ERR-GRC             PIC X(2).
     05  FILLER              PIC X(15) VALUE ' REASON CODE = '.
     05  ERR-REASON          PIC X.
     05  FILLER              PIC X(45) VALUE ' '.

 01  RPT-ERR-LINE-2.
     05  FILLER              PIC X(48) VALUE ' '.
     05  FILLER              PIC X(4) VALUE '*** '.
```

```
       05  OUT-ERR-MSG         PIC X(80).

   01  RPT-WRN-LINE.
       05  WRN-BOR             PIC X.
       05  FILLER              PIC X          VALUE ' '.
       05  WRN-HN              PIC X(12).

05  FILLER             PIC X         VALUE ' '.
       05  WRN-ST              PIC X(32).
       05  FILLER              PIC X(14)
           VALUE ' *** FUNCTION '.
       05  WRN-FUNCTION        PIC X.
       05  FILLER              PIC X(16)
     VALUE ' WARNING, GRC = '.
       05  WRN-GRC             PIC X(2).
       05  FILLER              PIC X(15) VALUE ' REASON CODE = '.
       05  WRN-REASON          PIC X(1).
       05  FILLER              PIC X(36) VALUE ' '.

   01  RPT-HEADER-1.
       05  FILLER              PIC X(40)  VALUE
       'SAMPLE COBOL PROGRAM #1 EXECUTION OUTPUT'.
       05  FILLER              PIC X(72) VALUE ' '.

   01  RPT-HEADER-2.
       05  FILLER              PIC X(58)  VALUE
       '*****---------- INPUT ADDRESS ------------***** *****-----'.
       05  FILLER              PIC X(58)  VALUE
       '---------------- SELECTED OUTPUT ITEMS -------------------'.
       05  FILLER              PIC X(16)  VALUE
       '----*****       '.

   01  RPT-HEADER-3.
       05  FILLER              PIC X(58)  VALUE
       'B HOUSE NUMBER IN-STREET-NAME                     ZIP CD N'.
       05  FILLER              PIC X(58)  VALUE
       'YPD-PCT SCHLDST LOW CROSS STREET          HIGH CROSS STREE'.
       05  FILLER              PIC X(16)  VALUE
       'T               '.

   01  RPT-HEADER-4.
       05  FILLER              PIC X(58)  VALUE
       '_ ____________ ________________________________ _____ __ _'.
       05  FILLER              PIC X(58)  VALUE
       '_______ _______ _________________________ ________________'.
       05  FILLER              PIC X(16)  VALUE
       '_________       '.

   01  FLAGS.
       05 DATA-FLAG    PIC XXX   VALUE 'YES'.
         88 MORE-DATA            VALUE 'YES'.
         88 NO-DATA              VALUE 'NO '.

  ****************************************
```

COBOL SAMPLE PROGRAM #1-JOB Stream-MSW

```
       PROCEDURE DIVISION.

           OPEN INPUT IN-FILE, OUTPUT RPT-FILE.
           WRITE RPT-LINE FROM RPT-HEADER-1 AFTER ADVANCING 1 LINES.
           WRITE RPT-LINE FROM RPT-HEADER-2 AFTER ADVANCING 2 LINES.
           WRITE RPT-LINE FROM RPT-HEADER-3 AFTER ADVANCING 2 LINES.
           WRITE RPT-LINE FROM RPT-HEADER-4 AFTER ADVANCING 0 LINES.
           READ IN-FILE AT END MOVE 'NO ' TO DATA-FLAG.
           PERFORM PROCESS THRU PROCESS-EX
    UNTIL NO-DATA.
           CLOSE IN-FILE, RPT-FILE.
           MOVE 0 TO RETURN-CODE
           STOP RUN.

 Process.
      *****************************************************************
      * TO MAKE A FUNCTION 1 CALL:                                    *
      *   (1) INITIALIZE WORKAREA 1 TO SPACES                         *
      *   (2) SET WA1'S FUNCTION CODE FIELD TO 1                      *
      *   (3) MOVE THE INPUT BORO TO WA1'S INPUT BORO CODE FIELD      *
      *   (4) MOVE THE INPUT HOUSE NUMBER TO WA1'S INPUT HOUSE NUMBER *
      *       FIELD                                                   *
      *   (5) MOVE THE INPUT STREET TO WA1'S INPUT STREET NAME FIELD  *
      *   (6) CALL GBI WITH 2 WORKAREAS                               *
      *   (7) CHECK RETURN CODES FOR ERRORS OR WARNINGS               *
      *****************************************************************
      *****************************************************************
      * AS OF GEOSUPPORT 10.1,                                        *
      * TO RECEIVE ROADBED-SPECIFIC INFORMATION,                      *
      * SET THE ROADBED REQUEST SWITCH TO 'R', AS FOLLOWS:            *
      * MOVE 'R' TO GEO-WA1-IN-ROADBED-REQ-SWITCH.                    *
      *****************************************************************
           MOVE SPACES TO WORK1.
           MOVE '1 ' TO GEO-WA1-IN-FUNCTION-CODE.
           MOVE IN-BORO-CODE TO GEO-WA1-IN-BORO OUT-BOR ERR-BOR WRN-BOR.
           MOVE IN-HOUSE-NUMBER TO GEO-WA1-IN-HOUSENUM OUT-HN ERR-HN
                                                       WRN-HN.
           MOVE IN-STREET TO GEO-WA1-IN-STREET-1 OUT-ST ERR-ST WRN-ST.
           CALL 'GBI' USING WORK1 WORK2.

           IF GEO-WA1-OUT-RETURN-CODE NOT = 00
              MOVE '1' TO ERR-FUNCTION WRN-FUNCTION
              PERFORM PRINT-ERROR-LINE THRU P-E-EX.

           IF (GEO-WA1-OUT-RETURN-CODE = 00) OR
             (GEO-WA1-OUT-RETURN-CODE = 01)
              PERFORM SUCCESSFUL-FUNC1 THRU S-F1-EX.

           READ IN-FILE AT END MOVE 'NO ' TO DATA-FLAG.

       PROCESS-EX.
           EXIT.

       SUCCESSFUL-FUNC1.
```

```
*********************************************************
***** REPLACE CODE BELOW WITH YOUR OWN CODE FOR ***********
***** PROCESSING SUCCESSFUL GEOSUPPORT CALLS          *****
*********************************************************
     MOVE GEO-WA2-FN1-ZIP            TO OUT-ZIP.
     MOVE GEO-WA2-FN1-COMDIST-NUMBER TO OUT-CD.
     MOVE GEO-WA2-FN1-POL-PRECINCT   TO OUT-NYPD-PCT.
     MOVE GEO-WA2-FN1-SCHOOLDIST     TO OUT-SCHLDIST.
     IF GEO-WA1-OUT-RETURN-CODE = 00
       WRITE RPT-LINE FROM RPT-DATA-LINE1 AFTER ADVANCING 2 LINES
     ELSE
       MOVE SPACES TO OUT-BOR OUT-HN OUT-ST
       WRITE RPT-LINE FROM RPT-DATA-LINE1 AFTER ADVANCING 1 LINES.

**********************************************************
* THIS PROGRAM ASSUMES THERE EXISTS AT LEAST ONE HIGH AND  *
* ONE LOW CROSS STREET.  TO GET THE STREET NAMES OF THE    *
* FIRST-LISTED HIGH AND FIRST-LISTED LOW CROSS STREETS     *
* FROM THE HIGH AND LOW STREET CODE LISTS CALL FUNCTION D: *
*   (1) INITIALIZE WORKAREA 1 TO SPACES                    *
*   (2) SET WA1'S FUNCTION CODE FIELD TO D                 *
*   (3) SET WA1'S STREET NAME LENGTH FIELD TO DESIRED      *
*       VALUE (IN THIS CASE 25 BECAUSE THE REPORT LINE     *
*              HAS SPACE FOR ONLY 25 CHARACTERS)           *
*   (4) USE THE COMPACT STREET NAMES OPTION TO OBTAIN      *
*       STREET NAMES FORMATTED FOR DISPLAY                 *
*   (5) MOVE WA2'S LOW PBSC FIELD TO WA1'S INPUT STREET    *
*       CODE 1 FIELD                                       *
*   (6) MOVE WA2'S HIGH PBSC FIELD TO WA1'S INPUT STREET   *
*       CODE 2 FIELD                                       *
*   (7) CALL GBI WITH 1 WORKAREA                           *
*   (8) CHECK RETURN CODES FOR ERRORS OR WARNINGS          *
**********************************************************
     MOVE SPACES TO WORK1.
     MOVE 'D ' TO GEO-WA1-IN-FUNCTION-CODE.
     MOVE 'C' TO GEO-WA1-IN-COMPACT-NAME-FLAG.
     MOVE '25' TO GEO-WA1-IN-SNL.
     MOVE GEO-WA2-FN1-LOW-PBSC (1) TO GEO-WA1-IN-STREETCODE-1.
     MOVE GEO-WA2-FN1-HI-PBSC  (1) TO GEO-WA1-IN-STREETCODE-2.
     CALL 'GBI' USING WORK1.

     IF GEO-WA1-OUT-RETURN-CODE NOT = 00
        MOVE 'D' TO ERR-FUNCTION WRN-FUNCTION
        PERFORM PRINT-ERROR-LINE THRU P-E-EX.

     IF (GEO-WA1-OUT-RETURN-CODE = 00) OR
        (GEO-WA1-OUT-RETURN-CODE = 01)
        PERFORM SUCCESSFUL-FUNCD THRU S-FD-EX.

 S-F1-EX.
     EXIT.

 SUCCESSFUL-FUNCD.

     MOVE GEO-WA1-OUT-STREET-1 TO OUT-LO-X-STREET
```

```
           MOVE GEO-WA1-OUT-STREET-2 TO OUT-HI-X-STREET
           WRITE RPT-LINE FROM RPT-DATA-LINE2 AFTER ADVANCING 0 LINES.

       S-FD-EX.
           EXIT.


       PRINT-ERROR-LINE.
           MOVE GEO-WA1-OUT-RETURN-CODE TO ERR-GRC WRN-GRC.
           MOVE GEO-WA1-OUT-REASON-CODE TO ERR-REASON WRN-REASON.
           MOVE GEO-WA1-OUT-ERROR-MESSAGE TO OUT-ERR-MSG.

           IF GEO-WA1-OUT-RETURN-CODE = 01
      **** INSERT YOUR OWN WARNING ROUTINE HERE  ****
             WRITE RPT-LINE FROM RPT-WRN-LINE AFTER ADVANCING 2 LINES
           ELSE
      **** INSERT YOUR OWN WARNING ROUTINE HERE  ****


   WRITE RPT-LINE FROM RPT-ERR-LINE-1 AFTER ADVANCING 2 LINES.

           WRITE RPT-LINE FROM RPT-ERR-LINE-2 AFTER ADVANCING 1 LINES.

       P-E-EX.
           EXIT.
/*
//LKED.SYSIN DD *
  INCLUDE INCLIB(GBI)
//LKED.INCLIB   DD DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR

//*****************************************************************//
//*                                                               *//
//*  AS OF GEOSUPPPORT VERSION 10.0,                              *//
//*  THE STEPLIB (OR JOBLIB) OF THE GEOSUPPORT EXECUTION STEP     *//
//*  MUST INCLUDE THE FOLLOWING TWO CONCATENATED DATASETS:        *//
//*       A030.GEO.SUPPORT.PDSE.LOADLIB                           *//
//*       A030.GEO.SUPPORT.LOADLIB                                *//
//*                                                               *//
//*****************************************************************//
//GO.STEPLIB DD DSN=A030.GEO.SUPPORT.PDSE.LOADLIB,DISP=SHR
//          DD DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//*
//*****************************************************************//
//*                                                               *//
//*  AS OF GEOSUPPPORT VERSION 10.0,                              *//
//*  DD STATEMENTS FOR GEOSUPPORT DATA FILES (E.G. GRID, PAD, ETC) *//
//*  ARE NO LONGER NEEDED AND ARE IGNORED.  GEOSUPPORT IS TAILORED *//
//*  TO USE STANDARD GEOSUPPORT DATA SET NAMES.                   *//
//*  TO USE NON-STANDARD FILES, SEE YOUR SYSTEMS PROGRAMMER.      *//
//*                                                               *//
//*****************************************************************//
//*
//GO.SYSUDUMP DD SYSOUT=A,OUTLIM=3000
//GO.SYSOUT   DD SYSOUT=A
//GO.RPTFILE  DD SYSOUT=A
```

COBOL SAMPLE PROGRAM #1-JOB Stream-MSW

```
//GO.INFILE  DD *
1 22           READE ST
1 500          DUANE ST
1 82-84        BROADWAY
4 165-100      BAISLEY BLVD
4 165-1000     BAISLEY BLVD
/*
//
```

COBOL SAMPLE PROGRAM #1 – Job Stream - COW

```
//COBC1SRC JOB   YOUR-JOB-CARD-INFORMATION
//*
//*******************************************************************
//***  COBOL SAMPLE BATCH GEOSUPPORT USER APPLICATION PROGRAM #1  ****
//***                    COW FORMAT                               ****
//*******************************************************************
//STEP1 EXEC   IGYWCLG,PARM.COBOL=(NOWORD,OPTIMIZE)
//COBOL.SYSLIB DD DSN=A030.GEO.COPYLIB2,DISP=SHR
//             DD DSN=A030.GEO.COPYLIB,DISP=SHR
//COBOL.SYSIN  DD *
      *****************************************************************
      * THIS PROGRAM MAKES FUNCTION 1 AND D CALLS TO GEOSUPPORT USING *
      * BORO, HOUSE NUMBER & STREET NAME SUPPLIED BY AN INSTREAM FILE.*
      * FUNCTION 1 RETURNS GEOGRAPHIC INFORMATION FOR AN ADDRESS.     *
      * FUNCTION D TRANSLATES AN INPUT STREET CODE TO A STREET NAME.  *
      * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
      *       NOTE: IF THE CROSS STREET NAMES FLAG WERE USED IN THE   *
      *             ORIGINAL CALL TO FUNCTION 1, ALL THE CROSS STREET *
      *             NAMES WOULD HAVE BEEN RETURNED BY FUNCTION 1.     *
      *****************************************************************
      *
       IDENTIFICATION DIVISION.
         PROGRAM-ID. COBS1JOB.

      ****************************************

       ENVIRONMENT DIVISION.
         INPUT-OUTPUT SECTION.

 FILE-CONTROL.
           SELECT IN-FILE ASSIGN TO INFILE.
           SELECT RPT-FILE ASSIGN TO RPTFILE.

      ****************************************

       DATA DIVISION.
         FILE SECTION.

      **** REPLACE CODE BELOW WITH YOUR OWN INPUT FILE DEFINTION *****
         FD  IN-FILE
             RECORDING MODE IS F
             RECORD CONTAINS 80 CHARACTERS
             LABEL RECORDS ARE OMITTED.

       01  INPUT-TO-GEOSUPPORT.
           05  IN-BORO-CODE        PIC X.
           05  FILLER              PIC X.
           05  IN-HOUSE-NUMBER     PIC X(12).
           05  FILLER              PIC X.
           05  IN-STREET           PIC X(32).
           05  FILLER              PIC X(33).
```

```
          FD  RPT-FILE
              RECORDING MODE IS F
              RECORD CONTAINS 132 CHARACTERS
              LABEL RECORDS ARE OMITTED.

        01  RPT-LINE                PIC X(132).

        WORKING-STORAGE SECTION.

*****************************************************************
       *** USE OF GEOSUPPORT COPY LIBRARIES (REFERENCED BELOW BY THE ***
       *** COPY STATEMENTS) IS STRONGLY ENCOURAGED.                 ***
       *****************************************************************
        01  WORK1.    COPY  P1COB.
        01  WORK2.    COPY  P2COB.

       **** REPLACE CODE BELOW WITH YOUR OWN REPORT LAYOUT    *********

        01  RPT-DATA-LINE1.
            05  OUT-BOR             PIC X.
            05  FILLER              PIC X         VALUE ' '.
            05  OUT-HN              PIC X(12).
            05  FILLER              PIC X         VALUE ' '.
            05  OUT-ST              PIC X(32).
            05  FILLER              PIC X         VALUE ' '.
            05  OUT-ZIP             PIC X(5).
            05  FILLER              PIC X         VALUE ' '.
            05  OUT-CD              PIC X(2).
            05  FILLER              PIC X         VALUE ' '.
            05  OUT-NYPD-PCT        PIC X(3).
            05  FILLER              PIC X(6)      VALUE ' '.
            05  OUT-SCHLDIST        PIC X(2).
            05  FILLER              PIC X(58)     VALUE ' '.

        01  RPT-DATA-LINE2.
            05  FILLER              PIC X(74)     VALUE ' '.
            05  OUT-LO-X-STREET     PIC X(25).
            05  FILLER              PIC X VALUE ' '.
            05  OUT-HI-X-STREET     PIC X(25).

            01  RPT-ERR-LINE-1.
            05  ERR-BOR             PIC X.
            05  FILLER              PIC X         VALUE ' '.
            05  ERR-HN              PIC X(12).
            05  FILLER              PIC X         VALUE ' '.
            05  ERR-ST              PIC X(32).
            05  FILLER              PIC X(14)
                VALUE ' *** FUNCTION '.
            05  ERR-FUNCTION        PIC X.
            05  FILLER              PIC X(7)
                VALUE ' GRC = '.
            05  ERR-GRC             PIC X(2).
            05  FILLER              PIC X(15) VALUE ' REASON CODE = '.
            05  ERR-REASON          PIC X.
            05  FILLER              PIC X(45) VALUE ' '.
```

```
       01  RPT-ERR-LINE-2.
           05  FILLER              PIC X(48) VALUE ' '.
           05  FILLER              PIC X(4) VALUE '*** '.
           05  OUT-ERR-MSG         PIC X(80).

       01  RPT-WRN-LINE.
           05  WRN-BOR             PIC X.
           05  FILLER              PIC X         VALUE ' '.
           05  WRN-HN              PIC X(12).

    05  FILLER              PIC X         VALUE ' '.
           05  WRN-ST              PIC X(32).
           05  FILLER              PIC X(14)

VALUE ' *** FUNCTION '.
           05  WRN-FUNCTION        PIC X.
           05  FILLER              PIC X(16)
               VALUE ' WARNING, GRC = '.
           05  WRN-GRC             PIC X(2).
           05  FILLER              PIC X(15) VALUE ' REASON CODE = '.
           05  WRN-REASON          PIC X(1).
           05  FILLER              PIC X(36) VALUE ' '.

       01  RPT-HEADER-1.
           05  FILLER              PIC X(40)  VALUE
           'SAMPLE COBOL PROGRAM #1 EXECUTION OUTPUT'.
           05  FILLER              PIC X(72) VALUE ' '.

       01  RPT-HEADER-2.
           05  FILLER              PIC X(58)  VALUE
           '*****---------- INPUT ADDRESS ------------***** *****-----'.
           05  FILLER              PIC X(58)  VALUE
           '---------------- SELECTED OUTPUT ITEMS -------------------'.
           05  FILLER              PIC X(16)  VALUE
           '----*****       '.

       01  RPT-HEADER-3.
           05  FILLER              PIC X(58)  VALUE
           'B HOUSE NUMBER IN-STREET-NAME                     ZIP CD N'.
           05  FILLER              PIC X(58)  VALUE
           'YPD-PCT SCHLDST LOW CROSS STREET          HIGH CROSS STREE'.
           05  FILLER              PIC X(16)  VALUE
           'T               '.

       01  RPT-HEADER-4.
           05  FILLER              PIC X(58)  VALUE
           '_ ____________ ________________________________ _____ __ _'.

           05  FILLER              PIC X(58)  VALUE
           '_______ _______ _________________________ ________________'.
           05  FILLER              PIC X(16)  VALUE
           '_________       '.

       01  FLAGS.
```

```
       05 DATA-FLAG    PIC XXX   VALUE 'YES'.
         88 MORE-DATA            VALUE 'YES'.
         88 NO-DATA              VALUE 'NO '.

*****************************************

 PROCEDURE DIVISION.

     OPEN INPUT IN-FILE, OUTPUT RPT-FILE.
     WRITE RPT-LINE FROM RPT-HEADER-1 AFTER ADVANCING 1 LINES.
     WRITE RPT-LINE FROM RPT-HEADER-2 AFTER ADVANCING 2 LINES.
     WRITE RPT-LINE FROM RPT-HEADER-3 AFTER ADVANCING 2 LINES.
     WRITE RPT-LINE FROM RPT-HEADER-4 AFTER ADVANCING 0 LINES.
     READ IN-FILE AT END MOVE 'NO ' TO DATA-FLAG.


     PERFORM PROCESS THRU PROCESS-EX
     UNTIL NO-DATA.
     CLOSE IN-FILE, RPT-FILE.
     MOVE 0 TO RETURN-CODE
     STOP RUN.

 PROCESS.

******************************************************************
* TO MAKE A FUNCTION 1 CALL:                                     *
*   (1) INITIALIZE WORKAREA 1 TO SPACES                          *
*   (2) SET WA1'S FUNCTION CODE FIELD TO 1                       *
*   (3) SET THE PLATFORM INDICATOR SWITCH (NON-IBM-MAINFRAME)    *
*       TO USE CHARACTER-ONLY WORK AREAS (COWS)                  *
*   (4) MOVE THE INPUT BORO TO WA1'S INPUT BORO CODE FIELD       *
*   (5) MOVE THE INPUT HOUSE NUMBER TO WA1'S INPUT HOUSE NUMBER *
*       FIELD                                                    *
*   (6) MOVE THE INPUT STREET TO WA1'S INPUT STREET NAME FIELD  *
*   (7) CALL GBI WITH 2 WORKAREAS                                *
*   (8) CHECK RETURN CODES FOR ERRORS OR WARNINGS                *
******************************************************************
******************************************************************
* AS OF GEOSUPPORT 10.1,                                         *
* TO RECEIVE ROADBED-SPECIFIC INFORMATION,                       *
* SET THE ROADBED REQUEST SWITCH TO 'R', AS FOLLOWS:             *
* MOVE 'R' TO PIWA1-IN-ROADBED-REQ-SWITCH.                       *
******************************************************************
     MOVE SPACES TO WORK1.
     MOVE '1 ' TO PIWA1-IN-FUNC-CODE.
     MOVE 'C' TO GEO-WA1-IN-NON-IBM-MAIN-FRAME.
     MOVE IN-BORO-CODE TO GEO-WA1-IN-BORO OUT-BOR ERR-BOR WRN-BOR.
     MOVE IN-HOUSE-NUMBER TO PIWA1-IN-HOUSENUM-DISPLAY OUT-HN
                                          ERR-HN WRN-HN.
     MOVE IN-STREET TO GEO-WA1-IN-STREET-1 OUT-ST ERR-ST WRN-ST.
     CALL 'GBI' USING WORK1 WORK2.

     IF GEO-WA1-OUT-RETURN-CODE NOT = 00
        MOVE '1' TO ERR-FUNCTION WRN-FUNCTION
        PERFORM PRINT-ERROR-LINE THRU P-E-EX.
```

```
        IF (GEO-WA1-OUT-RETURN-CODE = 00) OR
          (GEO-WA1-OUT-RETURN-CODE = 01)
           PERFORM SUCCESSFUL-FUNC1 THRU S-F1-EX.

    READ IN-FILE AT END MOVE 'NO ' TO DATA-FLAG.

    PROCESS-EX.
        EXIT.

    SUCCESSFUL-FUNC1.

   ***********************************************************
   ***** REPLACE CODE BELOW WITH YOUR OWN CODE FOR ***********
   ***** PROCESSING SUCCESSFUL GEOSUPPORT CALLS          *****
   ***********************************************************
        MOVE GEO-WA2-FN1-ZIP            TO OUT-ZIP.
        MOVE GEO-WA2-FN1-COMDIST-NUMBER TO OUT-CD.


 MOVE GEO-WA2-FN1-POL-PRECINCT   TO OUT-NYPD-PCT.
        MOVE GEO-WA2-FN1-SCHOOLDIST     TO OUT-SCHLDIST.
        IF GEO-WA1-OUT-RETURN-CODE = 00
          WRITE RPT-LINE FROM RPT-DATA-LINE1 AFTER ADVANCING 2 LINES
        ELSE
          MOVE SPACES TO OUT-BOR OUT-HN OUT-ST
          WRITE RPT-LINE FROM RPT-DATA-LINE1 AFTER ADVANCING 1 LINES.


   ****************************************************************
   * THIS PROGRAM ASSUMES THERE EXISTS AT LEAST ONE HIGH AND      *
   * ONE LOW CROSS STREET.  TO GET THE STREET NAMES OF THE        *
   * FIRST-LISTED HIGH AND FIRST-LISTED LOW CROSS STREETS         *
   * FROM THE HIGH AND LOW STREET CODE LISTS CALL FUNCTION D:     *
   *   (1) INITIALIZE WORKAREA 1 TO SPACES                        *
   *   (2) SET WA1'S FUNCTION CODE FIELD TO D                     *
   *   (3) SET THE PLATFORM INDICATOR SWITCH (NON-IBM-MAINFRAME)  *
   *       TO USE CHARACTER-ONLY WORK AREAS (COWS)                *
   *   (4) SET WA1'S STREET NAME LENGTH FIELD TO DESIRED          *
   *       VALUE (IN THIS CASE 25 BECAUSE THE REPORT LINE         *
   *              HAS SPACE FOR ONLY 25 CHARACTERS)               *
   *   (5) USE THE COMPACT STREET NAMES OPTION TO OBTAIN          *
   *       STREET NAMES FORMATTED FOR DISPLAY                     *
   *   (6) MOVE WA2'S LOW BSC FIELD TO WA1'S INPUT STREET         *
   *       CODE 1 FIELD                                           *
   *   (7) MOVE WA2'S HIGH BSC FIELD TO WA1'S INPUT STREET        *
   *       CODE 2 FIELD                                           *
   *   (8) CALL GBI WITH 1 WORKAREA                               *
   *   (9) CHECK RETURN CODES FOR ERRORS OR WARNINGS              *
   ****************************************************************
        MOVE SPACES TO WORK1.
        MOVE 'D ' TO PIWA1-IN-FUNC-CODE.
        MOVE 'C' TO GEO-WA1-IN-NON-IBM-MAIN-FRAME.
        MOVE 'C' TO GEO-WA1-IN-COMPACT-NAME-FLAG.
        MOVE '25' TO GEO-WA1-IN-SNL.
```

```
           MOVE PIWA2-FN1-LOW-B5SC (1) TO GEO-WA1-IN-10SC-1.
           MOVE PIWA2-FN1-HI-B5SC  (1) TO GEO-WA1-IN-10SC-2.
           CALL 'GBI' USING WORK1.

           IF GEO-WA1-OUT-RETURN-CODE NOT = 00
              MOVE 'D' TO ERR-FUNCTION WRN-FUNCTION
              PERFORM PRINT-ERROR-LINE THRU P-E-EX.

           IF (GEO-WA1-OUT-RETURN-CODE = 00) OR
              (GEO-WA1-OUT-RETURN-CODE = 01)
              PERFORM SUCCESSFUL-FUNCD THRU S-FD-EX.

       S-F1-EX.
       EXIT.

       SUCCESSFUL-FUNCD.

           MOVE GEO-WA1-OUT-STREET-1 TO OUT-LO-X-STREET
           MOVE GEO-WA1-OUT-STREET-2 TO OUT-HI-X-STREET
           WRITE RPT-LINE FROM RPT-DATA-LINE2 AFTER ADVANCING 0 LINES.

       S-FD-EX.

           EXIT.


       PRINT-ERROR-LINE.
           MOVE GEO-WA1-OUT-RETURN-CODE TO ERR-GRC WRN-GRC.
           MOVE GEO-WA1-OUT-REASON-CODE TO ERR-REASON WRN-REASON.
           MOVE GEO-WA1-OUT-ERROR-MESSAGE TO OUT-ERR-MSG.

           IF GEO-WA1-OUT-RETURN-CODE = 01
      **** INSERT YOUR OWN WARNING ROUTINE HERE  ****
             WRITE RPT-LINE FROM RPT-WRN-LINE AFTER ADVANCING 2 LINES
           ELSE
      **** INSERT YOUR OWN ERROR ROUTINE HERE  ****
             WRITE RPT-LINE FROM RPT-ERR-LINE-1 AFTER ADVANCING 2 LINES.

  WRITE RPT-LINE FROM RPT-ERR-LINE-2 AFTER ADVANCING 1 LINES.

       P-E-EX.
           EXIT.
/*
//LKED.SYSIN DD *
  INCLUDE INCLIB(GBI)
//LKED.INCLIB   DD DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//*************************************************************//
//*                                                          *//
//*  AS OF GEOSUPPPORT VERSION 10.0,                          *//
//*  THE STEPLIB (OR JOBLIB) OF THE GEOSUPPORT EXECUTION STEP *//
//*  MUST INCLUDE THE FOLLOWING TWO CONCATENATED DATASETS:    *//
//*       A030.GEO.SUPPORT.PDSE.LOADLIB                       *//
//*       A030.GEO.SUPPORT.LOADLIB                            *//
//*                                                          *//
//*************************************************************//
```

COBOL SAMPLE PROGRAM #1 – Job Stream - COW

```
//GO.STEPLIB DD DSN=A030.GEO.SUPPORT.PDSE.LOADLIB,DISP=SHR
//            DD DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//*
//*****************************************************************//
//*                                                               *//
//*  AS OF GEOSUPPPORT VERSION 10.0,                              *//
//*  DD STATEMENTS FOR GEOSUPPORT DATA FILES (E.G. GRID, PAD, ETC) *//
//*  ARE NO LONGER NEEDED AND ARE IGNORED.  GEOSUPPORT IS TAILORED *//
//*  TO USE STANDARD GEOSUPPORT DATA SET NAMES.                   *//
//*  TO USE NON-STANDARD FILES, SEE YOUR SYSTEMS PROGRAMMER.      *//
//*                                                               *//
//*****************************************************************//
//*
//GO.SYSUDUMP DD SYSOUT=A,OUTLIM=3000
//GO.SYSOUT   DD SYSOUT=A
//GO.RPTFILE  DD SYSOUT=A
//GO.INFILE  DD *
1 22           READE ST
1 500          DUANE ST
1 82-84        BROADWAY
4 165-100      BAISLEY BLVD
4 165-1000     BAISLEY BLVD
/*
//
```

COBOL SAMPLE PROGRAM #1 – Output Report

```
SAMPLE COBOL PROGRAM #1 EXECUTION OUTPUT

*****---------- INPUT ADDRESS ------------***** *****--------------------- SELECTED OUTPUT ITEMS -----------------------*****

B HOUSE NUMBER IN-STREET-NAME                     ZIP CD NYPD-PCT SCHLDST LOW CROSS STREET          HIGH CROSS STREET
- ------------ -------------------------------- ----- -- -------- ------- ------------------------- -------------------------

1 22           READE ST                         10007 01 005      02      ELK STREET                BROADWAY

1 500          DUANE ST                         *** FUNCTION 1 GRC = 42 REASON CODE =
                                                *** ADDRESS NUMBER OUT OF RANGE

1 82-84        BROADWAY                         *** FUNCTION 1 WARNING, GRC = 01 REASON CODE = 1
                                                *** ADDR NUMBER ALTERED: RANGE ASSUMED. USING DIGITS BEFORE DASH ONLY
                                                10005 01 001      02      RECTOR STREET             WALL GREEN

4 165-100      BAISLEY BLVD                     11434 12 113      28      SMITH STREET              166 STREET

4 165-1000     BAISLEY BLVD                     *** FUNCTION 1 GRC = 13 REASON CODE = 2
                                                *** ADDRESS NBR 165-1000  HAS MORE THAN 3 DIGITS AFTER THE DASH.
```

COBOL SAMPLE PROGRAM #2

- Input Job Stream - MSW
- Input Job Stream - COW
- Output Report

COBOL SAMPLE PROGRAM #2- Job Stream -MSW

```
//COBF2SRC JOB   YOUR-JOB-CARD-INFORMATION
//*
//*******************************************************************
//***  COBOL SAMPLE BATCH GEOSUPPORT USER APPLICATION PROGRAM #2  ****
//***                     MSW FORMAT                              ****
//*******************************************************************
//STEP1 EXEC   IGYWCLG,PARM.COBOL=(NOWORD,OPTIMIZE)
//COBOL.SYSLIB DD DSN=A030.GEO.COPYLIB2,DISP=SHR
//             DD DSN=A030.GEO.COPYLIB,DISP=SHR
//COBOL.SYSIN  DD *
      *****************************************************************
      * THIS PROGRAM MAKES FUNCTION 2 AND D CALLS TO GEOSUPPORT USING *
      * TWO BOROS AND TWO STREET NAMES SUPPLIED BY AN INSTREAM FILE.  *
      * FUNCTION 2 RETURNS GEOGRAPHIC INFORMATION FOR AN INTERSECTION.*
      * FUNCTION D TRANSLATES AN INPUT STREET CODE TO A STREET NAME.  *
      * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
      *       NOTE: IF THE CROSS STREET NAMES FLAG WERE USED IN THE   *
      *             ORIGINAL CALL TO FUNCTION 2, ALL THE CROSS STREET *
      *             NAMES WOULD HAVE BEEN RETURNED BY FUNCTION 2.     *
      *****************************************************************
      *
       IDENTIFICATION DIVISION.
         PROGRAM-ID. COBS1JOB.

      ****************************************

       ENVIRONMENT DIVISION.
         INPUT-OUTPUT SECTION.
         FILE-CONTROL.
           SELECT IN-FILE ASSIGN TO INFILE.
           SELECT RPT-FILE ASSIGN TO RPTFILE.

      ****************************************

       DATA DIVISION.
         FILE SECTION.

      **** REPLACE CODE BELOW WITH YOUR OWN INPUT FILE DEFINTION *****
         FD  IN-FILE
             RECORDING MODE IS F
             RECORD CONTAINS 80 CHARACTERS
             LABEL RECORDS ARE OMITTED.

       01  INPUT-TO-GEOSUPPORT.
           05  IN-BOR1             PIC X.
           05  FILLER              PIC X.
           05  IN-STREET1          PIC X(32).
           05  FILLER              PIC X.
           05  IN-BOR2             PIC X.
           05  FILLER              PIC X.
           05  IN-STREET2          PIC X(32).
           05  FILLER              PIC X(11).

         FD  RPT-FILE
             RECORDING MODE IS F
```

```
              RECORD CONTAINS 132 CHARACTERS
              LABEL RECORDS ARE OMITTED.

        01  RPT-LINE                PIC X(132).

        WORKING-STORAGE SECTION.

 77  I                       PIC 9 VALUE 0.

       ***************************************************************
       *** USE OF GEOSUPPORT COPY LIBRARIES (REFERENCED BELOW BY THE ***
       *** COPY STATEMENTS) IS STRONGLY ENCOURAGED.                  ***
       ***************************************************************
        01  WORK1.    COPY  W1COB.
        01  WORK2.    COPY  W2COB.

       **** REPLACE CODE BELOW WITH YOUR OWN REPORT LAYOUT    *********

        01  RPT-DATA-LINE1.
            05  OUT-BOR1            PIC X.
            05  FILLER              PIC X         VALUE ' '.
            05  OUT-ST1             PIC X(32).
            05  FILLER              PIC X         VALUE ' '.
            05  OUT-BOR2            PIC X.
            05  FILLER              PIC X         VALUE ' '.
            05  OUT-ST2             PIC X(32).
            05  OUT-DETAIL.
              10  FILLER            PIC X         VALUE ' '.
              10  OUT-ZIP           PIC X(5).
              10  FILLER            PIC X         VALUE ' '.
              10  OUT-CD            PIC X(2).
              10  FILLER            PIC X         VALUE ' '.
              10  OUT-NYPD-PCT      PIC X(3).
              10  FILLER            PIC X(6)      VALUE ' '.
              10  OUT-SCHLDIST      PIC X(2).
              10  FILLER            PIC X(42)     VALUE ' '.

        01  RPT-DATA-LINE2.
            05  FILLER              PIC X(96)     VALUE ' '.
            05  OUT-ST              PIC X(32).
            05  FILLER              PIC X(4) VALUE ' '.

        01  RPT-ERR-LINE.
            05  FILLER              PIC X(15) VALUE '***** FUNCTION '.
            05  ERR-FUNCTION        PIC X.
            05  FILLER              PIC X(7)  VALUE ' GRC = '.
            05  ERR-GRC             PIC X(2).
            05  FILLER              PIC X(15) VALUE ' REASON CODE = '.
            05  ERR-REASON          PIC X.
            05  FILLER              PIC X(2)  VALUE '. '.
            05  OUT-ERR-MSG         PIC X(80).
            05  FILLER              PIC X(9) VALUE ' '.

        01  RPT-WRN-LINE.
            05  FILLER              PIC X(15) VALUE '***** FUNCTION '.
```

```
        05  WRN-FUNCTION        PIC X.
        05  FILLER              PIC X(15) VALUE ' WARNING GRC = '.
        05  WRN-GRC             PIC X(2).
        05  FILLER              PIC X(15) VALUE ' REASON CODE = '.
        05  WRN-REASON          PIC X.
        05  FILLER              PIC X(2)  VALUE '. '.
        05  OUT-WRN-MSG         PIC X(80).
        05  FILLER              PIC X    VALUE ' '.

    01  RPT-HEADER-1.
        05  FILLER              PIC X(40)  VALUE
        'SAMPLE COBOL PROGRAM #2 EXECUTION OUTPUT'.
        05  FILLER              PIC X(72) VALUE ' '.

  01  RPT-HEADER-2.
        05  FILLER              PIC X(58)  VALUE
        '*****----------------- INPUT INTERSECTION ----------------'.
        05  FILLER              PIC X(58)  VALUE
        '------***** *****------------ SELECTED OUTPUT ITEMS ------'.
        05  FILLER              PIC X(16)  VALUE
        '-------*****'.

    01  RPT-HEADER-3.
        05  FILLER              PIC X(58)  VALUE
        'B IN-STREET-NAME-1            B IN-STREET-NAME-2     '.
        05  FILLER              PIC X(58)  VALUE
        '              ZIP CD NYPD-PCT SCHLDST INTERSECTING STREET '.
        05  FILLER              PIC X(16)  VALUE
        'NAMES           '.

    01  RPT-HEADER-4.
        05  FILLER              PIC X(58)  VALUE
        '_ ________________________________ _ _____________________'.
        05  FILLER              PIC X(58)  VALUE
        '___________ _____ __ ________ _______ ____________________'.
        05  FILLER              PIC X(16)  VALUE
        '____________    '.

    01  FLAGS.
        05 DATA-FLAG    PIC XXX   VALUE 'YES'.
          88 MORE-DATA            VALUE 'YES'.
          88 NO-DATA              VALUE 'NO '.

   ****************************************

    PROCEDURE DIVISION.

        OPEN INPUT IN-FILE, OUTPUT RPT-FILE.
        WRITE RPT-LINE FROM RPT-HEADER-1 AFTER ADVANCING 1 LINES.
        WRITE RPT-LINE FROM RPT-HEADER-2 AFTER ADVANCING 2 LINES.
        WRITE RPT-LINE FROM RPT-HEADER-3 AFTER ADVANCING 2 LINES.
        WRITE RPT-LINE FROM RPT-HEADER-4 AFTER ADVANCING 0 LINES.
        READ IN-FILE AT END MOVE 'NO ' TO DATA-FLAG.
        PERFORM PROCESS THRU PROCESS-EX
            UNTIL NO-DATA.
```

```
     CLOSE IN-FILE, RPT-FILE.
     MOVE 0 TO RETURN-CODE
     STOP RUN.

 PROCESS.




*****************************************************************
* TO MAKE A FUNCTION 2 CALL:                                    *
*   (1) INITIALIZE WORKAREA 1 TO SPACES                         *
*   (2) SET WA1'S FUNCTION-CODE TO 2                            *
*   (3) MOVE THE 1ST INPUT BORO TO WA1'S INPUT BORO CODE FIELD  *
*   (4) MOVE THE 1ST INPUT STREET TO WA1'S INPUT STREET NAME    *
*       FIELD                                                   *
*   (5) MOVE THE 2ND INPUT BORO TO WA1'S INPUT BORO CODE 2 FIELD *
*   (6) MOVE THE 2ND INPUT STREET TO WA1'S INPUT STREET NAME 2  *
*       FIELD                                                   *
*   (7) CALL GBI WITH 2 WORKAREAS                               *
*   (8) CHECK RETURN CODES FOR ERRORS OR WARNINGS               *
*****************************************************************
     MOVE SPACES TO WORK1.
     MOVE '2 ' TO GEO-WA1-IN-FUNCTION-CODE.
   MOVE IN-BOR1 TO GEO-WA1-IN-BORO   OUT-BOR1.
     MOVE IN-BOR2 TO GEO-WA1-IN-BORO-2 OUT-BOR2.
     MOVE IN-STREET1 TO GEO-WA1-IN-STREET-1 OUT-ST1.
  MOVE IN-STREET2 TO GEO-WA1-IN-STREET-2 OUT-ST2.
     CALL 'GBI' USING WORK1 WORK2.

     IF GEO-WA1-OUT-RETURN-CODE NOT = 00
        MOVE '2' TO ERR-FUNCTION WRN-FUNCTION
        PERFORM PRINT-ERROR-LINE THRU P-E-EX.

     IF (GEO-WA1-OUT-RETURN-CODE = 00) OR
       (GEO-WA1-OUT-RETURN-CODE = 01)
        PERFORM SUCCESSFUL-FUNC2 THRU S-F2-EX
     ELSE
       MOVE SPACES TO OUT-DETAIL
       WRITE RPT-LINE FROM RPT-DATA-LINE1 AFTER ADVANCING 1 LINES.

     READ IN-FILE AT END MOVE 'NO ' TO DATA-FLAG.

 PROCESS-EX.
     EXIT.

 SUCCESSFUL-FUNC2.

**********************************************************
***** REPLACE CODE BELOW WITH YOUR OWN CODE FOR ***********
***** PROCESSING SUCCESSFUL GEOSUPPORT CALLS         *****
**********************************************************
     MOVE GEO-WA2-FN2-ZIP            TO OUT-ZIP.
     MOVE GEO-WA2-FN2-COMDIST-NUMBER TO OUT-CD.
     MOVE GEO-WA2-FN2-POL-PRECINCT   TO OUT-NYPD-PCT.
```

```
        MOVE GEO-WA2-FN2-SCHOOLDIST     TO OUT-SCHLDIST.
    * PROCESS CROSS STREET** CHECK FOR AT LEAST 1.
        WRITE RPT-LINE FROM RPT-DATA-LINE1 AFTER ADVANCING 2 LINES.

        PERFORM CALL-D THRU CALL-D-EX
           VARYING I FROM 1 BY 1 UNTIL
               (I > GEO-WA2-FN2-NUM-OF-INTERSECTS).

     S-F2-EX.
         EXIT.

     CALL-D.

    *******************************************************
    * TO GET STREET NAMES FOR INTERSECTING STREET CODES   *
    * MAKE A FUNCTION D CALL:                             *
    *   (1) INITIALIZE WORKAREA 1 TO SPACES               *
    *   (2) SET THE WA1'S FUNCTION CODE FIELD TO D        *
    *   (3) USE THE COMPACT STREET NAMES OPTION TO OBTAIN *
    *       STREET NAMES FORMATTED FOR DISPLAY            *
    *   (4) MOVE THE PACKED BORO AND STREET CODE TO       *
    *       WA1'S INPUT STREET CODE 1 FIELD               *
    *   (5) CALL GBI WITH 1 WORKAREA                      *
    *   (6) CHECK RETURN CODES FOR ERRORS OR WARNINGS     *
    *******************************************************
        MOVE SPACES TO WORK1.
        MOVE 'D ' TO GEO-WA1-IN-FUNCTION-CODE.
        MOVE 'C' TO GEO-WA1-IN-COMPACT-NAME-FLAG.
        MOVE '25' TO GEO-WA1-IN-SNL.
        MOVE GEO-WA2-FN2-INTERSECT-PBSC (I)
            TO GEO-WA1-IN-STREETCODE-1

   CALL 'GBI' USING WORK1.

        IF GEO-WA1-OUT-RETURN-CODE NOT = 00
           MOVE 'D' TO ERR-FUNCTION WRN-FUNCTION
           PERFORM PRINT-ERROR-LINE THRU P-E-EX.

  IF (GEO-WA1-OUT-RETURN-CODE = 00) OR
           (GEO-WA1-OUT-RETURN-CODE = 01)
           PERFORM SUCCESSFUL-FUNCD THRU S-FD-EX.

     CALL-D-EX.
         EXIT.

     SUCCESSFUL-FUNCD.

          MOVE GEO-WA1-OUT-STREET-1 TO OUT-ST
          IF I = 1
          WRITE RPT-LINE FROM RPT-DATA-LINE2 AFTER ADVANCING 0 LINES
          ELSE
          WRITE RPT-LINE FROM RPT-DATA-LINE2 AFTER ADVANCING 1 LINES.

     S-FD-EX.
         EXIT.
```

COBOL SAMPLE PROGRAM #2- Job Stream -MSW

```
       PRINT-ERROR-LINE.
           MOVE GEO-WA1-OUT-RETURN-CODE TO ERR-GRC WRN-GRC.
           MOVE GEO-WA1-OUT-REASON-CODE TO ERR-REASON WRN-REASON.
           MOVE GEO-WA1-OUT-ERROR-MESSAGE TO OUT-ERR-MSG OUT-WRN-MSG.

           IF GEO-WA1-OUT-RETURN-CODE = 01
      **** INSERT YOUR OWN WARNING ROUTINE HERE  ****
             WRITE RPT-LINE FROM RPT-WRN-LINE AFTER ADVANCING 2 LINES
           ELSE
      **** INSERT YOUR OWN WARNING ROUTINE HERE  ****
             WRITE RPT-LINE FROM RPT-ERR-LINE AFTER ADVANCING 2 LINES.

       P-E-EX.
           EXIT.
/*
//LKED.SYSIN DD *
  INCLUDE INCLIB(GBI)
//LKED.INCLIB   DD DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//*****************************************************************//
//*                                                               *//
//*  AS OF GEOSUPPPORT VERSION 10.0,                              *//
//*  THE STEPLIB (OR JOBLIB) OF THE GEOSUPPORT EXECUTION STEP     *//
//*  MUST INCLUDE THE FOLLOWING TWO CONCATENATED DATASETS:        *//
//*       A030.GEO.SUPPORT.PDSE.LOADLIB                           *//
//*       A030.GEO.SUPPORT.LOADLIB                                *//
//*                                                               *//
//*****************************************************************//
//GO.STEPLIB DD DSN=A030.GEO.SUPPORT.PDSE.LOADLIB,DISP=SHR
//           DD DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//*
//*****************************************************************//
//*                                                               *//
//*  AS OF GEOSUPPPORT VERSION 10.0,                              *//
//*  DD STATEMENTS FOR GEOSUPPORT DATA FILES (E.G. GRID, PAD, ETC) *//
//*  ARE NO LONGER NEEDED AND ARE IGNORED.  GEOSUPPORT IS TAILORED *//
//*  TO USE STANDARD GEOSUPPORT DATA SET NAMES.                   *//
//*  TO USE NON-STANDARD FILES, SEE YOUR SYSTEMS PROGRAMMER.      *//
/*                                                               *//
//*****************************************************************//
//*
//GO.SYSUDUMP DD SYSOUT=A,OUTLIM=3000
//GO.SYSOUT   DD SYSOUT=A
//GO.RPTFILE  DD SYSOUT=A
//GO.INFILE  DD *
1 CHAMBERS ST                     1 HUDSON ST
1 SIXTH AVE                       1 W. 8 ST
1 DUANE ST                        1 READE ST
/*
//
```

COBOL SAMPLE PROGRAM #2- Job Stream- COW

```
//COBC2SRC JOB   YOUR-JOB-CARD-INFORMATION
//*
//*******************************************************************
//***  COBOL SAMPLE BATCH GEOSUPPORT USER APPLICATION PROGRAM #2  ****
//***                  COW FORMAT                                 ****
//*******************************************************************
//STEP1 EXEC   IGYWCLG,PARM.COBOL=(NOWORD,OPTIMIZE)
//COBOL.SYSLIB DD DSN=A030.GEO.COPYLIB2,DISP=SHR
//             DD DSN=A030.GEO.COPYLIB,DISP=SHR
//COBOL.SYSIN  DD *
      ****************************************************************
      * THIS PROGRAM MAKES FUNCTION 2 AND D CALLS TO GEOSUPPORT USING *
      * TWO BOROS AND TWO STREET NAMES SUPPLIED BY AN INSTREAM FILE.  *
      * FUNCTION 2 RETURNS GEOGRAPHIC INFORMATION FOR AN INTERSECTION.*
      * FUNCTION D TRANSLATES AN INPUT STREET CODE TO A STREET NAME.  *
      * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
      *       NOTE: IF THE CROSS STREET NAMES FLAG WERE USED IN THE   *
      *             ORIGINAL CALL TO FUNCTION 2, ALL THE CROSS STREET *
      *             NAMES WOULD HAVE BEEN RETURNED BY FUNCTION 2.     *
      ****************************************************************
      *
       IDENTIFICATION DIVISION.
         PROGRAM-ID. COBS1JOB.

      ****************************************

       ENVIRONMENT DIVISION.
         INPUT-OUTPUT SECTION.
         FILE-CONTROL.
           SELECT IN-FILE ASSIGN TO INFILE.
           SELECT RPT-FILE ASSIGN TO RPTFILE.

      ****************************************

       DATA DIVISION.
         FILE SECTION.

      **** REPLACE CODE BELOW WITH YOUR OWN INPUT FILE DEFINTION *****
         FD  IN-FILE
             RECORDING MODE IS F
             RECORD CONTAINS 80 CHARACTERS
             LABEL RECORDS ARE OMITTED.

       01  INPUT-TO-GEOSUPPORT.
           05  IN-BOR1             PIC X.
           05  FILLER              PIC X.
           05  IN-STREET1          PIC X(32).
           05  FILLER              PIC X.
           05  IN-BOR2             PIC X.
           05  FILLER              PIC X.
           05  IN-STREET2          PIC X(32).
           05  FILLER              PIC X(11).

         FD  RPT-FILE
```

```
       RECORDING MODE IS F
       RECORD CONTAINS 132 CHARACTERS
       LABEL RECORDS ARE OMITTED.

 01  RPT-LINE                PIC X(132).

 WORKING-STORAGE SECTION.

 77  I                       PIC 9 VALUE 0.

*****************************************************************
*** USE OF GEOSUPPORT COPY LIBRARIES (REFERENCED BELOW BY THE ***
*** COPY STATEMENTS) IS STRONGLY ENCOURAGED.                  ***
*****************************************************************
 01  WORK1.    COPY  P1COB.
 01  WORK2.    COPY  P2COB.

**** REPLACE CODE BELOW WITH YOUR OWN REPORT LAYOUT    *********

 01  RPT-DATA-LINE1.
     05  OUT-BOR1            PIC X.
     05  FILLER              PIC X         VALUE ' '.
     05  OUT-ST1             PIC X(32).
     05  FILLER              PIC X         VALUE ' '.
     05  OUT-BOR2            PIC X.
     05  FILLER              PIC X         VALUE ' '.
     05  OUT-ST2             PIC X(32).
     05  OUT-DETAIL.
       10  FILLER            PIC X         VALUE ' '.
       10  OUT-ZIP           PIC X(5).
       10  FILLER            PIC X         VALUE ' '.
       10  OUT-CD            PIC X(2).
       10  FILLER            PIC X         VALUE ' '.
       10  OUT-NYPD-PCT      PIC X(3).
       10  FILLER            PIC X(6)      VALUE ' '.
       10  OUT-SCHLDIST      PIC X(2).
       10  FILLER            PIC X(42)     VALUE ' '.

 01  RPT-DATA-LINE2.
     05  FILLER              PIC X(96)     VALUE ' '.
     05  OUT-ST              PIC X(32).
     05  FILLER              PIC X(4) VALUE ' '.

 01  RPT-ERR-LINE.
     05  FILLER              PIC X(15) VALUE '***** FUNCTION '.
     05  ERR-FUNCTION        PIC X.
     05  FILLER              PIC X(7)  VALUE ' GRC = '.
     05  ERR-GRC             PIC X(2).
     05  FILLER              PIC X(15) VALUE ' REASON CODE = '.
     05  ERR-REASON          PIC X.
     05  FILLER              PIC X(2)  VALUE '. '.
     05  OUT-ERR-MSG         PIC X(80).
     05  FILLER              PIC X(9) VALUE ' '.

 01  RPT-WRN-LINE.
```

```
           05  FILLER              PIC X(15) VALUE '***** FUNCTION '.
           05  WRN-FUNCTION        PIC X.
           05  FILLER              PIC X(15) VALUE ' WARNING GRC = '.
           05  WRN-GRC             PIC X(2).
           05  FILLER              PIC X(15) VALUE ' REASON CODE = '.
           05  WRN-REASON          PIC X.
           05  FILLER              PIC X(2)  VALUE '. '.
           05  OUT-WRN-MSG         PIC X(80).
           05  FILLER              PIC X    VALUE ' '.

       01  RPT-HEADER-1.
           05  FILLER              PIC X(40)  VALUE
           'SAMPLE COBOL PROGRAM #2 EXECUTION OUTPUT'.
           05  FILLER              PIC X(72) VALUE ' '.

       01  RPT-HEADER-2.
           05  FILLER              PIC X(58)  VALUE
           '*****----------------- INPUT INTERSECTION ----------------'.
           05  FILLER              PIC X(58)  VALUE
           '------***** *****------------ SELECTED OUTPUT ITEMS ------'.
           05  FILLER              PIC X(16)  VALUE
           '-------*****'.

       01  RPT-HEADER-3.
           05  FILLER              PIC X(58)  VALUE
           'B IN-STREET-NAME-1                B IN-STREET-NAME-2     '.
           05  FILLER              PIC X(58)  VALUE
           '              ZIP CD NYPD-PCT SCHLDST INTERSECTING STREET '.
           05  FILLER              PIC X(16)  VALUE
           'NAMES           '.

       01  RPT-HEADER-4.
           05  FILLER              PIC X(58)  VALUE
           '_ ________________________________ _ _____________________'.
           05  FILLER              PIC X(58)  VALUE
           '____________ _____ __ ________ _______ ___________________'.
           05  FILLER              PIC X(16)  VALUE
           '____________    '.

       01  FLAGS.
           05 DATA-FLAG    PIC XXX   VALUE 'YES'.
             88 MORE-DATA            VALUE 'YES'.
             88 NO-DATA              VALUE 'NO '.

      ****************************************

       PROCEDURE DIVISION.

           OPEN INPUT IN-FILE, OUTPUT RPT-FILE.
           WRITE RPT-LINE FROM RPT-HEADER-1 AFTER ADVANCING 1 LINES.
           WRITE RPT-LINE FROM RPT-HEADER-2 AFTER ADVANCING 2 LINES.
           WRITE RPT-LINE FROM RPT-HEADER-3 AFTER ADVANCING 2 LINES.
           WRITE RPT-LINE FROM RPT-HEADER-4 AFTER ADVANCING 0 LINES.
           READ IN-FILE AT END MOVE 'NO ' TO DATA-FLAG.
           PERFORM PROCESS THRU PROCESS-EX
```

```
           UNTIL NO-DATA.
       CLOSE IN-FILE, RPT-FILE.
       MOVE 0 TO RETURN-CODE
       STOP RUN.

   PROCESS.




  ******************************************************************
  * TO MAKE A FUNCTION 2 CALL:                                     *
  *   (1) INITIALIZE WORKAREA 1 TO SPACES                          *
  *   (2) SET WA1'S FUNCTION-CODE TO 2                             *
  *   (3) SET THE PLATFORM INDICATOR SWITCH (NON-IBM-MAINFRAME)    *
  *       TO USE CHARACTER-ONLY WORK AREAS (COWS)                  *
  *   (4) MOVE THE 1ST INPUT BORO TO WA1'S INPUT BORO CODE FIELD   *
  *   (5) MOVE THE 1ST INPUT STREET TO WA1'S INPUT STREET NAME     *
  *       FIELD                                                    *
  *   (6) MOVE THE 2ND INPUT BORO TO WA1'S INPUT BORO CODE 2 FIELD *
  *   (7) MOVE THE 2ND INPUT STREET TO WA1'S INPUT STREET NAME 2   *
  *       FIELD                                                    *
  *   (8) CALL GBI WITH 2 WORKAREAS                                *
  *   (9) CHECK RETURN CODES FOR ERRORS OR WARNINGS                *
  ******************************************************************
       MOVE SPACES TO WORK1.
       MOVE '2 ' TO PIWA1-IN-FUNC-CODE.
       MOVE 'C' TO GEO-WA1-IN-NON-IBM-MAIN-FRAME.
       MOVE IN-BOR1 TO GEO-WA1-IN-BORO   OUT-BOR1.
       MOVE IN-BOR2 TO GEO-WA1-IN-BORO-2 OUT-BOR2.
       MOVE IN-STREET1 TO GEO-WA1-IN-STREET-1 OUT-ST1.
       MOVE IN-STREET2 TO GEO-WA1-IN-STREET-2 OUT-ST2.
       CALL 'GBI' USING WORK1 WORK2.

       IF GEO-WA1-OUT-RETURN-CODE NOT = 00
          MOVE '2' TO ERR-FUNCTION WRN-FUNCTION
          PERFORM PRINT-ERROR-LINE THRU P-E-EX.

       IF (GEO-WA1-OUT-RETURN-CODE = 00) OR
         (GEO-WA1-OUT-RETURN-CODE = 01)
          PERFORM SUCCESSFUL-FUNC2 THRU S-F2-EX
       ELSE
         MOVE SPACES TO OUT-DETAIL
         WRITE RPT-LINE FROM RPT-DATA-LINE1 AFTER ADVANCING 1 LINES.

       READ IN-FILE AT END MOVE 'NO ' TO DATA-FLAG.

   PROCESS-EX.
       EXIT.

   SUCCESSFUL-FUNC2.

  ***********************************************************
  ***** REPLACE CODE BELOW WITH YOUR OWN CODE FOR ***********
  ***** PROCESSING SUCCESSFUL GEOSUPPORT CALLS          *****
```

```
 ***********************************************************
      MOVE GEO-WA2-FN2-ZIP            TO OUT-ZIP.
      MOVE GEO-WA2-FN2-COMDIST-NUMBER TO OUT-CD.
      MOVE GEO-WA2-FN2-POL-PRECINCT   TO OUT-NYPD-PCT.
      MOVE GEO-WA2-FN2-SCHOOLDIST     TO OUT-SCHLDIST.
 * PROCESS CROSS STREET** CHECK FOR AT LEAST 1.
      WRITE RPT-LINE FROM RPT-DATA-LINE1 AFTER ADVANCING 2 LINES.

      PERFORM CALL-D THRU CALL-D-EX
         VARYING I FROM 1 BY 1 UNTIL
             (I > GEO-WA2-FN2-NUM-OF-INTERSECTS).

  S-F2-EX.
      EXIT.

  CALL-D.

 *****************************************************************
 * TO GET STREET NAMES FOR INTERSECTING STREET CODES             *
 * MAKE A FUNCTION D CALL:                                       *
 *   (1) INITIALIZE WORKAREA 1 TO SPACES                         *
 *   (2) SET THE WA1'S FUNCTION CODE FIELD TO D                  *
 *   (3) SET THE PLATFORM INDICATOR SWITCH (NON-IBM-MAINFRAME)   *
 *       TO USE CHARACTER-ONLY WORK AREAS (COWS)                 *
 *   (4) USE THE COMPACT STREET NAMES OPTION TO OBTAIN           *
 *       STREET NAMES FORMATTED FOR DISPLAY                      *
 *   (5) MOVE THE BORO AND STREET CODE                           *
 *       WA1'S INPUT STREET CODE 1 FIELD                         *
 *   (6) CALL GBI WITH 1 WORKAREA                                *
 *   (7) CHECK RETURN CODES FOR ERRORS OR WARNINGS               *
 *****************************************************************
      MOVE SPACES TO WORK1.
MOVE 'D ' TO PIWA1-IN-FUNC-CODE.
      MOVE 'C' TO GEO-WA1-IN-NON-IBM-MAIN-FRAME.
      MOVE 'C' TO GEO-WA1-IN-COMPACT-NAME-FLAG.
      MOVE '25' TO GEO-WA1-IN-SNL.
      MOVE PIWA2-FN2-INTERSECT-B5SC (I)
          TO GEO-WA1-IN-10SC-1
      CALL 'GBI' USING WORK1.

      IF GEO-WA1-OUT-RETURN-CODE NOT = 00
         MOVE 'D' TO ERR-FUNCTION WRN-FUNCTION
         PERFORM PRINT-ERROR-LINE THRU P-E-EX.

      IF (GEO-WA1-OUT-RETURN-CODE = 00) OR
         (GEO-WA1-OUT-RETURN-CODE = 01)
         PERFORM SUCCESSFUL-FUNCD THRU S-FD-EX.

  CALL-D-EX.
      EXIT.

  SUCCESSFUL-FUNCD.

        MOVE GEO-WA1-OUT-STREET-1 TO OUT-ST
        IF I = 1
```

```
              WRITE RPT-LINE FROM RPT-DATA-LINE2 AFTER ADVANCING 0 LINES
              ELSE
              WRITE RPT-LINE FROM RPT-DATA-LINE2 AFTER ADVANCING 1 LINES.

        S-FD-EX.
            EXIT.


        PRINT-ERROR-LINE.
            MOVE GEO-WA1-OUT-RETURN-CODE TO ERR-GRC WRN-GRC.
            MOVE GEO-WA1-OUT-REASON-CODE TO ERR-REASON WRN-REASON.
            MOVE GEO-WA1-OUT-ERROR-MESSAGE TO OUT-ERR-MSG OUT-WRN-MSG.

            IF GEO-WA1-OUT-RETURN-CODE = 01
       **** INSERT YOUR OWN WARNING ROUTINE HERE  ****
              WRITE RPT-LINE FROM RPT-WRN-LINE AFTER ADVANCING 2 LINES
            ELSE
       **** INSERT YOUR OWN WARNING ROUTINE HERE  ****
              WRITE RPT-LINE FROM RPT-ERR-LINE AFTER ADVANCING 2 LINES.

        P-E-EX.
            EXIT.
/*
//LKED.SYSIN DD *
  INCLUDE INCLIB(GBI)
//LKED.INCLIB   DD DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//*************************************************************//
//*                                                           *//
//*  AS OF GEOSUPPPORT VERSION 10.0,                          *//
//*  THE STEPLIB (OR JOBLIB) OF THE GEOSUPPORT EXECUTION STEP *//
//*  MUST INCLUDE THE FOLLOWING TWO CONCATENATED DATASETS:    *//
//*       A030.GEO.SUPPORT.PDSE.LOADLIB                       *//
//*       A030.GEO.SUPPORT.LOADLIB                            *//
//*                                                           *//
//*************************************************************//
//GO.STEPLIB DD DSN=A030.GEO.SUPPORT.PDSE.LOADLIB,DISP=SHR
//           DD DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//*
//*************************************************************//
//*                                                           *//
//*  AS OF GEOSUPPPORT VERSION 10.0,                          *//
//*  DD STATEMENTS FOR GEOSUPPORT DATA FILES (E.G. GRID, PAD, ETC) *//
//*  ARE NO LONGER NEEDED AND ARE IGNORED.  GEOSUPPORT IS TAILORED *//
//*  TO USE STANDARD GEOSUPPORT DATA SET NAMES.               *//
//*  TO USE NON-STANDARD FILES, SEE YOUR SYSTEMS PROGRAMMER.  *//
//*                                                           *//
//*************************************************************//
//*
//GO.SYSUDUMP DD SYSOUT=A,OUTLIM=3000
//GO.SYSOUT   DD SYSOUT=A
//GO.RPTFILE  DD SYSOUT=A
//GO.INFILE  DD *
1 CHAMBERS ST                     1 HUDSON ST
1 SIXTH AVE                       1 W. 8 ST
```

```
1 DUANE ST                                 1 READE ST
/*
//
```

SAMPLE COBOL PROGRAM #2 EXECUTION OUTPUT

```
*****----------------- INPUT INTERSECTION ----------------------***** *****------------ SELECTED OUTPUT ITEMS ---*****

B IN-STREET-NAME-1                  B IN-STREET-NAME-2                    ZIP CD NYPD-PCT SCHLDST INTERSECTING STREET NM
- --------------------------------- - -------------------------------- ----- -- -------- ------- ----------------------

1 CHAMBERS ST                       1 HUDSON ST                        10007 01 001      02      CHAMBERS STREET
                                                                                                 HUDSON STREET
                                                                                                 WEST BROADWAY

1 SIXTH AVE                         1 W. 8 ST                          10014 02 006      02      6 AVENUE
                                                                                                 GREENWICH AVENUE
                                                                                                 WEST 8 STREET

***** FUNCTION 2 GRC = 62 REASON CODE =  . READE STREET & DUANE STREET DO NOT INTERSECT
1 DUANE ST                          1 READE ST
```

ASSEMBLER SAMPLE PROGRAM #1

- Input Job Stream - MSW
- Input Job Stream - COW
- Output Report

ASSEMBLER SAMPLE PROGRAM #1 –Job Stream-MSW

```
//ASMF1SRC JOB   YOUR-JOB-CARD-INFORMATION
//*
//*********************************************************************
//**  ASSEMBLER SAMPLE BATCH GEOSUPPORT USER APPLICATION PROGRAM #1 **
//**                         MSW FORMAT                              **
//*********************************************************************
//STEP1  EXEC  ASMACLG,
//          PARM.ASM='OBJECT,NODECK',
//          PARM.LKED='XREF,LET,LIST,NCAL'
//ASM.SYSLIB DD DSN=A030.GEO.COPYLIB2,DISP=SHR
//            DD DSN=A030.GEO.COPYLIB,DISP=SHR
//            DD DSN=SYS1.MACLIB,DISP=SHR
//ASM.SYSIN  DD *
ASMF1SRC TITLE 'SAMPLE GEOSUPPORT ASSEMBLER PROGRAM 1 - MSW FORMAT'
ASMF1SRC CSECT
*****************************************************************
* THIS PROGRAM MAKES FUNCTION 1 AND D CALLS TO GEOSUPPORT USING *
* BORO, HOUSENUMBER, & STREET NAME SUPPLIED BY AN INSTREAM FILE.*
* FUNCTION 1 RETURNS GEOGRAPHIC INFORMATION FOR AN ADDRESS.     *
* FUNCTION D TRANSLATES AN INPUT STREET CODE TO A STREET NAME.  *
* - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - *
* NOTE: IF THE CROSS STREET NAMES FLAG WERE USED IN THE         *
*       ORIGINAL CALL TO FUNCTION 1, ALL THE CROSS STREET NAMES *
*       WOULD HAVE BEEN RETURNED BY FUNCTION 1.                 *
*****************************************************************
*
***********************************************************************
*                                                                     *
*  This program will do the following:                                *
*                                                                     *
*     * Read an instream record containing a house number,            *
*       street name, and borough code                                 *
*                                                                     *
*     * Build Work Area 1 for a Function 1 call                       *
*                                                                     *
*     * Call Function 1                                               *
*                                                                     *
*     * Get ZIP code, community district, police precinct, school     *
*       district, and lists of street codes of streets intersecting   *
*       at the low and high ends of the input street address's block. *
*       These will be displayed along with the input address which    *
*       consists of borough code, house number, and street name.      *
*                                                                     *
*     * Call Function D to get the street names of the first          *
*       intersecting street on both low and high ends.                *
*                                                                     *
*     * Print the information                                         *
*                                                                     *
* NOTE that after each Geosupport call, the Return Code is checked.   *
*      If it is greater than 01, an error message is printed, and     *
*      the next input record, if any, is read.                        *
*      If it is 01, a warning message is printed, the input record is *
*      processed, and the next record is read.                        *
*      If it is zero, the input record is processed, and the next     *
```

```
*      record is read.                                                *
*                                                                     *
***********************************************************************
         SPACE
  STM   R14,R12,12(R13)   Save caller's registers
         LR    R3,R15
         LA    R12,4095(,R3)     (second base register
         LA    R12,1(,R12)        to accomodate Work Areas 1 and 2)
   USING ASMF1SRC,R3,R12
* Chain save areas
         LA    R4,MYSAVE
         ST    R13,4(,R4)    Save caller's savearea address
         ST    R4,8(,R13)    Save pgm's savearea adr in caller savearea
         LR    R13,R4        Ensure that R13 points to pgm's savearea
         SPACE 2
         XR    R15,R15                  (set OS return code to zero)
* Open input and output files
         OPEN  (INFILE,,OUTFILE,(OUTPUT))
         TM    INFILE+48,X'10'   Did input file open successfully?
         BNO   INOPNERR              (no..)
         TM    OUTFILE+48,X'10'  Did output file open successfully?
         BNO   OUTOPNER              (no..)
* Print page and report header lines
         SPACE
         PUT   OUTFILE,HDR1
         PUT   OUTFILE,HDR2
         PUT   OUTFILE,HDR3
         PUT   OUTFILE,HDR4
         B     NEXTREC
         SPACE 2
         TITLE 'READ IN-STREAM INPUT AND PREPARE FUNCTION 1 CALL'
* Read (next) input record
NEXTREC  DS    0H
         GET   INFILE,INREC
* Move input data to output record for display
         MVC   DBORO,INBORO                      borough code
         MVC   DHSE(L'W1IHSE#),INHOUSE           house number
         MVC   DSTRT,INSTREET                    street name
         SPACE
*****************************************************************
* TO MAKE A FUNCTION 1 CALL:                                    *
*   (1) INITIALIZE WORKAREA 1 TO SPACES                         *
*   (2) SET WA1'S FUNCTION CODE FIELD TO 1                      *
*   (3) MOVE THE INPUT BORO TO WA1'S INPUT BORO CODE FIELD      *
*   (4) MOVE THE INPUT HOUSE NUMBER TO WA1'S INPUT HOUSE NUMBER *
*       FIELD                                                   *
*   (5) MOVE THE INPUT STREET TO WA1'S INPUT STREET NAME FIELD  *
*   (6) CALL GBI WITH 2 WORKAREAS                               *
*   (7) CHECK RETURN CODES FOR ERRORS OR WARNINGS               *
*****************************************************************
 * Clear WA1 to blanks
         LA    R8,W1BAL    "To" address for MVCL
         LA    R9,W1LENGTH     "To" length
         XR    R11,R11       for blanking out std WA1,
         ICM   R11,B'1000',=C' '  rather than moving data
```

```
* ...since if the "from" length reg. has lo-order zeroes, MVCL will
* pad the target area with the pad character of the "from" register
* and do nothing else (the "from" address register is not used).
         MVCL  R8,R10
         SPACE
* Prime Work Area 1 for Function 1 call

         MVC   W1IFUNC,=CL2'1 '              Get function code
         MVC   W1IBORO1,INBORO                   borough code
         MVC   W1IHSE#(L'W1IHSE#),INHOUSE        house number
         MVC   W1ISTRT1,INSTREET                 street name
         MVC   W1ISNL(L'W1ISNL),=C'25'    Normalized street name length

** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*                                                                     *
*        As of Geosupport Version 10.1,                               *
*        to receive roadbed-specific information,                     *
*        set the Roadbed Request Switch to 'R', as follows:           *
*        MVC   W1IRBRQS,C'R'                                          *
*                                                                     *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*
* Call Function 1 (2-Work-Area call)
         CALL  GBI,(W1BAL,W2BAL),VL
* Check Return code
         CLC   W1ORC(2),=C'00'         Good return?
         BE    PROCESS                     Yes, process returned data
* Handle errors and warnings
ERREXIT  DS    0H
         CLC   W1ORC(2),=C'01'         Warning condition?
         BE    PUTWARN                    Yes, process warning
*                                              and then process input;
*                                         otherwise, process error
         MVC   ERINPUT,DSPLYIN    Boro code, hse no., street name
         MVC   ERFUNC,W1IFUNC              function code
         MVC   ERRET(L'W1ORC),W1ORC        return code
         MVC   ERREAS(L'W1OREASN),W1OREASN reason code
         PUT   OUTFILE,ERR1            Print error messages 1
         B     PUTMSG                                   and 2
PUTWARN  DS    0H
         MVC   WRINPUT,DSPLYIN    Boro code, hse no., street name
         MVC   WRFUNC,W1IFUNC              function code
         MVC   WRRET(L'W1ORC),W1ORC        return code
         MVC   WRREAS(L'W1OREASN),W1OREASN reason code
         PUT   OUTFILE,WRN1            Print warning messages 1
PUTMSG   DS    0H                                         and 2
         MVC   ERRWRN(L'W1OERROR),W1OERROR
         PUT   OUTFILE,ERRWRN2         Print error/warning message 2
         CLC   W1ORC(2),=C'01'         Warning condition?
         BNE   NEXTREC                  No, get next record, if any
         MVI   OINPUT,C' '              Yes,
         MVC   OINPUT+1(L'OINPUT-1),OINPUT  ensure input NOT displayd
         MVI   OUTVALID,C' '     ensure single-spacing after warning
         B     GETZIP            and continue normal processing
         SPACE
```

ASSEMBLER SAMPLE PROGRAM #1 –Job Stream-MSW

```
* Handle successful Geosupport calls (Return Code <= 01)
PROCESS  DS    0H
         MVC   OINPUT,DSPLYIN    Boro code, hse no., street name
         MVI   OUTVALID,C'0'     Ensure double-spacing
GETZIP   DS    0H
         MVC   OZIP,W2F1ZIP      ZIP code
         MVC   OCOMM,W2F1CDN     community district number
         MVC   OPCT,W2F1POP      police precinct
         MVC   OSCHL,W2F1SCH     school district
ASSEMBLER SAMPLE PROGRAM #1- Job stream- MSW (continue


***** At this point, clear WA1 again, call Function D, and move ******
***** its reported Low and High Instersecting Street Names to output *
         TITLE 'GET LOW, HIGH INTERSECTING STREETS, USING FUNCTION D'
         SPACE 2
*************************************************************
* THIS PROGRAM ASSUMES THERE EXISTS AT LEAST ONE HIGH AND   *
* ONE LOW CROSS STREET.  TO GET THE STREET NAMES OF THE     *
* FIRST-LISTED HIGH AND FIRST-LISTED LOW CROSS STREETS      *
* FROM THE HIGH AND LOW STREET CODE LISTS CALL FUNCTION D:  *
*   (1) INITIALIZE WORKAREA 1 TO SPACES                     *
*   (2) SET WA1'S FUNCTION CODE FIELD TO D                  *
*   (3) SET WA1'S STREET NAME LENGTH FIELD TO DESIRED       *
*       VALUE (IN THIS CASE 25 BECAUSE THE REPORT LINE      *
*              HAS SPACE FOR ONLY 25 CHARACTERS)            *
*   (4) USE THE COMPACT STREET NAMES OPTION TO OBTAIN       *
*       STREET NAMES FORMATTED FOR DISPLAY                  *
*   (5) MOVE WA2'S LOW PBSC FIELD TO WA1'S INPUT STREET     *
*       CODE 1 FIELD                                        *
*   (6) MOVE WA2'S HIGH PBSC FIELD TO WA1'S INPUT STREET    *
*       CODE 2 FIELD                                        *
*   (7) CALL GBI WITH 1 WORKAREA                            *
*   (8) CHECK RETURN CODES FOR ERRORS OR WARNINGS           *
*************************************************************
         SPACE
* Clear WA1 to blanks
         LA    R8,W1BAL    "To" address for MVCL
         LA    R9,W1LENGTH     "To" length
         XR    R11,R11       for blanking out std WA1,
         ICM   R11,B'1000',=C' '  rather than moving data
* ...since if the "from" length reg. has lo-order zeroes, MVCL will
* pad the target area with the pad character of the "from" register
* and do nothing else (the "from" address register is not used).
         MVCL  R8,R10
         MVC   W1ICDE1,W2F1CDEL
         MVC   W1ICDE2,W2F1CDEH
         MVC   W1IFUNC(2),=CL2'D '
   MVC   W1ISNL(L'W1ISNL),=C'25'    normalized street name length
         MVI   W1ICMPCT,C'C'              streets to be compacted
         CALL  GBI,W1BAL,VL   Call Function D
* Check Return code
         CLC   W1ORC(2),=C'00'         Good return?
         BNE   ERREXIT                     No, error or warning
*                                          Yes, complete the record
```

```
*                                                      and write it out
PUTREC   DS    0H
         MVC   OLOSTRT,W1OSTRT1
         MVC   OHISTRT,W1OSTRT2
* Print an output record and get the next input record, if any
         PUT   OUTFILE,OUTVALID
         B     NEXTREC
EXIT     DS    0H
OUTOPNER DS    0H
         CLOSE (INFILE)
         TM    OUTFILE+48,X'10'   Did OUTFILE open successfully?
         BNO   INOPNERR              No, bypass closing it
         CLOSE (OUTFILE)
ASSEMBLER SAMPLE PROGRAM #1- Job stream- MSW (continue)

INOPNERR DS    0H
         L     R13,4(,R13)
         L     R14,12(,R13)
         LM    R0,R12,20(R13)
         BR    R14
         SPACE 2
PARAMERR DS    0H       parameter error, missing or invalid
         LA    R15,8    rc=8
         B     EXIT
         TITLE 'DATA SECTION - REGISTER ASSIGNMENTS'
R0       EQU   0
R1       EQU   1
R2       EQU   2
R3       EQU   3
R4       EQU   4
R5       EQU   5
R6       EQU   6
R7       EQU   7
R8       EQU   8
R9       EQU   9
R10      EQU   10
R11      EQU   11
R12      EQU   12
R13      EQU   13
R14      EQU   14
R15      EQU   15
         TITLE 'FILE AND RECORD DEFINITIONS'
         PUSH  PRINT
         PRINT NOGEN
INFILE   DCB   DSORG=PS,MACRF=(GM),DDNAME=INFILE,                      *
               RECFM=FB,LRECL=80,BLKSIZE=400,EODAD=EXIT
         SPACE
OUTFILE  DCB   DSORG=PS,MACRF=(PM),DDNAME=SYSPRINT,                    *
               RECFM=FBA,LRECL=133,BLKSIZE=1330
*
         POP PRINT
         SPACE
INREC    DS    0CL80              Input record
INBORO   DS    CL1                    Borough code
INHOUSE  DS    CL12                   House number
```

```
INSTREET DS    CL32                   Street name
         DC    35C' '                 filler
         SPACE
* Output records: error, warning, and normal
ERR1     DS    0CL133
         DC    C'0'
ERINPUT  DS    CL48
         DC    C'*** FUNCTION '
ERFUNC   DS    CL2
         DC    C' GRC = '
ERRET    DS    CL2
         DC    C' REASON CODE = '
ERREAS   DS    CL1
         DC    CL(133-89)' '
         SPACE
WRN1     DS    0CL133
         DC    C'0'
WRINPUT  DS    CL48
         DC    C'*** FUNCTION '
WRFUNC   DS    CL2
         DC    C' WARNING, GRC = '
WRRET    DS    CL2
         DC    C' REASON CODE = '
WRREAS   DS    CL1
         DC    CL(133-98)' '
         SPACE
ERRWRN2  DS    0CL133
         DC    C' '
         DC    48C' '          Boro Code, House Number, Street Name
         DC    CL4'*** '
ERRWRN   DS    CL80            Error/Warning message
         SPACE
HDR1     DC    CL133'1SAMPLE ASSEMBLER #1 EXECUTION OUTPUT             *
                  '
HDR2     DC    CL133'0*****---------- INPUT ADDRESS ------------***** *C
               ****--------------------- SELECTED OUTPUT ITEMS --------C
        ----------------------*****'
HDR3     DC    CL133'0B HOUSE NUMBER IN-STREET-NAME                    *
                ZIP CD NYPD-PCT SCHLDST LOW CROSS STREET          HIGH *
               CROSS STREET                '
HDR4     DC    CL133' - ------------ -------------------------------- -*
               ---- -- -------- ------- ------------------------ -----*
               ---------------------------'
OUTVALID DS    0CL133
* Borough code, house number, and street name are from input record
         DC    C'0'
OINPUT   DS    CL48
OZIP     DS    CL5
         DC    C' '
OCOMM    DS    CL2
         DC    C' '
OPCT     DS    CL3
         DC    6C' '
OSCHL    DS    CL2
         DC    6C' '
```

```
OLOSTRT  DS    CL25  Normalized name of intersecting street at low end
         DC    C' '
OHISTRT  DS    CL25  Normalized name of intersecting street at high end
         DC    7C' '
         TITLE 'WORKING VARIABLES, VALUES, ETC.'
MYSAVE   DC    18F'0'
***********************************************************************
***** USE OF GEOSUPPORT COPY LIBRARIES (REFERENCED BELOW BY THE      ***
***** COPY STATEMENTS) IS STRONGLY ENCOURAGED.                       ***
***********************************************************************
         COPY  W1BAL              COPY WORK AREA 1
         EJECT
         COPY  W2BAL              COPY WORK AREA 2
         EJECT
         SPACE 2
DSPLYIN  DS    0CL48
DBORO    DS    CL1
         DC    C' '
DHSE     DS    CL12
         DC    C' '
DSTRT    DS    CL32
  DC    C' '
         SPACE 2
         TITLE 'CONSTANTS AND LITERAL POOL'
         SPACE 2
         LTORG
         END   ASMF1SRC
//LKED.SYSIN  DD  *
 INCLUDE INCLIB(GBI)
/*
//LKED.INCLIB   DD  DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//*                                                                 *//
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *//
//*                                                                 *//
//*  AS OF GEOSUPPORT VERSION 10.0,                                 *//
//*  THE STEPLIB (OR JOBLIB) OF THE GEOSUPPORT EXECUTION STEP       *//
//*  MUST INCLUDE THE FOLLOWING TWO CONCATENATED DATASETS:          *//
//*       A030.GEO.SUPPORT.PDSE.LOADLIB                             *//
//*       A030.GEO.SUPPORT.LOADLIB                                  *//
//*                                                                 *//
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *//
//GO.STEPLIB  DD  DSN=A030.GEO.SUPPORT.PDSE.LOADLIB,DISP=SHR
//*           DD  DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//*
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *//
//*                                                                 *//
//*   AS OF GEOSUPPORT VERSION 10.0,                                *//
//*   DD STATEMENTS FOR GEOSUPPORT DATA FILES (E.G. GRID, PAD,      *//
//*   ETC) ARE NO LONGER NEEDED AND ARE IGNORED. GEOSUPPORT         *//
//*   IS TAILORED TO USE STANDARD GEOSUPPORT DATA SET NAMES.        *//
//*   TO USE NON-STANDARD FILES, SEE YOUR SYSTEMS PROGRAMMER        *//
//*                                                                 *//
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *//
//*
//SYSUDUMP DD  SYSOUT=*,OUTLIM=2000
```

ASSEMBLER SAMPLE PROGRAM #1 –Job Stream-MSW

```
//SYSPRINT DD  SYSOUT=*
//INFILE   DD  *
122          READE ST
1500         DUANE ST
12-4         BROADWAY
4165-100     BAISLEY BLVD
4165-1000    BAISLEY BLVD
/*
//
```

ASSEMBLER SAMPLE PROGRAM #1 – Job Stream- COW

```
//ASMC1SRC JOB   YOUR-JOB-CARD-INFORMATION
//*
//*********************************************************************
//**  ASSEMBLER SAMPLE BATCH GEOSUPPORT USER APPLICATION PROGRAM #1 **
//**                        COW FORMAT                              **
//*********************************************************************
//STEP1  EXEC  ASMACLG,
//         PARM.ASM='OBJECT,NODECK',
//         PARM.LKED='XREF,LET,LIST,NCAL'
//ASM.SYSLIB DD DSN=A030.GEO.COPYLIB2,DISP=SHR
//           DD DSN=A030.GEO.COPYLIB,DISP=SHR
//           DD DSN=SYS1.MACLIB,DISP=SHR
//ASM.SYSIN  DD *
ASMC1SRC TITLE 'SAMPLE GEOSUPPORT ASSEMBLER PROGRAM 1 - COW FORMAT'
ASMC1SRC CSECT
*****************************************************************
* THIS PROGRAM MAKES FUNCTION 1 AND D CALLS TO GEOSUPPORT USING *
* BORO, HOUSENUMBER, & STREET NAME SUPPLIED BY AN INSTREAM FILE.*
* FUNCTION 1 RETURNS GEOGRAPHIC INFORMATION FOR AN ADDRESS.     *
* FUNCTION D TRANSLATES AN INPUT STREET CODE TO A STREET NAME.  *
* - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - *
* NOTE: IF THE CROSS STREET NAMES FLAG WERE USED IN THE         *
*       ORIGINAL CALL TO FUNCTION 1, ALL THE CROSS STREET NAMES *
*       WOULD HAVE BEEN RETURNED BY FUNCTION 1.                 *
*****************************************************************
*
***********************************************************************
*                                                                     *
*  This program will do the following:                                *
*                                                                     *
*     * Read an instream record containing a house number,            *
*       street name, and borough code                                 *
*                                                                     *
*     * Build Work Area 1 for a Function 1 call                       *
*                                                                     *
*     * Call Function 1                                               *
*                                                                     *
*     * Get ZIP code, community district, police precinct, school     *
*       district, and lists of street codes of streets intersecting   *
*       at the low and high ends of the input street address's block. *
*       These will be displayed along with the input address which    *
*       consists of borough code, house number, and street name.      *
*                                                                     *
*     * Call Function D to get the street names of the first          *
*       intersecting street on both low and high ends.                *
*                                                                     *
*     * Print the information                                         *
*                                                                     *
* NOTE that after each Geosupport call, the Return Code is checked.   *
*      If it is greater than 01, an error message is printed, and     *
*      the next input record, if any, is read.                        *
*      If it is 01, a warning message is printed, the input record is *
*      processed, and the next record is read.                        *
*      If it is zero, the input record is processed, and the next     *
```

```
*      record is read.                                                 *
*                                                                      *
************************************************************************
         SPACE
         STM   R14,R12,12(R13)   Save caller's registers
         LR    R3,R15
         LA    R12,4095(,R3)      (second base register
         LA    R12,1(,R12)         to accomodate Work Areas 1 and 2)
         USING ASMC1SRC,R3,R12
* Chain save areas
         LA    R4,MYSAVE
         ST    R13,4(,R4)    Save caller's savearea address
         ST    R4,8(,R13)    Save pgm's savearea adr in caller savearea
         LR    R13,R4        Ensure that R13 points to pgm's savearea
         SPACE 2
         XR    R15,R15                 (set OS return code to zero)
* Open input and output files
         OPEN  (INFILE,,OUTFILE,(OUTPUT))
         TM    INFILE+48,X'10'   Did input file open successfully?
         BNO   INOPNERR             (no..)
         TM    OUTFILE+48,X'10'  Did output file open successfully?
         BNO   OUTOPNER             (no..)
* Print page and report header lines
         SPACE
         PUT   OUTFILE,HDR1
         PUT   OUTFILE,HDR2
         PUT   OUTFILE,HDR3
         PUT   OUTFILE,HDR4
         B     NEXTREC
         SPACE 2
         TITLE 'READ IN-STREAM INPUT AND PREPARE FUNCTION 1 CALL'
* Read (next) input record
NEXTREC  DS    0H
         GET   INFILE,INREC
* Move input data to output record for display
         MVC   DBORO,INBORO                     borough code
         MVC   DHSE(L'INHOUSE),INHOUSE          house number
         MVC   DSTRT,INSTREET                   street name
         SPACE
******************************************************************
* TO MAKE A FUNCTION 1 CALL:                                     *
*   (1) INITIALIZE WORKAREA 1 TO SPACES                          *
*   (2) SET WA1'S FUNCTION CODE FIELD TO 1                       *
*   (3) MOVE THE INPUT BORO TO WA1'S INPUT BORO CODE FIELD       *
*   (4) MOVE THE INPUT HOUSE NUMBER TO WA1'S INPUT HOUSE NUMBER *
*       FIELD                                                    *
*   (5) MOVE THE INPUT STREET TO WA1'S INPUT STREET NAME FIELD  *
*   (6) CALL GBI WITH 2 WORKAREAS                                *
*   (7) CHECK RETURN CODES FOR ERRORS OR WARNINGS                *
******************************************************************
* Clear WA1 to blanks
         LA    R8,P1BAL    "To" address for MVCL
         LA    R9,P1LENGTH     "To" length
         XR    R11,R11       for blanking out std WA1,
         ICM   R11,B'1000',=C' '  rather than moving data
```

```
* ...since if the "from" length reg. has lo-order zeroes, MVCL will
* pad the target area with the pad character of the "from" register
* and do nothing else (the "from" address register is not used).
         MVCL  R8,R10
         SPACE
* Prime Work Area 1 for Function 1 call
         MVI   P1IPLIND,C'C'                Set Work Area Format to COW
         MVC   P1IFUNC,=CL2'1 '              Get function code
         MVC   P1IBORO1,INBORO                   borough code
*
* Note COW - MSW: Display House # - P1IHSE# is a 16-byte field
*                                   W1IHSE# is a 12-byte field
*
         MVC   P1IHSE#(L'INHOUSE),INHOUSE        house number
         MVC   P1ISTRT1,INSTREET                 street name
*

* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*                                                                     *
*        As of Geosupport Version 10.1,                               *
*        to receive roadbed-specific information,                     *
*        set the Roadbed Request Switch to 'R', as follows:           *
*        MVC   P1IRBRQS,C'R'                                          *
*                                                                     *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*
         MVC   P1ISNL(L'P1ISNL),=C'25'    Normalized street name length
* Call Function 1 (2-Work-Area call)
         CALL  GBI,(P1BAL,P2BAL),VL
* Check Return code
         CLC   P1ORC(2),=C'00'         Good return?
         BE    PROCESS                     Yes, process returned data
* Handle errors and warnings
ERREXIT  DS    0H
         CLC   P1ORC(2),=C'01'         Warning condition?
         BE    PUTWARN                    Yes, process warning
*                                              and then process input;
*                                         otherwise, process error
         MVC   ERINPUT,DSPLYIN    Boro code, hse no., street name
         MVC   ERFUNC,P1IFUNC              function code
         MVC   ERRET(L'P1ORC),P1ORC        return code
         MVC   ERREAS(L'P1OREASN),P1OREASN reason code
         PUT   OUTFILE,ERR1            Print error messages 1
         B     PUTMSG                                    and 2
PUTWARN  DS    0H
         MVC   WRINPUT,DSPLYIN    Boro code, hse no., street name
         MVC   WRFUNC,P1IFUNC              function code
         MVC   WRRET(L'P1ORC),P1ORC        return code
  MVC   WRREAS(L'P1OREASN),P1OREASN reason code
         PUT   OUTFILE,WRN1            Print warning messages 1
PUTMSG   DS    0H                                          and 2
         MVC   ERRWRN(L'P1OERROR),P1OERROR
         PUT   OUTFILE,ERRWRN2         Print error/warning message 2
         CLC   P1ORC(2),=C'01'         Warning condition?
         BNE   NEXTREC                  No, get next record, if any
```

```
         MVI   OINPUT,C' '               Yes,
         MVC   OINPUT+1(L'OINPUT-1),OINPUT  ensure input NOT displayd
         MVI   OUTVALID,C' '     ensure single-spacing after warning
         B     GETZIP            and continue normal processing
         SPACE
* Handle successful Geosupport calls (Return Code <= 01)
PROCESS  DS    0H
         MVC   OINPUT,DSPLYIN    Boro code, hse no., street name
         MVI   OUTVALID,C'0'     Ensure double-spacing
GETZIP   DS    0H
         MVC   OZIP,P2F1ZIP      ZIP code
         MVC   OCOMM,P2F1CDN     community district number
         MVC   OPCT,P2F1POP      police precinct
         MVC   OSCHL,P2F1SCH     school district
***** At this point, clear WA1 again, call Function D, and move ******
***** its reported Low and High Intersecting Street Names to output *
         TITLE 'GET LOW, HIGH INTERSECTING STREETS, USING FUNCTION D'
         SPACE 2
*************************************************************
* THIS PROGRAM ASSUMES THERE EXISTS AT LEAST ONE HIGH AND   *
* ONE LOW CROSS STREET.  TO GET THE STREET NAMES OF THE     *
* FIRST-LISTED HIGH AND FIRST-LISTED LOW CROSS STREETS      *
* FROM THE HIGH AND LOW STREET CODE LISTS CALL FUNCTION D:  *
*   (1) INITIALIZE WORKAREA 1 TO SPACES                     *
*   (2) SET WA1'S FUNCTION CODE FIELD TO D                  *
*   (3) SET WA1'S STREET NAME LENGTH FIELD TO DESIRED       *
*       VALUE (IN THIS CASE 25 BECAUSE THE REPORT LINE      *
*              HAS SPACE FOR ONLY 25 CHARACTERS)            *
*   (4) USE THE COMPACT STREET NAMES OPTION TO OBTAIN       *
*       STREET NAMES FORMATTED FOR DISPLAY                  *
*   (5) MOVE WA2'S LOW B5SC FIELD TO WA1'S INPUT STREET     *
*       CODE 1 FIELD                                        *
*   (6) MOVE WA2'S HIGH B5SC FIELD TO WA1'S INPUT STREET    *
*       CODE 2 FIELD                                        *
*   (7) CALL GBI WITH 1 WORKAREA                            *
*   (8) CHECK RETURN CODES FOR ERRORS OR WARNINGS           *
*************************************************************
         SPACE
* Clear WA1 to blanks
         LA    R8,P1BAL    "To" address for MVCL
         LA    R9,P1LENGTH     "To" length
         XR    R11,R11       for blanking out std WA1,
         ICM   R11,B'1000',=C' '  rather than moving data
* ...since if the "from" length reg. has lo-order zeroes, MVCL will
* pad the target area with the pad character of the "from" register
and do nothing else (the "from" address register is not used).
         MVCL  R8,R10
         MVI   P1IPLIND,C'C'                Set Work Area Format to COW
*
* Note  COW - MSW: P1ICDEx is the 10-digit street code (no boro)
*                  P1IBCDx is the Boro and 10-digit street code
*                  W1ICDEx is the packed Boro and 5-digit street code
*                  P2F1CDEx is Boro and 5-digit street code list
*                  W2F1CDEx is packed Boro and 5-digit street code list
*
```

```
         MVC   P1IBCD1(6),P2F1CDEL
         MVC   P1IBCD2(6),P2F1CDEH
         MVC   P1IFUNC(2),=CL2'D '
         MVC   P1ISNL(L'P1ISNL),=C'25'    normalized street name length
         MVI   P1ICMPCT,C'C'              streets to be compacted
         CALL  GBI,P1BAL,VL   Call Function D
* Check Return code
         CLC   P1ORC(2),=C'00'         Good return?
         BNE   ERREXIT                     No, error or warning
*                                          Yes, complete the record
*                                               and write it out
PUTREC   DS    0H
         MVC   OLOSTRT,P1OSTRT1
         MVC   OHISTRT,P1OSTRT2
* Print an output record and get the next input record, if any
         PUT   OUTFILE,OUTVALID
         B     NEXTREC
EXIT     DS    0H
OUTOPNER DS    0H
         CLOSE (INFILE)
         TM    OUTFILE+48,X'10'   Did OUTFILE open successfully?
         BNO   INOPNERR              No, bypass closing it
         CLOSE (OUTFILE)
INOPNERR DS    0H
         L     R13,4(,R13)
         L     R14,12(,R13)
         LM    R0,R12,20(R13)
         BR    R14
         SPACE 2
PARAMERR DS    0H       parameter error, missing or invalid
         LA    R15,8    rc=8
         B     EXIT
         TITLE 'DATA SECTION - REGISTER ASSIGNMENTS'
R0       EQU   0
R1       EQU   1
R2       EQU   2
R3       EQU   3
R4       EQU   4
R5       EQU   5
R6       EQU   6
R7       EQU   7
R8       EQU   8
R9       EQU   9
R10      EQU   10
R11      EQU   11
R12      EQU   12
R13      EQU   13
R14      EQU   14
R15      EQU   15
         TITLE 'FILE AND RECORD DEFINITIONS'
         PUSH  PRINT
         PRINT NOGEN
INFILE   DCB   DSORG=PS,MACRF=(GM),DDNAME=INFILE,                      *
               RECFM=FB,LRECL=80,BLKSIZE=400,EODAD=EXIT
         SPACE
```

ASSEMBLER SAMPLE PROGRAM #1 – Job Stream- COW

```
OUTFILE  DCB   DSORG=PS,MACRF=(PM),DDNAME=SYSPRINT,                  *
               RECFM=FBA,LRECL=133,BLKSIZE=1330
*
         POP PRINT
         SPACE
INREC    DS    0CL80              Input record
INBORO   DS    CL1                    Borough code
INHOUSE  DS    CL12                   House number
INSTREET DS    CL32                   Street name
         DC    35C' '                 filler
         SPACE
* Output records: error, warning, and normal
ERR1     DS    0CL133
         DC    C'0'
ERINPUT  DS    CL48
         DC    C'*** FUNCTION '
ERFUNC   DS    CL2
         DC    C' GRC = '
ERRET    DS    CL2
         DC    C' REASON CODE = '
ERREAS   DS    CL1
         DC    CL(133-89)' '
         SPACE
WRN1     DS    0CL133
         DC    C'0'
WRINPUT  DS    CL48
         DC    C'*** FUNCTION '
WRFUNC   DS    CL2
         DC    C' WARNING, GRC = '
WRRET    DS    CL2
         DC    C' REASON CODE = '
WRREAS   DS    CL1
         DC    CL(133-98)' '
         SPACE
ERRWRN2  DS    0CL133
         DC    C' '
         DC    48C' '          Boro Code, House Number, Street Name
         DC    CL4'*** '
ERRWRN   DS    CL80            Error/Warning message
         SPACE
HDR1     DC    CL133'1SAMPLE ASSEMBLER #1 EXECUTION OUTPUT             *
                                    '
HDR2     DC    CL133'0*****---------- INPUT ADDRESS ------------***** *C
               ****--------------------- SELECTED OUTPUT ITEMS --------C
               ----------------------*****'
HDR3     DC    CL133'0B HOUSE NUMBER IN-STREET-NAME                    *
                ZIP CD NYPD-PCT SCHLDST LOW CROSS STREET          HIGH *
               CROSS STREET                 '
HDR4     DC    CL133' - ------------ -------------------------------- -*
               ---- -- --------- -------- ------------------------- -----*
               ---------------------------'
OUTVALID DS    0CL133
* Borough code, house number, and street name are from input record
         DC    C'0'
OINPUT   DS    CL48
```

```
OZIP     DS    CL5
         DC    C' '
OCOMM    DS    CL2
         DC    C' '
OPCT     DS    CL3
         DC    6C' '
OSCHL    DS    CL2
         DC    6C' '
OLOSTRT  DS    CL25  Normalized name of intersecting street at low end
         DC    C' '
OHISTRT  DS    CL25  Normalized name of intersecting street at high end
         DC    7C' '
         TITLE 'WORKING VARIABLES, VALUES, ETC.'
MYSAVE   DC    18F'0'
***********************************************************************
***** USE OF GEOSUPPORT COPY LIBRARIES (REFERENCED BELOW BY THE     ***
***** COPY STATEMENTS) IS STRONGLY ENCOURAGED.                     ***
***********************************************************************
         COPY  P1BAL              COPY WORK AREA 1
         EJECT
         COPY  P2BAL              COPY WORK AREA 2
         EJECT
         SPACE 2
DSPLYIN  DS    0CL48
DBORO    DS    CL1
         DC    C' '
DHSE     DS    CL12
         DC    C' '
DSTRT    DS    CL32
         DC    C' '
         SPACE 2
         TITLE 'CONSTANTS AND LITERAL POOL'
         SPACE 2
         LTORG
         END   ASMC1SRC
//LKED.SYSIN  DD  *
 INCLUDE INCLIB(GBI)
/*
//LKED.INCLIB   DD  DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//*                                                          *//
//*     AS OF GEOSUPPORT VERSION 10.0,                       *//
//*     GEO.SUPPORT.PDSE.LOADLIB AND GEO.SUPPORT.LOADLIB     *//
//*     ARE REQUIRED IN THE STEPLIB (OR JOBLIB) OF THE       *//
//*     GEOSUPPORT EXECUTION STEP.                           *//
//*                                                          *//
//GO.STEPLIB  DD  DSN=A030.GEO.SUPPORT.PDSE.LOADLIB,DISP=SHR
//*           DD  DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//*                                                          *//
//*   AS OF GEOSUPPORT VERSION 10.0,                         *//
//*   DD STATEMENTS ARE NO LONGER USED TO DEFINE?            *//
//*   GEOSUPPORT DATA FILES.                                 *//
//*   DD STATEMENTS ARE NO LONGER INCLUDED FOR THE           *//
//*   GEOSUPPORT FOREGROUND FILES.                           *//
//*   TO USE NON-STANDARD FILES, SEE YOUR SYSTEMS PROGRAMMER *//
//*                                                          *//
```

ASSEMBLER SAMPLE PROGRAM #1 – Job Stream- COW

```
//SYSUDUMP DD  SYSOUT=*,OUTLIM=2000
//SYSPRINT DD  SYSOUT=*
//INFILE   DD  *
122          READE ST
1500         DUANE ST
12-4         BROADWAY
4165-100     BAISLEY BLVD
4165-1000    BAISLEY BLVD
/*
//
```

SAMPLE ASSEMBLER #1 EXECUTION OUTPUT

```
*****---------- INPUT ADDRESS ------------***** *****--------------------- SELECTED OUTPUT ITEMS ----------------*****

B HOUSE NUMBER IN-STREET-NAME                     ZIP CD NYPD-PCT SCHLDST LOW CROSS STREET          HIGH CROSS STREET
- ------------ -------------------------------- ----- -- -------- ------- ------------------------- ------------------

1 22           READE ST                         10007 01 005      02      ELK STREET                BROADWAY

1 500          DUANE ST                         *** FUNCTION 1  GRC = 42 REASON CODE =
                                                *** ADDRESS NUMBER OUT OF RANGE

1 2-4          BROADWAY                         *** FUNCTION 1  WARNING, GRC = 01 REASON CODE = 1
                                                *** ADDR NUMBER ALTERED: RANGE ASSUMED. USING DIGITS BEFORE DASH ONLY
                                                10004 01 001      02      STONE STREET              BOWLING GREEN

4 165-100      BAISLEY BLVD                     11434 12 113      28      GUY R BREWER BOULEVARD    BEDELL STREET

4 165-1000     BAISLEY BLVD                     *** FUNCTION 1  GRC = 13 REASON CODE = 2
                                                *** ADDRESS NBR 165-1000  HAS MORE THAN 3 DIGITS AFTER THE DASH.
```

ASSEMBLER SAMPLE PROGRAM #2

- Input Job Stream - MSW

- Input Job Stream - COW

- Output Report

ASSEMBLER SAMPLE PROGRAM #2- Job Stream -MSW

```
//ASMF2SRC JOB   YOUR-JOB-CARD-INFORMATION
//*
//*******************************************************************
//**  ASSEMBLER SAMPLE BATCH GEOSUPPORT USER APPLICATION PROGRAM #2 **
//**                          MSW FORMAT                             **
//*******************************************************************
//STEP1  EXEC  ASMACLG,
//         PARM.ASM='OBJECT,NODECK',
//         PARM.LKED='XREF,LET,LIST,NCAL'
//ASM.SYSLIB DD DSN=A030.GEO.COPYLIB2,DISP=SHR
//           DD DSN=A030.GEO.COPYLIB,DISP=SHR
//           DD DSN=SYS1.MACLIB,DISP=SHR
//ASM.SYSIN  DD *
ASMF2SRC TITLE 'SAMPLE GEOSUPPORT ASSEMBLER PROGRAM 2 - MSW FORMAT'
ASMF2SRC CSECT
*****************************************************************
* THIS PROGRAM MAKES FUNCTION 2 AND D CALLS TO GEOSUPPORT USING  *
* TWO BOROS AND TWO STREET NAMES SUPPLIED BY AN INSTREAM FILE.   *
* FUNCTION 2 RETURNS GEOGRAPHIC INFORMATION FOR AN INTERSECTION. *
* FUNCTION D TRANSLATES AN INPUT STREET CODE TO A STREET NAME.   *
* - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -  *
* NOTE: IF THE CROSS STREET NAMES FLAG WERE USED IN THE          *
*       ORIGINAL CALL TO FUNCTION 2, ALL THE CROSS STREET NAMES  *
*       WOULD HAVE BEEN RETURNED BY FUNCTION 2.                  *
*****************************************************************
*
*********************************************************************
*                                                                   *
*  This program will do the following:                              *
*     * Read an instream record containing 2 borough codes          *
*       and two street names                                        *
*                                                                   *
*     * Build Work Area 1 for a Function 2 call                     *
*                                                                   *
*     * Call Function 2                                             *
*                                                                   *
*     * Get ZIP code, community district, police precinct, school   *
*       district, and lists of intersecting street codes.           *
*       These will be displayed along with the input intersection   *
*       which consists of 2 borough codes, and 2 street names.      *
*                                                                   *
*     * Call Function D to get the street names of all intersecting *
*       streets.                                                    *
*                                                                   *
*      If it is greater than 01, an error message is printed, and   *
*      the next input record, if any, is read.                      *
*      If it is 01, a warning message is printed, the input record is *
*      processed, and the next record is read.                      *
*      If it is zero, the input record is processed, and the next   *
*      record is read.                                              *
*                                                                   *
*********************************************************************
 SPACE
         STM   R14,R12,12(R13)   Save caller's registers
```

```
         LR    R3,R15
         LA    R12,4095(,R3)      (second base register
         LA    R12,1(,R12)         to accommodate Work Areas 1 and 2)
         USING ASMF2SRC,R3,R12
* Chain save areas
         LA    R4,MYSAVE
         ST    R13,4(,R4)    Save caller's savearea address
         ST    R4,8(,R13)    Save pgm's savearea adr in caller savearea
         LR    R13,R4        Ensure that R13 points to pgm's savearea
         SPACE 2
         XR    R15,R15                 (set OS return code to zero)
* Open input and output files
         OPEN  (INFILE,,OUTFILE,(OUTPUT))
         TM    INFILE+48,X'10'   Did input file open successfully?
         BNO   INOPNERR             (no..)
         TM    OUTFILE+48,X'10'  Did output file open successfully?
         BNO   OUTOPNER             (no..)
* Print report header lines
         SPACE
         PUT   OUTFILE,HDR1
         PUT   OUTFILE,HDR2
         PUT   OUTFILE,HDR3
         PUT   OUTFILE,HDR4
         B     NEXTREC
         SPACE 2
         TITLE 'READ IN-STREAM INPUT AND PREPARE FUNCTION 2 CALL'
* Read (next) input record
NEXTREC  DS    0H
         GET   INFILE,INREC
* Move input data to output record for display
         MVC   DBORO1,INBORO1          First borough code
         MVC   DSTRT1,INSTRT1          First street name
         MVC   DBORO2,INBORO2          Second borough code
         MVC   DSTRT2,INSTRT2          Second street name
         SPACE
*****************************************************************
* TO MAKE A FUNCTION 2 CALL:                                    *
*   (1) INITIALIZE WORKAREA 1 TO SPACES                         *
*   (2) SET WA1'S FUNCTION CODE FIELD TO 2                      *
*   (3) MOVE THE 1ST INPUT BORO TO WA1'S INPUT BORO CODE FIELD  *
*   (4) MOVE THE 1ST INPUT STREET TO WA1'S INPUT STREET NAME    *
*   (5) MOVE THE 2ND INPUT BORO TO WA1'S INPUT BORO CODE 2 FIELD *
*   (6) MOVE THE 2ND INPUT STREET TO WA1'S INPUT STREET NAME 2  *
*   (7) CALL GBI WITH 2 WORKAREAS                               *
*   (8) CHECK RETURN CODES FOR ERRORS OR WARNINGS               *
*****************************************************************
* Clear WA1 to blanks
         LA    R8,W1BAL    "To" address for MVCL
         LA    R9,W1LENGTH     "To" length
         XR    R11,R11       for blanking out std WA1,
         ICM   R11,B'1000',=C' '  rather than moving data
* ...since if the "from" length reg. has lo-order zeroes, MVCL will
* pad the target area with the pad character of the "from" register
* and do nothing else (the "from" address register is not used).
         MVCL  R8,R10
```

```
         SPACE
* Prime Work Area 1 for Function 2 call
         MVC   W1IFUNC,=CL2'2 '             Get function code
         MVC   W1IBORO1,INBORO1                 borough code 1
         MVC   W1ISTRT1,INSTRT1                 street name  1
         MVC   W1IBORO2,INBORO2                 borough code 2
         MVC   W1ISTRT2,INSTRT2                 street name  2
         MVC   W1ISNL(L'W1ISNL),=C'25'    Normalized street name length
* Call Function 2 (2-Work-Area call)
         CALL  GBI,(W1BAL,W2BAL),VL
* Check Return code
         CLC   W1ORC(2),=C'00'         Good return?
         BE    PROCESS                     Yes, process returned data
* Handle errors and warnings
ERREXIT  DS    0H
         CLC   W1ORC(2),=C'01'         Warning condition?
         BE    PUTWARN                    Yes, process warning
*                                              and then process input;
*                                         otherwise, process error
         MVC   ERFUNC,W1IFUNC              function code
         MVC   ERRET(L'W1ORC),W1ORC        return code
         MVC   ERREAS(L'W1OREASN),W1OREASN reason code
         MVC   ERRMSG(L'W1OERROR),W1OERROR Geosupport error message
         PUT   OUTFILE,ERR1            Print error message 1
         MVC   ERINPUT,DSPLYIN    2 boro codes and 2 street names
         PUT   OUTFILE,ERR2            Print error message 2
         B     NEXTREC
PUTWARN  DS    0H
         MVC   WRFUNC,W1IFUNC              function code
         MVC   WRRET(L'W1ORC),W1ORC        return code
         MVC   WRREAS(L'W1OREASN),W1OREASN reason code
         MVC   WRNMSG(L'W1OERROR),W1OERROR Geosupport warning message
         PUT   OUTFILE,WARN            Print warning message
         SPACE
* Handle successful Geosupport calls (Return Code <= 01)
PROCESS  DS    0H
         MVI   OUTFIXED,C'0'      Init. carriage control to dbl-space
         CLC   W1ORC(2),=C'01'    Was a warning issued?
         BNE   MOVEOUT               No..
         MVI   OUTFIXED,C' '         Yes, single-space output instead
MOVEOUT  DS    0H
         MVC   OINPUT,DSPLYIN    Pair of boro codes and street names
         MVC   OZIP,W2F2ZIP      ZIP code
         MVC   OCOMM,W2F2CDN     community district number
         MVC   OPCT,W2F2POP      police precinct
         MVC   OSCHL,W2F2SCH     school district
***** At this point, clear WA1 again, call Function D, and move ******
***** all reported Intersecting Street Names to output          ******
         TITLE 'GET INTERSECTING STREET NAMES, USING FUNCTION D'
         SPACE 2
*************************************************************
* TO GET THE STREET NAMES FOR INTERSECTING STREET CODES     *
* MAKE A FUNCTION D CALL:                                   *
*   (1) INITIALIZE WORKAREA 1 TO SPACES                     *
*   (2) SET THE WA1'S FUNCTION CODE FIELD TO D              *
```

```
*   (3) USE THE COMPACT STREET NAMES OPTION TO OBTAIN       *
*       STREET NAMES FORMATTED FOR DISPLAY                  *
*   (4) MOVE THE PACKED BORO AND STREET CODE TO             *
*       WA1'S INPUT STREET CODE 1 FIELD                     *
*   (5) CALL GBI WITH 1 WORKAREA                            *
*   (6) CHECK RETURN CODES FOR ERRORS OR WARNINGS           *
*************************************************************
         SPACE
* For each street code of intersecting streets, including those input,
* call Function D to get the corresponding street name
         XR    R4,R4
         MVC   INTWK,W2F2#INT   get count of intersecting streets.
         NI    INTWK,X'0F'      remove zone, leaving numeric
         IC    R4,INTWK         count of intersecting streets.
         LA    R5,W2F2CODE      point to street code(s).
         SPACE
INTRLOOP DS    0H
* Clear WA1 to blanks
         LA    R8,W1BAL    "To" address for MVCL
         LA    R9,W1LENGTH     "To" length
         XR    R11,R11       for blanking out std WA1,
         ICM   R11,B'1000',=C' '  rather than moving data
* ...since if the "from" length reg. has lo-order zeroes, MVCL will
* pad the target area with the pad character of the "from" register
* and do nothing else (the "from" address register is not used).
         MVCL  R8,R10
         SPACE
         MVC   W1IFUNC(2),=CL2'D '
         MVC   W1ISNL(L'W1ISNL),=C'25'    normalized street name length
         MVI   W1ICMPCT,C'C'              streets to be compacted
         MVC   W1ICDE1(L'W1ICDE1),0(R5)   Intersecting street code
         CALL  GBI,W1BAL,VL   Call Function D
* Check Return code
         CLC   W1ORC(2),=C'00'         Good return?
         BNE   ERREXIT                     No, error or warning
*                                          Yes, complete the record
*                                               and write it out
PFIX     NOP   PVAR
         OI    PFIX+1,X'F0'
         MVC   OINTRSC1,W1OSTRT1
*  put out the initial output including the first intersecting street
         PUT   OUTFILE,OUTFIXED
         B     NEXTSC     Now get the rest of the street codes, if any
PVAR     DS    0H
        MVC   OINTRSCN,W1OSTRT1
* Print an output record and get the next intersecting street, if any
         PUT   OUTFILE,OUTVAR
NEXTSC   DS    0H
         LA    R5,4(,R5)    point to next intersecting street code
         BCT   R4,INTRLOOP  if any, and process it;
         NI    PFIX+1,X'0F'    reset 1st-time (fixed/variable) switch
         B     NEXTREC      then, process next input record, if any
         SPACE
EXIT     DS    0H
OUTOPNER DS    0H
```

```
         CLOSE (INFILE)
         TM    OUTFILE+48,X'10'   Did OUTFILE open successfully?
         BNO   INOPNERR              No, bypass closing it
         CLOSE (OUTFILE)
INOPNERR DS    0H
         L     R13,4(,R13)
         L     R14,12(,R13)
         LM    R0,R12,20(R13)
         BR    R14
SPACE 2
PARAMERR DS    0H       parameter error, missing or invalid
         LA    R15,8    rc=8
         B     EXIT
         TITLE 'DATA SECTION - REGISTER ASSIGNMENTS'
R0       EQU   0
R1       EQU   1
R2       EQU   2
R3       EQU   3
R4       EQU   4
R5       EQU   5
R6       EQU   6
R7       EQU   7
R8       EQU   8
R9       EQU   9
R10      EQU   10
R11      EQU   11
R12      EQU   12
R13      EQU   13
R14      EQU   14
R15      EQU   15
         TITLE 'FILE AND RECORD DEFINITIONS'
         PUSH  PRINT
         PRINT NOGEN
INFILE   DCB   DSORG=PS,MACRF=(GM),DDNAME=INFILE,                      *
               RECFM=FB,LRECL=80,BLKSIZE=400,EODAD=EXIT
         SPACE
OUTFILE  DCB   DSORG=PS,MACRF=(PM),DDNAME=SYSPRINT,                    *
               RECFM=FBA,LRECL=133,BLKSIZE=1330
*
         POP PRINT
         SPACE
INREC    DS    0CL80              Input record
INBORO1  DS    CL1                    First borough code
INSTRT1  DS    CL32                   First street name
INBORO2  DS    CL1                    Second borough code
INSTRT2  DS    CL32                   Second street name
         DC    14C' '                 filler
         SPACE
* Output records: header, normal, warning, and error

         SPACE
* header records
HDR1     DC    CL133'1SAMPLE ASSEMBLER #2 EXECUTION OUTPUT             *
                                                                       *
                                   '
```

```
HDR2     DC    CL133'0*****----------------- INPUT INTERSECTION -------C
               --------------***** *****--------------- SELECTED OUTPUT*
                ITEMS ---------------*****'
HDR3     DC    CL133'0B IN-STREET-NAME-1                 B IN-STREET-NA*
               ME-2                ZIP CD NYPD-PCT SCHLDST INTERSECTI*
               NG STREET NAMES           '
HDR4     DC    CL133' - -------------------------------- - ------------*
               ------------------- ----- -- --------- -------- -----------*
               ---------------------------'
         SPACE
* normal records, i.e., output for valid data
OUTFIXED DS    0CL133                Fixed output
* Borough codes and street names for each of 2 streets are from input
         DC    C'0'
OINPUT   DS    CL69
OZIP     DS    CL5
         DC    C' '
OCOMM    DS    CL2
         DC    C' '
OPCT     DS    CL3
         DC    6C' '
OSCHL    DS    CL2
         DC    6C' '
OINTRSC1 DS    CL25  Normalized name of first intersecting street
         SPACE
OUTVAR   DS    0CL133 Output line repeated per No. of Intersecting Sts.
         DC    C' '
         DC    95C' '
OINTRSCN DS    CL25  Normalized name of additional intersecting street
         DC    (133-121)C' '
         SPACE
* warning record
WARN     DS    0CL133
         DC    C'0'
         DC    C'**** FUNCTION '
WRFUNC   DS    CL2
         DC    C' WARNING, GRC = '
WRRET    DS    CL2
         DC    C' REASON CODE = '
WRREAS   DS    CL1
         DC    C'. '
WRNMSG   DS    CL80            Warning message
         SPACE
* error records
ERR1     DS    0CL133
         DC    C'0'
         DC    C'***** FUNCTION '
ERFUNC   DS    CL2
         DC    C' GRC = '
ERRET    DS    CL2
         DC    C' REASON = '
ERREAS   DS    CL1
         DC    C'. '
ERRMSG   DS    CL80            Error message
         DC    CL(133-120)' '
```

```
         SPACE
ERR2     DS    0CL133
         DC    C' '
ERINPUT  DS    CL69
         DC    CL(133-70)' '
         TITLE 'WORKING VARIABLES, VALUES, ETC.'
#INTER   DS    D        Working field for no. of intersecting streets
MYSAVE   DC    18F'0'
**********************************************************************
***** USE OF GEOSUPPORT COPY LIBRARIES (REFERENCED BELOW BY THE     ***
***** COPY STATEMENTS) IS STRONGLY ENCOURAGED.                      ***
**********************************************************************
         COPY  W1BAL              COPY WORK AREA 1
         EJECT
         COPY  W2BAL              COPY WORK AREA 2
         EJECT
         SPACE 2
DSPLYIN  DS    0CL69
DBORO1   DS    CL1
         DC    C' '
DSTRT1   DS    CL32
         DC    C' '
DBORO2   DS    CL1
         DC    C' '
DSTRT2   DS    CL32
         SPACE 2
INTWK    DS    XL1      work field for number of intersecting streets
         TITLE 'CONSTANTS AND LITERAL POOL'
         SPACE 2
         LTORG
         END   ASMF2SRC
//LKED.SYSIN  DD  *
 INCLUDE INCLIB(GBI)
/*
//LKED.INCLIB   DD  DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//*                                                             *//
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *//
//*                                                             *//
//*  AS OF GEOSUPPORT VERSION 10.0,                             *//
//*  THE STEPLIB (OR JOBLIB) OF THE GEOSUPPORT EXECUTION STEP   *//
//*  MUST INCLUDE THE FOLLOWING TWO CONCATENATED DATASETS:      *//
//*       A030.GEO.SUPPORT.PDSE.LOADLIB                         *//
//*       A030.GEO.SUPPORT.LOADLIB                              *//
//*                                                             *//
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *//
//GO.STEPLIB DD DSN=A030.GEO.SUPPORT.PDSE.LOADLIB,DISP=SHR
//           DD DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//*
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *//
//*                                                             *//
//*   AS OF GEOSUPPORT VERSION 10.0,                            *//
//*   DD STATEMENTS FOR GEOSUPPORT DATA FILES (E.G. GRID, PAD,  *//
//*   ETC) ARE NO LONGER NEEDED AND ARE IGNORED. GEOSUPPORT     *//
//*   IS TAILORED TO USE STANDARD GEOSUPPORT DATA SET NAMES.    *//
//*   TO USE NON-STANDARD FILES, SEE YOUR SYSTEMS PROGRAMMER.   *//
```

ASSEMBLER SAMPLE PROGRAM #2- Job Stream -MSW

```
//*                                                             *//
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *//
//*
//SYSUDUMP DD  SYSOUT=*,OUTLIM=2000
//SYSPRINT DD  SYSOUT=*
//INFILE   DD  *
1CHAMBERS ST                     1HUDSON ST
1SIXTH AVE                       1W. 8 ST
1DUANE ST                        1READE ST
/*
//
```

ASSEMBLER SAMPLE PROGRAM #2 – Job Stream - COW

```
//ASMC2SRC JOB   YOUR-JOB-CARD-INFORMATION
//*
//*******************************************************************
//**  ASSEMBLER SAMPLE BATCH GEOSUPPORT USER APPLICATION PROGRAM #2 **
//**                           COW FORMAT                           **
//*******************************************************************
//STEP1  EXEC  ASMACLG,
//         PARM.ASM='OBJECT,NODECK',
//         PARM.LKED='XREF,LET,LIST,NCAL'
//ASM.SYSLIB DD DSN=A030.GEO.COPYLIB2,DISP=SHR
//           DD DSN=A030.GEO.COPYLIB,DISP=SHR
//           DD DSN=SYS1.MACLIB,DISP=SHR
//ASM.SYSIN  DD *
ASMC2SRC TITLE 'SAMPLE GEOSUPPORT ASSEMBLER PROGRAM 2 - COW FORMAT'
ASMC2SRC CSECT
******************************************************************
* THIS PROGRAM MAKES FUNCTION 2 AND D CALLS TO GEOSUPPORT USING  *
* TWO BOROS AND TWO STREET NAMES SUPPLIED BY AN INSTREAM FILE.   *
* FUNCTION 2 RETURNS GEOGRAPHIC INFORMATION FOR AN INTERSECTION. *
* FUNCTION D TRANSLATES AN INPUT STREET CODE TO A STREET NAME.   *
* - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -  *
* NOTE: IF THE CROSS STREET NAMES FLAG WERE USED IN THE          *
*       ORIGINAL CALL TO FUNCTION 2, ALL THE CROSS STREET NAMES  *
*       WOULD HAVE BEEN RETURNED BY FUNCTION 2.                  *
******************************************************************
*
***********************************************************************
*                                                                     *
*  This program will do the following:                                *
*     * Read an instream record containing 2 borough codes            *
*       and two street names                                          *
*                                                                     *
*     * Build Work Area 1 for a Function 2 call                       *
*                                                                     *
*     * Call Function 2                                               *
*                                                                     *
*     * Get ZIP code, community district, police precinct, school     *
*       district, and lists of intersecting street codes.             *
*       These will be displayed along with the input intersection     *
*       which consists of 2 borough codes, and 2 street names.        *
*                                                                     *
*     * Call Function D to get the street names of all intersecting   *
*       streets.                                                      *
*                                                                     *
*      If it is greater than 01, an error message is printed, and     *
*      the next input record, if any, is read.                        *
*      If it is 01, a warning message is printed, the input record is *
*      processed, and the next record is read.                        *
*      If it is zero, the input record is processed, and the next     *
*      record is read.                                                *
*                                                                     *
***********************************************************************
SPACE
         STM   R14,R12,12(R13)   Save caller's registers
```

```
         LR    R3,R15
         LA    R12,4095(,R3)      (second base register
         LA    R12,1(,R12)         to accommodate Work Areas 1 and 2)
         USING ASMC2SRC,R3,R12
* Chain save areas
         LA    R4,MYSAVE
         ST    R13,4(,R4)    Save caller's savearea address
         ST    R4,8(,R13)    Save pgm's savearea adr in caller savearea
         LR    R13,R4        Ensure that R13 points to pgm's savearea
         SPACE 2
         XR    R15,R15                 (set OS return code to zero)
* Open input and output files
         OPEN  (INFILE,,OUTFILE,(OUTPUT))
         TM    INFILE+48,X'10'   Did input file open successfully?
         BNO   INOPNERR             (no..)
         TM    OUTFILE+48,X'10'  Did output file open successfully?
         BNO   OUTOPNER             (no..)
* Print report header lines
         SPACE
         PUT   OUTFILE,HDR1
         PUT   OUTFILE,HDR2
         PUT   OUTFILE,HDR3
         PUT   OUTFILE,HDR4
         B     NEXTREC
         SPACE 2
         TITLE 'READ IN-STREAM INPUT AND PREPARE FUNCTION 2 CALL'
* Read (next) input record
NEXTREC  DS    0H
         GET   INFILE,INREC
* Move input data to output record for display
         MVC   DBORO1,INBORO1          First borough code
         MVC   DSTRT1,INSTRT1          First street name
         MVC   DBORO2,INBORO2          Second borough code
         MVC   DSTRT2,INSTRT2          Second street name
         SPACE
*******************************************************************
* TO MAKE A COW FORMAT FUNCTION 2 CALL:                           *
*   (1) INITIALIZE WORKAREA 1 TO SPACES                           *
*       AND SET WORK AREA FORMAT FLAG TO 'C'                      *
*   (2) SET WA1'S FUNCTION CODE FIELD TO 2                        *
*   (3) MOVE THE 1ST INPUT BORO TO WA1'S INPUT BORO CODE FIELD   *
*   (4) MOVE THE 1ST INPUT STREET TO WA1'S INPUT STREET NAME     *
*   (5) MOVE THE 2ND INPUT BORO TO WA1'S INPUT BORO CODE 2 FIELD *
*   (6) MOVE THE 2ND INPUT STREET TO WA1'S INPUT STREET NAME 2   *
*   (7) CALL GBI WITH 2 WORKAREAS                                 *
*   (8) CHECK RETURN CODES FOR ERRORS OR WARNINGS                 *
*******************************************************************
* Clear WA1 to blanks
         LA    R8,P1BAL    "To" address for MVCL
         LA    R9,P1LENGTH     "To" length
         XR    R11,R11       for blanking out std WA1,
         ICM   R11,B'1000',=C' '  rather than moving data
* ...since if the "from" length reg. has lo-order zeroes, MVCL will
* pad the target area with the pad character of the "from" register
* and do nothing else (the "from" address register is not used).
```

```
         MVCL  R8,R10
*
         MVI   P1IPLIND,C'C'  set work area format indicator to COW
*
         SPACE
* Prime Work Area 1 for Function 2 call
         MVC   P1IFUNC,=CL2'2 '              Get function code
         MVC   P1IBORO1,INBORO1                  borough code 1
         MVC   P1ISTRT1,INSTRT1                  street name  1
         MVC   P1IBORO2,INBORO2                  borough code 2
         MVC   P1ISTRT2,INSTRT2                  street name  2
         MVC   P1ISNL(L'P1ISNL),=C'25'    Normalized street name length
* Call Function 2 (2-Work-Area call)
         CALL  GBI,(P1BAL,P2BAL),VL
* Check Return code
         CLC   P1ORC(2),=C'00'         Good return?
         BE    PROCESS                     Yes, process returned data
* Handle errors and warnings
ERREXIT  DS    0H
         CLC   P1ORC(2),=C'01'         Warning condition?
         BE    PUTWARN                    Yes, process warning
*                                              and then process input;
*                                         otherwise, process error
         MVC   ERFUNC,P1IFUNC              function code
         MVC   ERRET(L'P1ORC),P1ORC        return code
         MVC   ERREAS(L'P1OREASN),P1OREASN reason code
         MVC   ERRMSG(L'P1OERROR),P1OERROR Geosupport error message
         PUT   OUTFILE,ERR1            Print error message 1
         MVC   ERINPUT,DSPLYIN    2 boro codes and 2 street names
         PUT   OUTFILE,ERR2            Print error message 2
         B     NEXTREC
PUTWARN  DS    0H
         MVC   WRFUNC,P1IFUNC              function code
         MVC   WRRET(L'P1ORC),P1ORC        return code
         MVC   WRREAS(L'P1OREASN),P1OREASN reason code
         MVC   WRNMSG(L'P1OERROR),P1OERROR Geosupport warning message
         PUT   OUTFILE,WARN            Print warning message
         SPACE
* Handle successful Geosupport calls (Return Code <= 01)
PROCESS  DS    0H
         MVI   OUTFIXED,C'0'      Init. carriage control to dbl-space
         CLC   P1ORC(2),=C'01'    Was a warning issued?
         BNE   MOVEOUT               No..
         MVI   OUTFIXED,C' '         Yes, single-space output instead
MOVEOUT  DS    0H
         MVC   OINPUT,DSPLYIN    Pair of boro codes and street names
         MVC   OZIP,P2F2ZIP      ZIP code
 MVC   OCOMM,P2F2CDN     community district number
         MVC   OPCT,P2F2POP      police precinct
         MVC   OSCHL,P2F2SCH     school district
***** At this point, clear WA1 again, call Function D, and move ******
***** all reported Intersecting Street Names to output          ******
         TITLE 'GET INTERSECTING STREET NAMES, USING FUNCTION D'
         SPACE 2
*************************************************************
```

```
* TO GET THE STREET NAMES FOR INTERSECTING STREET CODES     *
* MAKE A FUNCTION D CALL:                                    *
*   (1) INITIALIZE WORKAREA 1 TO SPACES                      *
*       AND SET WORK AREA FORMAT FLAG TO 'C'                 *
*   (2) SET THE WA1'S FUNCTION CODE FIELD TO D               *
*   (3) USE THE COMPACT STREET NAMES OPTION TO OBTAIN        *
*       STREET NAMES FORMATTED FOR DISPLAY                   *
*   (4) MOVE THE PACKED BORO AND STREET CODE TO              *
*       WA1'S INPUT STREET CODE 1 FIELD                      *
*   (5) CALL GBI WITH 1 WORKAREA                             *
*   (6) CHECK RETURN CODES FOR ERRORS OR WARNINGS            *
*************************************************************
         SPACE
* For each street code of intersecting streets, including those input,
* call Function D to get the corresponding street name
         XR    R4,R4
         MVC   INTWK,P2F2#INT   get count of intersecting streets.
         NI    INTWK,X'0F'      remove zone, leaving numeric
         IC    R4,INTWK         count of intersecting streets.
         LA    R5,P2F2CODE      point to street code(s).
         SPACE
INTRLOOP DS    0H
* Clear WA1 to blanks
         LA    R8,P1BAL    "To" address for MVCL
         LA    R9,P1LENGTH     "To" length
         XR    R11,R11       for blanking out std WA1,
         ICM   R11,B'1000',=C' '  rather than moving data
* ...since if the "from" length reg. has lo-order zeroes, MVCL will
* pad the target area with the pad character of the "from" register
* and do nothing else (the "from" address register is not used).
         MVCL  R8,R10
*
         MVI   P1IPLIND,C'C'  set work area format indicator to COW
*
         SPACE
         MVC   P1IFUNC(2),=CL2'D '
         MVC   P1ISNL(L'P1ISNL),=C'25'    normalized street name length
         MVI   P1ICMPCT,C'C'              streets to be compacted
*
* Note  COW - MSW: P1ICDEx is the 10-digit street code (no boro)
*                  P1IBCDx is the Boro and 10-digit street code
*                  W1ICDEx is the packed Boro and 5-digit street code
*                  P2F2CODE is Boro and 5-digit street code list
*                  W2F2CODE is packed Boro and 5-digit street code list
*
         MVC   P1IBCD1(LB5SC),0(R5)   Intersecting boro and street code
         CALL  GBI,P1BAL,VL   Call Function D
* Check Return code
         CLC   P1ORC(2),=C'00'         Good return?
         BNE   ERREXIT                     No, error or warning
*                                          Yes, complete the record
*                                               and write it out
PFIX     NOP   PVAR
         OI    PFIX+1,X'F0'
         MVC   OINTRSC1,P1OSTRT1
```

ASSEMBLER SAMPLE PROGRAM #2 – Job Stream - COW

```
*  put out the initial output including the first intersecting street
         PUT   OUTFILE,OUTFIXED
         B     NEXTSC     Now get the rest of the street codes, if any
PVAR     DS    0H
         MVC   OINTRSCN,P1OSTRT1
* Print an output record and get the next intersecting street, if any
         PUT   OUTFILE,OUTVAR
NEXTSC   DS    0H
         LA    R5,LB5SC(,R5) point to next intersecting street code
         BCT   R4,INTRLOOP  if any, and process it;
         NI    PFIX+1,X'0F'    reset 1st-time (fixed/variable) switch
         B     NEXTREC      then, process next input record, if any
         SPACE
EXIT     DS    0H
OUTOPNER DS    0H
         CLOSE (INFILE)
         TM    OUTFILE+48,X'10'   Did OUTFILE open successfully?
         BNO   INOPNERR              No, bypass closing it
         CLOSE (OUTFILE)
INOPNERR DS    0H
         L     R13,4(,R13)
         L     R14,12(,R13)
         LM    R0,R12,20(R13)
         BR    R14
         SPACE 2
PARAMERR DS    0H       parameter error, missing or invalid
         LA    R15,8    rc=8
         B     EXIT
         TITLE 'DATA SECTION - REGISTER ASSIGNMENTS'
R0       EQU   0
R1       EQU   1
R2       EQU   2
R3       EQU   3
R4       EQU   4
R5       EQU   5
R6       EQU   6
R7       EQU   7
R8       EQU   8
R9       EQU   9
R10      EQU   10
R11      EQU   11
R12      EQU   12
R13      EQU   13
R14      EQU   14
R15      EQU   15
         TITLE 'FILE AND RECORD DEFINITIONS'
         PUSH  PRINT
         PRINT NOGEN
INFILE   DCB   DSORG=PS,MACRF=(GM),DDNAME=INFILE,
*
               RECFM=FB,LRECL=80,BLKSIZE=400,EODAD=EXIT
         SPACE
OUTFILE  DCB   DSORG=PS,MACRF=(PM),DDNAME=SYSPRINT,
*
               RECFM=FBA,LRECL=133,BLKSIZE=1330
```

```
*
         POP PRINT
         SPACE
INREC    DS    0CL80              Input record
INBORO1  DS    CL1                    First borough code
INSTRT1  DS    CL32                   First street name
INBORO2  DS    CL1                    Second borough code
INSTRT2  DS    CL32                   Second street name
         DC    14C' '                 filler
         SPACE
* Output records: header, normal, warning, and error
         SPACE
* header records
HDR1     DC    CL133'1SAMPLE ASSEMBLER #2 EXECUTION OUTPUT
*

*
                                             '
HDR2     DC    CL133'0*****------------------ INPUT INTERSECTION -------
C
               --------------***** *****---------------- SELECTED
OUTPUT*
                ITEMS ----------------*****'
HDR3     DC    CL133'0B IN-STREET-NAME-1                 B IN-STREET-
NA*
               ME-2                  ZIP CD NYPD-PCT SCHLDST
INTERSECTI*
               NG STREET NAMES            '
HDR4     DC    CL133' - -------------------------------- - ------------
*
               ------------------- ----- -- -------- ------- ----------
*
               ---------------------------'
         SPACE
* normal records, i.e., output for valid data
OUTFIXED DS    0CL133                 Fixed output
* Borough codes and street names for each of 2 streets are from input
         DC    C'0'
OINPUT   DS    CL69
OZIP     DS    CL5
         DC    C' '
OCOMM    DS    CL2
         DC    C' '
OPCT     DS    CL3
         DC    6C' '
OSCHL    DS    CL2
                   DC    6C' '
OINTRSC1 DS    CL25  Normalized name of first intersecting street
         SPACE
OUTVAR   DS    0CL133 Output line repeated per No. of Intersecting Sts.
         DC    C' '
         DC    95C' '
OINTRSCN DS    CL25  Normalized name of additional intersecting street
         DC    (133-121)C' '
         SPACE
```

```
* warning record
WARN     DS    0CL133
         DC    C'0'
         DC    C'**** FUNCTION '
WRFUNC   DS    CL2
         DC    C' WARNING, GRC = '
WRRET    DS    CL2
         DC    C' REASON CODE = '
WRREAS   DS    CL1
         DC    C'. '
WRNMSG   DS    CL80            Warning message
         SPACE
* error records
ERR1     DS    0CL133
         DC    C'0'
         DC    C'***** FUNCTION '
ERFUNC   DS    CL2
         DC    C' GRC = '
ERRET    DS    CL2
         DC    C' REASON = '
ERREAS   DS    CL1
         DC    C'. '
ERRMSG   DS    CL80            Error message
         DC    CL(133-120)' '
         SPACE
ERR2     DS    0CL133
         DC    C' '
ERINPUT  DS    CL69
         DC    CL(133-70)' '
         TITLE 'WORKING VARIABLES, VALUES, ETC.'
#INTER   DS    D        Working field for no. of intersecting streets
MYSAVE   DC    18F'0'
***********************************************************************
***** USE OF GEOSUPPORT COPY LIBRARIES (REFERENCED BELOW BY THE     ***
***** COPY STATEMENTS) IS STRONGLY ENCOURAGED.                      ***
***********************************************************************
         COPY  P1BAL              COPY WORK AREA 1
         EJECT
         COPY  P2BAL              COPY WORK AREA 2
         EJECT
         SPACE 2
DSPLYIN  DS    0CL69
DBORO1   DS    CL1
         DC    C' '
DSTRT1   DS    CL32
         DC    C' '
DBORO2   DS    CL1
         DC    C' '
DSTRT2   DS    CL32
         SPACE 2
INTWK    DS    XL1      work field for number of intersecting streets
LB5SC    EQU   6        length of Boro and 5-digit street code
         TITLE 'CONSTANTS AND LITERAL POOL'
         SPACE 2
         LTORG
```

```
         END   ASMC2SRC
//LKED.SYSIN  DD  *
 INCLUDE INCLIB(GBI)
/*
//LKED.INCLIB   DD  DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//*                                                                 *//


//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *//
//*                                                                 *//
//*  AS OF GEOSUPPORT VERSION 10.0,                                 *//
//*  THE STEPLIB (OR JOBLIB) OF THE GEOSUPPORT EXECUTION STEP       *//
//*  MUST INCLUDE THE FOLLOWING TWO CONCATENATED DATASETS:          *//
//*       A030.GEO.SUPPORT.PDSE.LOADLIB                             *//
//*       A030.GEO.SUPPORT.LOADLIB                                  *//
//*                                                                 *//
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *//
//GO.STEPLIB DD DSN=A030.GEO.SUPPORT.PDSE.LOADLIB,DISP=SHR
//           DD DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//*
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *//
//*                                                                 *//
//*   AS OF GEOSUPPORT VERSION 10.0,                                *//
//*   DD STATEMENTS FOR GEOSUPPORT DATA FILES (E.G. GRID, PAD,      *//
//*   ETC) ARE NO LONGER NEEDED AND ARE IGNORED. GEOSUPPORT         *//
//*   IS TAILORED TO USE STANDARD GEOSUPPORT DATA SET NAMES.        *//
//*   TO USE NON-STANDARD FILES, SEE YOUR SYSTEMS PROGRAMMER.       *//
//*                                                                 *//
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *//
//*
//SYSUDUMP DD  SYSOUT=*,OUTLIM=2000
//SYSPRINT DD  SYSOUT=*
//INFILE   DD  *
1CHAMBERS ST                     1HUDSON ST
1SIXTH AVE                       1W. 8 ST
1DUANE ST                        1READE ST
/*
//
```

SAMPLE ASSEMBLER #2 EXECUTION OUTPUT

```
*****----------------- INPUT INTERSECTION ---------------------***** *****--------------- SELECTED OUTPUT ITEMS ---------------
*****

B IN-STREET-NAME-1                 B IN-STREET-NAME-2                 ZIP CD NYPD-PCT SCHLDST INTERSECTING STREET NAMES
- -------------------------------- - ------------------------------- ----- -- -------- ------- ---------------------------------
----

1 CHAMBERS ST                      1 HUDSON ST                      10007 01 001      02      CHAMBERS STREET
                                                                                              HUDSON STREET
                                                                                              WEST BROADWAY

1 SIXTH AVE                        1 W. 8 ST                        10014 02 006      02      6 AVENUE
                                                                                              GREENWICH AVENUE
                                                                                              WEST 8 STREET

***** FUNCTION 2  GRC = 62 REASON =  . READE STREET & DUANE STREET DO NOT INTERSECT
1 DUANE ST                         1 READE ST
```

PL/1 SAMPLE PROGRAM #1

- Input Job Stream - MSW

- Input Job Stream - COW

- Output Report

PL/1 SAMPLE PROGRAM #1 – Job Stream - MSW

```
//PL1F1BAT  JOB YOUR-JOB-CARD-INFORMATION
//*
//********************************************************************
//***  PL1 SAMPLE BATCH GEOSUPPORT USER APPLICATION PROGRAM #1. ******
//***                   (MSW FORMAT)                            ******
//********************************************************************
//STEP1      EXEC IBMZCPLG,REGION=0M,GOPGM='PL1F1SC',
//           PARM.PLI='S,GS,INCLUDE',
//           PARM.LKED='AMODE(31)'
//PLI.SYSLIB DD DSN=A030.GEO.COPYLIB2,DISP=SHR
//           DD DSN=A030.GEO.COPYLIB,DISP=SHR
//SYSIN      DD *
 PL1F1SC:    PROC OPTIONS(MAIN);
   /*****************************************************************/
   /* THIS PROGRAM MAKES FUNCTION 1 AND D CALLS TO GEOSUPPORT USING */
   /* BORO, HOUSENUMBER, & STREET NAME SUPPLIED BY AN INSTREAM FILE.*/
   /* FUNCTION 1 RETURNS GEOGRAPHIC INFORMATION FOR AN ADDRESS.     */
   /* FUNCTION D TRANSLATES AN INPUT STREET CODE TO A STREET NAME.  */
   /* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * */
   /* NOTE: IF THE CROSS STREET NAMES FLAG WERE USED IN THE         */
   /*       ORIGINAL CALL TO FUNCTION 1, ALL THE CROSS STREET       */
   /*       NAMES WOULD HAVE BEEN RETURNED BY FUNCTION 1.           */
   /*****************************************************************/

 DCL EOF                     BIT(1)  INIT('0'B),
     YES                     BIT(1)  INIT('1'B),
     NO                      BIT(1)  INIT('0'B),
     ADDR                    BUILTIN,
     (I,J)                   FIXED BIN(15) INIT(0);

 /*******************************************************************/
 /**************   GBI DECLARATION BELOW IS REQUIRED   **************/
 /*** USE OF GEOSUPPORT COPY LIBRARIES (REFERENCED BELOW BY THE *****/
 /*** %INCLUDE STATEMENTS) IS STRONGLY ENCOURAGED.           *******/
 /*******************************************************************/
 DCL GBI                     ENTRY OPTIONS(ASM,INTER);
 %INCLUDE W1PL1;
 %INCLUDE W2PL1;

 /***** REPLACE CODE BELOW WITH YOUR OWN INPUT FILE DECLARATION *****/
 DCL INFILE FILE STREAM INPUT;
 DCL IN_BORO                 CHAR(01),
     IN_HOUSENUM             CHAR(12),
     IN_STREET_NAME          CHAR(32);

 /******** REPLACE CODE BELOW WITH YOUR OWN REPORT LAYOUT *********/
 DCL SYSPRINT FILE STREAM OUTPUT PRINT;
 ON ENDPAGE(SYSPRINT)
   PUT EDIT('SAMPLE PL1 PROGRAM #1 EXECUTION OUTPUT',
      '*****---------- INPUT ADDRESS ------------***** '||
      '*****---------------------'||
      ' SELECTED OUTPUT ITEMS ------------------------*****',
      'B HOUSE NUMBER IN-STREET-NAME                   '||
      '  ZIP CD NYPD-PCT SCHLDST '||
      'LOW CROSS STREET          HIGH CROSS STREET       ',
      '_ ____________ '||(32)'_'||' '||
      '_____ __ ________ _______ '||
```

```
      (25)'_'||' '||(25)'_')
     (PAGE,COL(1),A,SKIP(2),COL(1),A,COL(1),A,SKIP(0),COL(1),A);
 OPEN FILE(SYSPRINT) LINESIZE(133);
 SIGNAL ENDPAGE(SYSPRINT);
 /*****************************************************************/


ON ENDFILE(INFILE)  BEGIN; EOF=YES; GOTO ENDLOOP;  END;
 OPEN FILE(INFILE);

 DO WHILE (EOF = NO);

   /********** REPLACE CODE BELOW WITH YOUR OWN INPUT *************/
   GET FILE(INFILE) EDIT(IN_BORO,IN_HOUSENUM,IN_STREET_NAME)
                    (COL(1),A(1),X(1),A(12),X(1),A(32));

   /***************************************************************/
   /* TO MAKE A FUNCTION 1 CALL:                                  */
   /*   (1) INITIALIZE WORKAREA 1 TO SPACES                       */
   /*   (2) SET WA1'S FUNCTION CODE FIELD TO 1                    */
   /*   (3) MOVE THE INPUT BORO TO WA1'S INPUT BORO CODE FIELD    */
   /*   (4) MOVE THE INPUT HOUSE NUMBER TO WA1'S INPUT HOUSE NUMBER */
   /*       FIELD                                                 */
   /*   (5) MOVE THE INPUT STREET TO WA1'S INPUT STREET NAME FIELD  */
   /*   (6) CALL GBI WITH 2 WORKAREAS                             */
   /*   (7) CHECK RETURN CODES FOR ERRORS OR WARNINGS             */
   /***************************************************************/
   WORK1PL1 = ' ';
   GEO_WA1_IN_FUNCTION_1 = '1';
   GEO_WA1_IN_BORO       = IN_BORO;
   GEO_WA1_IN_HOUSENUM   = IN_HOUSENUM;
   GEO_WA1_IN_STREET_1   = IN_STREET_NAME;

   CALL GBI(W1PL1,W2PL1);

   IF GEO_WA1_OUT_RC_1||GEO_WA1_OUT_RC_2 ¬= '00' &
      GEO_WA1_OUT_RC_1||GEO_WA1_OUT_RC_2 ¬= '01'
   THEN DO;
          /******** INSERT YOUR OWN ERROR HANDLING ROUTINE HERE *****/
          PUT EDIT(IN_BORO,IN_HOUSENUM,IN_STREET_NAME,
                   '*** FUNCTION 1 GRC =',
                   GEO_WA1_OUT_RC_1||GEO_WA1_OUT_RC_2,
                   'REASON CODE =',GEO_WA1_OUT_REASON_CODE,
                   '*** ',GEO_WA1_OUT_ERROR_MESSAGE)
                  (SKIP(2),COL(1),(7)(A,X(1)),SKIP(1),COL(49),A,A);
        END;
   ELSE DO;
          PUT EDIT(IN_BORO,IN_HOUSENUM,IN_STREET_NAME)
                  (SKIP(2),COL(1),(3)(A,X(1)));
          IF GEO_WA1_OUT_RC_1||GEO_WA1_OUT_RC_2 = '01'
          THEN DO;
                 /** INSERT YOUR OWN WARNING HANDLING ROUTINE HERE **/
                 PUT EDIT('*** FUNCTION 1 WARNING, GRC =',
                          GEO_WA1_OUT_RC_1||GEO_WA1_OUT_RC_2,
                          'REASON CODE =',GEO_WA1_OUT_REASON_CODE,
                          '*** ',GEO_WA1_OUT_ERROR_MESSAGE)
                         (COL(49),(4)(A,X(1)),SKIP(1),COL(49),A,A);
               END;
          /*************************************************/
          /***** REPLACE CODE BELOW WITH YOUR OWN CODE FOR ****/
```

```
         /***** PROCESSING SUCCESSFUL GEOSUPPORT CALLS    ****/
         /*************************************************/
         PUT EDIT(GEO_WA2_FN1_ZIP,GEO_WA2_FN1_COMDIST_NUMBER,
                  GEO_WA2_FN1_POL_PRECINCT,GEO_WA2_FN1_SCHOOLDIST)
                 (COL(49),(3)(A,X(1)),X(5),A);
         /******************************************************/
         /* THIS PROGRAM ASSUMES THERE EXISTS AT LEAST ONE HIGH AND */

         /* ONE LOW CROSS STREET.  TO GET THE STREET NAMES OF THE   */
         /* FIRST-LISTED HIGH AND FIRST-LISTED LOW CROSS STREETS    */
         /* FROM THE HIGH AND LOW STREET CODE LISTS CALL            */
         /* FUNCTION D:                                             */
         /*    (1) INITIALIZE WORKAREA 1 TO SPACES                  */
         /*    (2) SET WA1'S FUNCTION CODE FIELD TO D               */
         /*    (3) SET WA1'S STREET NAME LENGTH FIELD TO DESIRED    */
         /*        VALUE (IN THIS CASE 25 BECAUSE THE REPORT LINE   */
         /*               HAS SPACE FOR ONLY 25 CHARACTERS)         */
         /*    (4) USE THE COMPACT STREET NAMES OPTION TO OBTAIN    */
         /*        STREET NAMES FORMATTED FOR DISPLAY               */
         /*    (5) MOVE WA2'S LOW PBSC FIELD TO WA1'S INPUT STREET  */
         /*        CODE 1 FIELD                                     */
         /*    (6) MOVE WA2'S HIGH PBSC FIELD TO WA1'S INPUT STREET */
         /*        CODE 2 FIELD                                     */
         /*    (7) CALL GBI WITH 1 WORKAREA                         */
         /*    (8) CHECK RETURN CODES FOR ERRORS OR WARNINGS        */
         /******************************************************/
         WORK1PL1 = ' ';
         GEO_WA1_IN_FUNCTION_1         = 'D';
         GEO_WA1_IN_SNL                = '25';
         GEO_WA1_IN_COMPACT_NAME_FLAG = 'C';
         GEO_WA1_IN_STREETCODE_1       = GEO_WA2_FN1_LOW_PBSC(1);
         GEO_WA1_IN_STREETCODE_2       = GEO_WA2_FN1_HI_PBSC(1);
         CALL GBI(W1PL1);
         IF GEO_WA1_OUT_RC_1||GEO_WA1_OUT_RC_2 = '00'
         THEN DO;
                /******** INSERT YOUR OWN CODE HERE *******/
                PUT EDIT(GEO_WA1_OUT_STREET_1,GEO_WA1_OUT_STREET_2)
                        (COL(75),A(25),X(1),A(25));
              END;
         ELSE DO;
                /*** INSERT YOUR OWN ERROR HANDLING ROUTINE HERE ***/
                PUT EDIT(IN_BORO,IN_HOUSENUM,IN_STREET_NAME,
                         '*** FUNCTION D GRC =',
                         GEO_WA1_OUT_RC_1||GEO_WA1_OUT_RC_2,
                         'REASON CODE =',GEO_WA1_OUT_REASON_CODE,',',
                         '*** ',GEO_WA1_OUT_ERROR_MESSAGE)
                        (SKIP(2),COL(1),(8)(A,X(1)),
                         SKIP(1),COL(49),A,A);
              END;
       END;
 ENDLOOP:  END;
 CLOSE FILE(INFILE);
 END PL1F1SC;
/*
//LKED.SYSIN  DD *
  INCLUDE INCLIB(GBI)
/*
//INCLIB      DD DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//*
```

```
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *//
//*   AS OF GEOSUPPORT VERSION 10.0,                                */
//*   THE STEPLIB (OR JOBLIB) OF THE GEOSUPPORT EXECUTION STEP   *//
//*   MUST INCLUDE THE FOLLOWING TWO CONCATENATED DATASETS:         *//
//*        A030.GEO.SUPPORT.PDSE.LOADLIB                           *//
//*        A030.GEO.SUPPORT.LOADLIB                                *//
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *//
//GO.STEPLIB  DD DSN=A030.GEO.SUPPORT.PDSE.LOADLIB,DISP=SHR
//            DD DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//GO.SYSLMOD  DD DSN=&&GOSET,DISP=(OLD,DELETE)


//*
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *//
//*   AS OF GEOSUPPORT VERSION 10.0,                                *//
//*   DD STATEMENTS FOR GEOSUPPORT DATA FILES (E.G. GRID, PAD,   *//
//*   ETC) ARE NO LONGER NEEDED AND ARE IGNORED. GEOSUPPORT      *//
//*   IS TAILORD TO USE STANDARD GEOSUPPORT DATA SET NAMES.      *//
//*   TO USE NON-STANDARD FILES, SEE YOUR SYSTEMS PROGRAMMER.    *//
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *//
//*
//GO.SYSPRINT DD SYSOUT=A
//GO.INFILE   DD *
1 22           READE ST
1 500          DUANE ST
1 2-4          BROADWAY
4 165-100      BAISLEY BLVD
4 165-1000     BAISLEY BLVD
/*
//
```

PL/1 SAMPLE PROGRAM #1 – Job Stream - COW

```
//PL1C1SRC  JOB YOUR-JOB-CARD-INFORMATION
//*
//*********************************************************************
//***  PL1 SAMPLE BATCH GEOSUPPORT USER APPLICATION PROGRAM #1. ******
//***                   (COW FORMAT)                            ******
//*********************************************************************
//STEP1      EXEC IBMZCPLG,REGION=0M,GOPGM='PL1C1SC',
//           PARM.PLI='S,GS,INCLUDE',
//           PARM.LKED='AMODE(31),LIST'
//PLI.SYSLIB DD DSN=A030.GEO.COPYLIB2,DISP=SHR
//           DD DSN=A030.GEO.COPYLIB,DISP=SHR
//SYSIN      DD *
 PL1C1SC:   PROC OPTIONS(MAIN);
   /*************************************************************/
   /* THIS PROGRAM MAKES FUNCTION 1 AND D CALLS TO GEOSUPPORT USING */
   /* BORO, HOUSENUMBER, & STREET NAME SUPPLIED BY AN INSTREAM FILE.*/
   /* FUNCTION 1 RETURNS GEOGRAPHIC INFORMATION FOR AN ADDRESS.     */
   /* FUNCTION D TRANSLATES AN INPUT STREET CODE TO A STREET NAME.  */
   /* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * */
   /* NOTE: IF THE CROSS STREET NAMES FLAG WERE USED IN THE         */
   /*       ORIGINAL CALL TO FUNCTION 1, ALL THE CROSS STREET       */
   /*       NAMES WOULD HAVE BEEN RETURNED BY FUNCTION 1.           */
   /*************************************************************/

 DCL EOF                     BIT(1)  INIT('0'B),
     YES                     BIT(1)  INIT('1'B),
     NO                      BIT(1)  INIT('0'B),
     ADDR                    BUILTIN,
     (I,J)                   FIXED BIN(15) INIT(0);

 /*****************************************************************/
 /**************   GBI DECLARATION BELOW IS REQUIRED   **************/
 /*** USE OF GEOSUPPORT COPY LIBRARIES (REFERENCED BELOW BY THE *****/
 /*** %INCLUDE STATEMENTS) IS STRONGLY ENCOURAGED.           *******/
 /*****************************************************************/
 DCL GBI                     ENTRY OPTIONS(ASM,INTER);
 %INCLUDE P1PL1;
 %INCLUDE P2PL1;

 /***** REPLACE CODE BELOW WITH YOUR OWN INPUT FILE DECLARATION *****/
 DCL INFILE FILE STREAM INPUT;
 DCL IN_BORO                 CHAR(01),
     IN_HOUSENUM             CHAR(12),
     IN_STREET_NAME          CHAR(32);

 /******** REPLACE CODE BELOW WITH YOUR OWN REPORT LAYOUT *********/
 DCL SYSPRINT FILE STREAM OUTPUT PRINT;
 ON ENDPAGE(SYSPRINT)
   PUT EDIT('SAMPLE PL1 PROGRAM #1 EXECUTION OUTPUT',
      '*****---------- INPUT ADDRESS ------------***** '||
      '*****---------------------'||
      ' SELECTED OUTPUT ITEMS -----------------------*****',
      'B HOUSE NUMBER IN-STREET-NAME                     '||
      '  ZIP CD NYPD-PCT SCHLDST '||
      'LOW CROSS STREET          HIGH CROSS STREET        ',
      '_ ____________ '||(32)'_'||' '||
      '_____ __ ________ _______ '||
```

```
      (25)'_'||' '||(25)'_')
     (PAGE,COL(1),A,SKIP(2),COL(1),A,COL(1),A,SKIP(0),COL(1),A);
 OPEN FILE(SYSPRINT) LINESIZE(133);
 SIGNAL ENDPAGE(SYSPRINT);


*****************************************************************/

 ON ENDFILE(INFILE)  BEGIN; EOF=YES; GOTO ENDLOOP;  END;
 OPEN FILE(INFILE);

 DO WHILE (EOF = NO);

   /********** REPLACE CODE BELOW WITH YOUR OWN INPUT *************/
   GET FILE(INFILE) EDIT(IN_BORO,IN_HOUSENUM,IN_STREET_NAME)
                     (COL(1),A(1),X(1),A(12),X(1),A(32));

   /**************************************************************/
   /* TO MAKE A FUNCTION 1 CALL:                                 */
   /*   (1) INITIALIZE WORKAREA 1 TO SPACES                      */
   /*   (2) SET WA1'S FUNCTION CODE FIELD TO 1                   */
   /*   (3) MOVE THE INPUT BORO TO WA1'S INPUT BORO CODE FIELD   */
   /*   (4) MOVE THE INPUT HOUSE NUMBER TO WA1'S INPUT HOUSE NUMBER */
   /*       FIELD                                                */
   /*   (5) MOVE THE INPUT STREET TO WA1'S INPUT STREET NAME FIELD  */
   /*   (6) CALL GBI WITH 2 WORKAREAS                            */
   /*   (7) CHECK RETURN CODES FOR ERRORS OR WARNINGS            */
   /**************************************************************/
   WORK1PL1 = ' ';
   PIWA1_IN_FUNCTION_1 = '1';
   PIWA1_IN_BORO_1     = IN_BORO;
    /* for cow format the field house_number has length=16 */
   PIWA1_IN_HOUSENUM_DISPLAY  = IN_HOUSENUM;
   PIWA1_IN_STREET_1   = IN_STREET_NAME;
   PIWA1_IN_PLATFORM_INDICATOR = 'C';
   /************************************************************/
   /************************************************************/
   /* AS OF GEOSUPPORT 10.1,                                   */
   /* TO RECEIVE ROADBED-SPECIFIC INFORMATION,                 */
   /* SET THE ROADBED REQUEST SWITCH TO 'R', AS FOLLOWS:       */
   /* PIWA1_IN_ROADBED_REQ_SWITCH = 'R';                       */
   /************************************************************/

   CALL GBI(P1PL1,P2PL1);

   IF PIWA1_OUT_RETURN_CODE ¬= '00' & PIWA1_OUT_RETURN_CODE ¬= '01'
   THEN DO;
          /******** INSERT YOUR OWN ERROR HANDLING ROUTINE HERE *****/
          PUT EDIT(IN_BORO,IN_HOUSENUM,IN_STREET_NAME,
                   '*** FUNCTION 1 GRC =',PIWA1_OUT_RETURN_CODE,
                   'REASON CODE =',PIWA1_OUT_REASON_CODE,
                   '*** ',PIWA1_OUT_ERROR_MESSAGE)
                  (SKIP(2),COL(1),(7)(A,X(1)),SKIP(1),COL(49),A,A);
        END;
   ELSE DO;
          PUT EDIT(IN_BORO,IN_HOUSENUM,IN_STREET_NAME)
                  (SKIP(2),COL(1),(3)(A,X(1)));
          IF PIWA1_OUT_RETURN_CODE = '01'
          THEN DO;
                 /** INSERT YOUR OWN WARNING HANDLING ROUTINE HERE **/
```

```
       PUT EDIT('*** FUNCTION 1 WARNING, GRC =',
                PIWA1_OUT_RETURN_CODE,
                'REASON CODE =',PIWA1_OUT_REASON_CODE,
                '*** ',PIWA1_OUT_ERROR_MESSAGE)
               (COL(49),(4)(A,X(1)),SKIP(1),COL(49),A,A);
     END;

  /*************************************************/
  /***** REPLACE CODE BELOW WITH YOUR OWN CODE FOR ****/
  /***** PROCESSING SUCCESSFUL GEOSUPPORT CALLS    ****/
  /*************************************************/
  PUT EDIT(PIWA2_FN1_ZIP,PIWA2_FN1_COM_DIST_NUM,
           PIWA2_FN1_POL_PRECINCT,PIWA2_FN1_SCHL_DIST)
          (COL(49),(3)(A,X(1)),X(5),A);
  /*******************************************************/
  /* THIS PROGRAM ASSUMES THERE EXISTS AT LEAST ONE HIGH AND */
  /* ONE LOW CROSS STREET.  TO GET THE STREET NAMES OF THE   */
  /* FIRST-LISTED HIGH AND FIRST-LISTED LOW CROSS STREETS    */
  /* FROM THE HIGH AND LOW STREET CODE LISTS CALL            */
  /* FUNCTION D:                                             */
  /*   (1) INITIALIZE WORKAREA 1 TO SPACES                   */
  /*   (2) SET WA1'S FUNCTION CODE FIELD TO D                */
  /*   (3) SET WA1'S STREET NAME LENGTH FIELD TO DESIRED     */
  /*       VALUE (IN THIS CASE 25 BECAUSE THE REPORT LINE    */
  /*              HAS SPACE FOR ONLY 25 CHARACTERS)          */
  /*   (4) USE THE COMPACT STREET NAMES OPTION TO OBTAIN     */
  /*       STREET NAMES FORMATTED FOR DISPLAY                */
  /*   (5) MOVE WA2'S LOW B5SC FIELD TO WA1'S INPUT STREET   */
  /*       CODE 1 FIELD                                      */
  /*   (6) MOVE WA2'S HIGH B5SC FIELD TO WA1'S INPUT STREET  */
  /*       CODE 2 FIELD                                      */
  /*   (7) CALL GBI WITH 1 WORKAREA                          */
  /*   (8) CHECK RETURN CODES FOR ERRORS OR WARNINGS         */
  /*******************************************************/
  WORK1PL1 = ' ';
  PIWA1_IN_PLATFORM_INDICATOR = 'C';
  PIWA1_IN_FUNCTION_1        = 'D';
  PIWA1_IN_SNL               = '25';
  PIWA1_IN_SN_NORM_FORMAT    = 'C';

  PIWA1_IN_BORO_1  = SUBSTR(PIWA2_FN1_LOW_B5SC(1),1,1);
  PIWA1_IN_10SC_1  = SUBSTR(PIWA2_FN1_LOW_B5SC(1),2,5);
  PIWA1_IN_BORO_2  = SUBSTR(PIWA2_FN1_HI_B5SC(1),1,1);
  PIWA1_IN_10SC_2  = SUBSTR(PIWA2_FN1_HI_B5SC(1),2,5);


  CALL GBI(P1PL1);
  IF PIWA1_OUT_RETURN_CODE = '00'
  THEN DO;
       /******** INSERT YOUR OWN CODE HERE *******/
       PUT EDIT(PIWA1_OUT_STREET_1,PIWA1_OUT_STREET_2)
               (COL(75),A(25),X(1),A(25));
     END;
  ELSE DO;
       /*** INSERT YOUR OWN ERROR HANDLING ROUTINE HERE ***/
       PUT EDIT(IN_BORO,IN_HOUSENUM,IN_STREET_NAME,
                '*** FUNCTION D GRC =',
                PIWA1_OUT_RETURN_CODE,
                'REASON CODE =',PIWA1_OUT_REASON_CODE,',',
                '*** ',PIWA1_OUT_ERROR_MESSAGE)
```

```
                         (SKIP(2),COL(1),(8)(A,X(1)),
                          SKIP(1),COL(49),A,A);
              END;
       END;
 ENDLOOP:  END;
 CLOSE FILE(INFILE);
 END PL1C1SC;
/*
//LKED.SYSIN  DD *
INCLUDE INCLIB(GBI)
/*
//INCLIB      DD DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//*
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *//
//*   AS OF GEOSUPPORT VERSION 10.0,                               *//
//*   THE STEPLIB (OR JOBLIB) OF THE GEOSUPPORT EXECUTION STEP     *//
//*   MUST INCLUDE THE FOLLOWING TWO CONCATENATED DATASETS:        *//
//*        A030.GEO.SUPPORT.PDSE.LOADLIB                           *//
//*        A030.GEO.SUPPORT.LOADLIB                                *//
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *//
//GO.STEPLIB  DD DSN=A030.GEO.SUPPORT.PDSE.LOADLIB,DISP=SHR
//            DD DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//GO.SYSLMOD  DD DSN=&&GOSET,DISP=(OLD,DELETE)
//*
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *//
//*   AS OF GEOSUPPORT VERSION 10.0,                               *//
//*   DD STATEMENTS FOR GEOSUPPORT DATA FILES (E.G. GRID, PAD,     *//
//*   ETC) ARE NO LONGER NEEDED AND ARE IGNORED. GEOSUPPORT        *//
//*   IS TAILORD TO USE STANDARD GEOSUPPORT DATA SET NAMES.        *//
//*   TO USE NON-STANDARD FILES, SEE YOUR SYSTEMS PROGRAMMER.      *//
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *//
//*
//GO.SYSPRINT DD SYSOUT=A
//GO.INFILE   DD *
1 22           READE ST
1 500          DUANE ST
1 2-4          BROADWAY
4 165-100      BAISLEY BLVD
4 165-1000     BAISLEY BLVD
/*
//
_
```

SAMPLE PL1 PROGRAM #1 EXECUTION OUTPUT

```
*****---------- INPUT ADDRESS ------------***** *****---------------------- SELECTED OUTPUT ITEMS ----------------------*****

B HOUSE NUMBER IN-STREET-NAME                     ZIP CD NYPD-PCT SCHLDST LOW CROSS STREET         HIGH CROSS STREET
- ------------ -------------------------------- ----- -- -------- ------- ------------------------- -------------------------


1 22           READE ST                         10007 01 005      02      ELK STREET                BROADWAY

1 500          DUANE ST                         *** FUNCTION 1 GRC = 42 REASON CODE =
                                                *** ADDRESS NUMBER OUT OF RANGE

1 2-4          BROADWAY                         *** FUNCTION 1 WARNING, GRC = 01 REASON CODE = 1
                                                *** ADDR NUMBER ALTERED: RANGE ASSUMED. USING DIGITS BEFORE DASH ONLY
                                                10004 01 001      02      STONE STREET              BOWLING GREEN

4 165-100      BAISLEY BLVD                     11434 12 113      28      GUY R BREWER BOULEVARD    BEDELL STREET

4 165-1000     BAISLEY BLVD                     *** FUNCTION 1 GRC = 13 REASON CODE = 2
                                                *** ADDRESS NBR 165-1000  HAS MORE THAN 3 DIGITS AFTER THE DASH.
```

PL/1 SAMPLE PROGRAM #2

- Input Job Stream - MSW

- Input Job Stream - COW

- Output Report

PL/1 SAMPLE PROGRAM #2 –Job Stream - MSW

```
//PL1F2SRC  JOB YOUR-JOB-CARD-INFORMATION
//*
//********************************************************************
//***  PL1 SAMPLE BATCH GEOSUPPORT USER APPLICATION PROGRAM #2. ******
//***                 (MSW FORMAT)                              ******
//********************************************************************
//STEP1      EXEC IBMZCPLG,REGION=0M,GOPGM='PL1F2SR',
//           PARM.PLI='S,GS,INCLUDE',
//           PARM.LKED='AMODE(31)'
//PLI.SYSLIB DD DSN=A030.GEO.COPYLIB2,DISP=SHR
//           DD DSN=A030.GEO.COPYLIB,DISP=SHR
//SYSIN      DD *
 PL1F2SR:    PROC OPTIONS(MAIN);
   /******************************************************************/
   /* THIS PROGRAM MAKES FUNCTION 2 AND D CALLS TO GEOSUPPORT USING  */
   /* TWO BOROS AND TWO STREET NAMES SUPPLIED BY AN INSTREAM FILE.   */
   /* FUNCTION 2 RETURNS GEOGRAPHIC INFORMATION FOR AN INTERSECTION. */
   /* FUNCTION D TRANSLATES AN INPUT STREET CODE TO A STREET NAME.   */
   /* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *  */
   /* NOTE: IF THE CROSS STREET NAMES FLAG WERE USED IN THE          */
   /*       ORIGINAL CALL TO FUNCTION 2, ALL THE CROSS STREET        */
   /*       NAMES WOULD HAVE BEEN RETURNED BY FUNCTION 2.            */
   /******************************************************************/

 DCL EOF                     BIT(1)  INIT('0'B),
     YES                     BIT(1)  INIT('1'B),
     NO                      BIT(1)  INIT('0'B),
     ADDR                    BUILTIN,
     (I,J)                   FIXED BIN(15) INIT(0);

 /**************** GBI DECLARATION BELOW IS REQUIRED ****************/
 DCL GBI                     ENTRY OPTIONS(ASM,INTER);

 /*******************************************************************/
 /** USE OF GEOSUPPORT COPY LIBRARIES (REFERENCED BY THE %INCLUDE  **/
 /** STATEMENTS) IS STRONGLY ENCOURAGED                            **/
 /*******************************************************************/
 %INCLUDE W1PL1;
 %INCLUDE W2PL1;

 /***** REPLACE CODE BELOW WITH YOUR OWN INPUT FILE DECLARATION *****/
 DCL INFILE FILE STREAM INPUT;
 DCL IN_BORO1                CHAR(01),
     IN_STREET_NAME1         CHAR(32),
     IN_BORO2                CHAR(01),
     IN_STREET_NAME2         CHAR(32);

 /******** REPLACE CODE BELOW WITH YOUR OWN REPORT LAYOUT *********/
 DCL SYSPRINT FILE STREAM OUTPUT PRINT;
 ON ENDPAGE(SYSPRINT)
   PUT EDIT('SAMPLE PL1 PROGRAM #2 EXECUTION OUTPUT',
      '*****------------------ INPUT INTERSECTION '||(22)'-'||'***** '||
      '*****------------ SELECTED OUTPUT ITEMS -------------*****',
      'B IN-STREET-NAME-1'||(17)' '||'B IN-STREET-NAME-2'||(17)' '||
      '  ZIP CD NYPD-PCT SCHLDST INTERSECTING STREET NAMES        ',
      '_ '||(32)'_'||' _ '||(32)'_'||' '||
      '_____ __ ________ _______ '||(32)'_')
```

```
    (PAGE,COL(1),A,SKIP(2),COL(1),A,COL(1),A,SKIP(0),COL(1),A);
OPEN FILE(SYSPRINT) LINESIZE(133);
SIGNAL ENDPAGE(SYSPRINT);
/************************************************************/
ON ENDFILE(INFILE)  BEGIN; EOF=YES; GOTO ENDLOOP;  END;
OPEN FILE(INFILE);

DO WHILE (EOF = NO);

  /********** REPLACE CODE BELOW WITH YOUR OWN INPUT *************/
  GET FILE(INFILE) EDIT(IN_BORO1,IN_STREET_NAME1,
                        IN_BORO2,IN_STREET_NAME2)
                       (COL(1),A(1),X(1),A(32),X(1),A(1),X(1),A(32));

  /**************************************************************/
  /* TO MAKE A FUNCTION 2 CALL:                                 */
  /*   (1) INITIALIZE WORKAREA 1 TO SPACES                      */
  /*   (2) SET WA1'S FUNCTION-CODE TO 2                         */
  /*   (3) MOVE THE 1ST INPUT BORO TO WA1'S INPUT BORO CODE FIELD   */
  /*   (4) MOVE THE 1ST INPUT STREET TO WA1'S INPUT STREET NAME     */
  /*       FIELD                                                */
  /*   (5) MOVE THE 2ND INPUT BORO TO WA1'S INPUT BORO CODE 2 FIELD */
  /*   (6) MOVE THE 2ND INPUT STREET TO WA1'S INPUT STREET NAME 2   */
  /*       FIELD                                                */
  /*   (7) CALL GBI WITH 2 WORKAREAS                            */
  /*   (8) CHECK RETURN CODES FOR ERRORS OR WARNINGS            */
  /**************************************************************/
  WORK1PL1 = ' ';
  GEO_WA1_IN_FUNCTION_1 = '2';
  GEO_WA1_IN_BORO       = IN_BORO1;
  GEO_WA1_IN_STREET_1   = IN_STREET_NAME1;
  GEO_WA1_IN_BORO_2     = IN_BORO2;
  GEO_WA1_IN_STREET_2   = IN_STREET_NAME2;

  CALL GBI(W1PL1,W2PL1);

  IF GEO_WA1_OUT_RC_1||GEO_WA1_OUT_RC_2 ¬= '00' &
     GEO_WA1_OUT_RC_1||GEO_WA1_OUT_RC_2 ¬= '01'
  THEN DO;
         /****** INSERT YOUR OWN ERROR HANDLING ROUTINE HERE *******/
         PUT EDIT('***** FUNCTION 2 GRC =',
                  GEO_WA1_OUT_RC_1||GEO_WA1_OUT_RC_2,
                  'REASON =',GEO_WA1_OUT_REASON_CODE,',',
                  GEO_WA1_OUT_ERROR_MESSAGE,
                  IN_BORO1,IN_STREET_NAME1,IN_BORO2,IN_STREET_NAME2)
                 (SKIP(2),COL(1),(3)(A,X(1)),A,A,X(1),A,
                  SKIP(1),(4)(A,X(1)));
       END;
  ELSE
      IF GEO_WA1_OUT_RC_1||GEO_WA1_OUT_RC_2 = '01'
      THEN DO;
             /*** INSERT YOUR OWN WARNING HANDLING ROUTINE HERE ****/
             PUT EDIT('***** FUNCTION 2 WARNING, GRC = '||
                      GEO_WA1_OUT_RC_1||GEO_WA1_OUT_RC_2||', '||
                      'REASON CODE = '||GEO_WA1_OUT_REASON_CODE||
                      ', '||GEO_WA1_OUT_ERROR_MESSAGE,
                      IN_BORO1,IN_STREET_NAME1,
                      IN_BORO2,IN_STREET_NAME2)
                     (SKIP(2),COL(1),A,SKIP(1),(4)(A,X(1)));
           END;
```

```
   IF GEO_WA1_OUT_RC_1||GEO_WA1_OUT_RC_2 = '00'|
      GEO_WA1_OUT_RC_1||GEO_WA1_OUT_RC_2 = '01'
   THEN DO;
         /*********************************************************/
  /***** REPLACE CODE BELOW WITH YOUR OWN CODE FOR ***********/
         /***** PROCESSING SUCCESSFUL GEOSUPPORT CALLS.         *****/
         /*********************************************************/
         PUT EDIT(IN_BORO1,IN_STREET_NAME1,IN_BORO2,IN_STREET_NAME2,
                  GEO_WA2_FN2_ZIP,GEO_WA2_FN2_COMDIST_NUMBER,
                  GEO_WA2_FN2_POL_PRECINCT,GEO_WA2_FN2_SCHOOLDIST)
                 (SKIP(2),COL(1),(7)(A,X(1)),X(5),A);
         DO J = 1 TO GEO_WA2_FN2_NUM_OF_INTERSECTS;
           /****************************************************/
           /* TO GET STREET NAMES FOR INTERSECTING STREET CODES   */
           /* MAKE A FUNCTION D CALL:                             */
           /*   (1) INITIALIZE WORKAREA 1 TO SPACES               */
           /*   (2) SET THE WA1'S FUNCTION CODE FIELD TO D        */
           /*   (3) USE THE COMPACT STREET NAMES OPTION TO OBTAIN */
           /*       STREET NAMES FORMATTED FOR DISPLAY            */
           /*   (4) MOVE THE PACKED BORO AND STREET CODE TO       */
           /*       WA1'S INPUT STREET CODE 1 FIELD               */
           /*   (5) CALL GBI WITH 1 WORKAREA                      */
           /*   (6) CHECK RETURN CODES FOR ERRORS OR WARNINGS     */
           /****************************************************/
           WORK1PL1 = ' ';
           GEO_WA1_IN_FUNCTION_1        = 'D';
           GEO_WA1_IN_COMPACT_NAME_FLAG = 'C';
           GEO_WA1_IN_STREETCODE_1 = GEO_WA2_FN2_INTERSECT_PBSC(J);
           CALL GBI(W1PL1);
           IF GEO_WA1_OUT_RC_1||GEO_WA1_OUT_RC_2 = '00'
           THEN DO;
                  /******** INSERT YOUR OWN CODE HERE *******/
                  PUT EDIT(GEO_WA1_OUT_STREET_1)  (COL(97),A);
                END;
           ELSE DO;
                  /** INSERT YOUR OWN ERROR HANDLING ROUTINE HERE **/
                  PUT EDIT('***** FUNCTION D GRC =',
                           GEO_WA1_OUT_RC_1||GEO_WA1_OUT_RC_2,
                           'REASON =',GEO_WA1_OUT_REASON_CODE,',',
                           GEO_WA1_OUT_ERROR_MESSAGE)
                          (SKIP(2),COL(1),(6)(A,X(1)));
                END;
         END;
       END;
 ENDLOOP:  END;
 CLOSE FILE(INFILE);
 END PL1F2SR;
/*
//LKED.SYSIN  DD *
  INCLUDE INCLIB(GBI)
/*
//INCLIB      DD DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//*
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *//
//*   AS OF GEOSUPPORT VERSION 10.0,                          *//
//*   THE STEPLIB (OR JOBLIB) OF THE GEOSUPPORT EXECUTION STEP  *//
//*   MUST INCLUDE THE FOLLOWING TWO CONCATENATED DATASETS:     *//
//*        A030.GEO.SUPPORT.PDSE.LOADLIB                      *//
//*        A030.GEO.SUPPORT.LOADLIB                           *//
```

```
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *//
//GO.STEPLIB  DD DSN=A030.GEO.SUPPORT.PDSE.LOADLIB,DISP=SHR
//            DD DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//GO.SYSLMOD  DD DSN=&&GOSET,DISP=(OLD,DELETE)
//*
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *//
//*   AS OF GEOSUPPORT VERSION 10.0,                               *//
//*   DD STATEMENTS FOR GEOSUPPORT DATA FILES (E.G. GRID, PAD,    *//
//*   ETC) ARE NO LONGER NEEDED AND ARE IGNORED. GEOSUPPORT       *//
//*   IS TAILORD TO USE STANDARD GEOSUPPORT DATA SET NAMES.       *//
//*   TO USE NON-STANDARD FILES, SEE YOUR SYSTEMS PROGRAMMER.     *//
//* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *//
//*
//GO.SYSPRINT DD SYSOUT=A
//GO.INFILE   DD *
1 CHAMBERS ST                     1 HUDSON ST
1 SIXTH AVE                       1 W. 8 ST
1 DUANE ST                        1 READE ST
/*
//
```

SAMPLE PL1 PROGRAM #2 EXECUTION OUTPUT

```
*****----------------- INPUT INTERSECTION ----------------------***** *****------------ SELECTED OUTPUT ITEMS -------------*****

B IN-STREET-NAME-1                 B IN-STREET-NAME-2                   ZIP CD NYPD-PCT SCHLDST INTERSECTING STREET NAMES
- -------------------------------- - -------------------------------- ----- -- -------- -------- --------------------------------
-

1 CHAMBERS ST                      1 HUDSON ST                        10007 01 001      02       CHAMBERS STREET
                                                                                                 HUDSON STREET
                                                                                                 WEST BROADWAY

1 SIXTH AVE                        1 W. 8 ST                          10014 02 006      02       6 AVENUE
                                                                                                 GREENWICH AVENUE
                                                                                                 WEST 8 STREET

***** FUNCTION 2 GRC = 62 REASON =  , READE STREET & DUANE STREET DO NOT INTERSECT
1 DUANE ST                         1 READE ST
```

C SAMPLE PROGRAM #1

- Input Job Stream - MSW

- Input Job Stream - COW

- Output Report

C SAMPLE PROGRAM #1 – Job Stream -MSW

```
//CCCF1SRC JOB YOUR-JOB-CARD-INFORMATION
//*
//*****************************************************************
//***  C SAMPLE MSW BATCH GEOSUPPORT USER APPLICATION PROGRAM #1  ****
//*****************************************************************
//STEP1 EXEC EDCCLG,
//      CPARM='SS,OPT,OFFSET,SOURCE,XREF,LIST'
//COMPILE.SYSPRINT DD SYSOUT=A
//COMPILE.SYSLIB   DD
//                 DD
//                 DD  DSNAME=A030.GEO.COPYLIB,DISP=SHR
//COMPILE.SYSIN    DD *
   /***************************************************************/
   /* THIS PROGRAM MAKES FUNCTION 1 AND D CALLS TO GEOSUPPORT USING */
   /* BORO, HOUSENUMBER, & STREET NAME SUPPLIED BY AN INSTREAM FILE.*/
   /* FUNCTION 1 RETURNS GEOGRAPHIC INFORMATION FOR AN ADDRESS.     */
   /* FUNCTION D TRANSLATES AN INPUT STREET CODE TO A STREET NAME.  */
   /* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * */
   /* NOTE: IF THE CROSS STREET NAMES FLAG WERE USED IN THE         */
   /*       ORIGINAL CALL TO FUNCTION 1, ALL THE CROSS STREET       */
   /*       NAMES WOULD HAVE BEEN RETURNED BY FUNCTION 1.           */
   /***************************************************************/

#include <stdio.h>
#include <string.h>

 /*****************************************************************/
 /*** USE OF GEOSUPPORT COPY LIBRARIES (REFERENCED BELOW BY THE     ***/
 /*** #INCLUDE STATEMENTS) IS STRONGLY ENCOURAGED.                  ***/
 /*****************************************************************/
#include <wac.h>

 /**************   GBI OS LINKAGE BELOW IS REQUIRED   **************/
   #pragma linkage (GBI,OS)
   long GBI(void *, ...);

 /***** THE WORK AREA LAYOUTS MUST BE DECLARED USING THE TYPEDEFS ***/
 /***** IN THE GEOSUPPORT COPY FILE.                              ***/
   C_WA1 wa1;
   C_WA2_F1 wa2_f1;

void main ()
 {
/***** REPLACE CODE BELOW WITH YOUR OWN INPUT FILE DECLARATION *****/
    FILE *inpdat;
    struct tag
      {
       char in_boro;
       char filler1;
       char in_housenum         [12];
       char filler2;
       char in_street_name      [32];
       char filler3             [33];
      } recin ;

    inpdat = fopen("DD:INPDAT","rb");
    if (inpdat ==  NULL)
```

```
      {printf("INPDAT Data Set did not open.\n");
       return;}
/***** REPLACE CODE BELOW WITH YOUR OWN REPORT LAYOUT  *****/
     printf("\fSAMPLE C PROGRAM #1 EXECUTION OUTPUT  ");
     printf("\n\n*****---------- INPUT ADDRESS -----------***** ***");
     printf("**--------------------- SELECTED OUTPUT ITEMS ---------");
     printf("-------------*****");
     printf("\n\nB HOUSE NUMBER IN-STREET-NAME              ");
     printf("      ZIP CD NYPD-PCT SCHLDST LOW CROSS STREET ");
     printf("        HIGH CROSS STREET       ");
     printf("\r_ ____________ ____________________________");
     printf("____ _____ __ ________ _______ _________________");
     printf("________ _________________________");

 /*** REPLACE CODE BELOW WITH YOUR OWN INPUT ***/
 while (fread(&recin,1,sizeof(recin),inpdat))
  {

  /*************************************************************/
  /* TO MAKE A FUNCTION 1 CALL:                                */
  /*   (1) INITIALIZE WORKAREA 1 TO SPACES                     */
  /*   (2) SET WA1'S FUNCTION CODE FIELD TO 1                  */
  /*   (3) MOVE THE INPUT BORO TO WA1'S INPUT BORO CODE FIELD  */
  /*   (4) MOVE THE INPUT HOUSE NUMBER TO WA1'S INPUT HOUSE NUMBER */
  /*       FIELD                                               */
  /*   (5) MOVE THE INPUT STREET TO WA1'S INPUT STREET NAME FIELD */
  /*   (6) CALL GBI WITH 2 WORKAREAS                           */
  /*   (7) CHECK RETURN CODES FOR ERRORS OR WARNINGS           */
  /*************************************************************/
    memset(&wa1,' ',sizeof(wa1));
    memcpy(wa1.input.func_code,"1 ",2);
    wa1.input.boro_1 = recin.in_boro ;
    memcpy(wa1.input.street_name_1,recin.in_street_name,32);
    memcpy(wa1.input.hse_nbr_disp,recin.in_housenum,12);
/*
/* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * */
/*     As of Geosupport Version 10.1,                            */
/*     to receive roadbed-specific information,                  */
/*     set the Roadbed Request Switch to 'R', as follows:        */
/*     wa1.input.roadbedreq = 'R';                               */
/*                                                               */
/* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * */
/*                                                               */
    GBI(&wa1,&wa2_f1);

    if ( (memcmp(wa1.output.ret_code,"01",2)) > 0
    ||   (memcmp(wa1.output.ret_code,"00",2)) < 0 )
         /******** INSERT YOUR OWN ERROR HANDLING ROUTINE HERE *****/
     {
      printf("\n\n%c %.12s %.32s *** FUNCTION 1 GRC = %.2s"
             " REASON CODE = %c",
          recin.in_boro,recin.in_housenum,recin.in_street_name,
          wa1.output.ret_code,wa1.output.reject_reason_code) ;
      printf ("\n%51.5s %.80s", "***", wa1.output.msg) ;
     }

    if ( (memcmp(wa1.output.ret_code,"01",2)) == 0 )
         /******** INSERT YOUR OWN WARNING HANDLING ROUTINE HERE *****/
     {
      printf("\n\n%c %.12s %.32s *** FUNCTION 1 WARNING, GRC = %.2s"
```

```
          " REASON CODE = %c",
        recin.in_boro,recin.in_housenum,recin.in_street_name,

    wa1.output.ret_code,wa1.output.reject_reason_code) ;
    printf ("\n%51.5s %.80s", "***", wa1.output.msg) ;
    printf("\n%47.1s %.5s %.2s %.3s      %.2s",
        " ",wa2_f1.zip_code,
        wa2_f1.com_dist+1,wa2_f1.police_pre,wa2_f1.com_schl_dist) ;
 }

if ( (memcmp(wa1.output.ret_code,"00",2)) == 0 )
     /*******************************************************/
     /***** REPLACE CODE BELOW WITH YOUR OWN CODE FOR ***********/
     /***** PROCESSING SUCCESSFUL GEOSUPPORT CALLS          *****/
     /*******************************************************/
     printf("\n\n%c %.12s %.31s  %.5s %.2s %.3s      %.2s",
       recin.in_boro,recin.in_housenum,recin.in_street_name,
       wa2_f1.zip_code,
       wa2_f1.com_dist+1,wa2_f1.police_pre,wa2_f1.com_schl_dist) ;

    /*******************************************************/
    /* THIS PROGRAM ASSUMES THERE EXISTS AT LEAST ONE HIGH AND  */
    /* ONE LOW CROSS STREET.  TO GET THE STREET NAMES OF THE    */
    /* FIRST-LISTED HIGH AND FIRST-LISTED LOW CROSS STREETS     */
    /* FROM THE HIGH AND LOW STREET CODE LISTS CALL FUNCTION D: */
    /*   (1) INITIALIZE WORKAREA 1 TO SPACES                    */
    /*   (2) SET WA1'S FUNCTION CODE FIELD TO D                 */
    /*   (3) SET WA1'S STREET NAME LENGTH FIELD TO DESIRED      */
    /*       VALUE (IN THIS CASE 25 BECAUSE THE REPORT LINE     */
    /*              HAS SPACE FOR ONLY 25 CHARACTERS)           */
    /*   (4) USE THE COMPACT STREET NAMES OPTION TO OBTAIN      */
    /*       STREET NAMES FORMATTED FOR DISPLAY                 */
    /*   (5) MOVE WA2'S LOW PBSC FIELD TO WA1'S INPUT STREET    */
    /*       CODE 1 FIELD                                       */
    /*   (6) MOVE WA2'S HIGH PBSC FIELD TO WA1'S INPUT STREET   */
    /*       CODE 2 FIELD                                       */
    /*   (7) CALL GBI WITH 1 WORKAREA                           */
    /*   (8) CHECK RETURN CODES FOR ERRORS OR WARNINGS          */
    /*******************************************************/
if ( (memcmp(wa1.output.ret_code,"00",2)) == 0
||   (memcmp(wa1.output.ret_code,"01",2)) == 0 )
 {
    memset(&wa1,' ',sizeof(wa1));  /* Clear Work area 1 */
    wa1.input.func_code[0] = 'D' ;
    wa1.input.compact_flag = 'C' ;
    memcpy(wa1.input.snl,"25",2) ;
    memcpy(wa1.input.PB5SC_1,wa2_f1.l_x_sts[0],4) ;
    memcpy(wa1.input.PB5SC_2,wa2_f1.h_x_sts[0],4) ;
    GBI(&wa1);
    if ( (memcmp(wa1.output.ret_code,"00",2)) == 0 )
      /***** INSERT YOUR OWN CODE HERE ***********/
      printf("      %.25s %.25s",wa1.output.street_name_1,
             wa1.output.street_name_2) ;
    else
      /******** INSERT YOUR OWN ERROR HANDLING ROUTINE HERE *****/
      {
      printf("\n\n%c %.12s %.32s *** FUNCTION D GRC = %.2s"
             " REASON CODE = %c",
         recin.in_boro,recin.in_housenum,recin.in_street_name,
         wa1.output.ret_code,wa1.output.reject_reason_code) ;
```

```
          printf ("\n%51.5s %.80s", "***", wa1.output.msg) ;
         }

      }
  }

 }
/*
//LKED.SYSIN   DD *
    INCLUDE DD1(GBI)
/*
//LKED.DD1  DD  DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//****************************************************************
//*
//*  AS OF GEOSUPPORT VERSION 10.0, THE STEPLIB OR JOBLIB
//*  STATEMENTS OF THE GEOSUPPORT EXECUTION STEP MUST INCLUDE
//*  THE FOLLOWING TWO CONCATENATED DATA SETS IN THE SPECIFIED
//*  ORDER:
//*                 A030.GEO.SUPPORT.PDSE.LOADLIB
//*                 A030.GEO.SUPPORT.LOADLIB
//*
//****************************************************************
//GO.STEPLIB  DD  DSN=A030.GEO.SUPPORT.PDSE.LOADLIB,DISP=SHR
//            DD  DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//****************************************************************
//*
//*  AS OF GEOSUPPORT VERSION 10.0, DD STATEMENTS FOR GEOSUPPORT
//*  DATA FILES (E.G. GRID, PAD, ETC) ARE NO LONGER NEEDED AND
//*  ARE IGNORED.  GEOSUPPORT IS TAILORED TO USE STANDARD
//*  GEOSUPPORT DATA SETS.  TO USE NON-STANDARD FILES, SEE YOUR
//*  SYSTEMS PROGRAMMER.
//*
//****************************************************************
//GO.SYSPRINT DD SYSOUT=A
//GO.INPDAT DD *,DCB=LRECL=80
1 22          READE ST
1 500         DUANE ST
1 2-4         BROADWAY
4 165-100     BAISLEY BLVD
4 165-1000    BAISLEY BLVD
/*
//
```

C SAMPLE PROGRAM #1 –Job Stream - COW

```
//CCCC1SRC JOB YOUR-JOB-CARD-INFORMATION
//*
//*****************************************************************
//***  C SAMPLE COW BATCH GEOSUPPORT USER APPLICATION PROGRAM #1  ****
//*****************************************************************
//*
//STEP1 EXEC EDCCLG,
//      CPARM='SS,OPT,OFFSET,SOURCE,XREF,LIST'
//COMPILE.SYSPRINT DD SYSOUT=A
//COMPILE.SYSLIB   DD
//                 DD
//                 DD  DSNAME=A030.GEO.COPYLIB,DISP=SHR
//COMPILE.SYSIN    DD *
   /*****************************************************************/
   /* THIS PROGRAM MAKES FUNCTION 1 AND D CALLS TO GEOSUPPORT USING */
   /* BORO, HOUSENUMBER, & STREET NAME SUPPLIED BY AN INSTREAM FILE.*/
   /* FUNCTION 1 RETURNS GEOGRAPHIC INFORMATION FOR AN ADDRESS.     */
   /* FUNCTION D TRANSLATES AN INPUT STREET CODE TO A STREET NAME.  */
   /* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * */
   /* NOTE: IF THE CROSS STREET NAMES FLAG WERE USED IN THE         */
   /*       ORIGINAL CALL TO FUNCTION 1, ALL THE CROSS STREET       */
   /*       NAMES WOULD HAVE BEEN RETURNED BY FUNCTION 1.           */
   /*****************************************************************/

#include <stdio.h>
#include <string.h>

 /*******************************************************************/
 /*** USE OF GEOSUPPORT COPY LIBRARIES (REFERENCED BELOW BY THE     ***/
 /*** #INCLUDE STATEMENTS) IS STRONGLY ENCOURAGED.                  ***/
 /*******************************************************************/
#include <pac.h>

 /**************   GBI OS LINKAGE BELOW IS REQUIRED   **************/
#pragma linkage (GBI,OS)
long GBI(void *, ...);

 /***** THE WORK AREA LAYOUTS MUST BE DECLARED USING THE TYPEDEFS ***/
 /***** IN THE GEOSUPPORT COPY FILE.                              ***/
   C_WA1 wa1;
   C_WA2_F1 wa2_f1;

void main ()

 /***** REPLACE CODE BELOW WITH YOUR OWN INPUT FILE DECLARATION *****/
    FILE *inpdat;
    struct tag
      {
       char in_boro;
       char filler1;
       char in_housenum         [12];
       char filler2;
       char in_street_name      [32];
       char filler3             [33];
      } recin ;

    inpdat = fopen("DD:INPDAT","rb");
```

```
   if (inpdat ==  NULL)
       {printf("INPDAT Data Set did not open.\n");
        return;}
/***** REPLACE CODE BELOW WITH YOUR OWN REPORT LAYOUT  *****/
     printf("\fSAMPLE C PROGRAM #1 EXECUTION OUTPUT  ");
     printf("\n\n*****---------- INPUT ADDRESS -----------***** ***");
     printf("**--------------------- SELECTED OUTPUT ITEMS ---------");
     printf("--------------*****");
     printf("\n\nB HOUSE NUMBER IN-STREET-NAME              ");
     printf("      ZIP CD NYPD-PCT SCHLDST LOW CROSS STREET ");
     printf("        HIGH CROSS STREET       ");
     printf("\r_ ____________ ____________________________");
     printf("____ _____ __ ________ _______ _________________");
     printf("________ _________________________");

 /*** REPLACE CODE BELOW WITH YOUR OWN INPUT ***/
 while (fread(&recin,1,sizeof(recin),inpdat))
  {

  /************************************************************/
  /* TO MAKE A FUNCTION 1 CALL:                               */
  /*   (1) INITIALIZE WORKAREA 1 TO SPACES                    */
  /*   (2) SET WA1'S FUNCTION CODE FIELD TO 1                 */
  /*   (3) MOVE THE INPUT BORO TO WA1'S INPUT BORO CODE FIELD */
  /*   (4) MOVE THE INPUT HOUSE NUMBER TO WA1'S INPUT HOUSE NUMBER */
  /*       FIELD                                              */
  /*   (5) MOVE THE INPUT STREET TO WA1'S INPUT STREET NAME FIELD */
  /*   (6) CALL GBI WITH 2 WORKAREAS                          */
  /*   (7) CHECK RETURN CODES FOR ERRORS OR WARNINGS          */
  /************************************************************/

    memset(&wa1,' ',sizeof(wa1));
    memcpy(wa1.input.func_code,"1 ",2);
    wa1.input.sti??(0??).boro = recin.in_boro ;
    memcpy(wa1.input.sti??(0??).Street_name,recin.in_street_name,32);
           /* Please note that the house number field is actually */
           /* 16 bytes.  If you are only using 12 bytes, it is    */
           /* critical that you blank out the work area before    */
           /* you move in the house number                        */
    memcpy(wa1.input.hse_nbr_disp,recin.in_housenum,12);
    wa1.input.platform_ind = 'C';    /* Tells Geosupport that you */
                                     /* are using the character   */
/*
/* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * */
/*     As of Geosupport Version 10.1,                             */
/*     to receive roadbed-specific information,                   */
/*     set the Roadbed Request Switch to 'R', as follows:         */
/*     wa1.input.roadbedrequest = 'R';                            */
/*                                                                */
/* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * */
/*  */


    GBI(&wa1,&wa2_f1);

    if ( (memcmp(wa1.output.ret_code,"01",2)) > 0
    ||    (memcmp(wa1.output.ret_code,"00",2)) < 0 )
         /******** INSERT YOUR OWN ERROR HANDLING ROUTINE HERE *****/
     {
       printf("\n\n%c %.12s %.32s *** FUNCTION 1 GRC = %.2s"
```

```
          " REASON CODE = %c",
       recin.in_boro,recin.in_housenum,recin.in_street_name,
       wa1.output.ret_code,wa1.output.reason_code) ;
   printf ("\n%51.5s %.80s", "***", wa1.output.msg) ;
 }
if ( (memcmp(wa1.output.ret_code,"01",2)) == 0 )
     /******** INSERT YOUR OWN WARNING HANDLING ROUTINE HERE *****/
 {
   printf("\n\n%c %.12s %.32s *** FUNCTION 1 WARNING, GRC = %.2s"
          " REASON CODE = %c",
       recin.in_boro,recin.in_housenum,recin.in_street_name,
  wa1.output.ret_code,wa1.output.reason_code) ;
   printf ("\n%51.5s %.80s", "***", wa1.output.msg) ;
   printf("\n%47.1s %.5s %.2s %.3s      %.2s",
       " ",wa2_f1.zip_code,
       wa2_f1.com_dist+1,wa2_f1.police_pre,wa2_f1.com_schl_dist) ;
 }

if ( (memcmp(wa1.output.ret_code,"00",2)) == 0 )
     /*******************************************************/
     /***** REPLACE CODE BELOW WITH YOUR OWN CODE FOR ***********/
     /***** PROCESSING SUCCESSFUL GEOSUPPORT CALLS          *****/
     /*******************************************************/
   printf("\n\n%c %.12s %.31s  %.5s %.2s %.3s      %.2s",
       recin.in_boro,recin.in_housenum,recin.in_street_name,
       wa2_f1.zip_code,
       wa2_f1.com_dist+1,wa2_f1.police_pre,wa2_f1.com_schl_dist) ;

   /********************************************************/
   /* THIS PROGRAM ASSUMES THERE EXISTS AT LEAST ONE HIGH AND  */
   /* ONE LOW CROSS STREET.  TO GET THE STREET NAMES OF THE    */
   /* FIRST-LISTED HIGH AND FIRST-LISTED LOW CROSS STREETS     */
   /* FROM THE HIGH AND LOW STREET CODE LISTS CALL FUNCTION D: */
   /*   (1) INITIALIZE WORKAREA 1 TO SPACES                    */
   /*   (2) SET WA1'S FUNCTION CODE FIELD TO D                 */
   /*   (3) SET WA1'S STREET NAME LENGTH FIELD TO DESIRED      */
   /*       VALUE (IN THIS CASE 25 BECAUSE THE REPORT LINE     */
   /*              HAS SPACE FOR ONLY 25 CHARACTERS)           */
   /*   (4) USE THE COMPACT STREET NAMES OPTION TO OBTAIN      */
   /*       STREET NAMES FORMATTED FOR DISPLAY                 */
   /*   (5) MOVE WA2'S LOW PBSC FIELD TO WA1'S INPUT STREET    */
   /*       CODE 1 FIELD                                       */
   /*   (6) MOVE WA2'S HIGH PBSC FIELD TO WA1'S INPUT STREET   */
   /*       CODE 2 FIELD                                       */
   /*   (7) CALL GBI WITH 1 WORKAREA                           */
   /*   (8) CHECK RETURN CODES FOR ERRORS OR WARNINGS          */
   /********************************************************/
if ( (memcmp(wa1.output.ret_code,"00",2)) == 0
||   (memcmp(wa1.output.ret_code,"01",2)) == 0 )
 {
   memset(&wa1,' ',sizeof(wa1));  /* Clear Work area 1 */
   wa1.input.func_code[0] = 'D' ;
   wa1.input.st_name_norm = 'C' ;
   memcpy(wa1.input.snl,"25",2) ;
   wa1.input.platform_ind = 'C';
   wa1.input.sti??(0??).boro=wa2_f1.st??(0??).B5SC??(0??)??(0??);
   memcpy(wa1.input.sti??(0??).SC10,
          wa2_f1.st??(0??).B5SC??(0??)+1,5);
   wa1.input.sti??(1??).boro=wa2_f1.st??(1??).B5SC??(0??)??(0??);
   memcpy(wa1.input.sti??(1??).SC10,
```

```
              wa2_f1.st??(1??).B5SC??(0??)+1,5);
        GBI(&wa1);
        if ( (memcmp(wa1.output.ret_code,"00",2)) == 0 )
          /***** INSERT YOUR OWN CODE HERE ***********/
            printf("      %.25s %.25s",wa1.output.sto??(0??).Street_name,
                 wa1.output.sto??(1??).Street_name) ;
        else
          /******** INSERT YOUR OWN ERROR HANDLING ROUTINE HERE *****/
         {
          printf("\n\n%c %.12s %.32s *** FUNCTION D GRC = %.2s"
                 " REASON CODE = %c",
              recin.in_boro,recin.in_housenum,recin.in_street_name,
              wa1.output.ret_code,wa1.output.reason_code) ;
          printf ("\n%51.5s %.80s", "***", wa1.output.msg) ;
         }

      }

   }

 }
/*
//LKED.SYSIN   DD *
    INCLUDE DD1(GBI)
/*
//LKED.DD1  DD  DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//*****************************************************************
//*
//*  AS OF GEOSUPPORT VERSION 10.0, THE STEPLIB OR JOBLIB
//*  STATEMENTS OF THE GEOSUPPORT EXECUTION STEP MUST INCLUDE
//*  THE FOLLOWING TWO CONCATENATED DATA SETS IN THE SPECIFIED
//*  ORDER:
//*                A030.GEO.SUPPORT.PDSE.LOADLIB
//*                A030.GEO.SUPPORT.LOADLIB
//*
//*****************************************************************
//GO.STEPLIB  DD  DSN=A030.GEO.SUPPORT.PDSE.LOADLIB,DISP=SHR
//            DD  DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//*****************************************************************
//*
//*  AS OF GEOSUPPORT VERSION 10.0, DD STATEMENTS FOR GEOSUPPORT
//*  DATA FILES (E.G. GRID, PAD, ETC) ARE NO LONGER NEEDED AND
//*  ARE IGNORED.  GEOSUPPORT IS TAILORED TO USE STANDARD
//*  GEOSUPPORT DATA SETS.  TO USE NON-STANDARD FILES, SEE YOUR
//*  SYSTEMS PROGRAMMER.
//*
//*****************************************************************
//GO.SYSPRINT DD SYSOUT=A
//GO.INPDAT DD *,DCB=LRECL=80
1 22          READE ST
1 500         DUANE ST
1 2-4         BROADWAY
4 165-100     BAISLEY BLVD
4 165-1000    BAISLEY BLVD
/*
//
```

C SAMPLE PROGRAM #1 – Output Report

```
SAMPLE C PROGRAM #1 EXECUTION OUTPUT

 *****---------- INPUT ADDRESS ------------***** *****--------------------- SELECTED OUTPUT ITEMS -----------------------*****

 B HOUSE NUMBER IN-STREET-NAME                     ZIP CD NYPD-PCT SCHLDST LOW CROSS STREET          HIGH CROSS STREET
 - ------------ -------------------------------- ----- -- -------- ------- ------------------------- -------------------------

 1 22           READE ST                         10007 01 005      02      ELK STREET                BROADWAY

 1 500          DUANE ST                         *** FUNCTION 1 GRC = 42 REASON CODE =
                                                 *** ADDRESS NUMBER OUT OF RANGE

 1 2-4          BROADWAY                         *** FUNCTION 1 WARNING, GRC = 01 REASON CODE = 1
                                                 *** ADDR NUMBER ALTERED: RANGE ASSUMED. USING DIGITS BEFORE DASH ONLY
                                                 10004 01 001      02      STONE STREET              BOWLING GREEN

 4 165-100      BAISLEY BLVD                     11434 12 113      28      GUY R BREWER BOULEVARD    BEDELL STREET

 4 165-1000     BAISLEY BLVD                     *** FUNCTION 1 GRC = 13 REASON CODE = 2
                                                 *** ADDRESS NBR 165-1000  HAS MORE THAN 3 DIGITS AFTER THE DASH.
```

C SAMPLE PROGRAM #2

- Input Job Stream - MSW
- Input Job Stream - COW
- Output Report

C SAMPLE PROGRAM #2 – Job Stream - MSW

```
//CCCF2SRC JOB YOUR-JOB-CARD-INFORMATION
//*
//*****************************************************************
//***  C SAMPLE MSW BATCH GEOSUPPORT USER APPLICATION PROGRAM #2  ****
//*****************************************************************
//*
//STEP1 EXEC EDCCLG,
//      CPARM='SS,OPT,OFFSET,SOURCE,XREF,LIST'
//COMPILE.SYSPRINT DD SYSOUT=A
//COMPILE.SYSLIB   DD
//                 DD
//                 DD  DSNAME=A030.GEO.COPYLIB,DISP=SHR
//COMPILE.SYSIN    DD *
   /*************************************************************/
   /* THIS PROGRAM MAKES FUNCTION 2 AND D CALLS TO GEOSUPPORT USING */
   /* TWO BOROS AND TWO STREET NAMES SUPPLIED BY AN INSTREAM FILE.  */
   /* FUNCTION 2 RETURNS GEOGRAPHIC INFORMATION FOR AN INTERSECTION.*/
   /* FUNCTION D TRANSLATES AN INPUT STREET CODE TO A STREET NAME.  */
   /* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * */
   /* NOTE: IF THE CROSS STREET NAMES FLAG WERE USED IN THE         */
   /*       ORIGINAL CALL TO FUNCTION 2, ALL THE CROSS STREET       */
   /*       NAMES WOULD HAVE BEEN RETURNED BY FUNCTION 2.           */
   /*************************************************************/

#include <stdio.h>
#include <stdlib.h>
#include <string.h>

 /*****************************************************************/
 /*** USE OF GEOSUPPORT COPY LIBRARIES (REFERENCED BELOW BY THE     ***/
 /*** #INCLUDE STATEMENTS) IS STRONGLY ENCOURAGED.                  ***/
 /*****************************************************************/
#include <wac.h>

 /**************   GBI DECLARATION BELOW IS REQUIRED   **************/
   #pragma linkage (GBI,OS)
   long GBI(void *, ...);

 /***** THE WORK AREA LAYOUTS MUST BE DECLARED USING THE TYPEDEFS ***/
 /***** IN THE GEOSUPPORT COPY FILE.                              ***/
   C_WA1 wa1;
   C_WA2_F2 wa2_f2;

void main ()
 {

 /***** REPLACE CODE BELOW WITH YOUR OWN INPUT FILE DECLARATION *****/
    FILE *infile;
    struct tag
      {
       char in_boro1;
       char filler1;
       char in_street_name1     [32];
       char filler2;
       char in_boro2;
       char filler3;
       char in_street_name2     [32];
```

```
      char filler4             [11];
     } recin ;
  short int j, i;
  char temp [2];
   if ((infile = fopen("DD:INFILE","rb")) ==  NULL)

     {printf("INFILE Data Set did not open.\n");
       return;}

/***** REPLACE CODE BELOW WITH YOUR OWN REPRORT LAYOUT  *****/
     printf("\fSAMPLE C PROGRAM #2 EXECUTION OUTPUT  ");
     printf("\n\n*****----------------- INPUT INTERSECTION ---------");
     printf("-------------***** *****------------ SELECTED OUTPUT ");
     printf("ITEMS -------------*****");
     printf("\n\nB IN-STREET-NAME-1            ");
     printf("    B IN-STREET-NAME-2                   ZIP CD");
     printf(" NYPD-PCT SCHLDST INTERSECTING STREET NAMES");
     printf(  "\r_ ____________________________");
     printf("____ _ ________________________________ _____ __");
     printf(" ________ _______ _________________________________");

 /*** REPLACE CODE BELOW WITH YOUR OWN INPUT ***/
 while (fread(&recin,1,sizeof(recin),infile))
  {

  /**************************************************************/
  /* TO MAKE A FUNCTION 2 CALL:                                 */
  /*   (1) INITIALIZE WORKAREA 1 TO SPACES                      */
  /*   (2) SET WA1'S FUNCTION-CODE TO 2                         */
  /*   (3) MOVE THE 1ST INPUT BORO TO WA1'S INPUT BORO CODE FIELD   */
  /*   (4) MOVE THE 1ST INPUT STREET TO WA1'S INPUT STREET NAME     */
  /*       FIELD                                                */
  /*   (5) MOVE THE 2ND INPUT BORO TO WA1'S INPUT BORO CODE 2 FIELD */
  /*   (6) MOVE THE 2ND INPUT STREET TO WA1'S INPUT STREET NAME 2   */
  /*       FIELD                                                */
  /*   (7) CALL GBI WITH 2 WORKAREAS                            */
  /*   (8) CHECK RETURN CODES FOR ERRORS OR WARNINGS            */
  /**************************************************************/

    memset(&wa1,' ',sizeof(wa1));
    memcpy(wa1.input.func_code,"2 ",2);
    wa1.input.boro_1 = recin.in_boro1 ;
    memcpy(wa1.input.street_name_1,recin.in_street_name1,32);
    wa1.input.boro_2 = recin.in_boro2 ;
    memcpy(wa1.input.street_name_2,recin.in_street_name2,32);
    GBI(&wa1,&wa2_f2);

    if ( (memcmp(wa1.output.ret_code,"01",2)) > 0
    ||   (memcmp(wa1.output.ret_code,"00",2)) < 0 )
         /******** INSERT YOUR OWN ERROR HANDLING ROUTINE HERE *****/
     {
       printf("\n\n***** FUNCTION 2 GRC = %.2s"
              " REASON CODE = %c. %.80s",
           wa1.output.ret_code,wa1.output.reject_reason_code,
           wa1.output.msg) ;
       printf
       ("\n%c %.32s %c %.32s ",
           recin.in_boro1,recin.in_street_name1,recin.in_boro2,
           recin.in_street_name2) ;
     }
```

```
if ( (memcmp(wa1.output.ret_code,"01",2)) == 0 )
     /******** INSERT YOUR OWN WARNING HANDLING ROUTINE HERE *****/
 {
   printf("\n\n***** FUNCTION 2 WARNING GRC = %.2s"
          " REASON CODE = %c. %.80s",
       wa1.output.ret_code,wa1.output.reject_reason_code,

   wa1.output.msg) ;
   printf
   ("\n%c %.32s %c %.32s ",
       recin.in_boro1,recin.in_street_name1,recin.in_boro2,
       recin.in_street_name2) ;
 }

if ( (memcmp(wa1.output.ret_code,"00",2)) == 0
||   (memcmp(wa1.output.ret_code,"01",2)) == 0 )
     /*******************************************************/
     /***** REPLACE CODE BELOW WITH YOUR OWN CODE FOR ***********/
     /***** PROCESSING SUCCESSFUL GEOSUPPORT CALLS          *****/
     /*******************************************************/
 {
  printf("\n\n%c %.32s %c %.32s %.5s %.2s %.3s      %.2s     ",
       recin.in_boro1,recin.in_street_name1,recin.in_boro2,
       recin.in_street_name2,wa2_f2.zip_code,
       wa2_f2.com_dist+1,wa2_f2.police_pre,wa2_f2.com_schl_dist) ;

  temp [0] = wa2_f2.nbr_x_sts ;
  temp [1] = 0;
  i = atoi(temp) ;
  for (j=0; j<i; j++)
  {
       /***************************************************/
       /* TO GET STREET NAMES FOR INTERSECTING STREET CODES   */
       /* MAKE A FUNCTION D CALL:                             */
       /*   (1) INITIALIZE WORKAREA 1 TO SPACES               */
       /*   (2) SET THE WA1'S FUNCTION CODE FIELD TO D        */
       /*   (3) USE THE COMPACT STREET NAMES OPTION TO OBTAIN */
       /*       STREET NAMES FORMATTED FOR DISPLAY            */
       /*   (4) MOVE THE PACKED BORO AND STREET CODE TO       */
       /*       WA1'S INPUT STREET CODE 1 FIELD               */
       /*   (5) CALL GBI WITH 1 WORKAREA                      */
       /*   (6) CHECK RETURN CODES FOR ERRORS OR WARNINGS     */
       /***************************************************/
   memset(&wa1,' ',sizeof(wa1));
   wa1.input.func_code[0] = 'D' ;
   wa1.input.compact_flag = 'C' ;
   memcpy(wa1.input.PB5SC_1,wa2_f2.x_sts[j],4) ;
   GBI(&wa1);
   if ( (memcmp(wa1.output.ret_code,"00",2)) == 0 )
    {
     /***** INSERT YOUR OWN CODE HERE ***********/
     if (j==0)
       printf(" %.32s",wa1.output.street_name_1);
     else
       printf("\n%128.32s",wa1.output.street_name_1);
    }
   else
     /******** INSERT YOUR OWN ERROR HANDLING ROUTINE HERE *****/
     printf("\n\n***** FUNCTION D GRC = %.2s"
```

```
               " REASON CODE = %c. %.80s",
            wa1.output.ret_code,wa1.output.reject_reason_code,
            wa1.output.msg) ;
       }

      }

   }

 }

/*
//LKED.SYSIN   DD *
    INCLUDE DD1(GBI)
/*
//LKED.DD1  DD  DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//*****************************************************************
//*
//*  AS OF GEOSUPPORT VERSION 10.0, THE STEPLIB OR JOBLIB
//*  STATEMENTS OF THE GEOSUPPORT EXECUTION STEP MUST INCLUDE
//*  THE FOLLOWING TWO CONCATENATED DATA SETS IN THE SPECIFIED
//*  ORDER:
//*                 A030.GEO.SUPPORT.PDSE.LOADLIB
//*                 A030.GEO.SUPPORT.LOADLIB
//*
//*****************************************************************
//GO.STEPLIB  DD  DSN=A030.GEO.SUPPORT.PDSE.LOADLIB,DISP=SHR
//            DD  DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//*****************************************************************
//*
//*  AS OF GEOSUPPORT VERSION 10.0, DD STATEMENTS FOR GEOSUPPORT
//*  DATA FILES (E.G. GRID, PAD, ETC) ARE NO LONGER NEEDED AND
//*  ARE IGNORED.  GEOSUPPORT IS TAILORED TO USE STANDARD
//*  GEOSUPPORT DATA SETS.  TO USE NON-STANDARD FILES, SEE YOUR
//*  SYSTEMS PROGRAMMER.
//*
//*****************************************************************
//GO.SYSPRINT DD SYSOUT=A
//GO.INFILE DD *
1 CHAMBERS ST                    1 HUDSON ST
1 SIXTH AVE                      1 W. 8 ST
1 DUANE ST                       1 READE ST
/*
//
```

C SAMPLE PROGRAM #2 – Job Stream - COW

```
//CCCC2SRC JOB   YOUR-JOB-CARD-INFORMATION
//*
//*******************************************************************
//***  C SAMPLE COW BATCH GEOSUPPORT USER APPLICATION PROGRAM #2  ****
//*******************************************************************
//*
//STEP1 EXEC EDCCLG,
//      CPARM='SS,OPT,OFFSET,SOURCE,XREF,LIST'
//COMPILE.SYSPRINT DD SYSOUT=A
//COMPILE.SYSLIB   DD
//                 DD
//                 DD  DSNAME=A030.GEO.COPYLIB,DISP=SHR
//COMPILE.SYSIN    DD *
   /*************************************************************/
   /* THIS PROGRAM MAKES FUNCTION 2 AND D CALLS TO GEOSUPPORT USING */
   /* TWO BOROS AND TWO STREET NAMES SUPPLIED BY AN INSTREAM FILE.  */
   /* FUNCTION 2 RETURNS GEOGRAPHIC INFORMATION FOR AN INTERSECTION.*/
   /* FUNCTION D TRANSLATES AN INPUT STREET CODE TO A STREET NAME.  */
   /* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * */
   /* NOTE: IF THE CROSS STREET NAMES FLAG WERE USED IN THE         */
   /*       ORIGINAL CALL TO FUNCTION 2, ALL THE CROSS STREET       */
   /*       NAMES WOULD HAVE BEEN RETURNED BY FUNCTION 2.           */
   /*************************************************************/

#include <stdio.h>
#include <stdlib.h>
#include <string.h>

 /*******************************************************************/
 /*** USE OF GEOSUPPORT COPY LIBRARIES (REFERENCED BELOW BY THE     ***/
 /*** #INCLUDE STATEMENTS) IS STRONGLY ENCOURAGED.                  ***/
 /*******************************************************************/
#include <pac.h>

 /**************   GBI DECLARATION BELOW IS REQUIRED   **************/
   #pragma linkage (GBI,OS)
   long GBI(void *, ...);

 /***** THE WORK AREA LAYOUTS MUST BE DECLARED USING THE TYPEDEFS ***/
 /***** IN THE GEOSUPPORT COPY FILE.                              ***/
   C_WA1 wa1;
   C_WA2_F2 wa2_f2;

void main ()
 {

 /***** REPLACE CODE BELOW WITH YOUR OWN INPUT FILE DECLARATION *****/
    FILE *infile;
    struct tag
      {
       char in_boro1;
       char filler1;
       char in_street_name1     [32];
       char filler2;
       char in_boro2;
       char filler3;
       char in_street_name2     [32];
```

```
     char filler4             [11];
    } recin ;
  short int j, i;
  char temp [2];
   if ((infile = fopen("DD:INFILE","rb")) ==  NULL)
      {printf("INFILE Data Set did not open.\n");
        return;}

/***** REPLACE CODE BELOW WITH YOUR OWN REPRORT LAYOUT  *****/
     printf("\fSAMPLE C PROGRAM #2 EXECUTION OUTPUT  ");
     printf("\n\n*****----------------- INPUT INTERSECTION ---------");
     printf("------------***** *****------------ SELECTED OUTPUT ");
     printf("ITEMS ------------*****");
     printf("\n\nB IN-STREET-NAME-1            ");
     printf("    B IN-STREET-NAME-2                  ZIP CD");
     printf(" NYPD-PCT SCHLDST INTERSECTING STREET NAMES");
     printf(  "\r_ ____________________________");
     printf("____ _ ________________________________ _____ __");
     printf(" ________ _______ _________________________________");

 /*** REPLACE CODE BELOW WITH YOUR OWN INPUT ***/
 while (fread(&recin,1,sizeof(recin),infile))
  {

  /*************************************************************/
  /* TO MAKE A FUNCTION 2 CALL:                                */
  /*   (1) INITIALIZE WORKAREA 1 TO SPACES                     */
  /*   (2) SET WA1'S FUNCTION-CODE TO 2                        */
  /*   (3) MOVE THE 1ST INPUT BORO TO WA1'S INPUT BORO CODE FIELD   */
  /*   (4) MOVE THE 1ST INPUT STREET TO WA1'S INPUT STREET NAME     */
  /*       FIELD                                               */
  /*   (5) MOVE THE 2ND INPUT BORO TO WA1'S INPUT BORO CODE 2 FIELD */
  /*   (6) MOVE THE 2ND INPUT STREET TO WA1'S INPUT STREET NAME 2   */
  /*       FIELD                                               */
  /*   (7) CALL GBI WITH 2 WORKAREAS                           */
  /*   (8) CHECK RETURN CODES FOR ERRORS OR WARNINGS           */
  /*************************************************************/

    memset(&wa1,' ',sizeof(wa1));
    memcpy(wa1.input.func_code,"2 ",2);
    wa1.input.sti??(0??).boro = recin.in_boro1 ;
    memcpy(wa1.input.sti??(0??).Street_name,recin.in_street_name1,32);
    wa1.input.sti??(1??).boro = recin.in_boro2 ;
    memcpy(wa1.input.sti??(1??).Street_name,recin.in_street_name2,32);
    wa1.input.platform_ind = 'C';    /* Tells Geosupport that you */
                                     /* are using the character   */
                                     /* only work areas           */
    GBI(&wa1,&wa2_f2);

    if ( (memcmp(wa1.output.ret_code,"01",2)) > 0
    ||   (memcmp(wa1.output.ret_code,"00",2)) < 0 )
         /******** INSERT YOUR OWN ERROR HANDLING ROUTINE HERE *****/
     {
       printf("\n\n***** FUNCTION 2 GRC = %.2s"
              " REASON CODE = %c. %.80s",
           wa1.output.ret_code,wa1.output.reason_code,
           wa1.output.msg) ;
       printf
       ("\n%c %.32s %c %.32s ",
           recin.in_boro1,recin.in_street_name1,recin.in_boro2,
```

```
       recin.in_street_name2) ;
 }

if ( (memcmp(wa1.output.ret_code,"01",2)) == 0 )
     /******** INSERT YOUR OWN WARNING HANDLING ROUTINE HERE *****/
 {
   printf("\n\n***** FUNCTION 2 WARNING GRC = %.2s"


     " REASON CODE = %c. %.80s",
       wa1.output.ret_code,wa1.output.reason_code,
       wa1.output.msg) ;
   printf
   ("\n%c %.32s %c %.32s ",
       recin.in_boro1,recin.in_street_name1,recin.in_boro2,
       recin.in_street_name2) ;
 }

if ( (memcmp(wa1.output.ret_code,"00",2)) == 0
||   (memcmp(wa1.output.ret_code,"01",2)) == 0 )
     /*******************************************************/
     /***** REPLACE CODE BELOW WITH YOUR OWN CODE FOR ***********/
     /***** PROCESSING SUCCESSFUL GEOSUPPORT CALLS          *****/
     /*******************************************************/
 {
  printf("\n\n%c %.32s %c %.32s %.5s %.2s %.3s      %.2s     ",
       recin.in_boro1,recin.in_street_name1,recin.in_boro2,
       recin.in_street_name2,wa2_f2.zip_code,
       wa2_f2.com_dist+1,wa2_f2.police_pre,wa2_f2.com_schl_dist) ;

  temp [0] = wa2_f2.inter.nbr_sts ;
  temp [1] = 0;
  i = atoi(temp) ;
  for (j=0; j<i; j++)
  {
       /****************************************************/
       /* TO GET STREET NAMES FOR INTERSECTING STREET CODES   */
       /* MAKE A FUNCTION D CALL:                             */
       /*   (1) INITIALIZE WORKAREA 1 TO SPACES               */
       /*   (2) SET THE WA1'S FUNCTION CODE FIELD TO D        */
       /*   (3) USE THE COMPACT STREET NAMES OPTION TO OBTAIN */
       /*       STREET NAMES FORMATTED FOR DISPLAY            */
       /*   (4) MOVE THE PACKED BORO AND STREET CODE TO       */
       /*       WA1'S INPUT STREET CODE 1 FIELD               */
       /*   (5) CALL GBI WITH 1 WORKAREA                      */
       /*   (6) CHECK RETURN CODES FOR ERRORS OR WARNINGS     */
       /****************************************************/
   memset(&wa1,' ',sizeof(wa1));
   wa1.input.func_code[0] = 'D' ;
   wa1.input.st_name_norm = 'C' ;
   wa1.input.platform_ind = 'C';
   wa1.input.sti??(0??).boro = wa2_f2.inter.B5SC??(j??)??(0??);
   memcpy(wa1.input.sti??(0??).SC10,wa2_f2.inter.B5SC??(j??)+1,5);
   GBI(&wa1);
   if ( (memcmp(wa1.output.ret_code,"00",2)) == 0 )
    {
     /***** INSERT YOUR OWN CODE HERE ***********/
     if (j==0)
       printf(" %.32s",wa1.output.sto??(0??).Street_name);
     else
```

```
            printf("\n%128.32s",wa1.output.sto??(0??).Street_name);
          }
         else
           /******** INSERT YOUR OWN ERROR HANDLING ROUTINE HERE *****/
           printf("\n\n***** FUNCTION D GRC = %.2s"
                " REASON CODE = %c. %.80s",
            wa1.output.ret_code,wa1.output.reason_code,
            wa1.output.msg) ;
        }


      }

    }

  }
/*
//LKED.SYSIN   DD *
    INCLUDE DD1(GBI)
/*
//LKED.DD1  DD  DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//*****************************************************************
//*
//*  AS OF GEOSUPPORT VERSION 10.0, THE STEPLIB OR JOBLIB
//*  STATEMENTS OF THE GEOSUPPORT EXECUTION STEP MUST INCLUDE
//*  THE FOLLOWING TWO CONCATENATED DATA SETS IN THE SPECIFIED
//*  ORDER:
//*                A030.GEO.SUPPORT.PDSE.LOADLIB
//*                A030.GEO.SUPPORT.LOADLIB
//*
//*****************************************************************
//GO.STEPLIB  DD  DSN=A030.GEO.SUPPORT.PDSE.LOADLIB,DISP=SHR
//            DD  DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//*****************************************************************
//*
//*  AS OF GEOSUPPORT VERSION 10.0, DD STATEMENTS FOR GEOSUPPORT
//*  DATA FILES (E.G. GRID, PAD, ETC) ARE NO LONGER NEEDED AND
//*  ARE IGNORED.  GEOSUPPORT IS TAILORED TO USE STANDARD
//*  GEOSUPPORT DATA SETS.  TO USE NON-STANDARD FILES, SEE YOUR
//*  SYSTEMS PROGRAMMER.
//*
//*****************************************************************
//GO.SYSPRINT DD SYSOUT=A
//GO.INFILE DD *
1 CHAMBERS ST                      1 HUDSON ST
1 SIXTH AVE                        1 W. 8 ST
1 DUANE ST                         1 READE ST
/*
//
```

SAMPLE C PROGRAM #2 EXECUTION OUTPUT

```
*****----------------- INPUT INTERSECTION ----------------------***** *****------------ SELECTED OUTPUT ITEMS -------------*****

B IN-STREET-NAME-1                 B IN-STREET-NAME-2                  ZIP CD NYPD-PCT SCHLDST INTERSECTING STREET NAMES
- -------------------------------- - -------------------------------- ----- -- -------- ------- --------------------------------
-

1 CHAMBERS ST                      1 HUDSON ST                        10007 01 001      02      CHAMBERS STREET
                                                                                                HUDSON STREET
                                                                                                WEST BROADWAY

1 SIXTH AVE                        1 W. 8 ST                          10014 02 006      02      6 AVENUE
                                                                                                GREENWICH AVENUE
                                                                                                WEST 8 STREET

***** FUNCTION 2 GRC = 62 REASON CODE =  . READE STREET & DUANE STREET DO NOT INTERSECT
1 DUANE ST                         1 READE ST
```

NATURAL SAMPLE PROGRAM #1

- Program Source Code - MSW

- Program Source Code - COW

- Input Job Stream

- Output Report

NATURAL SAMPLE PROGRAM #1 – Program Source- MSW

```
***********************************************************************
* PGM NAME: GEOBUPG1    DATE: 08-18-98                                *
*                                                                     *
* THIS PROGRAM MAKES FUNCTION 1 AND D CALLS TO GEOSUPPORT USING       *
* BORO, HOUSENUMBER, & STREET NAME SUPPLIED BY AN INSTREAM FILE.      *
* FUNCTION 1 RETURNS GEOGRAPHIC INFORMATION FOR AN ADDRESS.           *
* FUNCTION D TRANSLATES AN INPUT STREET CODE TO A STREET NAME.        *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *  *
*          NOTE: IF THE CROSS STREET NAMES FLAG WERE USED IN THE      *
*                ORIGINAL CALL TO FUNCTION 1, ALL THE CROSS STREET    *
*                NAMES WOULD HAVE BEEN RETURNED BY FUNCTION 1.        *
***********************************************************************
*                                                                     *
***********************************************************************
* USE OF GEOSUPPORT LDA (REFERENCED BELOW BY THE LOCAL USING STATEMENT)*
* IS STRONGLY ENCOURAGED.                                             *
***********************************************************************
DEFINE DATA
 LOCAL USING GEOLW1
 LOCAL USING GEOLW2
*
***** REPLACE CODE BELOW WITH YOUR OWN INPUT FILE DECLARATION      *****
 LOCAL
  01 #USER-INPUT
     02 #USER-BORO                   (A1)
     02 #FILLER1                     (A1)
     02 #USER-HSE-NUM                (A12)
     02 #FILLER2                     (A1)
     02 #USER-STRT-NAME              (A32)
     02 #FILLER3                     (A33)
*
  01 #SAVE-RET-CODE                  (A2)
  01 #OUT-STREET-1-SNL25             (A25)
  01 #OUT-STREET-2-SNL25             (A25)
  01 #OUT-ERROR-MESSAGE-77           (A77)
*
END-DEFINE
*
FORMAT LS=133 PS=65
*
***** REPLACE CODE BELOW WITH YOUR OWN REPORT LAYOUT               *****
WRITE NOTITLE
 1T'SAMPLE NATURAL PROGRAM #1 EXECUTION OUTPUT'//
 1T'*****---------- INPUT ADDRESS ------------*****'
 49T'*****--------------------- SELECTED OUTPUT'
 92T'ITEMS -----------------------*****'//
 1T'B HOUSE NUMBER IN-STREET-NAME                     ZIP CD'
 58T'NYPD-PCT SCHLDST LOW CROSS STREET         '
 101T'HIGH CROSS STREET        '/
 1T'- ------------ -------------------------------- ----- --'
 58T'-------- -------- -------------------------'
 101T'-------------------------'/
*
READ WORK FILE 01 #USER-INPUT
 PERFORM FN1-PROCESS
END-WORK
*
```

```
DEFINE SUBROUTINE FN1-PROCESS
*************************************************************************
* TO MAKE A FUNCTION 1 CALL:                                            *
*   (1) INITIALIZE WORKAREA 1 TO SPACES                                 *
*   (2) SET WA1'S FUNCTION CODE FIELD TO 1                              *
*   (3) MOVE THE INPUT BORO TO WA1'S INPUT BORO CODE FIELD              *
*   (4) MOVE THE INPUT HOUSE NUMBER TO WA1'S INPUT HOUSE NUMBER FIELD  *
*   (5) MOVE THE INPUT STREET TO WA1'S INPUT STREET NAME FIELD          *
*   (6) CALL GBI WITH 2 WORKAREAS                                       *
*   (7) CHECK RETURN CODES FOR ERRORS OR WARNINGS                       *
*************************************************************************
*************************************************************************
* AS OF GEOSUPPORT 10.1,                                                *
*    TO RECEIVE ROADBED-SPECIFIC INFORMATION,                           *
*    SET THE ROADBED REQUEST SWITCH TO 'R', AS FOLLOWS:                 *
*        MOVE 'R' TO GEO-WA1-IN-ROADBED-REQ-SWITCH.                     *
*************************************************************************
 RESET GEOLW1
 MOVE '1 ' TO GEO-WA1-IN-FUNCTION-CODE
 MOVE #USER-BORO TO GEO-WA1-IN-BORO
 MOVE #USER-HSE-NUM TO GEO-WA1-IN-HOUSENUM
 MOVE #USER-STRT-NAME TO GEO-WA1-IN-STREET-1
*
 CALL 'GBI' W1NAT W2NAT
*
 IF GEO-WA1-OUT-RETURN-CODE NOT = '00' AND
    GEO-WA1-OUT-RETURN-CODE NOT = '01'
*
***** REPLACE YOUR OWN ERROR HANDLING ROUTINE HERE                  *****
*
  MOVE GEO-WA1-OUT-ERROR-MESSAGE TO #OUT-ERROR-MESSAGE-77
  WRITE NOTITLE
   1T #USER-BORO 3T #USER-HSE-NUM 16T #USER-STRT-NAME
   49T '*** FUNCTION 1 GRC =' GEO-WA1-OUT-RETURN-CODE
   73T 'REASON CODE =' GEO-WA1-OUT-REASON-CODE /
   49T '***' #OUT-ERROR-MESSAGE-77 /
 ELSE
  IF GEO-WA1-OUT-RETURN-CODE = '01'
*
***** REPLACE YOUR OWN WARNING HANDLING ROUTINE HERE                *****
*
   MOVE GEO-WA1-OUT-ERROR-MESSAGE TO #OUT-ERROR-MESSAGE-77
   WRITE NOTITLE
    1T #USER-BORO 3T #USER-HSE-NUM 16T #USER-STRT-NAME
    49T '*** FUNCTION 1 WARNING, GRC =' GEO-WA1-OUT-RETURN-CODE
    82T 'REASON CODE =' GEO-WA1-OUT-REASON-CODE /
    49T '***' #OUT-ERROR-MESSAGE-77
  END-IF
 END-IF
*
 IF GEO-WA1-OUT-RETURN-CODE = '00' OR
    GEO-WA1-OUT-RETURN-CODE = '01'
  MOVE GEO-WA1-OUT-RETURN-CODE TO #SAVE-RET-CODE
*
***** REPLACE CODE BELOW WITH YOUR OWN CODE FOR                     *****
***** PROCESSING SUCCESSFUL GEOSUPPORT FUNCTION 1 CALL              *****
*
*************************************************************************
* THIS PROGRAM ASSUMES THERE EXISTS AT LEAST ONE HIGH AND               *
* ONE LOW CROSS STREET.  TO GET THE STREET NAMES OF THE                 *
```

```
* FIRST-LISTED HIGH AND FIRST-LISTED LOW CROSS STREETS                 *
* FROM THE HIGH AND LOW STREET CODE LISTS CALL FUNCTION D:             *
*   (1) INITIALIZE WORKAREA 1 TO SPACES                                *
*   (2) SET WA1'S FUNCTION CODE FIELD TO D                             *
*   (3) SET WA1'S STREET NAME LENGTH FIELD TO DESIRED                  *
*       VALUE (IN THIS CASE 25 BECAUSE THE REPORT LINE                 *
*              HAS SPACE FOR ONLY 25 CHARACTERS)                       *
*   (4) USE THE COMPACT STREET NAMES OPTION TO OBTAIN                  *
*       STREET NAMES FORMATTED FOR DISPLAY                             *
*   (5) MOVE WA2'S LOW PBSC FIELD TO WA1'S INPUT STREET CODE 1 FIELD   *
*   (6) MOVE WA2'S HIGH PBSC FIELD TO WA1'S INPUT STREET CODE 2 FIELD  *
*   (7) CALL GBI WITH 1 WORKAREA                                       *
*   (8) CHECK RETURN CODES FOR ERRORS OR WARNINGS                      *
************************************************************************
  RESET GEOLW1
  MOVE 'D ' TO GEO-WA1-IN-FUNCTION-CODE
  MOVE 'C' TO GEO-WA1-IN-COMPACT-NAME-FLAG
  MOVE '25' TO GEO-WA1-IN-SNL
  MOVE GEO-WA2-FN1-LOW-PBSC(1) TO GEO-WA1-IN-STREETCODE-1
  MOVE GEO-WA2-FN1-HI-PBSC(1) TO GEO-WA1-IN-STREETCODE-2
*
  CALL 'GBI' W1NAT
*
  IF GEO-WA1-OUT-RETURN-CODE = '00'
   MOVE GEO-WA1-OUT-STREET-1 TO #OUT-STREET-1-SNL25
   MOVE GEO-WA1-OUT-STREET-2 TO #OUT-STREET-2-SNL25
*
***** REPLACE CODE BELOW WITH YOUR OWN CODE FOR                    *****
***** PROCESSING SUCCESSFUL GEOSUPPORT CALLS                       *****
*
   IF #SAVE-RET-CODE = '01' RESET #USER-BORO
    #USER-HSE-NUM #USER-STRT-NAME
   END-IF
   WRITE NOTITLE
    1T #USER-BORO 3T #USER-HSE-NUM 16T #USER-STRT-NAME
    49T GEO-WA2-FN1-ZIP 55T GEO-WA2-FN1-COMDIST-NUM
    58T GEO-WA2-FN1-POL-PRECINCT 67T GEO-WA2-FN1-SCHOOLDIST
    75T #OUT-STREET-1-SNL25 101T #OUT-STREET-2-SNL25 /
  ELSE
*
***** REPLACE YOUR OWN ERROR HANDLING ROUTINE HERE                 *****
*
   MOVE GEO-WA1-OUT-ERROR-MESSAGE TO #OUT-ERROR-MESSAGE-77
   WRITE NOTITLE
    1T #USER-BORO 3T #USER-HSE-NUM 16T #USER-STRT-NAME
    49T '*** FUNCTION D GRC =' GEO-WA1-OUT-RETURN-CODE
    73T 'REASON CODE =' GEO-WA1-OUT-REASON-CODE /
    49T '***' #OUT-ERROR-MESSAGE-77 /
  END-IF
 END-IF
*
 END-SUBROUTINE
 END
```

NATURAL SAMPLE PROGRAM #1 – Program Source code - COW

```
***********************************************************************
* PGM NAME: GEOBUPGA    DATE: 08-18-98         MODIFIED : 08-28-06     *
*                                                                     *
* THIS PROGRAM MAKES FUNCTION 1 AND D CALLS TO GEOSUPPORT USING        *
* BORO, HOUSENUMBER, & STREET NAME SUPPLIED BY AN INSTREAM FILE.       *
* FUNCTION 1 RETURNS GEOGRAPHIC INFORMATION FOR AN ADDRESS.           *
* FUNCTION D TRANSLATES AN INPUT STREET CODE TO A STREET NAME.        *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*          NOTE: IF THE CROSS STREET NAMES FLAG WERE USED IN THE       *
*                ORIGINAL CALL TO FUNCTION 1, ALL THE CROSS STREET     *
*                NAMES WOULD HAVE BEEN RETURNED BY FUNCTION 1.         *
***********************************************************************
*                                                                     *
***********************************************************************
* USE OF GEOSUPPORT LDA (REFERENCED BELOW BY THE LOCAL USING STATEMENT)*
* IS STRONGLY ENCOURAGED.                                             *
***********************************************************************
DEFINE DATA
 LOCAL USING GEOLP1
 LOCAL USING GEOLP2
*
***** REPLACE CODE BELOW WITH YOUR OWN INPUT FILE DECLARATION      *****
 LOCAL
  01 #USER-INPUT
     02 #USER-BORO                   (A1)
     02 #FILLER1                     (A1)
     02 #USER-HSE-NUM                (A12)
     02 #FILLER2                     (A1)
     02 #USER-STRT-NAME              (A32)
     02 #FILLER3                     (A33)
*
  01 #SAVE-RET-CODE                  (A2)
  01 #OUT-STREET-1-SNL25             (A25)
  01 #OUT-STREET-2-SNL25             (A25)
  01 #OUT-ERROR-MESSAGE-77           (A77)
*
  01 #B5SC (A6)
  01 REDEFINE #B5SC
     02 #B5SC-BORO (A1)
     02 #B5SC-5SC (A5)
*
END-DEFINE
*
FORMAT LS=133 PS=65
*
***** REPLACE CODE BELOW WITH YOUR OWN REPORT LAYOUT               *****
WRITE NOTITLE
 1T'SAMPLE NATURAL PROGRAM #1 EXECUTION OUTPUT'//
 1T'*****---------- INPUT ADDRESS -----------*****'
 49T'*****--------------------- SELECTED OUTPUT'
 92T'ITEMS ----------------------*****'//
 1T'B HOUSE NUMBER IN-STREET-NAME                     ZIP CD'
 58T'NYPD-PCT SCHLDST LOW CROSS STREET         '
 101T'HIGH CROSS STREET        '/
 1T'- ------------ -------------------------------- ----- --'
```

```
 58T'-------- ------- -------------------------'
 101T'-------------------------'/
*
READ WORK FILE 01 #USER-INPUT
 PERFORM FN1-PROCESS
END-WORK
*
DEFINE SUBROUTINE FN1-PROCESS
**********************************************************************
* TO MAKE A FUNCTION 1 CALL:                                         *
*   (1) INITIALIZE WORKAREA 1 TO SPACES                              *
*   (2) SET WA1'S FUNCTION CODE FIELD TO 1                           *
*   (3) SET THE PLATFORM INDICATOR SWITCH (NON-IBM-MAINFRAME)        *
*       TO USE CHARACTER-ONLY WORK AREA (COWS)                       *
*   (4) MOVE THE INPUT BORO TO WA1'S INPUT BORO CODE FIELD           *
*   (5) MOVE THE INPUT HOUSE NUMBER TO WA1'S INPUT HOUSE NUMBER FIELD  *
*   (6) MOVE THE INPUT STREET TO WA1'S INPUT STREET NAME FIELD       *
*   (7) CALL GBI WITH 2 WORKAREAS                                    *
*   (8) CHECK RETURN CODES FOR ERRORS OR WARNINGS                    *
**********************************************************************
**********************************************************************
* AS OF GEOSUPPORT 10.1,                                             *
*    TO RECEIVE ROADBED-SPECIFIC INFORMATION,                        *
*    SET THE ROADBED REQUEST SWITCH TO 'R', AS FOLLOWS:              *
*        MOVE 'R' TO PIWA1-IN-ROADBED-REQ-SWITCH.                    *
**********************************************************************
 RESET GEOLP1
 MOVE '1 ' TO PIWA1-IN-FUNCTION-CODE
 MOVE 'C' TO PIWA1-IN-PLATFORM-INDICATOR
 MOVE #USER-BORO TO PIWA1-IN-BORO-1
 MOVE #USER-HSE-NUM TO PIWA1-IN-HOUSENUM-DISPLAY
 MOVE #USER-STRT-NAME TO PIWA1-IN-STREET-1
*
 CALL 'GBI' P1NAT P2NAT
*
 IF PIWA1-OUT-RETURN-CODE NOT = '00' AND
    PIWA1-OUT-RETURN-CODE NOT = '01'
*
***** REPLACE YOUR OWN ERROR HANDLING ROUTINE HERE                *****
*
  MOVE PIWA1-OUT-ERROR-MESSAGE TO #OUT-ERROR-MESSAGE-77
  WRITE NOTITLE
   1T #USER-BORO 3T #USER-HSE-NUM 16T #USER-STRT-NAME
   49T '*** FUNCTION 1 GRC =' PIWA1-OUT-RETURN-CODE
   73T 'REASON CODE =' PIWA1-OUT-REASON-CODE /
   49T '***' #OUT-ERROR-MESSAGE-77 /
 ELSE
  IF PIWA1-OUT-RETURN-CODE = '01'
*
***** REPLACE YOUR OWN WARNING HANDLING ROUTINE HERE              *****
*
   MOVE PIWA1-OUT-ERROR-MESSAGE TO #OUT-ERROR-MESSAGE-77
   WRITE NOTITLE
    1T #USER-BORO 3T #USER-HSE-NUM 16T #USER-STRT-NAME
    49T '*** FUNCTION 1 WARNING, GRC =' PIWA1-OUT-RETURN-CODE
    82T 'REASON CODE =' PIWA1-OUT-REASON-CODE /
    49T '***' #OUT-ERROR-MESSAGE-77
  END-IF
 END-IF
*
```

```
 IF PIWA1-OUT-RETURN-CODE = '00' OR
    PIWA1-OUT-RETURN-CODE = '01'
  MOVE PIWA1-OUT-RETURN-CODE TO #SAVE-RET-CODE
*
***** REPLACE CODE BELOW WITH YOUR OWN CODE FOR                       *****
***** PROCESSING SUCCESSFUL GEOSUPPORT FUNCTION 1 CALL                *****
*
************************************************************************
* THIS PROGRAM ASSUMES THERE EXISTS AT LEAST ONE HIGH AND              *
* ONE LOW CROSS STREET.  TO GET THE STREET NAMES OF THE                *
* FIRST-LISTED HIGH AND FIRST-LISTED LOW CROSS STREETS                 *
* FROM THE HIGH AND LOW STREET CODE LISTS CALL FUNCTION D:             *
*   (1) INITIALIZE WORKAREA 1 TO SPACES                                *
*   (2) SET WA1'S FUNCTION CODE FIELD TO D                             *
*   (3) SET THE PLATFORM INDICATOR SWITCH (NON-IBM-MAINFRAME)          *
*       TO USE CHARACTER-ONLY WORK AREA (COWS)                         *
*   (4) SET WA1'S STREET NAME LENGTH FIELD TO DESIRED                  *
*       VALUE (IN THIS CASE 25 BECAUSE THE REPORT LINE                 *
*              HAS SPACE FOR ONLY 25 CHARACTERS)                       *
*   (5) USE THE COMPACT STREET NAMES OPTION TO OBTAIN                  *
*       STREET NAMES FORMATTED FOR DISPLAY                             *
*   (6) MOVE WA2'S LOW B5SC FIELD TO WA1'S INPUT STREET CODE 1 FIELD   *
*   (7) MOVE WA2'S HIGH B5SC FIELD TO WA1'S INPUT STREET CODE 2 FIELD  *
*   (8) CALL GBI WITH 1 WORKAREA                                       *
*   (9) CHECK RETURN CODES FOR ERRORS OR WARNINGS                      *
************************************************************************
  RESET GEOLP1
  MOVE 'C' TO PIWA1-IN-PLATFORM-INDICATOR
  MOVE 'D ' TO PIWA1-IN-FUNCTION-CODE
  MOVE '25' TO PIWA1-IN-SNL
  MOVE 'C' TO PIWA1-IN-SN-NORM-FORMAT
  MOVE PIWA2-FN1-LOW-B5SC(1) TO #B5SC
  MOVE #B5SC-BORO TO PIWA1-IN-BORO-1
  MOVE #B5SC-5SC TO PIWA1-IN-10SC-1
  MOVE PIWA2-FN1-HI-B5SC(1) TO #B5SC
  MOVE #B5SC-BORO TO PIWA1-IN-BORO-2
  MOVE #B5SC-5SC TO PIWA1-IN-10SC-2
*
  CALL 'GBI' P1NAT
*
  IF PIWA1-OUT-RETURN-CODE = '00'
   MOVE PIWA1-OUT-STREET-1 TO #OUT-STREET-1-SNL25
   MOVE PIWA1-OUT-STREET-2 TO #OUT-STREET-2-SNL25
*
***** REPLACE CODE BELOW WITH YOUR OWN CODE FOR                       *****
***** PROCESSING SUCCESSFUL GEOSUPPORT CALLS                          *****
*
   IF #SAVE-RET-CODE = '01' RESET #USER-BORO
    #USER-HSE-NUM #USER-STRT-NAME
   END-IF
   WRITE NOTITLE
    1T #USER-BORO 3T #USER-HSE-NUM 16T #USER-STRT-NAME
    49T PIWA2-FN1-ZIP 55T PIWA2-FN1-COM-DIST-NUM
    58T PIWA2-FN1-POL-PRECINCT 67T PIWA2-FN1-SCHL-DIST
    75T #OUT-STREET-1-SNL25 101T #OUT-STREET-2-SNL25 /
  ELSE
*
***** REPLACE YOUR OWN ERROR HANDLING ROUTINE HERE                    *****
*
   MOVE PIWA1-OUT-ERROR-MESSAGE TO #OUT-ERROR-MESSAGE-77
```

```
   WRITE NOTITLE
    1T #USER-BORO 3T #USER-HSE-NUM 16T #USER-STRT-NAME
    49T '*** FUNCTION D GRC =' PIWA1-OUT-RETURN-CODE
    73T 'REASON CODE =' PIWA1-OUT-REASON-CODE /
    49T '***' #OUT-ERROR-MESSAGE-77 /
  END-IF
 END-IF
*
 END-SUBROUTINE
 END
```

NATURAL SAMPLE PROGRAM #1- Job Stream

```
//GEOBUPG1 JOB    YOUR-JOB-CARD-INFORMATION
//*
//*********************************************************************
//***  NATURAL SAMPLE BATCH GEOSUPPORT USER APPLICATION PROGRAM #1   ***
//***                    MSW FORMAT                                  ***
//*********************************************************************
//S1  EXEC NT3MPM1M,REGION=7000K
//* * * * * * *  * * * * * * * * * * * * * * * * * * * * * * * * * */ /
//*                                                                */ /
//*  AS OF GEOSUPPORT VERSION 10.0,                                */ /
//*  THE STEPLIB (OR JOBLIB) OF THE GEOSUPPORT EXECUTION STEP      */ /
//*  MUST INCLUDE THE FOLLOWING TWO CONCATENATED DATSETS:          */ /
//*       A030.GEO.SUPPORT.PDSE.LOADLIB                            */ /
//*       A030.GEO.SUPPORT.LOADLIB                                 */ /
//*                                                                */ /
//* * * * * * *  * * * * * * * * * * * * * * * * * * * * * * * * * */ /
//NAT.STEPLIB DD
//            DD
//            DD DSN=A030.GEO.SUPPORT.PDSE.LOADLIB,DISP=SHR
//            DD DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//SYSPRINT    DD SYSOUT=A
//SYSOUT      DD SYSOUT=A,DCB=(LRECL=132)
//CMPRINT     DD SYSOUT=A,DCB=(LRECL=132)
//CMWKF01     DD *
1,22         ,READE ST
1,500        ,DUANE ST
1,2-4        ,BROADWAY
4,165-100    ,BAISLEY BLVD
4,165-1000   ,BAISLEY BLVD
//CMSYNIN     DD *
Your_Application_ID,Your-User_ID
%*
Your-Password
L L GEOLW1     [For COW: GEOLP1]
L L GEOLW2     [For COW: GEOLP2]
L P GEOBUPG1   [For COW Sample:  GEOBUPGA]
GEOBUPG1       [For COW Sample:  GEOBUPGA}
FIN
//INCLIB      DD DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//* * * * * * *  * * * * * * * * * * * * * * * * * * * * * * * * * */ /
//*                                                                */ /
//*  AS OF GEOSUPPORT VERSION 10.0,                                */ /
//*  DD STATEMENTS FOR GEOSUPPORT DATA FILES (E.G. GRID, PAD,      */ /
//*  ETC) ARE NO LONGER NEEDED AND ARE IGNORED. GEOSUPPORT         */ /
//*  IS TAILORED TO USE STANDARD GEOSUPPORT DATA SET NAMES.        */ /
//*  TO USE NON-STANDARD FILES, SEE YOUR SYSTEMS PROGRAMMER.       */ /
//*                                                                */ /
//* * * * * * *  * * * * * * * * * * * * * * * * * * * * * * * * * */ /
//SYSUDUMP    DD DUMMY
//
```

SAMPLE NATURAL PROGRAM #1 EXECUTION OUTPUT

```
*****---------- INPUT ADDRESS ------------***** *****--------------------- SELECTED OUTPUT ITEMS -------------------------*****

B HOUSE NUMBER IN-STREET-NAME                     ZIP CD NYPD-PCT SCHLDST LOW CROSS STREET          HIGH CROSS STREET
- ------------ -------------------------------- ----- -- -------- ------- ------------------------- -------------------------

1 22           READE ST                         10007 01 005      02      ELK STREET                BROADWAY

1 500          DUANE ST                         *** FUNCTION 1 GRC = 42 REASON CODE =
                                                *** ADDRESS NUMBER OUT OF RANGE

1 2-4          BROADWAY                         *** FUNCTION 1 WARNING, GRC = 01 REASON CODE = 1
                                                *** ADDR NUMBER ALTERED: RANGE ASSUMED. USING DIGITS BEFORE DASH ONLY
                                                10004 01 001      02      STONE STREET              BOWLING GREEN

4 165-100      BAISLEY BLVD                     11434 12 113      28      GUY R BREWER BOULEVARD    BEDELL STREET

4 165-1000     BAISLEY BLVD                     *** FUNCTION 1 GRC = 13 REASON CODE = 2
                                                *** ADDRESS NBR 165-1000  HAS MORE THAN 3 DIGITS AFTER THE DASH.
```

NATURAL SAMPLE PROGRAM #2

- Program Source Code - MSW

- Program Source Code - COW

- Input Job Stream

- Output Report

NATURAL SAMPLE PROGRAM #2 – Program Source Code - MSW

```
************************************************************************
* PGM NAME: GEOBUPG2    DATE: 08-18-98                                 *
*                                                                      *
* THIS PROGRAM MAKES FUNCTION 2 AND D CALLS TO GEOSUPPORT USING TWO    *
* BOROS AND TWO STREET NAMES SUPPLIED BY AN INSTREAM FILE.             *
* FUNCTION 2 RETURNS GEOGRAPHIC INFORMATION FOR AN INTERSECTION.       *
* FUNCTION D TRANSLATES AN INPUT STREET CODE TO A STREET NAME.         *
************************************************************************
*          NOTE: IF THE CROSS STREET NAMES FLAG WERE USED IN THE       *
*                ORIGINAL CALL TO FUNCTION 1, ALL THE CROSS STREET     *
*                NAMES WOULD HAVE BEEN RETURNED BY FUNCTION 1.         *
************************************************************************
*
************************************************************************
* USE OF GEOSUPPORT LDA (REFERENCED BELOW BY THE LOCAL USING STATEMENT)*
* IS STRONGLY ENCOURAGED.                                              *
************************************************************************
*
DEFINE DATA
 LOCAL USING GEOLW1
 LOCAL USING GEOLW2
*
***** REPLACE CODE BELOW WITH YOUR OWN INPUT DATA DECLARATION      *****
*
 LOCAL
  01 #USER-INPUT
     02 #USER-BORO1                   (A1)
     02 #FILLER1                      (A1)
     02 #USER-STRT-NAME1              (A32)
     02 #FILLER2                      (A1)
     02 #USER-BORO2                   (A1)
     02 #FILLER3                      (A1)
     02 #USER-STRT-NAME2              (A32)
     02 #FILLER4                      (A11)
*
  01 #INDEX                           (I1)
*
END-DEFINE
*
FORMAT LS=133 PS=65
*
***** REPLACE CODE BELOW WITH YOUR OWN REPORT LAYOUT               *****
*
WRITE NOTITLE
 1T'SAMPLE NATURAL PROGRAM #2 EXECUTION OUTPUT'//
 1T'*****----------------- INPUT INTERSECTION'
 43T'----------------------*****'
 71T'*****------------ SELECTED OUTPUT ITEMS -------------*****'//
 1T 'B IN-STREET-NAME-1                '
 36T'B IN-STREET-NAME-2                '
 71T'  ZIP CD NYPD-PCT SCHLDST INTERSECTING STREET NAMES'/
 1T '- --------------------------------'
 36T'- --------------------------------'
 71T'----- -- --------- ------- --------------------------------'
*
READ WORK FILE 01 #USER-INPUT
 PERFORM FN2-PROCESS
```

```
END-WORK
*
DEFINE SUBROUTINE FN2-PROCESS
**********************************************************************
* TO MAKE A FUNCTION 2 CALL:                                         *
*    (1) INITIALIZE WORKAREA 1 TO SPACES                             *
*    (2) SET WA1'S FUNCTION-CODE TO 2                                *
*    (3) MOVE THE 1ST INPUT BORO TO WA1'S INPUT BORO CODE FIELD      *
*    (4) MOVE THE 1ST INPUT STREET TO WA1'S INPUT STREET NAME FIELD  *
*    (5) MOVE THE 2ND INPUT BORO TO WA1'S INPUT BORO CODE 2 FIELD    *
*    (6) MOVE THE 2ND INPUT STREET TO WA1'S INPUT STREET NAME 2 FIELD *
*    (7) CALL GBI WITH 2 WORKAREAS                                   *
*    (8) CHECK RETURN CODES FOR ERRORS OR WARNINGS                   *
**********************************************************************
 RESET GEOLW1
 MOVE '2 ' TO GEO-WA1-IN-FUNCTION-CODE
 MOVE #USER-BORO1 TO GEO-WA1-IN-BORO
 MOVE #USER-STRT-NAME1 TO GEO-WA1-IN-STREET-1
 MOVE #USER-BORO2 TO GEO-WA1-IN-BORO-2
 MOVE #USER-STRT-NAME2 TO GEO-WA1-IN-STREET-2
*
 CALL 'GBI' W1NAT W2NAT
*
 IF GEO-WA1-OUT-RETURN-CODE NOT = '00' AND
    GEO-WA1-OUT-RETURN-CODE NOT = '01'
*
***** REPLACE CODE BELOW WITH YOUR OWN ERROR HANDLING ROUTINE HERE *****
*
  WRITE NOTITLE /
   1T '***** FUNCTION 2 GRC =' GEO-WA1-OUT-RETURN-CODE
   27T 'REASON CODE ='GEO-WA1-OUT-REASON-CODE
   43T ','GEO-WA1-OUT-ERROR-MESSAGE /
   1T #USER-BORO1 3T #USER-STRT-NAME1
   36T #USER-BORO2 38T #USER-STRT-NAME2
 ELSE
  IF GEO-WA1-OUT-RETURN-CODE = '01'
*
*** REPLACE CODE BELOW WITH YOUR OWN WARNING HANDLING ROUTINE HERE   ***
*
   WRITE NOTITLE /
    1T '***** FUNCTION 2 WARNING, GRC =' GEO-WA1-OUT-RETURN-CODE
    37T 'REASON CODE =' GEO-WA1-OUT-REASON-CODE
    53T ','GEO-WA1-OUT-ERROR-MESSAGE /
    1T #USER-BORO1 3T #USER-STRT-NAME1
    36T #USER-BORO2 38T #USER-STRT-NAME2
  END-IF
 END-IF
*
  IF GEO-WA1-OUT-RETURN-CODE = '00' OR
     GEO-WA1-OUT-RETURN-CODE = '01'
*
***** REPLACE CODE BELOW WITH YOUR OWN CODE FOR                  *****
***** PROCESSING SUCCESSFUL GEOSUPPORT FUNCTION 2 CALL           *****
*
   FOR #INDEX 1 TO GEO-WA2-FN2-NUM-OF-INTERSECTS
*********************************************************************
* TO GET STREET NAMES FOR INTERSECTING STREET CODES                 *
* MAKE A FUNCTION D CALL:                                           *
*    (1) INITIALIZE WORKAREA 1 TO SPACES                            *
*    (2) SET THE WA1'S FUNCTION CODE FIELD TO D                     *
```

```
*    (3) USE THE COMPACT STREET NAMES OPTION TO OBTAIN                *
*        STREET NAMES FORMATTED FOR DISPLAY                           *
*    (4) MOVE THE PACKED BORO AND STREET CODE TO                      *
*        WA1'S INPUT STREET CODE 1 FIELD                              *
*    (5) CALL GBI WITH 1 WORKAREA                                     *
*    (6) CHECK RETURN CODES FOR ERRORS OR WARNINGS                    *
***********************************************************************
    RESET GEOLW1
    MOVE 'D ' TO GEO-WA1-IN-FUNCTION-CODE
    MOVE 'C ' TO GEO-WA1-IN-COMPACT-NAME-FLAG
    MOVE '25' TO GEO-WA1-IN-SNL
    MOVE GEO-WA2-FN2-INTERSECT-PBSC(#INDEX) TO GEO-WA1-IN-STREETCODE-1
*
    CALL 'GBI' W1NAT
*
    IF GEO-WA1-OUT-RETURN-CODE = '00'
*
***** INSERT YOUR OWN CODE HERE FOR                               *****
***** PROCESSING SUCCESSFUL FUNCTION D CALLS                      *****
*
     IF #INDEX = 1
      WRITE NOTITLE /
       1T #USER-BORO1 3T #USER-STRT-NAME1
       36T #USER-BORO2 38T #USER-STRT-NAME2
       71T GEO-WA2-FN2-ZIP 77T GEO-WA2-FN2-COMDIST-NUM
       80T GEO-WA2-FN2-POL-PRECINCT 89T GEO-WA2-FN2-SCHOOLDIST
       97T GEO-WA1-OUT-STREET-1
     ELSE
      WRITE NOTITLE
       97T GEO-WA1-OUT-STREET-1
     END-IF
    ELSE IF GEO-WA1-OUT-RETURN-CODE NOT = '00'
*
***** INSERT YOUR OWN ERROR HANDLING ROUTINE HERE                 *****
*
     WRITE NOTITLE /
      1T '***** FUNCTION D GRC =' GEO-WA1-OUT-RETURN-CODE
      27T 'REASON CODE =' GEO-WA1-OUT-REASON-CODE
      43T ','GEO-WA1-OUT-ERROR-MESSAGE /
      1T #USER-BORO1 3T #USER-STRT-NAME1
      36T #USER-BORO2 38T #USER-STRT-NAME2
    END-IF
    END-IF
   END-FOR
 END-IF
*
END-SUBROUTINE
END
```

NATURAL SAMPLE PROGRAM #2 – Program Source Code - COW

```
************************************************************************
* PGM NAME: GEOBUPGB    DATE: 08-18-98     MODIFIED : 08-28-06         *
*                                                                      *
* THIS PROGRAM MAKES FUNCTION 2 AND D CALLS TO GEOSUPPORT USING TWO    *
* BOROS AND TWO STREET NAMES SUPPLIED BY AN INSTREAM FILE.             *
* FUNCTION 2 RETURNS GEOGRAPHIC INFORMATION FOR AN INTERSECTION.       *
* FUNCTION D TRANSLATES AN INPUT STREET CODE TO A STREET NAME.         *
************************************************************************
*          NOTE: IF THE CROSS STREET NAMES FLAG WERE USED IN THE       *
*                ORIGINAL CALL TO FUNCTION 2, ALL THE CROSS STREET     *
*                NAMES WOULD HAVE BEEN REUTRNED BY FUNCTION 2.         *
************************************************************************
*                                                                      *
************************************************************************
* USE OF GEOSUPPORT LDA (REFERENCED BELOW BY THE LOCAL USING STATEMENT)*
* IS STRONGLY ENCOURAGED.                                              *
************************************************************************
*
DEFINE DATA
 LOCAL USING GEOLP1
 LOCAL USING GEOLP2
*
***** REPLACE CODE BELOW WITH YOUR OWN INPUT DATA DECLARATION      *****
*
 LOCAL
  01 #USER-INPUT
     02 #USER-BORO1                     (A1)
     02 #FILLER1                        (A1)
     02 #USER-STRT-NAME1                (A32)
     02 #FILLER2                        (A1)
     02 #USER-BORO2                     (A1)
     02 #FILLER3                        (A1)
     02 #USER-STRT-NAME2                (A32)
     02 #FILLER4                        (A11)
*
  01 #INDEX                             (I1)
*
  01 #B5SC (A6)
  01 REDEFINE #B5SC
     02 #B5SC-BORO (A1)
     02 #B5SC-5SC (A5)
*
  01 #NUM-INTERSECT-A (A1)
  01 REDEFINE #NUM-INTERSECT-A
     02 #NUM-INTERSECT-N (N1)
*
END-DEFINE
*
FORMAT LS=133 PS=60
*
***** REPLACE CODE BELOW WITH YOUR OWN REPORT LAYOUT               *****
*
WRITE NOTITLE
 1T'SAMPLE NATURAL PROGRAM #2 EXECUTION OUTPUT'//
 1T'*****------------------ INPUT INTERSECTION'
 43T'-----------------------*****'
 71T'*****------------- SELECTED OUTPUT ITEMS -------------*****'//
```

```
 1T 'B IN-STREET-NAME-1                '
 36T'B IN-STREET-NAME-2                '
 71T'  ZIP CD NYPD-PCT SCHLDST INTERSECTING STREET NAMES'/
 1T '- --------------------------------'
 36T'- --------------------------------'
 71T'----- -- -------- ------- --------------------------------'
*
READ WORK FILE 01 #USER-INPUT
 PERFORM FN2-PROCESS
END-WORK
*
DEFINE SUBROUTINE FN2-PROCESS
*******************************************************************
* TO MAKE A FUNCTION 2 CALL:                                      *
*    (1) INITIALIZE WORKAREA 1 TO SPACES                          *
*    (2) SET WA1'S FUNCTION-CODE TO 2                             *
*    (3) SET THE PLATFORM INDICATOR SWITCH (NON-IBM-MAIN-FRAME)   *
*        TO USE CHARACTER ONLY WORK AREAS (COWS)
*    (4) MOVE THE 1ST INPUT BORO TO WA1'S INPUT BORO CODE FIELD   *
*    (5) MOVE THE 1ST INPUT STREET TO WA1'S INPUT STREET NAME FIELD *
*    (6) MOVE THE 2ND INPUT BORO TO WA1'S INPUT BORO CODE 2 FIELD *
*    (7) MOVE THE 2ND INPUT STREET TO WA1'S INPUT STREET NAME 2 FIELD *
*    (8) CALL GBI WITH 2 WORKAREAS                                *
*    (9) CHECK RETURN CODES FOR ERRORS OR WARNINGS                *
*******************************************************************
 RESET GEOLP1
 MOVE '2 ' TO PIWA1-IN-FUNCTION-CODE
 MOVE 'C' TO PIWA1-IN-PLATFORM-INDICATOR
 MOVE #USER-BORO1 TO PIWA1-IN-BORO-1
 MOVE #USER-STRT-NAME1 TO PIWA1-IN-STREET-1
 MOVE #USER-BORO2 TO PIWA1-IN-BORO-2
 MOVE #USER-STRT-NAME2 TO PIWA1-IN-STREET-2
*
 CALL 'GBI' P1NAT P2NAT
*
 IF PIWA1-OUT-RETURN-CODE NOT = '00' AND
    PIWA1-OUT-RETURN-CODE NOT = '01'
*
***** REPLACE CODE BELOW WITH YOUR OWN ERROR HANDLING ROUTINE HERE *****
*
  WRITE NOTITLE /
   1T '***** FUNCTION 2 GRC =' PIWA1-OUT-RETURN-CODE
   27T 'REASON CODE ='PIWA1-OUT-REASON-CODE
   43T ','PIWA1-OUT-ERROR-MESSAGE /
   1T #USER-BORO1 3T #USER-STRT-NAME1
   36T #USER-BORO2 38T #USER-STRT-NAME2
 ELSE
  IF PIWA1-OUT-RETURN-CODE = '01'
*
*** REPLACE CODE BELOW WITH YOUR OWN WARNING HANDLING ROUTINE HERE   ***
*
   WRITE NOTITLE /
    1T '***** FUNCTION 2 WARNING, GRC =' PIWA1-OUT-RETURN-CODE
    37T 'REASON CODE =' PIWA1-OUT-REASON-CODE
    53T ','PIWA1-OUT-ERROR-MESSAGE /
    1T #USER-BORO1 3T #USER-STRT-NAME1
    36T #USER-BORO2 38T #USER-STRT-NAME2
  END-IF
 END-IF
*
```

```
  IF PIWA1-OUT-RETURN-CODE = '00' OR
     PIWA1-OUT-RETURN-CODE = '01'
*
***** REPLACE CODE BELOW WITH YOUR OWN CODE FOR                      *****
***** PROCESSING SUCCESSFUL GEOSUPPORT FUNCTION 2 CALL               *****
*
  MOVE PIWA2-FN2-NUM-OF-INTERSECTS TO #NUM-INTERSECT-A
  FOR #INDEX 1 TO #NUM-INTERSECT-N
***********************************************************************
* TO GET STREET NAMES FOR INTERSECTING STREET CODES                   *
* MAKE A FUNCTION D CALL:                                             *
*    (1) INITIALIZE WORKAREA 1 TO SPACES                              *
*    (2) SET THE WA1'S FUNCTION CODE FIELD TO D                       *
*    (3) SET THE PLATFORM INDICATOR SWITCH (NON-IBM-MAIN-FRAME)       *
*        TO USE CHARACTER ONLY WORK AREAS (COWS)                      *
*    (4) USE THE COMPACT STREET NAMES OPTION TO OBTAIN                *
*        STREET NAMES FORMATTED FOR DISPLAY                           *
*    (5) MOVE THE PACKED BORO AND STREET CODE TO                      *
*        WA1'S INPUT STREET CODE 1 FIELD                              *
*    (6) CALL GBI WITH 1 WORKAREA                                     *
*    (7) CHECK RETURN CODES FOR ERRORS OR WARNINGS                    *
***********************************************************************
    RESET GEOLP1
    MOVE 'D ' TO PIWA1-IN-FUNCTION-CODE
    MOVE 'C' TO PIWA1-IN-PLATFORM-INDICATOR
    MOVE 'C' TO PIWA1-IN-SN-NORM-FORMAT
*   MOVE PIWA2-FN2-INTERSECT-B5SC(#INDEX) TO PIWA1-IN-10SC-1
    MOVE PIWA2-FN2-INTERSECT-B5SC(#INDEX) TO #B5SC
    MOVE #B5SC-BORO TO PIWA1-IN-BORO-1
    MOVE #B5SC-5SC TO PIWA1-IN-10SC-1
*
    CALL 'GBI' P1NAT
*
    IF PIWA1-OUT-RETURN-CODE = '00'
*
***** INSERT YOUR OWN CODE HERE FOR                                  *****
***** PROCESSING SUCCESSFUL FUNCTION D CALLS                         *****
*
     IF #INDEX = 1
      WRITE NOTITLE /
       1T #USER-BORO1 3T #USER-STRT-NAME1
       36T #USER-BORO2 38T #USER-STRT-NAME2
       71T PIWA2-FN2-ZIP 77T PIWA2-FN2-COM-DIST-NUM
       80T PIWA2-FN2-POL-PRECINCT 89T PIWA2-FN2-SCHL-DIST
       97T PIWA1-OUT-STREET-1
     ELSE
      WRITE NOTITLE
       97T PIWA1-OUT-STREET-1
     END-IF
    ELSE IF PIWA1-OUT-RETURN-CODE NOT = '00'
*
***** INSERT YOUR OWN ERROR HANDLING ROUTINE HERE                    *****
*
     WRITE NOTITLE /
      1T '***** FUNCTION D GRC =' PIWA1-OUT-RETURN-CODE
      27T 'REASON CODE =' PIWA1-OUT-REASON-CODE
      43T ','PIWA1-OUT-ERROR-MESSAGE /
      1T #USER-BORO1 3T #USER-STRT-NAME1
      36T #USER-BORO2 38T #USER-STRT-NAME2
    END-IF
```

```
    END-IF
   END-FOR
 END-IF
*
END-SUBROUTINE
END
```

NATURAL SAMPLE PROGRAM #2 – Job stream

```
//GEOBUPG2 JOB    YOUR-JOB-CARD-INFORMATION
//*
//*******************************************************************
//***  NATURAL SAMPLE BATCH GEOSUPPORT USER APPLICATION PROGRAM #2   ***
//***                      MSW FORMAT                                ***
//*******************************************************************
//S1  EXEC NT3MPM1M,REGION=7000K
//* * * * * * *  * * * * * * * * * * * * * * * * * * * * * * * * * *//
//*                                                               *//
//*  AS OF GEOSUPPORT VERSION 10.0,                               *//
//*  THE STEPLIB (OR JOBLIB) OF THE GEOSUPPORT EXECUTION STEP     *//
//*  MUST INCLUDE THE FOLLOWING TWO CONCATENATED DATSETS:         *//
//*       A030.GEO.SUPPORT.PDSE.LOADLIB                           *//
//*       A030.GEO.SUPPORT.LOADLIB                                *//
//*                                                               *//
//* * * * * * *  * * * * * * * * * * * * * * * * * * * * * * * * * *//
//NAT.STEPLIB DD
//            DD
//            DD DSN=A030.GEO.SUPPORT.PDSE.LOADLIB,DISP=SHR
//            DD DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//SYSPRINT    DD SYSOUT=A
//SYSOUT      DD SYSOUT=A,DCB=(LRECL=132)
//CMPRINT     DD SYSOUT=A,DCB=(LRECL=132)
//CMWKF01     DD *
1,CHAMBERS ST                     ,1,HUDSON ST
1,SIXTH AV                        ,1,W. 8 ST
1,DUANE ST                        ,1,READE ST
//CMSYNIN     DD *
Your-Application-ID,Your-User-ID
%*
Your-Password
L L GEOLW1         [For COW: GEOLP1]
L L GEOLW2         [For COW: GEOLP2]
L P GEOBUPG2       [For COW Sample:  GEOBUPGB]
GEOBUPG2           [For COW Sample:  GEOBUPGB]
FIN
//INCLIB      DD DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR
//* * * * * * *  * * * * * * * * * * * * * * * * * * * * * * * * * *//
//*                                                               *//
//*  AS OF GEOSUPPORT VERSION 10.0,                               *//
//*  DD STATEMENTS FOR GEOSUPPORT DATA FILES (E.G. GRID, PAD,     *//
//*  ETC) ARE NO LONGER NEEDED AND ARE IGNORED. GEOSUPPORT        *//
//*  IS TAILORED TO USE STANDARD GEOSUPPORT DATA SET NAMES.       *//
//*  TO USE NON-STANDARD FILES, SEE YOUR SYSTEMS PROGRAMMER.      *//
//*                                                               *//
//* * * * * * *  * * * * * * * * * * * * * * * * * * * * * * * * * *//
//SYSUDUMP    DD DUMMY
```

SAMPLE NATURAL PROGRAM #2 EXECUTION OUTPUT

```
*****----------------- INPUT INTERSECTION ----------------------***** *****------------ SELECTED OUTPUT ITEMS -------------*****

B IN-STREET-NAME-1                B IN-STREET-NAME-2                  ZIP CD NYPD-PCT SCHLDST INTERSECTING STREET NAMES
- -------------------------------- - -------------------------------- ----- -- -------- ------- --------------------------------

1 CHAMBERS ST                     1 HUDSON ST                       10007 01 001      02      CHAMBERS STREET
                                                                                              HUDSON STREET
                                                                                              WEST BROADWAY

1 SIXTH AV                        1 W. 8 ST                         10014 02 006      02      6 AVENUE
                                                                                              GREENWICH AVENUE
                                                                                              WEST 8 STREET

***** FUNCTION 2 GRC = 62 REASON CODE =   , READE STREET & DUANE STREET DO NOT INTERSECT
1 DUANE ST                        1 READE ST
```

APPENDIX 9: GBAT REFERENCE TABLES

Table A9-1: GBAT Control Entry Descriptions by Keyword

This table lists all of the control entries alphabetically by keyword. Each control entry's coding format is indicated, and its purpose and usage are described. Control entry variables are indicated using 'S' and 'L' to represent the starting position and length, respectively, of a field in the input data records, and 'V' to represent other types of variables. Certain control entries do not have full table entries of their own but are cross-referenced to closely related control entries.

Control Entry	Description
ALIASES=V	Specifies whether an input alias file is to be used during this GBAT run. If so, during the processing of the input data file, the user-defined street name aliases in the alias file supplement the set of street names that Geosupport recognizes (see Section IX.6). This control entry is optional; if it is not coded, the default value is NO. The valid variable values are NO, YES and VAL. ALIASES=NO directs GBAT not to perform any alias processing. If there is an ALIASES DD statement in the JCL, it is ignored. ALIASES=YES directs GBAT to validate the ALIASES file, and then to process the input data file whether or not there are any invalid records in the alias file. An ALIASES DD statement referring to the alias file is required to be in the JCL. ALIASES=VAL directs GBAT to validate the alias file, and then to process the input data file only if there are no invalid records in the alias file. An ALIASES DD statement referring to the alias file is required to be in the JCL.
AUXSEG=V	Specifies whether the Work Area 2 to be used to form the records written into the output file of accepted data (OUTFILE) is the regular WA2 or the auxiliary segment WA2 (see Section II.6). The valid variable values are YES and NO and are self-explanatory. Currently, the Auxiliary Segment WA2 option is only available for COW format Functions 3 and 3C; this control entry is invalid for all other functions. For the functions that have the Auxiliary Segment WA2 option, this control entry is invalid when GEOCODE=NO or VAL; it is optional when GEOCODE=YES or ALL, and the default value is NO.
BBL=S,10	Specifies the starting position and length of the input BBL field in the input data records. This control entry is valid only for Function BL. This control entry can be used in place of the three control entries BORO, BLOCK and LOT whenever the input data records contain those three items in adjacent positions so that they can be treated collectively as a BBL field. The length value must be explicitly coded as '10'.
BIN=S or BIN=S,7	Specifies the starting position and length of the input Building Identification Number (BIN) field in the input data records. This control entry is valid only for Function BN. An input BIN field must always have a length of seven bytes, which may be coded

explicitly as ‘7’ in this control entry or it may be left uncoded, in which case it defaults to that value.

BLOCK=S or BLOCK=S,5

Specifies the starting position and length of the input tax block field in the input data records. This control entry is valid only for Function BL. Either all three control entries BORO, BLOCK and LOT must be specified, or the control entry BBL must be specified. An input tax block field must always have a length of five bytes, which may be coded explicitly as ‘5’ in this control entry, or it may be left uncoded, in which case it defaults to that value.

BORO=S,L

Specifies the starting position and length of the input borough code field in the input data records. This control entry is valid for all functions except Function BN. It is mandatory for functions that require an input borough code field. BORO is optional if ZIPCODE is specified for Function 1, 1A, 1B or 1E. For Functions 2, 3, 3C, 3S and D, which accept multiple input street fields, the field specified by BORO serves as the input borough code field for the input street field specified by the control entry ONSTREET or STRTCODE; in addition, if the control entries CROSSBORO1 and CROSSBORO2 are not coded, it also serves as the input borough code field for the other input street fields. The maximum permissible length value of BORO is L=12. Note: The input borough code field specified by BORO may contain user-defined, non-standard borough code values - see discussion at table entry for BRONX.

BRONX=V
BROOKLYN=V
MANHATTAN=V
QUEENS=V
STATEN=V

GBAT can accept non-standard, user-defined borough code values in the input borough code fields specified by the control entries BORO, CROSSBORO1 and CROSSBORO2. (If there is more than one input borough code field, the same borough code values must be used in all of them.) The five control entries BRONX, BROOKLYN, MANHATTAN, QUEENS and STATEN are used to specify the character strings that represent each borough in those input borough code fields. (Note: these control entries do not pertain to the borough code sub-fields that are embedded within larger data items such as BBL, BIN and B7SC, which must always contain the standard Geosupport borough code values.) The five borough code values may be specified as any strings of non-blank characters the lengths of which do not exceed the length value specified in the BORO control entry (which has a maximum permissible length value of 12). Embedded blanks should not be included in user-defined borough code values, since the first blank that GBAT encounters when scanning a borough code value terminates the scan. For example, coding STATEN=STATEN ISLAND would cause GBAT to interpret the control entry as STATEN=STATEN and to interpret ISLAND as the next keyword in the control file. Since ISLAND is an invalid control keyword, GBAT would terminate abnormally. However, coding STATEN=STATENISLAND (without the embedded blank) is acceptable.

These five control entries are optional, but if any of them is coded, all five must be coded. If these control entries are not coded, the default values are the standard Geosupport borough codes, as follows:

Table A9-1: GBAT Control Entry Descriptions by Keyword (continued)

Control Entry	Description
	MANHATTAN=1 BRONX=2 BROOKLYN=3 QUEENS=4 STATEN=5
BROOKLYN	See BRONX.
BROWSEFLAG=V	Specifies whether the Browse Flag request (described in Sections III.7 and III.8) is in effect. This control entry is valid only for COW functions that return normalized street name output. For such functions, this control entry is optional. BROWSEFLAG=P specifies that the Browse Flag is set to ‘P’. Only the primary name and street code of the input street names will be returned to the user. BROWSEFLAG=F specifies that the Browse Flag is set to ‘F’. Only principal street name and street code of the input street names will be returned to the user. BROWSEFLAG=R specifies that the Browse Flag is set to ‘R’. Only the DCP or BOE preferred street name and street code of the input street names will be returned to the user. The value of ‘R’ is valid only for ‘GEOCODE=YES’ or ‘GEOCODE=ALL’.
B7SC1=S or B7SC1=S,8 B7SC2=S or B7SC2=S,8 B7SC3=S or B7SC3=S,8	Specify the starting positions of up to three input Borough-and-7-digit Street Code (B7SC) fields for input to Function DG. An input B7SC field must always have a length of 8, which may be coded explicitly in these control entries, or it may be left uncoded, in which case it defaults to 8.
B10SC1=S or B10SC1=S,11 B10SC2=S or B10SC2=S,11 B10SC3=S or B10SC3=S,11	Specify the starting positions of up to three input Borough-and-10-digit Street Code (B10SC) fields for input to Function DN. An input B10SC field must always have a length of 11, which may be coded explicitly in these control entries, or it may be left uncoded, in which case it defaults to 11.
COMPACT=V	Specifies whether the Compact Names option (described in Section III.3) is in effect. This control entry is valid only for functions that return normalized street name output. For such functions, this control entry is optional, and NO is the default value. COMPACT=YES specifies that the Compact Names option is in effect. Street names with numeric components are normalized into the compact format.

Table A9-1: GBAT Control Entry Descriptions by Keyword (continued)

Control Entry	Description
	COMPACT=NO specifies that the Compact Names option is not in effect. Street names with numeric components are normalized into the sort format.
COMPASS=S	Specifies the position of an input compass direction field in the input data records. This control entry is never coded with a length variable; GBAT always assumes an input compass direction field to be one byte long. This control entry is valid only for Functions 2, 3C and 3S. For Function 2: this control entry is required only if the input data file contains at least one input street intersection defined by a pair of streets that intersect at two distinct locations (see Section VII.2). In such input data records, the input compass direction field must contain a valid non-blank compass direction value, 'N', 'S', 'E' or 'W', which serves to designate which of the two intersections of the given pair of streets is to be processed. In other input data records, the input compass direction field should be blank. For Function 3C: this control entry is mandatory. The input data field that this control entry specifies contains the compass direction designating the side of the street. This field must contain a valid non-blank compass direction value, 'N', 'S', 'E' or 'W', in every input data record. For Function 3S: this control entry corresponds to the 'first input intersection', that is, the input intersection defined either by ONSTREET and CROSS1 or by STRTCODE and CRSCOD1. (The control entry COMPASS2 corresponds to the second input intersection.) The COMPASS control entry is required only if the input data file contains at least one first input intersection that is defined by a pair of streets that intersect in two locations (see Section VII.2). In such input data records, the **input** data field that this control entry specifies must contain a valid compass direction value identifying which of the two locations is the intended first input intersection. In other input data records, this field should contain a blank.
COMPASS2=S	Specifies the position of the input compass direction field in the input data records that corresponds to the >second input intersection=, that is, the input intersection defined either by ONSTREET and CROSS2 or by STRTCODE and CRSCOD2. The COMPASS2 control entry is never coded with a length variable; GBAT always assumes an input compass direction field to be one byte long. The COMPASS2 control entry is valid only for Function 3S. It is required only if the input data file contains at least one second input intersection that is defined by a pair of streets that intersect at two distinct locations (see Section VII.2). In such input data records, the input data field that this control entry specifies must contain a valid compass direction value identifying which of the two locations is the intended second input intersection. In other input data records, this field should contain a blank.
CROSSBORO1=S,L	Specifies the starting position and length of the input borough code field corresponding to the input street field specified by the control entry CROSS1 or

Table A9-1: GBAT Control Entry Descriptions by Keyword (continued)

Control Entry	Description
	CRSCOD1**.**
	CROSSBORO1 is coded only if the input data records have separate borough code fields corresponding to each of the input street fields. Such separate input borough code fields enable GBAT to process input data files containing borough boundary locations that are defined by streets in different boroughs (see discussion of Geosupport=s borough boundary processing feature in Section VII.7). CROSSBORO1 is valid for Functions 2, 3, 3C, 3S and D, and is optional for those functions. If CROSSBORO1 is not coded, then the field specified by BORO is used as the input borough code field for the input street field specified by CROSS1 or CRSCOD1. If CROSSBORO1 is coded, then whenever the field it specifies contains a blank, the contents of the field specified by BORO is used as the input borough code for the input street field specified by CROSS1 or CRSCOD1. If CROSSBORO1 is coded, and the input street field it applies to is specified by CRSCOD1 rather than CROSS1 (i.e., if that field contains street codes rather than street names), and the length of CRSCOD1 is specified as 4 or 6 (i.e., the input street code field is in one of the formats that contain their own borough code), then CROSSBORO1 is ignored, and the input borough code field it specifies is not used. Note: The input borough code field specified by CROSSBORO1 may contain user-defined, non-standard borough code values - see discussion at table entry for BRONX.
CROSSBORO2=S,L	Specifies the starting position and length of the input borough code field corresponding to the input street field specified by the control entry CROSS2 or CRSCOD2.
	CROSSBORO2 is coded only if the input data records have separate borough code fields corresponding to each of the input street fields. Such separate input borough code fields enable GBAT to process input data files containing borough boundary locations that are defined by streets in different boroughs (see discussion of Geosupport's borough boundary processing feature in Section **VII.7).** CROSSBORO2 is valid for Functions 3, 3C, 3S and D, and is optional for those functions. If CROSSBORO2 is not coded, then the field specified by BORO is used as the input borough code field for the input street field specified by CROSS2 or CRSCOD2. If CROSSBORO2 is coded, then whenever the field it specifies contains a blank, the contents of the field specified by BORO is used as the input borough code for the input street field specified by CROSS2 or CRSCOD2. If CROSSBORO2 is coded, and the input street field it applies to is specified by CRSCOD2 rather than CROSS2 (i.e., if that field contains street codes rather than street names), and the length of CRSCOD2 is specified as 4 or 6 (i.e., the input street code field is in one of the formats that contain their own borough code), then CROSSBORO2 is ignored, and the input borough code field it specifies is not used. Note: The input borough code field specified by CROSSBORO2 may contain user-defined, non-standard borough code values - see discussion at table entry for BRONX.

Table A9-1: GBAT Control Entry Descriptions by Keyword (continued)

<u>Control Entry</u>	<u>Description</u>
CROSSSTNAMES=V	Specifies whether a list of street names of the cross streets or intersecting streets is to be included in the appended output data. Note: the CROSSSTNAMES feature incurs processing overhead, and should only be used when necessary. Note that CROSSSTNAMES may no longer be necessary with certain COW functions since MODE=X (Extended Mode) and Function 1B Work Areas are now supported, and they contain the cross street B7SCs and the corresponding Principal cross street names. CROSSSTNAMES=YES specifies that the street names of the cross streets (RECTYPE=1, 1E, 2, 3 or 3C) or intersecting streets (RECTYTPE=2) are to be appended. This causes a 320-byte block of data to be included in the appended data containing those street names, laid out as described in the Appendix 3 entry for the List of Street Names (see paragraph on List of Cross Street Names). CROSSSTNAMES=YES is valid only when GEOCODE=ALL and RECTYPE=1, 1E, 2, 3 or 3C have been specified. CROSSSTNAMES=NO specifies that the street names of cross streets or intersecting streets are not to be appended. The default value is NO. This control entry is optional; if it is not coded, the default value is NO.
CROSS1, CROSS2	See ONSTREET.
CRSCOD1, CRSCOD2	See STRTCODE.
GEOCODE=V	Specifies whether GBAT will issue one-work-area or two-work-area calls (see Section II.4); whether OUTFILE will be produced; and if so, what information GBAT will append to the user input records in forming the OUTFILE records (see Section IX.7). The valid variable values for this control entry are NO, YES, ALL and VAL. For COW Functions 1, 1E, 1A and 1B, see also keyword GEOUNIT. GEOCODE=NO specifies a one-work-area call. Only selected information from Work Area 1 is appended. For Function BL, the BBL is appended; for Function BN, the BIN is appended; for the other functions, normalized house numbers, normalized street names and street codes are appended. For a detailed layout of the appended information for GEOCODE=NO, see Table A9-4 for MSW format, and see Table A12-2 for COW format. In addition, for COW Functions 1, 1E, 1A and 1B, if <u>GEOUNIT=YES</u> is specified, the Normalized Display Format Unit output field is also appended, in the form of a 70-byte block of data, the first 14 bytes of which are the Unit output field. For a description of the Unit fields, see Section V.15. OUTFILE is produced.

Table A9-1: GBAT Control Entry Descriptions by Keyword (continued)

Control Entry	Description
	GEOCODE=YES specifies a two-work-area call. Only a copy of Work Area 2 for the given function is appended. OUTFILE is produced. GEOCODE=ALL specifies a two-work-area call. Both the GEOCODE=NO information (including the GEOUNIT=YES information, as described above with GEOCODE=NO) and the GEOCODE=YES information are appended. In addition, if CROSSSTNAMES=YES is specified, a list of street names of the cross streets or intersecting streets is also appended, in the form of a 320-byte block of data, between the GEOCODE=NO data and the GEOCODE=YES data. OUTFILE is produced**.** GEOCODE=VAL specifies a two-work-area call. OUTFILE is not produced. This control entry is optional. The default value depends on the function: it is NO for Functions 1, 1N, 2, 3, D, DG and DN, and it is YES for all other functions. The values YES, ALL and VAL are invalid for functions that can only be called using one work area (currently, Functions 1N, D, DG and DN).
GEOUNIT=V	Specifies whether GBAT will append the Normalized Display Format Unit Output field. This control entry is valid only for COW Functions 1, 1E, 1A and 1B and only when GEOCODE=NO or GEOCODE=ALL is specified. The Normalized Display Format Unit output field is appended, in the form of a 70-byte block of data, the first 14 bytes of which are the Unit output field. See the description of GEOCODE=V above. The GEOUNIT control entry is optional. The valid values are YES and NO. The default is GEOUNIT=NO. For a description of the Unit fields, see Section V.15.
HNI=V	Specifies whether the input house number fields specified by the HOUSENUM and HOUSENUM2 control entries are House Numbers in Internal format (HNIs) (see Section V.2) or are in character format, indicated by the variable values YES and NO respectively. The HNI control entry is optional only for MSW Functions 1, 1A, 1E, D, DG and DN, and is invalid for other functions and for the COW format. The default value depends on the function. For MSW Functions 1, 1A and 1E, NO is the default, and YES is also valid. For MSW Functions D, DG and DN, YES is the default and is the only valid value.
HNS=V	Specifies whether the input house number field specified by the HOUSENUM and HOUSENUM2 control entries are House Numbers in Sort format (HNSs) (see Section V.2) or are in character format, indicated by the variable values YES and NO respectively. The HNS control entry is optional for COW Functions 1, 1A, 1E, D, DG and DN, and is invalid for other functions and for the MSW format. The default value depends on the function. For COW Functions 1, 1A and 1E, NO is the default, and YES is also valid. For COW Functions D, DG and DN, YES is the default and is the only valid value.

Table A9-1: GBAT Control Entry Descriptions by Keyword (continued)

<u>Control Entry</u>	<u>Description</u>
HOUSENUM=S or HOUSENUM=S,L	Specifies the starting position and length of an input house number field. This control entry is optional. It is valid for Functions 1, 1A, 1B, 1E, D, DG and DN. For Functions 1, 1A, 1B and 1E, if HOUSENUM is not coded, Geosupport assumes that the input street name field (specified by the control entry ONSTREET) contains a free-form address (see Section V.3). If HOUSENUM is coded, the input data field it specifies may contain either a House Number in Internal format (HNI - for MSW format only - see Section V.2), a House Number in Sort Format (HNS - for COW format only - see Section V.2), or a house number in character format. If it contains an HNI, then the control entry HNI=YES must be in effect (either by explicitly coding it or by default), and HOUSENUM's length variable must either be coded with the value '6' or not coded (in which case it defaults to '6' by virtue of HNI=YES). If it contains an HNS, then the control entry HNS=YES must be in effect (either by explicitly coding it or by default), and HOUSENUM's length variable must either be coded with the value '11' or not coded (in which case it defaults to '11' by virtue of HNS=YES). If HOUSENUM is not an HNI or an HNS, its length variable must be a number between 5 and 12. For Functions D, DG and DN, if HOUSENUM is coded, for MSW format, the input data field it specifies must contain an HNI, and the length variable must either be coded with the value '6' or not coded (in which case it defaults to '6'). For COW format, the input data field it specifies must contain an HNS, and the length variable must either be coded with the value '11' or not coded (in which case it defaults to '11').
HOUSENUM2=S or HOUSENUM2=S,L	Specifies the starting position and length of an input house number field containing an HNI for the MSW format, or an HNS for the COW format. HOUSENUM2 is valid for Functions D, DG and DN, for which it is optional. Those functions can accept two input HNI or HNS fields per call. Coding both HOUSENUM and HOUSENUM2 enables two input HNI or HNS fields to be processed through Functions D, DG or DN in a single GBAT pass. For the MSW format, when HOUSENUM2 is coded, the OUTFILE records include a corresponding 12-byte field (identified as HND-2 in Table A9-4) in the appended data for a House Number in Display format (HND), and the total length of the appended data is 120 bytes. When HOUSENUM2 is not coded using the MSW format, no corresponding HND-2 field is included in the OUTFILE records, and the total length of the appended data is 108 bytes. For the COW format, the OUTFILE record length is always 128 bytes, and has space for two 16-byte output House Numbers in Display format (HNDs), each of which would either have data or be blank, dependent on the input..
LONGWA2=V	Specifies whether the Work Area 2 to be used to form the records written into the output file of accepted data (OUTFILE) is the regular WA2 or the long WA2 (see Section II.5). The valid variable values are YES and NO and are self-explanatory.

Table A9-1: GBAT Control Entry Descriptions by Keyword (continued)

Control Entry	Description
	Currently, the long WA2 option is only available for MSW format Functions 1, 1E, and 3, and for both MSW and COW formats for Functions 1A and BL; this control entry is invalid for all other functions. For the functions that have the long WA2 option, this control entry is invalid when GEOCODE=NO or VAL; it is optional when GEOCODE=YES or ALL, and the default value is NO.
LOT=S,L	Specifies the starting position and length of the input tax lot field. This control entry is valid only for Function BL. The Function BL user must specify either all three control entries BORO, BLOCK and LOT, or the control entry BBL. The length value of LOT must be explicitly coded as ‘4’. There is no default.
MANHATTAN	See BRONX.
MAXREJECTS=V	Specifies how many rejects (including warnings, if REJECTWARNINGS=YES has been specified) occurring at the beginning of the input data file, other than any records rejected for an invalid borough code, are to cause a ‘MAXREJECTS termination’, that is, would cause GBAT to terminate execution abnormally and exit with Condition Code 20 (see Section IX.3). The variable value must be either a positive integer specifying the number of such rejects that are to cause a MAXREJECTS termination, or the value NOMAX. If MAXREJECTS=NOMAX is coded, the entire input data file is processed, regardless of the number of rejects occurring at the beginning of the file. The MAXREJECTS control entry is optional, and the default value is MAXREJECTS=200.
MODE=V	Specifies whether the Work Area 2 to be used to form the records written into the output file of accepted data (OUTFILE) is the regular WA2 or the Extended WA2 (see Section II.7). The valid variable values are X or NO. X requests the Extended Work Area 2. Currently, the extended WA2 option is available only for COW format (WORKAREA=COW) Functions 1, 1E, 1A, 3, 3C, BL, and BN; this control entry is invalid for all other functions. When MODE=X, LONGWA2 cannot be set to YES for Function 1A or BL. All other control cards are the same for each of the Functions 1, 1E, 1A, 3, 3C, BL or BN. For the functions that have the extended WA2 option, this control entry (MODE=X) is invalid when GEOCODE=NO or VAL; it is optional when GEOCODE=YES or ALL, and the default value of MODE is NO.
NODE=S or **NODE=S,7**	Specifies the starting position and length of the input node ID field. This control entry is valid only for COW Functions 2 and 2W. An input node ID field must always have a length of seven bytes, which may be coded explicitly as ‘7’ in this control entry or it may be left uncoded, in which case it defaults to that value. This entry must be coded if you have node input instead of two intersecting streets or an intersection name. Since node input stands on its own and does not require a borough code, the GBAT statistical report will not include groupings by borough. It is therefore recommended that the user not mix street name/street code input with node input.

Table A9-1: GBAT Control Entry Descriptions by Keyword (continued)

Control Entry	Description
ONSTREET=S,L **CROSS1=S,L** **CROSS2=S,L**	Specify the starting positions and lengths of input street name fields for Functions 1, 1A, 1B, 1E, 1N, 2, 3, 3C, 3S. (For functions 1, 1A, 1B, 1E, those fields may contain free-form addresses.) The appropriate combination of these control entries for the function being called must be coded, as follows**:**

Functions	Field(s) Specified	Control Entries Used to Specify These Fields
1, 1A, 1B, 1E, 1N	'On' Street	ONSTREET
2	Two Intersecting Streets in Either Order	ONSTREET and CROSS1
3, 3C, 3S	'On' Street and Two Cross Streets in Either Order	ONSTREET, CROSS1 and CROSS2 (Note: For Function 3S, input cross street fields are optional.)

Whenever input street name fields are specified by coding any of the three control entries ONSTREET, CROSS1 and CROSS2, an input borough code field (or fields) must also be specified, by coding the control entry BORO (and optionally CROSSBORO1 and CROSSBORO2, as appropriate).

Note: for Functions 1, 1A, 1B, 1E, 2, 3, 3C and 3S, but not function 1N, input street data may be provided either in the form of street name fields, specified using the control entries ONSTREET, CROSS1 and CROSS2, or alternatively, in the form of five-digit street code fields (see Section IV.8), specified using the control entries STRTCODE, CRSCOD1 and CRSCOD2. For those of the aforementioned functions that accept multiple input streets, either all of those input streets must take the form of street names or all must take the form of street codes; a mixture of names and codes is not permitted. For Function 1N, street name input fields are mandatory.

QUEENS See BRONX.

REALSTREETONLY=V

Specifies whether the Real Street Only request (described in Chapter VII.6) is in effect. This control entry is valid only for COW function 3S. This control entry is optional.

REALSTREETONLY=YES specifies that the Real Street Only flag is set to 'R'. Only real streets (not bends or non-street features) will be returned to the user.

REALSTREETONLY=NO specifies that the Real Street Only flag is set to blank.

Table A9-1: GBAT Control Entry Descriptions by Keyword (continued)

Control Entry	Description
	All intersections, including bends and non-street features, will be returned to the user. If this control entry is not coded, the default value is NO.
RECTYPE=V	Specifies the Geosupport function to be executed. This control entry is mandatory. The valid variable values are the valid Geosupport function codes. As of this writing, these are 1, 1A, 1B, 1E, 1N, 2, 3, 3C, 3S, AP, BL, BN, D, DG, DN.
REJECTWARNINGS=V	Specifies whether input data records that result in warnings are to be treated as accepted records or as rejects (see discussion of REJECTWARNINGS in Section IX.7). The valid variable values are YES and NO. This control entry is optional, and the default value is NO. If REJECTWARNINGS=YES is coded, records resulting in warnings (GRC=>01=) are treated as rejects; that is, they are written into ERRFILE (or ERRFIL2) rather than OUTFILE, they are counted as rejects in the report of run statistics, and they are considered to be rejects for the purpose of determining whether a MAXREJECTS termination is to be triggered. If REJECTWARNINGS=NO is coded or is in effect by default, warnings are treated as accepted records; that is, they are written into OUTFILE rather than ERRFILE (or ERRFIL2), they are counted as accepted records in the report of run statistics, and they are considered to be accepted records for the purpose of determining whether a MAXREJECTS termination is to be triggered.
RELATEDNODES=V	If COW Function 2 results in a 'many-node case' (GRC 03 with Reason Code A), this control entry specifies if GBAT should return the Nodes and B7SCs for the streets at those nodes (up to 20 nodes). This control entry is valid only with WORKAREA=COW, RECTYPE=2 and GEOCODE=YES or ALL. ERRFIL3 will contain this output. The variable values are YES and NO and are self-explanatory. If these If this control entry is not coded, the default value is NO.
ROADBED=V	Specifies whether the output of a multi-Roadbed street should contain Roadbed information or information based on the center line of the street. This control entry is valid only for Functions 1, 1E, 1B and 3S for which it is optional. The variable values are YES and NO and are self-explanatory. If this control entry is not coded, the default value is NO.
SNL=V	Specifies a value for the Street Name Normalization Length Limit (SNL) parameter (see Section III.2). The variable value must be a number between 4 and 32, inclusive. This control entry is valid only for functions that return normalized street names, for which it is optional. The default value is 32.
STATEN	See BRONX.

Table A9-1: GBAT Control Entry Descriptions by Keyword (continued)

Control Entry	Description
STRTCODE=S,L **CRSCOD1=S,L** **CRSCOD2=S,L**	Specify the starting positions and lengths of input five-digit street code fields for Functions 1, 1A, 1B, 1E, 2, 3, 3C, 3S and D. The appropriate combination of these control entries for the function being called must be coded, as follows**:**

Functions	Street Input Fields Required	Control Entries Used to Specify These Fields
1, 1A, 1B, 1E	'On' Street	STRTCODE
2	Two Intersecting Streets in Either Order	STRTCODE and CRSCOD1
3, 3C, 3S	'On' Street and Two Cross Streets in Either Order	STRTCODE, CRSCOD1 and CRSCOD2 (Note: For Function 3S, input cross street fields are optional.)
D	Up to Three 5-Digit Street Codes	STRTCODE, CRSCOD1 if necessary, CRSCOD2 if necessary

Each of the input street code fields specified by STRTCODE, CRSCOD1 and CRSCOD2 must contain a five-digit street code in one of four formats: P5SC (which has a length of 3 bytes, valid only with MSW format), PB5SC (length = 4, valid only with MSW format), 5SC (length = 5) or B5SC (length = 6). For Functions 2, 3, 3C, 3S and D, which can have multiple input five-digit street code fields, it is allowable for those fields to have different formats; for example, for MSW Function 3, it is permissible for the input 'on' street field to contain a PB5SC while one input cross street field contains a 5SC and the other input cross street field contains a B5SC. The user must code the length variable value in each of these control entries so that it accords with the street code format of the corresponding input street code field. GBAT uses that length value to determine which five-digit street code format to expect in that input field.

If any input street code fields are in the form of P5SCs or 5SCs, which do not contain their own borough code sub-field, the input data file must also have a separate input borough code field or fields, which must be specified by coding the control entry BORO, and if needed, the control entries CROSSBORO1 and CROSSBORO2.

Note: for Functions 1, 1A, 1B, 1E, 2, 3, 3C and 3S, but not Function D, input street data may be provided either in the form of five-digit street code fields, specified using the control entries STRTCODE, CRSCOD1 and CRSCOD2, or alternatively, in the form of street name fields, specified using the control entries ONSTREET, CROSS1 and CROSS2. For those of the aforementioned functions that accept multiple input streets, either all of those input streets must take the form

Table A9-1: GBAT Control Entry Descriptions by Keyword (continued)

Control Entry	Description
	of street codes or all must take the form of street names; a mixture of codes and names is not permitted. For Function D, input street data must be in the form of street codes**.**
TITLE=V	Specifies a title to appear on the top of the SYSPRINT output report of summary run statistics. A valid variable value is any character string of up to 73 bytes ending in a semicolon. This control entry is optional. If it is not coded, the report is generated without a title. If it is coded, it is mandatory to terminate the title character string with a semicolon, which does not appear in the actual report.
TPADDATA=V	Specifies whether TPAD processing should be performed for functions 1A, 1B, BL, and BN Work Area 2 giving more up-to-date property-level information. (See Section VI.11).The valid variable values are YES and NO. Y requests the TPAD processing. The TPADDATA option is available only for COW format (WORKAREA=COW) Functions 1A, 1B, BL, and BN; this control entry is invalid for all other functions. All other control cards are the same for each of the Functions 1A, 1B, BL or BN. For the functions that have the TPAD option, this control entry (TPADDATA=YES) is invalid/ignored when GEOCODE=NO or VAL; it is optional when GEOCODE=YES or ALL, and the default value of TPADDATA= NO.
UNIT=S,L	Specify the starting position and length for the input Unit field. This control entry is valid only for COW Functions 1, 1E, 1A and 1B. This control entry is optional and there is no default. To have GBAT append the Normalized Display Format Unit Output field (in OUTFILE) also specify GEOUNIT=YES and either GEOCODE=NO or GEOCODE=ALL. See the description of those control entries. For a description of the Unit fields, see Section V.15.
VSAM=V	Specifies whether the input data file is a VSAM file or a sequential file. The valid variable values are YES and NO, specifying that the file is a VSAM file or a sequential file, respectively. This control entry is optional, and NO is the default value. If NO is specified or is in effect by default, then in the JCL, the DD statement for the input data file must contain the DDname INFILE. If YES is specified, the DDname must be coded as INVSAM.
WORKAREA=V	Specifies whether the work areas should be in MSW or COW format. The WORKAREA control entry is valid for all functions. The valid variable values are COW (Character Only Work Area) and MSW (Mainframe Specific Work Area), and are self-explanatory. If this control entry is not coded, the default value is MSW.
ZIPCODE=S or **ZIPCODE=S,5**	Specifies the starting position and length of the input ZIP code field. This control entry is valid only for Functions 1, 1A, 1B and 1E. An input ZIP code field must always have a length of five bytes, which may be coded explicitly as ‘5’ in this control entry or it may be left uncoded, in which case it defaults to that value.

Table A9-1: GBAT Control Entry Descriptions by Keyword (continued)

Control Entry	Description
1ABLVERSION=V	Specifies that standard processing is to be performed for Functions 1A and BL (see Section VI.8). The 1ABLVERSION control entry is valid only for Functions 1A and BL, and is required for the MSW format. The only valid variable value for this control entry is STANDARD or S, and is self-explanatory. Note: Legacy has been discontinued..

Table A9-2: Summary of GBAT Control Entries by Keyword

This table lists all of the control entries alphabetically by keyword, indicates their coding formats, their allowable and default variable values, and the Geosupport functions for which each control entry or combination of control entry and variable value is valid. Control entry variables are indicated using ‘S’ and ‘L’ to represent the starting position and length of a field in the input data records, respectively, and ‘V’ to represent variables of other types.

Table A9-2: Summary of GBAT Control Entries by Keyword			
Control Entry	**Valid Variable Values**	**Default**	**Functions**
ALIASES=V	NO, YES, VAL	NO	1, 1A, 1B, 1E, 1N, 2, 3, 3C, 3S, AP
AUXSEG=V	YES, NO	NO	COW only: 3, 3C
BBL=S,10	1 <= S <= (LRECL-1)-10	None	BL
BIN=S or BIN=S,7	1 <= S<= (LRECL+1)-7	L=7	BN
BLOCK=S or BLOCK=S,5	1 <= S <= (LRECL+1)-5	L=5	BL
BORO=S,L	1 <= S <= (LRECL+1)-L 1 <= L <= 12	None	All but BN, DG, DN
BRONX=V	Any character string that fits BORO	2	All but BN, DG, DN
BROOKLYN=V	Any character string that fits BORO	3	All but BN, DG, DN
BROWSEFLAG=V	P, F, R	None	1, 1A, 1B, 1E,1N, 2, 3, 3C, AP
B7SC1=S or B7SC1=S,8	1 <= S <= (LRECL+1)-8	L=8	DG
B7SC2=S or B7SC2=S,8	1 <= S <= (LRECL+1)-8	L=8	DG
B7SC3=S or B7SC3=S,8	1 <= S <= (LRECL+1)-8	L=8	DG
B10SC1=S or B10SC1=S,11	1 <= S <= (LRECL+1)-11	L=11	DN
B10SC2=S or B10SC2=S,11	1 <= S <= (LRECL+1)-11	L=11	DN
B10SC3=S or B10SC3=S,11	1 <= S <= (LRECL+1)-11	L=11	DN
COMPACT=V	YES, NO	NO	All but BL, BN
COMPASS=S	1 <= S <= LRECL	None	2, 3C, 3S
COMPASS2=S	1 <= S <= LRECL	None	3S
CROSSBORO1=S,L	1 <= S <= (LRECL+1)-L	None	2, 3, 3C, 3S, D

Table A9-2: Summary of GBAT Control Entries by Keyword			
Control Entry	**Valid Variable Values**	**Default**	**Functions**
	1<= L <= 12		
CROSSBORO2=S,L	1 <= S <= (LRECL+1)-L 1<= L <= 12	None	3, 3C, 3S, D
CROSSSTNAMES=V	YES, NO (YES is valid only for GEOCODE=ALL)	NO	1, 1B, 1E, 2, 3, 3C
CROSS1=S,L	1 <= S <= (LRECL+1)-L 4 <= L <= 32	None	2, 3, 3C, 3S
CROSS2=S,L	1 <= S <= (LRECL+1)-L 4 <= L <= 32	None	3, 3C, 3S
CRSCOD1=S,L	1 <= S <= (LRECL+1)-L L=3 if field contains P5SC (MSW) L=4 if field contains PB5SC (MSW) L=5 if field contains 5SC L=6 if field contains B5SC	None	2, 3, 3C, 3S, D
CRSCOD2=S,L	1 <= S <= (LRECL+1)-L L=3 if field contains P5SC (MSW) L=4 if field contains PB5SC (MSW) L=5 if field contains 5SC L=6 if field contains B5SC	None	3, 3C, 3S, D
GEOCODE=V	NO, YES, ALL, VAL	NO	1, 1N, 2, 3, D, DG, DN
	(YES and ALL are invalid for Functions 1N, D, DG, DN)	YES	1A, 1B, 1E, 3C, 3S, AP, BL, BN
GEOUNIT=V	YES, NO (YES is valid only for GEOCODE=NO or GEOCODE=ALL)	NO	COW only: 1, 1E, 1A, 1B
HNI=V	YES, NO (MSW format only)	YES	D, DG, DN
	(NO is invalid for MSW Fns D, DG, DN)	NO	1, 1A, 1E
HNS=V	YES, NO (COW format only)	YES	D, DG, DN
	(NO is invalid for COW Fns D, DG, DN)	NO	1, 1A, 1B, 1E, AP
HOUSENUM=S or HOUSENUM=S,L	1 <= S <= (LRECL+1)-L 5 <= L <= 12 if field contains house number in character format L= 6 if field contains HNI	L=6 when HNI=YES;L=11 when	1, 1A, 1B, 1E, AP, D, DG, DN

Table A9-2: Summary of GBAT Control Entries by Keyword			
Control Entry	**Valid Variable Values**	**Default**	**Functions**
	L=11 if field contains HNS	HNS= YES else no length default	
HOUSENUM2=S or HOUSENUM2=S,L	1 <= S <= (LRECL+1)-L L= 6 if field contains HNI L=11 if field contains HNS	L=6 when HNI=YES; L=11 when HNS=YES	D, DG, DN
LONGWA2=V	YES, NO	NO	MSW and COW: 1A, BL MSW only: 1, 1E, 3
LOT=S,4	1 <= S <= (LRECL+1)-4	None	BL
MANHATTAN=V	Any character string that fits BORO	1	All but BN, DG, DN
MAXREJECTS=V	Any positive integer or NOMAX	200	All
MODE=V	X, NO	NO	COW and GEOCODE=ALL or YES: 1,1E,1A,3,3C, BL,BN
ONSTREET=S,L	1 <= S<= (LRECL+1)-L 4 <= L <= 32	None	1, 1A, 1B, 1E, 1N, AP, 2, 3, 3C, 3S
QUEENS=V	Any character string that fits BORO	4	All but BN, DG, DN
RECTYPE=V	1, 1A, 1B, 1E, 1N, 2, 3, 3C, 3S, AP, BL, BN, D, DG, DN	None	All (Note 1B and AP are COW only
REALSTREETONLY=V	YES, NO	NO	COW only: 3S
REJECTWARNINGS=V	YES, NO	NO	All
ROADBED	YES, NO	NO	1, 1B, 1E, 3S
SNL=V	4 <= V <= 32	32	All but BL, BN
STATEN=V	Any character string that fits BORO	5	All but BN, DG, DN
STRTCODE=S,L	1 <= S <= (LRECL+1)-L	None	1, 1A, 1B, 1E, 2, 3,

Table A9-2: Summary of GBAT Control Entries by Keyword			
Control Entry	**Valid Variable Values**	**Default**	**Functions**
	L=3 if contains P5SC (MSW) L=4 if contains PB5SC (MSW) L=5 if contains 5SC L=6 if contains B5SC		3C, 3S, AP, D
TITLE=V	Any character string of up to 73 bytes ending in a semicolon	No title	All
TPADDATA=V	YES, NO	NO	1A, 1B, BL, BN
UNIT=S,L	1 <= S<= (LRECL+1)-L 1 <= L <= 14	None	COW only: 1, 1E, 1A, 1B
VSAM=V	YES, NO	NO	All
WORKAREA=V	COW, MSW	MSW	All
ZIPCODE=S or ZIPCODE=S,5	1 <= S <= (LRECL+1)-5	L=5	1, 1A, 1B, 1E, AP
1ABLVERSION=V	STANDARD, S	None	1A, BL

Table A9-3: Summary of GBAT Control Entry Usage by Function

This table lists, by Geosupport function, which control entries are allowable and which of those are mandatory. Control entries are represented in this table by their keywords. Some combinations of control entries are mandatory or prohibited; such conditions are indicated in this table by using the logical connectors "and", "or" (inclusive or) and "xor" (exclusive or) and by using underlining, as follows:

- A table entry of the form "A and B" signifies that if either A or B is coded, then both must be coded. Similarly, "A and B and C" signifies that if any of A, B or C is coded, then all three must be coded.
- A table entry of the form "A or B" signifies that A may be coded without B, B may be coded without A, and A and B may both be coded. Similarly, "A or B or C" signifies that any combination of these three items may be coded."
- A table entry of the form "A xor B" signifies that if either A or B is coded, then the other one must not be coded.
- If a table entry is underlined, that control entry or combination of control entries is mandatory for the given function. All table entries not underlined are optional.
- Square brackets (" [.....]") are sometimes used for logical grouping to increase clarity.

Thus, a table entry of the form "A or B" signifies that it is mandatory to code A or B; that is, it is mandatory to code at least one of A and B and it is permissible to code both A and B. "A xor B" signifies that it is mandatory to code A xor B; that is, it is mandatory to code either A or B but prohibited (because of the exclusive or) to code both A and B. A table entry of the form " [A and B] xor [C and D]" signifies that it is mandatory to code either both A and B or both C and D but prohibited to code all four of them.

Function **Control Entries**

1 ALIASES, BORO or ZIPCODE, BRONX and BROOKLYN and MANHATTAN and QUEENS and STATEN, BROWSEFLAG (valid only if WORKAREA=COW),COMPACT, CROSSSTNAMES, GEOCODE, GEOUNIT (requires WORKAREA=COW and [GEOCODE=NO or GEOCODE=ALL]), HNI xor HNS (see Note 1), HOUSENUM (see Note 2), LONGWA2 xor WORKAREA=COW, MAXREJECTS, MODE=X (valid only if WORKAREA=COW and GEOCODE=ALL or YES), ONSTREET xor STRTCODE, RECTYPE, REJECTWARNINGS, ROADBED, SNL, TITLE, UNIT (requires WORKAREA=COW), WORKAREA, VSAM

Note 1: HNI is a valid entry only if WORKAREA defaults to MSW or is set to MSW. HNS is a valid entry only if WORKAREA=COW.

Note 2: For Functions 1, 1A 1B and 1E, HOUSENUM is optional in the sense that coding it is either mandatory or prohibited, depending, respectively, on whether the input data file contains free-form addresses (in which a single field contains the house number followed by the street name in non-fixed positions; see Section V.3) or parsed-form addresses (in which the house number and street name are in separate fields). When HOUSENUM is not

Table A9-3: Summary of GBAT Control Entry Usage by Function (continued)

Function	Control Entries
	coded, the input street must be in the form of street names rather than street codes, the input street name field must be specified by the control entry ONSTREET, and in every input data record, that field must contain either a free-form address or a Non-Addressable Place name (NAP). When HOUSENUM is coded, and the input street is in the form of street names, GBAT assumes that the input street name field contains street names and NAPs only, not free-form addresses.
1 Extended	Same as Function 1, except [GEOCODE=ALL] xor [GEOCODE=YES], MODE=X, WORKAREA=COW
1A	ALIASES, BORO or ZIPCODE, BRONX and BROOKLYN and MANHATTAN and QUEENS and STATEN, BROWSEFLAG (valid only if WORKAREA=COW), COMPACT, GEOCODE, GEOUNIT (requires WORKAREA=COW and [GEOCODE=NO or GEOCODE=ALL]), HNI xor HNS (see Note 1 following Function 1 entry), HOUSENUM (see Note 2 following Function 1 entry), LONGWA2, MAXREJECTS, ONSTREET xor STRTCODE, RECTYPE, REJECTWARNINGS, ROADBED, SNL, TITLE, TPADDATA (requires WORKAREA=COW), UNIT (requires WORKAREA=COW), WORKAREA, VSAM, 1ABLVERSION
1A Extended	Same as Function 1A, except [GEOCODE=ALL] xor [GEOCODE=YES], LONGWA2=NO (specified or by default), MODE=X, WORKAREA=COW
1B	ALIASES, BORO or ZIPCODE , BRONX and BROOKLYN and MANHATTAN and QUEENS and STATEN, BROWSEFLAG , COMPACT, CROSSSTNAMES, [GEOCODE=ALL] xor [GEOCODE=YES], GEOUNIT (requires GEOCODE=ALL), HNS, HOUSENUM (see Note 2 following Function 1 entry), MAXREJECTS, ONSTREET xor STRTCODE, RECTYPE, REJECTWARNINGS, ROADBED, SNL, TITLE, TPADDATA, UNIT, WORKAREA=COW, VSAM
1E	ALIASES, BORO or ZIPCODE , BRONX and BROOKLYN and MANHATTAN and QUEENS and STATEN, BROWSEFLAG (valid only if WORKAREA=COW), COMPACT, CROSSSTNAMES, GEOCODE, GEOUNIT (requires WORKAREA=COW and [GEOCODE=NO or GEOCODE=ALL]), HNI xor HNS (see Note 1 following Function 1 entry), HOUSENUM (see Note 2 following Function 1 entry), LONGWA2 xor WORKAREA=COW, MAXREJECTS, ONSTREET xor STRTCODE, RECTYPE, REJECTWARNINGS, ROADBED, SNL, TITLE, UNIT (requires WORKAREA=COW), WORKAREA, VSAM
1E Extended	Same as Function 1E, except [GEOCODE=ALL] xor [GEOCODE=YES], MODE=X,

Table A9-3: Summary of GBAT Control Entry Usage by Function (continued)

Function	Control Entries
	WORKAREA=COW
1N	ALIASES, BORO, BRONX and BROOKLYN and MANHATTAN and QUEENS and STATEN, BROWSEFLAG (valid only if WORKAREA=COW), COMPACT, GEOCODE, MAXREJECTS, ONSTREET, RECTYPE, REJECTWARNINGS, SNL, TITLE, WORKAREA, VSAM
2	ALIASES, BORO, BRONX and BROOKLYN and MANHATTAN and QUEENS and STATEN, BROWSEFLAG (valid only if WORKAREA=COW), COMPACT, COMPASS, CROSSBORO1, CROSSSTNAMES, GEOCODE, MAXREJECTS, [ONSTREET and CROSS1] xor [STRTCODE and CRSCOD1], RECTYPE, REJECTWARNINGS, SNL, TITLE, WORKAREA, VSAM
3	ALIASES, AUXSEG (see Note 3), BORO, BRONX and BROOKLYN and MANHATTAN and QUEENS and STATEN, BROWSEFLAG (valid only if WORKAREA=COW), COMPACT, CROSSBORO1, CROSSBORO2, CROSSSTNAMES, GEOCODE, LONGWA2 xor WORKAREA=COW, MAXREJECTS, [ONSTREET and CROSS1 and CROSS2] xor [STRTCODE and CRSCOD1 and CRSCOD2], RECTYPE, REJECTWARNINGS, SNL, TITLE, WORKAREA, VSAM Note 3: AUXSEG is a valid entry only if WORKAREA=COW.
3C	ALIASES, AUXSEG (see Note 3 following Function 3 entry), BORO, BRONX and BROOKLYN and MANHATTAN and QUEENS and STATEN, BROWSEFLAG (valid only if WORKAREA=COW), COMPACT, COMPASS, CROSSBORO1, CROSSBORO2, CROSSSTNAMES, GEOCODE, MAXREJECTS, [ONSTREET and CROSS1 and CROSS2] xor [STRTCODE and CRSCOD1 and CRSCOD2], RECTYPE, REJECTWARNINGS, SNL, TITLE, WORKAREA, VSAM
3/3C (extended)	
3S	ALIASES, BORO, BRONX and BROOKLYN and MANHATTAN and QUEENS and STATEN, COMPACT, COMPASS, COMPASS2, CROSSBORO1, CROSSBORO2, [CROSS1 and CROSS2] xor STRTCODE, [CRSCOD1 and CRSCOD2] xor ONSTREET, GEOCODE, MAXREJECTS, ONSTREET xor STRTCODE, REALSTREETONLY (see Note 4), RECTYPE, REJECTWARNINGS, ROADBED, SNL, TITLE, WORKAREA, VSAM Note 4: REALSTREETONLY is a valid entry only if WORKAREA=COW.
AP	ALIASES, BORO or ZIPCODE, BRONX and BROOKLYN and MANHATTAN and QUEENS and STATEN, BROWSEFLAG , COMPACT, GEOCODE, HNS, HOUSENUM (see Note 2 following Function 1 entry), MAXREJECTS, ONSTREET xor STRTCODE, RECTYPE, REJECTWARNINGS, SNL, TITLE, WORKAREA=COW, VSAM

Table A9-3: Summary of GBAT Control Entry Usage by Function (continued)

Function	Control Entries
AP Extended	Same as Function AP, except [GEOCODE=ALL] xor [GEOCODE=YES], MODE=X
BL	BORO and BLOCK and LOT xor BBL, BRONX and BROOKLYN and MANHATTAN and QUEENS and STATEN, LONGWA2, MAXREJECTS, RECTYPE, REJECTWARNINGS, TITLE, TPADDATA (requires WORKAREA=COW), VSAM, WORKAREA, 1ABLVERSION
BL Extended	Same as Function BL, except [GEOCODE=ALL] xor [GEOCODE=YES], LONGWA2=NO (specified or by default), MODE=X, WORKAREA=COW
BN	BIN, GEOCODE, MAXREJECTS, RECTYPE, REJECTWARNINGS, TITLE, TPADDATA (requires WORKAREA=COW), WORKAREA, VSAM
BN Extended	Same as Function BN, except [GEOCODE=ALL] xor [GEOCODE=YES], MODE=X, WORKAREA=COW
D	BRONX and BROOKLYN and MANHATTAN and QUEENS and STATEN, COMPACT, CROSSBORO1, CROSSBORO2, GEOCODE, HNI xor HNS, HOUSENUM or HOUSENUM2 or [BORO and STRTCODE] or [BORO and STRTCODE and CRSCOD1] or [BORO and STRTCODE and CRSCOD1 and CRSCOD2], MAXREJECTS, RECTYPE, REJECTWARNINGS, SNL, TITLE, WORKAREA, VSAM
DG	COMPACT, GEOCODE, HNI xor HNS, HOUSENUM or HOUSENUM2 or B7SC1 or [B7SC1 and B7SC2] or [B7SC1 and B7SC2 and B7SC3], MAXREJECTS, RECTYPE, REJECTWARNINGS, SNL, TITLE, WORKAREA, VSAM
DN	COMPACT, GEOCODE, HNI xor HNS, HOUSENUM or HOUSENUM2 or B10SC1 or [B10SC1 and B10SC2] or [B10SC1 and B10SC2 and B10SC3], MAXREJECTS, RECTYPE, REJECTWARNINGS, SNL, TITLE, WORKAREA, VSAM

Table A9-4: MSW Appended Items for GEOCODE=NO

NOTE: For COW Appended Items for GEOCODE=NO see TABLE 12.2

This table contains, by function or combination of function and option, a layout of the data that GBAT appends to the input data record to form the OUTFILE record for the MSW format when GEOCODE=NO has been specified.

Function(s)	**Option**	**Appended Items**	**Length**
1, 1A, 1E		HND HNHPD Normalized Street Name 10SC	12 8 32 10
		Total Length:	62
1N		Normalized Street Name 10SC	32 10
		Total Length:	42
2		Normalized Street Name-1 10SC-1 Normalized Street Name-2 10SC-2	32 10 32 10
		Total Length:	84
3, 3C, 3S		Normalized Street Name-1 10SC-1 Normalized Street Name-2 10SC-2 Normalized Street Name-3 10SC-3	32 10 32 10 32 10
		Total Length:	126
BL	1ABLVERSION=STANDARD	BBL (Standard Format): Borough Code Tax Block Tax Lot	 1 5 4
		Total Length:	10
	1ABLVERSION=LEGACY	No longer supported	
BN		BIN Filler	7 3
		Total Length:	10

Function(s)	**Option**	**Appended Items**	**Length**
D, DG, DN	HOUSENUM2 control entry not coded	HND Normalized Street Name-1 Normalized Street Name-2 Normalized Street Name-3 Total Length:	12 32 32 32 108
D, DG,DN (cont.)	HOUSENUM2 control entry coded	HND-1 Normalized Street Name-1 Normalized Street Name-2 Normalized Street Name-3 HND-2 Total Length:	12 32 32 32 12 120

Table A9-5: MSW Format- Length of GBAT-Appended Data

This table lists, by function and GEOCODE value, the length in bytes of the data that GBAT appends to an input data record that has been accepted by Geosupport to form the corresponding OUTFILE record. The LRECL value that the user must specify in the OUTFILE DD statement in the JCL is computed by adding the length of the appended data as indicated in this table to the LRECL of the input data file.

Note: For Functions 1, 1E, 2, 3 and 3C, when GEOCODE=ALL and CROSSSTNAMES=YES, the appended data consist of the concatenation of the GEOCODE=NO data, followed by a 320-byte block of data containing cross street names, followed by the GEOCODE=YES data. For further information about the layout of the appended CROSSSTNAMES data, refer to the Appendix 3 entry for the List of Street Names (see paragraph on List of Cross Street Names).

MSW Functions	Options	GEOCODE Value		
		NO	YES	ALL
1, 1E		62		
	LONGWA2=NO, CROSSSTNAMES=NO		200	262
	LONGWA2=YES, CROSSSTNAMES=NO		300	362
	LONGWA2=NO, CROSSSTNAMES=YES			582
	LONGWA2=YES, CROSSSTNAMES=YES			682
1A	1ABLVERSION=STANDARD	62		
	1ABLVERSION=STANDARD, LONGWA2=NO		939	1001
	1ABLVERSION=STANDARD,LONGWA2=YES		17683	17745
1N		42	Invalid	Invalid
2	CROSSSTNAMES=NO	84	200	284
	CROSSSTNAMES=YES			604
3		126		
	LONGWA2=NO, CROSSSTNAMES=NO		200	326
	LONGWA2=YES, CROSSSTNAMES=NO		300	426
	LONGWA2=NO, CROSSSTNAMES=YES			646
	LONGWA2=YES, CROSSSTNAMES=YES			746
3C	CROSSSTNAMES=NO	126	200	326
	CROSSSTNAMES=YES			646
3S		126	4224	4350
BL	1ABLVERSION=STANDARD	10		
	1ABLVERSION=STANDARD, LONGWA2=NO		939	949

MSW Functions	Options	GEOCODE Value		
		NO	YES	ALL
BL (cont.)	1ABLVERSION=STANDARD, LONGWA2=YES		17683	17693
BN		10	939	949
D, DG, DN	HOUSENUM2 not coded	108	Invalid	Invalid
	HOUSENUM2 coded	120	Invalid	Invalid

APPENDIX 10: SAMPLE GBAT JOBS

This appendix contains printouts of two sample GBAT jobs, referred to as Sample Job 1 and Sample Job 2. Sample Job 1 executes Function 1A. Sample Job 2 executes Function 2.

For each sample job, this appendix contains a description of the control file, followed by listings of the job-stream input and the job output. The job-stream input listing contains the JCL, the in-stream control file, the in-stream data input file, and for Sample Job 2 only, the in-stream ALIASES input file. An ALIASES file is not used in Sample Job 1. The job output listing contains the system job-stream output, the GBAT output report of messages and run statistics, and the output file of GBAT rejects.

GSS developed and ran the sample jobs on the DoITT/Computer Service Center mainframe. Some variations from the JCL shown herein may be necessary for users running on other computers. In addition, the JCL shown has been modified to remove account-specific references.

Please note that the GBAT samples are not guaranteed to run exactly as shown in this appendix. The samples are here as an aid in developing GBAT runs.

Note: The GBAT samples are MSW format samples. To run using the COW format, add the GBAT control entry WORKAREA=COW to the in-stream control files and update the LRECL of the OUTFILE DD card appropriately.

SAMPLE GBAT JOB #1

SAMPLE GBAT JOB 1: DESCRIPTION

The control file for Sample GBAT Job 1 is as follows:

```
BORO=9,1   RECTYPE=1A    ONSTREET=15,20    1ABLVERSION=S
TITLE=THIS IS GBAT CONTROL FILE EXAMPLE 1;
```

In this example, the user has chosen to code several control entries in a single control record, followed by a second control record containing a heading for the SYSPRINT output file. In the first control record, the order in which the control entries are coded, their precise positioning within the control record and the amount of spacing between them are immaterial.

The control file in this example contains the following control entries. (See Table A9-1 for Control Entry Descriptions)

- BORO specifies that the input borough code field is in position 9 of the INFILE records and is one byte long.

- RECTYPE specifies Function 1A.

- ONSTREET specifies that the input street name field starts in position 15 of the INFILE records and is 20 bytes long.

- 1ABLVERSION specifies that the standard version of Function 1A is to be executed. This control entry is required with the MSW format. The Legacy version of Function 1A is no longer supported.

- TITLE specifies a title for the SYSPRINT output report. Notice that the text of the title is terminated with a semicolon character, as required. (The semicolon does not appear in the actual report.)

The user has chosen not to code the following control entries, the default values for which are therefore in effect: (See Table A9-2 for Control Entry default values.)

- Since the control entry VSAM has not been coded, GBAT will assume that the user input data file is a sequential file. Consequently, GBAT will access the input data file via the DDname INFILE, and the corresponding DD statement in the JCL must be coded accordingly.

- Since the control entry GEOCODE has not been coded, and Function 1A is being executed, the default value of YES is in effect. This causes GBAT to issue a two-work-area call and to append Work Area 2 for Function 1A to the successfully processed INFILE records in forming the OUTFILE records.

- Since the control entry ALIASES has not been coded, the default value of NO is in effect. Therefore, GBAT will not use temporary user-defined aliases when processing input street names; if an ALIASES DD statement has been included in the JCL, it will be ignored.

- Since the control entries MANHATTAN, BRONX etc. have not been coded, GBAT will assume that the input borough code field contains the default borough code values, which are the standard Geosupport borough codes (‘1’ for Manhattan, ‘2’ for the Bronx, etc.).

- Since HNI (or HNS for COW) has not been coded, GBAT will assume that input house numbers are not necessarily normalized and are in display format rather than in the HNI (or HNS for COW) format.

- Since HOUSENUM has not been coded, GBAT will assume that the input street name field specified by ONSTREET contains a free-form address (a house number followed by a street name). Note that since in this GBAT run input addresses are free-form, partial street names (see Section III.4) will be rejected.

- Since COMPACT has not been coded, GBAT will return normalized street names in a format suitable for sorting, rather than in the compact format.

- Since REJECTWARNINGS has not been coded, the default value of NO is in effect, so warnings will be treated as successfully processed records: they will be written to OUTFILE, they will be counted as successfully processed records in the SYSPRINT report, and they will not be counted as rejects towards the MAXREJECTS termination limit.

- Since MAXREJECTS has not been coded, the default value of ‘200’ is in effect, so that GBAT will terminate with an MVS Return Code of ‘20’ if the first 200 INFILE records all result in rejects for any reason other than an invalid borough code.

- Since the SNL control entry has not been coded, GBAT will assume the default value of SNL=32 when normalizing street names.

- Since LONGWA2=YES has not been coded, GBAT will return the regular WA2 for Function 1A.

- Since the WORKAREA control entry has not been coded, GBAT will assume the default value of MSW (Mainframe Specific Work Area).

SAMPLE GBAT JOB 1: JOB-STREAM INPUT

```
//EXAMPLE1 JOB YOUR-JOB-CARD-INFORMATION
//*
//*
//*******************************************************************
//************     THIS JOB IS GBAT MSW EXAMPLE 1     ***************
//*******************************************************************
//*********   THIS STEP INVOKES THE STANDARD CATALOGUED      ********
//*********   PROCEDURE FOR GBAT EXECUTION, CALLED GBAT2     ********
//*******************************************************************
//S1 EXEC GBAT2
//*******************************************************************
//*********   CARDIN IS THE USER-PROVIDED CONTROL FILE       ********
//*******************************************************************
//CARDIN DD *
BORO=9,1  RECTYPE=1A ONSTREET=15,20 1ABLVERSION=S
TITLE=THIS IS GBAT CONTROL FILE MSW EXAMPLE 1;
/*
//*******************************************************************
//*********   INFILE IS THE USER-PROVIDED INPUT DATA.          ******
//*********   IN THIS EXAMPLE, IT IS PROVIDED AS INSTREAM DATA.******
//*******************************************************************
//INFILE DD *
        1     100 GARAGE CENTRE ST
        1     22  READE ST
        1     36  READE ST
        1     60  READE              ** PARTIAL STREET NAMES NOT ALLOWED
        1     12  ELK                ** IN FREE-FORM ADDRESSES
        1     12  ELK ST
        1     310   BWY
        1     99 W 3 ST
        2     709 E 165 ST
        2     187C  EDGEWATER PK
        4     229-16 87 AVE
        2     1475  LONGFELLOW AV
        1     2053 ADAM POWELL BL
        1     310   1 AVE
/*
//*******************************************************************
//*********   OUTFILE IS THE OUTPUT FILE OF SUCCESSFULLY     ********
//*********   PROCESSED INFILE RECORDS.                      ********
//*******************************************************************
//OUTFILE DD DSN=&&OUT1A,DISP=(NEW,PASS),
//        UNIT=SYSDA,SPACE=(TRK,(80,20),RLSE),
//        DCB=(RECFM=FB,LRECL=1019)
//*******************************************************************
//*** ERRFILE IS THE OUTPUT FILE OF REJECTED INFILE RECORDS.      ***
//*********   INFILE RECORDS.                                ********
//ERRFILE DD SYSOUT=A,DCB=(RECFM=FB,LRECL=84)
//*******************************************************************
//*** AS OF GEOSUPPORT VERSION 10.0, DD STATEMENTS FOR GEOSUPPORT ***
//*** DATA FILES (E.G. GRID, PAD, ETC) ARE NO LONGER NEEDED       ***
//*** AND ARE IGNORED.  GEOSUPPORT IS TAILORED TO USE STANDARD    ***
//*** GEOSUPPORT DATA SET NAMES.                                  ***
//*** TO USE NON-STANDARD FILES, SEE YOUR SYSTEMS PROGRAMMER.     ***
//*******************************************************************
//
```

SAMPLE GBAT JOB 1: OUTPUT

```
                 J E S 2  J O B  L O G  --  S Y S T E M  M V S P  --  N O D E  C S C B A T C H

10.29.19 JOB17476 ---- FRIDAY,    DD MMMM YYYY ----
10.29.19 JOB17476  IRR010I  USERID YOURUID  IS ASSIGNED TO THIS JOB.
10.29.19 JOB17476  ICH70001I YOURUID  LAST ACCESS AT 10:27:49 ON FRIDAY, MMMM DD, YYYY
10.29.19 JOB17476  $HASP373 EXAMPLE1 STARTED - INIT 84   - CLASS X - SYS MVSP
10.29.19 JOB17476  IEF403I EXAMPLE1 - STARTED - TIME=10.29.19
10.29.19 JOB17476  +GBI SUCCESSFULLY LOADED GBIDRV
10.29.20 JOB17476  +GBIDRV (VERSION VV.V) INVOKED
10.29.20 JOB17476  +GEO (VERSION VV.V) INVOKED
10.29.20 JOB17476  +snd NNN  OPENED SUCCESSFULLY
10.29.20 JOB17476  +PAD NNN  'B030.GEO.COW.BLDGS.CITY' OPENED SUCCESSFULLY
10.29.20 JOB17476  -                                                 --TIMINGS (MINS.)--            ----PAGING COUNTS---
10.29.20 JOB17476  -JOBNAME  STEPNAME PROCSTEP    RC   EXCP   CONN    TCB    SRB  CLOCK   SERV  PG  PAGE  SWAP   VIO
10.29.20 JOB17476  -EXAMPLE1 S1       GBAT2       00    787    142    .00    .00     .0   1198   0     0     0     0
10.29.20 JOB17476  IEF404I EXAMPLE1 - ENDED - TIME=10.29.20
10.29.20 JOB17476  -EXAMPLE1 ENDED.  NAME-YOURUID             TOTAL TCB CPU TIME=   .00  TOTAL ELAPSED TIME=    .0
10.29.20 JOB17476  $HASP395 EXAMPLE1 ENDED

------ JES2 JOB STATISTICS ------

  DD MMMM YYYY JOB EXECUTION DATE

           60 CARDS READ

          208 SYSOUT PRINT RECORDS

            0 SYSOUT PUNCH RECORDS

           15 SYSOUT SPOOL KBYTES


         0.01 MINUTES EXECUTION TIME
```

```
1 //EXAMPLE1 JOB YOUR-JOB-CARD-INFORMATION
  //*
  //*
  //*******************************************************************
  //************     THIS JOB IS GBAT MSW EXAMPLE 1     ***************
  //*******************************************************************
  //*******************************************************************
  //*********   THIS STEP INVOKES THE STANDARD CATALOGUED      ********
  //*********   PROCEDURE FOR GBAT EXECUTION, CALLED GBAT2     ********
  //*******************************************************************
3 //S1 EXEC GBAT2
4 XXGBAT2 PROC                                                            00000100
  XX**                          /* IN CSC.TEST.PROCLIB */                 00000200
  XX**                          /* MODIFIED 06/30/06  BY MEB   */         00000315
  XX**                          /* ADDED SUPPORT.PDSE.LOADLIB  */         00000415
  XX**                          /* REMOVED DD CARDS            */         00000515
  XX**                          /* MODIFIED 05/11/06  BY MEB   */         00000615
  XX**                          /* ADDED GRID1R FILE           */         00000715
  XX**                          /* MODIFIED 07/25/05  BY MEB   */         00000815
  XX**                          /* PEDFILE BECOMES DUMMY FILE  */         00000915
  XX**                          /* MODIFIED 03/26/02  BY MEB   */         00001015
  XX**                                                                    00001115
  XX**** WARNING: DO NOT OVERRIDE THE REGION PARAMETER  **************    00001215
  XX**                                                                    00001315
5 XXGBAT2 EXEC PGM=GBATIO2,REGION=9M,PARM='ISASIZE(40K)'                  00001415
  XX*                                                                     00001516
  XX*****************************************************************/    00001616
  XX*                                                               */    00001716
  XX*   AS OF GEOSUPPORT VERSION 10.0,                              */    00001816
  XX*   THE STEPLIB (OR JOBLIB) OF THE GEOSUPPORT EXECUTION STEP    */    00001916
  XX*   MUST INCLUDE THE FOLLOWING TWO CONCATENATED DATASETS:       */    00002016
  XX*               A030.GEO.SUPPORT.PDSE.LOADLIB                   */    00002116
  XX*               A030.GEO.SUPPORT.LOADLIB                        */    00002216
  XX*                                                               */    00002316
  XX*****************************************************************/    00002416
  XX*                                                                     00002516
  XX*                                                                     00002616
6 XXSTEPLIB DD DSN=A030.GEO.SUPPORT.PDSE.LOADLIB,DISP=SHR                 00002716
7 XX        DD DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR                      00002816
  XX*                                                                     00002916
  XX*                                                                     00003016
  XX*****************************************************************/    00003116
  XX*                                                               */    00003216
  XX*   AS OF GEOSUPPORT VERSION 10.0,                              */    00003316
```

```
   XX*   DD STATEMENTS FOR GEOSUPPORT DATA FILES (E.G. GRID, PAD    */     00003416
   XX*   ETC) ARE NO LONGER NEEDED AND ARE IGNORED.  GEOSUPPORT     */     00003516
   XX*   IS TAILORED TO USE STANDARD GEOSUPPORT DATA SET NAMES.     */     00003616
   XX*   TO USE NON-STANDARD FILES, SEE YOUR SYSTEMS PROGRAMMER.    */     00003716
   XX*                                                              */     00003816
   XX***************************************************************/     00003916
   XX*                                                              */     00004016
   XX*                                                              */     00004116
 8 XXSYSPRINT DD SYSOUT=A,DCB=(LRECL=133,RECFM=FBA,BLKSIZE=1330)           00004216
   XX** SYSPRINT FILE CONTAINS RUN STATISTICS AND MESSAGES                 00004316
 9 XXSYSTERM  DD SYSOUT=A,DCB=(LRECL=133,RECFM=FBA,BLKSIZE=1330)           00004416
   XX** SYSTERM FILE CONTAINS SYSTEM WARNINGS AND ERRORS                   00004516
10 //CARDIN DD *
   X/CARDIN DD DDNAME=CARDIN                                               00004616
   XX** CARDIN IS THE FILE OF GBAT CONTROL RECORDS                         00004716
11 //INFILE DD *
   X/INFILE DD DDNAME=INFILE                                               00004816
   XX** INFILE CONTAINS THE USERS DATA INPUT RECORDS                       00004916
12 //OUTFILE DD DSN=&&OUT1A,DISP=(NEW,PASS),
   //        UNIT=SYSDA,SPACE=(TRK,(80,20),RLSE),
   //        DCB=(RECFM=FB,LRECL=1019)
   X/OUTFILE DD DDNAME=OUTFILE                                             00005016
   XX** OUTFILE CONTAINS THE VALID OUTPUT RECORDS                          00005116
13 //ERRFILE DD SYSOUT=A,DCB=(RECFM=FB,LRECL=84)
   X/ERRFILE DD DDNAME=ERRFILE                                             00005216
   XX** ERRFILE CONTAINS THE REJECTS                                       00005316
14 XXALIASES  DD DUMMY                                                     00005416
   XX** ALIASES IS THE OPTIONAL INPUT FILE OF USER-DEFINED ST NAME ALIASES 00006015
   //*****************************************************************
   //*********   CARDIN IS THE USER-PROVIDED CONTROL FILE       ********
   //*****************************************************************
   //*****************************************************************
   //*********   INFILE IS THE USER-PROVIDED INPUT DATA.          ******
   //*********   IN THIS EXAMPLE, IT IS PROVIDED AS INSTREAM DATA.******
   //*****************************************************************
   //*****************************************************************
   //*********   OUTFILE IS THE OUTPUT FILE OF SUCCESSFULLY     ********
   //*********   PROCESSED INFILE RECORDS.                      ********
   //*****************************************************************
   //*****************************************************************
   //*********   ERRFILE IS THE OUTPUT FILE OF REJECTED         ********
   //*********   INFILE RECORDS.                                ********
   //*****************************************************************
   //*****************************************************************
```

```
          //*********   AS OF GEOSUPPORT VERSION 10.0,                 ********
          //*********   DD STATEMENTS FOR GEOSUPPORT DATA FILES (E.G.  ********
          //*********   GRID, PAD, TABFILE ETC) ARE NO LONGER NEEDED   ********
          //*********   AND ARE IGNORED.  GEOSUPPORT IS TAILORED TO    ********
          //*********   USE STANDARD GEOSUPPORT DATA SET NAMES.        ********
          //*********   TO USE NON-STANDARD FILES, PLEASE SEE YOUR     ********
          //*********   SYSTEMS PROGRAMMER.                            ********
          //*******************************************************************
          //*******************************************************************
 STMT NO. MESSAGE
        3 IEFC001I PROCEDURE GBAT2 WAS EXPANDED USING PRIVATE LIBRARY CSC.TEST.PROCLIB
ICH70001I YOURUID  LAST ACCESS AT 10:27:49 ON FRIDAY, MMMM DD, YYYY
IEF236I ALLOC. FOR EXAMPLE1 GBAT2 S1
IGD103I SMS ALLOCATED TO DDNAME STEPLIB
IGD103I SMS ALLOCATED TO DDNAME
IEF237I JES2 ALLOCATED TO SYSPRINT
IEF237I JES2 ALLOCATED TO SYSTERM
IEF237I JES2 ALLOCATED TO CARDIN
IEF237I JES2 ALLOCATED TO INFILE
IGD101I SMS ALLOCATED TO DDNAME (OUTFILE )
        DSN (SYS06195.T102919.RA000.EXAMPLE1.OUT1A.H01   )
        STORCLAS (PRIMARY) MGMTCLAS (        ) DATACLAS (        )
        VOL SER NOS= SMST01
IEF237I JES2 ALLOCATED TO ERRFILE
IEF237I DMY  ALLOCATED TO ALIASES
GBI SUCCESSFULLY LOADED GBIDRV
GBIDRV (VERSION VV.V) INVOKED
GEO (VERSION VV.V) INVOKED
snd NNN  OPENED SUCCESSFULLY
IGD103I SMS ALLOCATED TO DDNAME SYS00001
PAD NNN  'B030.GEO.COW.BLDGS.CITY' OPENED SUCCESSFULLY
IEF142I EXAMPLE1 GBAT2 S1 - STEP WAS EXECUTED - COND CODE 0000
IGD104I A030.GEO.SUPPORT.PDSE.LOADLIB                RETAINED,  DDNAME=STEPLIB
IGD104I A030.GEO.SUPPORT.LOADLIB                     RETAINED,  DDNAME=
IEF285I   YOURUID.EXAMPLE1.JOB17476.D0000103.?         SYSOUT
IEF285I   YOURUID.EXAMPLE1.JOB17476.D0000104.?         SYSOUT
IEF285I   YOURUID.EXAMPLE1.JOB17476.D0000101.?         SYSIN
IEF285I   YOURUID.EXAMPLE1.JOB17476.D0000102.?         SYSIN
IEF285I   YOURUID.EXAMPLE1.JOB17476.D0000105.?         SYSOUT
IGD104I B030.GEO.COW.BLDGS.CITY                      RETAINED,  DDNAME=SYS00001
IEF373I STEP/GBAT2   /START 2006195.1029
IEF374I STEP/GBAT2   /STOP  2006195.1029 CPU    0MIN 00.06SEC SRB    0MIN 00.00SEC VIRT   928K SYS   308K EXT    8768K
SYS   11284K
IEF237I E001 ALLOCATED TO SYS00002
```

```
IEF285I   SYS06195.T102920.RA000.EXAMPLE1.R0170302     KEPT
IEF285I   VOL SER NOS= SMST01.
IGD105I SYS06195.T102919.RA000.EXAMPLE1.OUT1A.H01    DELETED,   DDNAME=OUTFILE
IEF375I  JOB/EXAMPLE1/START 2006195.1029
IEF376I  JOB/EXAMPLE1/STOP  2006195.1029 CPU    0MIN 00.06SEC SRB    0MIN 00.00SEC
```

```
*****************************************************************************************************************************
 *****  NOTE:  THIS IS PART OF THE SYSPRINT OUTPUT
*****************************************************************************************************************************
0USER CONTROL CARDS:

 BORO=9,1  RECTYPE=1A ONSTREET=15,20 1ABLVERSION=S
 TITLE=THIS IS GBAT CONTROL FILE MSW EXAMPLE 1;

 WARNING: CONTROL ENTRIES FOR BOROUGH CODES ARE MISSING - ASSUMED VALUES FOLLOW.
 WARNING: GEOCODE IS MISSING. A DEFAULT VALUE OF YES IS IN EFFECT.
 WARNING: HNI IS MISSING OR UNDEFINED. A DEFAULT VALUE OF NO  IS IN EFFECT.
 WARNING: SNL IS MISSING. A DEFAULT VALUE OF 32 IS IN EFFECT.
 WARNING: MAXREJECTS IS MISSING. A DEFAULT VALUE OF 200 IS IN EFFECT.
 WARNING: REJECTWARNINGS IS MISSING. A DEFAULT VALUE OF NO IS IN EFFECT.
 WARNING: ALIASES IS MISSING. A DEFAULT VALUE OF NO IS IN EFFECT.

 PARAMETERS BEING USED:
 BOROUGH STARTS IN               9               FOR A LENGTH OF                 1
 STREET 1 STARTS IN             15               FOR A LENGTH OF                20
 NORMALIZED STREET LENGTH:                              32
 THE VALUE OF 1ABLVERSION IS:                    S
 RECORD TYPE SPECIFIED: FUNCTION 1A
 THE VALUE OF GEOCODE IS:                        YES
 THE VALUE OF ALIASES IS:                        NO
 THE VALUE OF HNI IS:    NO
 BOROUGH CODE FOR MANHATTAN IS:                  1
 BOROUGH CODE FOR THE BRONX IS:                  2
 BOROUGH CODE FOR BROOKLYN IS:                   3
 BOROUGH CODE FOR QUEENS IS:                     4
 BOROUGH CODE FOR STATEN ISLAND IS:              5
```

```
**************************************************************************************************************************
 *****  NOTE:  THIS IS PART OF THE SYSPRINT OUTPUT
***************************************************************************************************************************

****************************************************    STATISTICS  ****************************************************

THIS IS GBAT CONTROL FILE MSW EXAMPLE 1                                                                            MM/DD/YY

                                                      GEOSUPPORT BATCH ADDRESS TRANSLATOR

                                   MANHATTAN         BRONX       BROOKLYN        QUEENS     STATEN IS.          TOTAL

 INPUT RECORDS                            10             3              0             1              0          14(*)

 ACCEPTED RECORDS                          8             2              0             1              0             11

 REJECTED RECORDS:

   28 - A PARTIAL STREET NAME MAY NOT BE USED IN A
        FREE-FORM ADDRESS:                 2             0              0             0              0              2

   42 - ADDRESS NUMBER OUT OF RANGE        0             1              0             0              0              1

 TOTAL REJECTED RECORDS EXCEPT CODES 17 AND 99:
                                           2             1              0             0              0              3

   17+99 - BLANK AND INVALID BOROUGH CODES                                                                          0

 TOTAL REJECTED RECORDS                                                                                             3

   (*) NOTE  - THIS TOTAL INCLUDES RECORDS WITH INVALID BOROUGH CODES
```

```
************************************************************************************************************************
*****  NOTE:  THIS IS A PRINTOUT OF ERRFILE.  THE FIRST FOUR BYTES CONSIST OF THE TWO-BYTE GEOSUPPORT RETURN CODE (GRC)
*****      FOLLOWED BY A DASH ('-'), FOLLOWED BY A ONE-BYTE REASON CODE, IF ANY.  IN THIS EXAMPLE, THERE ARE 3 REJECTED
*****      RECORDS. TWO HAVE A GRC VALUE OF '28' AND NO REASON CODE VALUE. THE THIRD REJECT HAS A GRC VALUE OF '42' AND
*****      NO REASON CODE VALUE. REFER TO THE GBAT STATISTICS REPORT OR TO APPENDIX 4 FOR THE MESSAGES CORRESPONDING TO
*****      THE OCCURRING GRC'S.  AFTER THE FIRST FOUR BYTES, THE REST OF THE ERRFILE RECORD CONSISTS OF A COPY OF THE
*****      REJECTED INFILE RECORD.
************************************************************************************************************************

28-         1     60  READE             ** PARTIAL STREET NAMES NOT ALLOWED
28-         1     12  ELK               ** IN FREE-FORM ADDRESSES
42-         2     709 E 165 ST
```

SAMPLE GBAT JOB #2

SAMPLE GBAT JOB 2: DESCRIPTION

The control file for Sample GBAT Job 2 is as follows:

```
ALIASES=YES
TITLE=THIS IS GBAT CONTROL FILE EXAMPLE 2;
RECTYPE=2
BORO=5,2
MANHATTAN=MN
BRONX=BX
BROOKLYN=BK
QUEENS=QN
STATEN=SI
ONSTREET=8,25
CROSS1=33,25
GEOCODE=ALL
COMPASS=65,1
COMPACT=YES
REJECTWARNINGS=YES
MAXREJECTS=75
```

In this example, the user has chosen to code each control entry in a separate control record. The user has chosen to align the control entries vertically for aesthetic reasons, although the positioning of each control entry within its control record and the order in which the control entries is codes are immaterial.

The control file in this example contains the following control entries. (See Table A9-1 for Control Entry Descriptions.)

- Since ALIASES=YES has been coded, the user must provide an ALIASES file in the required format (described in Section IX.6), and must provide a DD statement in the JCL referring to that file. GBAT will validate the user's ALIASES file, and will then use the valid street name aliases it contains when processing INFILE. Any invalid aliases will be ignored when processing INFILE, but will be reported in SYSPRINT.

- The TITLE control entry specifies a title for the SYSPRINT output report. Notice that the text of the title is terminated with a semicolon character, as required. (The semicolon does not appear in the actual report.)

- The control entry RECTYPE specifies Function 2.

- The control entry BORO specifies that the input borough code field is in position 5 of the INFILE records and is two bytes long. The input borough code values in this example are not the standard Geosupport borough codes, but are specified as user-defined two-character alphabetic borough codes, 'MN', 'BX', etc., as shown.

- Function 2 requires two input street fields, which in this example are in the form of street names rather than street codes. These fields are specified using the control entries ONSTREET and CROSS1, which state that these fields begin in positions 8 and 33 of the INFILE records, and that each field is 25 bytes long.

- GEOCODE=ALL has been specified, so GBAT will issue a two-work-area call to Function 2 and will form the OUTFILE records by appending the normalized street names and street codes, as well as Work Area 2, to the successfully processed INFILE records.

- The control entry COMPASS specifies an INFILE field for an input compass direction. (Function 2 requires an input compass direction for intersections that are specified in terms of a pair of streets that intersect twice (see Section VII.2). If INFILE contains no such intersections, the control entry COMPASS is not required.)

- COMPACT=YES has been specified, directing GBAT to return all normalized street names in the compact format, which is suitable for display but not for use in sorting.

- REJECTWARNINGS=YES directs GBAT to treat warnings as rejects: they will be written to ERRFILE instead of OUTFILE, they will be counted as errors in the SYSPRINT report, and they will count towards the MAXREJECTS termination limit.

- Since MAXREJECTS=75 has been coded, GBAT will terminate with an MVS Return Code of ‘20’ if the first 75 INFILE records all result in rejects or warnings for any reason other than an invalid borough code.

The user has chosen not to code the following control entries, the default values for which are therefore in effect: (See Table A9-2 for Control Entry default values.)

- Since the control entry VSAM has not been coded, GBAT will assume that the user input data file is a sequential file. Consequently, GBAT will access the input data file via the DDname INFILE, and the corresponding DD statement in the JCL must be coded accordingly.

- Since the SNL control entry has not been coded, GBAT will assume the default value of SNL=32 when normalizing street names.

- Since the WORKAREA control entry has not been coded, GBAT will assume the default value of MSW (Mainframe Specific Work Area).

SAMPLE GBAT JOB 2: JOB-STREAM INPUT

```
//EXAMPLE2 JOB YOUR-JOB-CARD-INFORMATION
//*
//*
//******************************************************************
//************     THIS JOB IS GBAT MSW EXAMPLE 2     ***************
//******************************************************************
//******************************************************************
//*********   THIS STEP INVOKES THE STANDARD CATALOGUED     *********
//*********   PROCEDURE FOR GBAT EXECUTION, CALLED GBAT2    *********
//******************************************************************
//S1 EXEC GBAT2
//******************************************************************
//*********   CARDIN IS THE USER-PROVIDED CONTROL FILE       ********
//******************************************************************
//CARDIN DD *
ALIASES=YES
TITLE=THIS IS GBAT CONTROL FILE MSW EXAMPLE 2;
BORO=5,2
RECTYPE=2
MANHATTAN=MN
BRONX=BX
BROOKLYN=BK
QUEENS=QN
STATEN=SI
ONSTREET=8,25
CROSS1=33,25
GEOCODE=ALL
COMPASS=65,1
COMPACT=YES
REJECTWARNINGS=YES
MAXREJECTS=75
/*
//******************************************************************
//*********   INFILE IS THE USER-PROVIDED INPUT DATA.          ******
//*********   IN THIS EXAMPLE, IT IS PROVIDED AS INSTREAM DATA.******
//******************************************************************
//INFILE DD *
    MN READE ST                 BROADWAY
    MN REED ST                  BROADWAY
    MN CANAL ST                 ALLEN ST                        E
    MN CANEL ST                 ALLEN ST                        E
    MN CANAL ST                 ALEN ST                         E
    MN CANEL ST                 ALEN ST                         S
    BK ASSEMBLY RD              GEE AV
    BK ASEMBLY RD               GEE AV
    BK ASSEMBLY RD              GE AV
    BK ASEMBLY RD               GE AV
    MN MAIN ST                  RIVER RD                        S
    MN MAN ST                   RIVER RD                        S
    MN MAIN ST                  RIVE RD                         S
    MN MAN ST                   RIVE RD
    SI HAVEN ESPLN              SILVER LAKE RD
    SI HAVEN ESPLN              SILVER LAKE RD                  N
    QN 116 ST                   CURZON RD                       S
    BX MARINE ST                CITY ISLAND AV                  N
    BX MARINE ST                CITY ISLAND AV
    BX PAULDING AV              SACKET AV                       N
    BK FLATBUSH AV              BEVERLEY RD                     S
```

```
    QN QUEENS BL                 64 ST                               S
    QN ALDERTON ST               CROMWELL CR                         E
    QN BURDEN CR                 84 DR                               N
    BX SHERIF S BYRD PL          JESUP AV
    BX FR MARTIN DOLAN PL        GLEBE AV
/*
//*********************************************************************
//*********   OUTFILE IS THE OUTPUT FILE OF SUCCESSFULLY     ********
//*********   PROCESSED INFILE RECORDS.                      ********
//*********************************************************************
//OUTFILE DD DSN=&&OUT,DISP=(NEW,PASS),UNIT=SYSDA,
//        SPACE=(TRK,(80,20),RLSE),
//        DCB=(RECFM=FM,LRECL=364)
//*********************************************************************
//*********   ERRFILE IS THE OUTPUT FILE OF REJECTED          ********
//*********   INFILE RECORDS.                                ********
//*********************************************************************
//ERRFILE DD SYSOUT=A,DCB=(RECFM=FB,LRECL=84)
//*********************************************************************
//*********   ALIASES IS THE OPTIONAL FILE OF USER-PROVIDED  ********
//*********   TEMPORARY STREET NAME ALIASES.                 ********
//*********************************************************************
//ALIASES DD *
1REED ST                         READE ST
1E ST                            ELK ST
1CANEL ST                        CANAL ST
1ALEN ST                         ALLEN ST
3ASEMBLY RD                      ASSEMBLY RD
3GE AV                           GEE AV
1MAN ST                          MAIN ST
1DUANE ST                        DUANE ST
1RIVE RD                         RIVER RD
1RIV RD                          RIVAR RD
1FASHION AVE                     7 AVE
/*
//*********************************************************************
//*********   AS OF GEOSUPPORT VERSION 10.0,                 ********
//*********   DD STATEMENTS FOR GEOSUPPORT DATA FILES (E.G.  ********
//*********   GRID, PAD, TABFILE ETC) ARE NO LONGER NEEDED   ********
//*********   AND ARE IGNORED.  GEOSUPPORT IS TAILORED TO    ********
//*********   USE STANDARD GEOSUPPORT DATA SET NAMES.        ********
//*********   TO USE NON-STANDARD FILES, PLEASE SEE YOUR     ********
//*********   SYSTEMS PROGRAMMER.                            ********
//*********************************************************************
//
```

SAMPLE GBAT JOB 2: OUTPUT

```
                    J E S 2  J O B  L O G  --  S Y S T E M  M V S P  --  N O D E  C S C B A T C H
0
 10.31.18 JOB17538 ---- FRIDAY,    DD MMMM YYYY ----
 10.31.18 JOB17538  IRR010I  USERID YOURUID  IS ASSIGNED TO THIS JOB.
 10.31.18 JOB17538  ICH70001I YOURUID  LAST ACCESS AT 10:30:31 ON FRIDAY, MMMM DD, YYYY
 10.31.18 JOB17538  $HASP373 EXAMPLE2 STARTED - INIT 84   - CLASS X - SYS MVSP
 10.31.18 JOB17538  IEF403I EXAMPLE2 - STARTED - TIME=10.31.18
 10.31.18 JOB17538  +GBI SUCCESSFULLY LOADED GBIDRV
 10.31.18 JOB17538  +GBIDRV (VERSION VV.V) INVOKED
 10.31.18 JOB17538  +GEO (VERSION VV.V) INVOKED
 10.31.18 JOB17538  +snd NNN  OPENED SUCCESSFULLY
 10.31.19 JOB17538  +GRID2 NNN  'B030.GEO.COW.GRID2' OPENED SUCCESSFULLY
 10.31.19 JOB17538  -                                          --TIMINGS (MINS.)--            ----PAGING COUNTS---
 10.31.19 JOB17538  -JOBNAME  STEPNAME PROCSTEP    RC   EXCP    CONN    TCB    SRB  CLOCK   SERV  PG  PAGE  SWAP   VIO SWAPS
 10.31.19 JOB17538  -EXAMPLE2 S1       GBAT2       00   1142     180    .00    .00     .0   1264   0     0     0     0     0
 10.31.19 JOB17538  IEF404I EXAMPLE2 - ENDED - TIME=10.31.19
 10.31.19 JOB17538  -EXAMPLE2 ENDED.  NAME-YOURUID             TOTAL TCB CPU TIME=   .00  TOTAL ELAPSED TIME=    .0
 10.31.19 JOB17538  $HASP395 EXAMPLE2 ENDED
0------ JES2 JOB STATISTICS ------
-  DD MMMM YYYY JOB EXECUTION DATE
-          102 CARDS READ
-          242 SYSOUT PRINT RECORDS
-            0 SYSOUT PUNCH RECORDS
-           17 SYSOUT SPOOL KBYTES
-         0.01 MINUTES EXECUTION TIME
         1 //EXAMPLE2 JOB YOUR-JOB-CARD-INFORMATION
           //*
           //*
           //*******************************************************************
           //************     THIS JOB IS MSW GBAT EXAMPLE 2     ***************
           //*******************************************************************
           //*******************************************************************
           //*********   THIS STEP INVOKES THE STANDARD CATALOGUED     *********
           //*********   PROCEDURE FOR GBAT EXECUTION, CALLED GBAT2    *********
           //*******************************************************************
         3 //S1 EXEC GBAT2
         4 XXGBAT2 PROC                                                        00000100
           XX**                       /* IN CSC.TEST.PROCLIB */                00000200
           XX**                       /* MODIFIED 06/30/06  BY MEB   */        00000315
           XX**                       /* ADDED SUPPORT.PDSE.LOADLIB  */        00000415
           XX**                       /* REMOVED DD CARDS            */        00000515
           XX**                       /* MODIFIED 05/11/06  BY MEB   */        00000615
           XX**                       /* ADDED GRID1R FILE           */        00000715
           XX**                       /* MODIFIED 07/25/05  BY MEB   */        00000815
           XX**                       /* PEDFILE BECOMES DUMMY FILE  */        00000915
           XX**                       /* MODIFIED 03/26/02  BY MEB   */        00001015
           XX**                                                                00001115
           XX**** WARNING: DO NOT OVERRIDE THE REGION PARAMETER  **************    00001215
           XX**                                                                00001315
         5 XXGBAT2 EXEC PGM=GBATIO2,REGION=9M,PARM='ISASIZE(40K)'              00001415
           XX*                                                                 00001516
           XX*****************************************************************/   00001616
           XX*                                                             */   00001716
           XX*   AS OF GEOSUPPORT VERSION 10.0,                            */   00001816
           XX*   THE STEPLIB (OR JOBLIB) OF THE GEOSUPPORT EXECUTION STEP  */   00001916
           XX*   MUST INCLUDE THE FOLLOWING TWO CONCATENATED DATASETS:     */   00002016
           XX*               A030.GEO.SUPPORT.PDSE.LOADLIB                 */   00002116
           XX*               A030.GEO.SUPPORT.LOADLIB                      */   00002216
           XX*                                                             */   00002316
           XX*****************************************************************/   00002416
           XX*                                                                 00002516
           XX*                                                                 00002616
         6 XXSTEPLIB DD DSN=A030.GEO.SUPPORT.PDSE.LOADLIB,DISP=SHR             00002716
         7 XX        DD DSN=A030.GEO.SUPPORT.LOADLIB,DISP=SHR                  00002816
           XX*                                                                 00002916
           XX*                                                                 00003016
           XX*****************************************************************/   00003116
           XX*                                                             */   00003216
           XX*   AS OF GEOSUPPORT VERSION 10.0,                            */   00003316
           XX*   DD STATEMENTS FOR GEOSUPPORT DATA FILES (E.G. GRID, PAD    */   00003416
           XX*   ETC) ARE NO LONGER NEEDED AND ARE IGNORED.  GEOSUPPORT     */   00003516
           XX*   IS TAILORED TO USE STANDARD GEOSUPPORT DATA SET NAMES.     */   00003616
           XX*   TO USE NON-STANDARD FILES, SEE YOUR SYSTEMS PROGRAMMER.    */   00003716
           XX*                                                             */   00003816
           XX*****************************************************************/   00003916
           XX*                                                             */   00004016
           XX*                                                             */   00004116
         8 XXSYSPRINT DD SYSOUT=A,DCB=(LRECL=133,RECFM=FBA,BLKSIZE=1330)       00004216
           XX** SYSPRINT FILE CONTAINS RUN STATISTICS AND MESSAGES             00004316
         9 XXSYSTERM  DD SYSOUT=A,DCB=(LRECL=133,RECFM=FBA,BLKSIZE=1330)       00004416
           XX** SYSTERM FILE CONTAINS SYSTEM WARNINGS AND ERRORS               00004516
        10 //CARDIN DD *
           X/CARDIN DD DDNAME=CARDIN                                           00004616
           XX** CARDIN IS THE FILE OF GBAT CONTROL RECORDS                     00004716
```

```
      11 //INFILE DD *
         X/INFILE DD DDNAME=INFILE                                              00004816
         XX** INFILE CONTAINS THE USERS DATA INPUT RECORDS                      00004916
      12 //OUTFILE DD DSN=&&OUT,DISP=(NEW,PASS),UNIT=SYSDA,
         //        SPACE=(TRK,(80,20),RLSE),
         //        DCB=(RECFM=FM,LRECL=364)
         X/OUTFILE DD DDNAME=OUTFILE                                            00005016
         XX** OUTFILE CONTAINS THE VALID OUTPUT RECORDS                         00005116
      13 //ERRFILE DD SYSOUT=A,DCB=(RECFM=FB,LRECL=84)
         X/ERRFILE DD DDNAME=ERRFILE                                            00005216
         XX** ERRFILE CONTAINS THE REJECTS                                      00005316
      14 //ALIASES DD *
         X/ALIASES  DD DUMMY                                                    00005416
         XX** ALIASES IS THE OPTIONAL INPUT FILE OF USER-DEFINED ST NAME ALIASES 00006015
         //*****************************************************************
         //*********   CARDIN IS THE USER-PROVIDED CONTROL FILE       ********
         //*****************************************************************
         //*****************************************************************
         //*********   INFILE IS THE USER-PROVIDED INPUT DATA.          ******
         //*********   IN THIS EXAMPLE, IT IS PROVIDED AS INSTREAM DATA.******
         //*****************************************************************
         //*****************************************************************
         //*********   OUTFILE IS THE OUTPUT FILE OF SUCCESSFULLY     ********
         //*********   PROCESSED INFILE RECORDS.                      ********
         //*****************************************************************
         //*****************************************************************
         //*********   ERRFILE IS THE OUTPUT FILE OF REJECTED         ********
         //*********   INFILE RECORDS.                                ********
         //*****************************************************************
         //*****************************************************************
         //*********   ALIASES IS THE OPTIONAL FILE OF USER-PROVIDED  ********
         //*********   TEMPORARY STREET NAME ALIASES.                 ********
         //*****************************************************************
         //*****************************************************************
         //*********   AS OF GEOSUPPORT VERSION 10.0,                 ********
         //*********   DD STATEMENTS FOR GEOSUPPORT DATA FILES (E.G.  ********
         //*********   GRID, PAD, TABFILE ETC) ARE NO LONGER NEEDED   ********
         //*********   AND ARE IGNORED.  GEOSUPPORT IS TAILORED TO    ********
         //*********   USE STANDARD GEOSUPPORT DATA SET NAMES.        ********
         //*********   TO USE NON-STANDARD FILES, PLEASE SEE YOUR     ********
         //*********   SYSTEMS PROGRAMMER.                            ********
         //*****************************************************************
 STMT NO. MESSAGE
       3 IEFC001I PROCEDURE GBAT2 WAS EXPANDED USING PRIVATE LIBRARY CSC.TEST.PROCLIB
ICH70001I YOURUID  LAST ACCESS AT 10:30:31 ON FRIDAY, MMMM DD, YYYY
IEF236I ALLOC. FOR EXAMPLE2 GBAT2 S1
IGD103I SMS ALLOCATED TO DDNAME STEPLIB
IGD103I SMS ALLOCATED TO DDNAME
IEF237I JES2 ALLOCATED TO SYSPRINT
IEF237I JES2 ALLOCATED TO SYSTERM
IEF237I JES2 ALLOCATED TO CARDIN
IEF237I JES2 ALLOCATED TO INFILE
IGD101I SMS ALLOCATED TO DDNAME (OUTFILE )
        DSN (SYS06195.T103118.RA000.EXAMPLE2.OUT.H01     )
        STORCLAS (PRIMARY) MGMTCLAS (        ) DATACLAS (        )
        VOL SER NOS= SMST07
IEF237I JES2 ALLOCATED TO ERRFILE
IEF237I JES2 ALLOCATED TO ALIASES
GBI SUCCESSFULLY LOADED GBIDRV
GBIDRV (VERSION VV.V) INVOKED
GEO (VERSION VV.V) INVOKED
snd NNN  OPENED SUCCESSFULLY
IGD103I SMS ALLOCATED TO DDNAME SYS00001
GRID2 NNN  'B030.GEO.COW.GRID2' OPENED SUCCESSFULLY
IEF142I EXAMPLE2 GBAT2 S1 - STEP WAS EXECUTED - COND CODE 0000
IGD104I A030.GEO.SUPPORT.PDSE.LOADLIB                RETAINED,  DDNAME=STEPLIB
IGD104I A030.GEO.SUPPORT.LOADLIB                     RETAINED,  DDNAME=
IEF285I   YOURUID.EXAMPLE2.JOB17538.D0000104.?         SYSOUT
IEF285I   YOURUID.EXAMPLE2.JOB17538.D0000105.?         SYSOUT
IEF285I   YOURUID.EXAMPLE2.JOB17538.D0000101.?         SYSIN
IEF285I   YOURUID.EXAMPLE2.JOB17538.D0000102.?         SYSIN
IEF285I   YOURUID.EXAMPLE2.JOB17538.D0000106.?         SYSOUT
IEF285I   YOURUID.EXAMPLE2.JOB17538.D0000103.?         SYSIN
IGD104I B030.GEO.COW.GRID2                           RETAINED,  DDNAME=SYS00001
IEF373I STEP/GBAT2   /START 2006195.1031
IEF374I STEP/GBAT2   /STOP  2006195.1031 CPU    0MIN 00.06SEC SRB    0MIN 00.00SEC VIRT  1020K SYS   300K EXT    8748K SYS   11384K
IEF237I E901 ALLOCATED TO SYS00002
IEF285I   SYS06195.T103119.RA000.EXAMPLE2.R0170325     KEPT
IEF285I   VOL SER NOS= SMST07.
IGD105I SYS06195.T103118.RA000.EXAMPLE2.OUT.H01      DELETED,   DDNAME=OUTFILE
IEF375I  JOB/EXAMPLE2/START 2006195.1031
IEF376I  JOB/EXAMPLE2/STOP  2006195.1031 CPU    0MIN 00.06SEC SRB    0MIN 00.00SEC
```

```
*****************************************************************************************************************************
***** NOTE:  THIS IS PART OF THE SYSPRINT OUTPUT
*****************************************************************************************************************************
0USER CONTROL CARDS:

 ALIASES=YES
 TITLE=THIS IS GBAT CONTROL FILE MSW EXAMPLE 2;
 BORO=5,2
 RECTYPE=2
 MANHATTAN=MN
 BRONX=BX
 BROOKLYN=BK
 QUEENS=QN
 STATEN=SI
 ONSTREET=8,25
 CROSS1=33,25
 GEOCODE=ALL
 COMPASS=65,1
 COMPACT=YES
 REJECTWARNINGS=YES
 MAXREJECTS=75

 WARNING: SNL IS MISSING. A DEFAULT VALUE OF 32 IS IN EFFECT.

 PARAMETERS BEING USED:
 BOROUGH STARTS IN               5               FOR A LENGTH OF                 2
 STREET 1 STARTS IN              8               FOR A LENGTH OF                25
 STREET 2 STARTS IN             33               FOR A LENGTH OF                25
 NORMALIZED STREET LENGTH:                              32
 COMPASS STARTS IN              65               FOR A LENGTH OF                 1
 COMPACT OPTION   WAS SPECIFIED
 RECORD TYPE SPECIFIED: FUNCTION 2
 THE VALUE OF GEOCODE IS:                        ALL
 WARNINGS ARE TREATED AS REJECTS
 MAXIMUM NUMBER OF REJECTS ALLOWED IS                        75
 THE VALUE OF ALIASES IS:                        YES
 BOROUGH CODE FOR MANHATTAN IS:                  MN
 BOROUGH CODE FOR THE BRONX IS:                  BX
 BOROUGH CODE FOR BROOKLYN IS:                   BK
 BOROUGH CODE FOR QUEENS IS:                     QN
 BOROUGH CODE FOR STATEN ISLAND IS:              SI
 ERROR: ALIASES INPUT RECORD NUMBER 0008 HAS BEEN REJECTED.
 ALIAS STREET NAME AND STREET NAME RECOGNIZED BY GEOSUPPORT ARE INDENTICAL - DUANE ST                         .

 ERROR: ALIASES INPUT RECORD NUMBER 0010 HAS BEEN REJECTED:
 RETURN CODE = EE FOR STNAME RIVAR RD                        .
 ERROR: ALIASES INPUT RECORD NUMBER 0011 HAS BEEN REJECTED.
 FASHION AVE                    AND 7 AVE                         HAVE DIFFERENT 7 DIGIT STCODES (11061002 AND 11061004).

 NOTE:  ALIAS TABLE HAS ERRORS AND ALIASES=YES HAS BEEN SPECIFIED-PROCESSING CONTINUED.
```

```
 *************************************************************************************************************************
 ***** NOTE:  THIS IS PART OF THE SYSPRINT OUTPUT
 *************************************************************************************************************************
0****************************************************    STATISTICS  ***********************************************************
0 THIS IS GBAT CONTROL FILE MSW EXAMPLE 2                                                                     MM/DD/YY
0                                            GEOSUPPORT BATCH ADDRESS TRANSLATOR
0                                             MANHATTAN      BRONX    BROOKLYN     QUEENS  STATEN IS.   BOROUGH       TOTAL
                                                                                                         BOUNDARY
0INPUT RECORDS                                       10          5           5          4           2          0        26(*)
0ACCEPTED RECORDS                                     8          4           5          2           0          0        19
0REJECTED RECORDS:
0  01 - WARNING MESSAGES                              0          0           0          1           0          0         1
0  02 - THESE STREETS INTERSECT TWICE-COMPASS
        DIRECTION REQUIRED:                           1          1           0          0           0          0         2
0  03 - THESE STREETS INTERSECT MORE THAN
        TWICE-CANNOT BE PROCESSED:                    0          0           0          1           2          0         3
0  40 - COMPASS DIRECTION VALUE IS INVALID FOR THIS
        INPUT LOCATION:                               1          0           0          0           0          0         1
0TOTAL REJECTED RECORDS EXCEPT CODES 17 AND 99:
                                                      2          1           0          2           2          0         7
0  17+99 - BLANK AND INVALID BOROUGH CODES                                                                               0
0TOTAL REJECTED RECORDS                                                                                                  7
0  (*) NOTE  - THIS TOTAL INCLUDES RECORDS WITH INVALID BOROUGH CODES
1*************************************************************************************************************************
 ***** NOTE:  THIS IS A PRINTOUT OF ERRFILE.  THE FIRST FOUR BYTES CONSIST OF THE TWO-BYTE GEOSUPPORT RETURN CODE (GRC),
 *****        FOLLOWED BY A DASH ('-'), FOLLOWED BY A ONE-BYTE REASON CODE, IF ANY.  IN THIS EXAMPLE, THERE ARE SEVEN REJECTED
 *****        RECORDS.  TWO HAVE A GRC VALUE OF '02' AND NO REASON CODE VALUE.  TWO HAVE A GRC VALUE OF '03' AND A REASON CODE
 *****        VALUE OF '3'.  ONE HAS A GRC VALUE OF '01' (WARNING) AND A REASON CODE VALUE OF 'H', ETC.  REFER TO THE GBAT
 *****        STATISTICS REPORT OR TO APPENDIX 4 FOR THE MESSAGES CORRESPONDING TO THE OCCURRING GRC'S AND REASON CODES.  AFTER
 *****        THE FIRST FOUR BYTES, THE REST OF THE ERRFILE RECORD CONSISTS OF A COPY OF THE REJECTED INFILE RECORD.
 *************************************************************************************************************************

 40-     MN CANEL ST                 ALEN ST                         S
 02-     MN MAN ST                   RIVE RD
 03-3    SI HAVEN ESPLN              SILVER LAKE RD
 03-3    SI HAVEN ESPLN              SILVER LAKE RD                  N
 01-H    QN 116 ST                   CURZON RD                       S
 02-     BX MARINE ST                CITY ISLAND AV
 03-4    QN QUEENS BL                64 ST                           S
```

APPENDIX 11: GUIDELINES FOR APPLICATION DESIGN

This appendix contains guidelines for application designers, listed in no particular order. These guidelines are intended only to be a limited selection of helpful suggestions, not a comprehensive set of instructions for application design. Terms highlighted in **bold typeface** have entries in the Glossary.

(1) DESIGN PROCEDURES TO REVIEW AND (WHEN APPROPRIATE) TO REPORT **REJECTS** TO **GSS**: As an integral part of the application, set up procedures to examine geographic data that have been rejected by Geosupport, and to report appropriate rejects to GSS. Only those rejected data that, after examination, do not appear attributable to user errors should be reported to GSS. In addition, users should also report cases in which the input information was not rejected, but the output data that Geosupport has returned to the application appear to be erroneous for the given location (such as an incorrect ZIP code or incorrect cross streets). User feedback is essential to GSS's efforts to keep Geosupport accurate and up to date.

(2) USE THE GEOSUPPORT **COPY LIBRARIES**: If the application is being written in a programming language supported by Geosupport's **COPY facility** (currently, COBOL, PL/1, IBM Mainframe Assembler Language, C or NATURAL), do not code layouts of the Geosupport **work areas** directly into the application program source code. Instead, write the program to access the Geosupport **COPY facility.** This will cause the program to automatically obtain the most current standard source code work area layouts at compile time. This approach eliminates tedious and error-prone line-by-line coding of the Geosupport work area layouts by the application programmer, insures the use of the most current layouts, and facilitates trouble-shooting by insuring the use of standard data names for Geosupport data items.

(3) DESIGN FOR **GEOGRAPHIC RETRIEVAL CONSISTENCY**: If an application is required to retrieve data from the application's own files by geographic location, it should be designed so that it performs such retrieval consistently, that is, independently of variations in specifying geographic locations. This is accomplished by obtaining certain items from Geosupport, storing them in the application file, and using them as part of the retrieval key. For example, for retrievals by address, use B5SCs instead of street names in the retrieval key. For building-level retrievals, store **BIN**s in the application file and use them rather than addresses or tax lot identifiers as the retrieval key.

(4) DESIGN BATCH PROCEDURES TO RE-SYNCHRONIZE APPLICATION FILES WITH NEW GEOSUPPORT RELEASES: Geographic information changes over time. For example, changes are possible in the election districts, tax lot identifiers or police precincts associated with addresses, in the **street codes** assigned to street names, in the streets incident upon intersections, etc. During application design, consider which data items obtained from Geosupport and stored in application files should be updated to reflect changes in new Geosupport **releases**, and design procedures to perform such updating. In particular, if street codes are to be stored in an application file, store them in the form of B10SCs (but use only the B5SC portions for geographic retrieval), and develop a fully automated batch **resynchronization** procedure utilizing the Street Code Change File (see Section IV.4).

(5) USE THE APPROPRIATE STREET NAME FOR THE TASK: To sort a file by geographic location, always use **street names normalized** in **sort format** (see Section III.3). For display purposes, obtain **preferred street names** (see Section IV.6)**,** and display them **normalized** in

compact format (see Section III.3).

(6) WHENEVER POSSIBLE, ALLOCATE 32 BYTES FOR STREET NAME FIELDS; DO NOT SPECIFY AN **SNL** VALUE UNLESS THE APPLICATION SPECIFICALLY REQUIRES SHORTER STREET NAME FIELDS (for example, to fit within a limited amount of space in a report, screen or transparent envelope window). The default SNL value, 32, insures that all valid input street names can be successfully normalized.

(7) TO VALIDATE ADDRESSES, USE FUNCTION 1A RATHER THAN FUNCTION 1 OR 1E. Function 1A does a far better job of validating whether a building having a given address actually exists.

(8) TO IMPROVE EXECUTION EFFICIENCY, use Function 1 instead of Function1E unless the application requires the political district geography that only Function 1E provides. (Function 1 performs fewer I/O operations.)

(9) NEVER DESIGN NEW APPLICATIONS TO USE **VESTIGIAL FEATURES** OF GEOSUPPORT (see Section I.5).

(10) ESCHEW **FREE-FORM ADDRESS** PROCESSING (see Section V.3) UNLESS IT IS UNAVOIDABLE. Whenever possible, pass the house number and the street name of an address to Geosupport in the separate **WA1** input fields for those items. Design application files so that the house number and street name of an address are stored in separate fields.

(11) REVIEW THE SET OF **WARNING** AND **REJECT** CONDITIONS THAT CAN BE ISSUED BY EACH FUNCTION THE APPLICATION WILL BE CALLING. Determine whether any of these conditions warrant custom handling in your application. Appendices 1 and 4 of this document are useful in this regard.

(12) DESIGN INTERACTIVE APPLICATIONS TO USE THE SIMILAR NAMES FEATURE. (See Section III.5.) Whenever Geosupport rejects an input street name and returns similar names, display the list of similar names on the screen and allow (but do not require) the operator to select one of them using the cursor. If the operator selects a similar name, re-submit the Geosupport call automatically using the similar name in place of the rejected input name.

APPENDIX 12: CHARACTER-ONLY WORK AREAS (COW)

Introduction

This appendix is based on Geosupport System Technical Bulletin 02-01 (dated 15 November 2002) and Geosupport Technical Bulletin 02-01 Addendum (dated 22 November 2002). It contains information needed to create Geosupport applications using the Character-Only Work Areas (COWs). Included are the following topics:

- Comparison of COWs and Mainframe-Specific Work Areas (MSWs)
- Considerations when using COWs
- Work Area Lengths
- Specifying the Work Area Format
- GBAT Considerations
- COW COPY Files

Notes:

1. There are two versions of the sample programs in Appendix 5 of this *User Programming Guide*. One version is for MSWs and the other is for COWs. When coding, bear in mind the differences between COWs and MSWs.

2. The Work Area Layouts in Appendix 2 of this *User Programming Guide* are the layouts of the MSWs. For the COW layouts, see Appendix 13.

3. The COPY files that are printed in Appendix 5 of this *User Programming Guide* are for the Mainframe-Specific Work Areas (MSWs). For the COW COPY files, see Appendix 14.

Overview

Standard work areas with pre-defined layouts are used to pass data between the Geosupport System and user-developed application programs. The same work areas are also used by GBAT, the Geosupport batch utility program, to pass data to and from Geosupport.

The Geosupport work areas that have long been in use are called the Mainframe-Specific Work Areas (MSWs). Most of the MSWs contain one or more packed decimal fields, a data encoding schema unique to IBM mainframes. This appendix discusses an alternative set of Geosupport work areas called the Character-Only Work Areas (COWs) which, as the name implies, contain character fields only. The introduction of the COW is an essential part of a long-term effort to port the Geosupport System to other platforms.

Each specific Geosupport work area (for example, Work Area 2 for Function 3S) has both a COW version and an MSW version. User-written application programs running on mainframes now have the option to use either set of work areas when making calls to Geosupport. GBAT users can also specify the use of either set of work areas.

From now on, all new applications should be designed to use the COWs. We also recommend that **all existing applications be converted to use the COWs**. Although the MSWs will continue to be supported, as of some future date (not yet determined), only the COWs will be enhanced with new data items and functionality. Eventually, the MSWs may be de-supported.

Comparison of COWs and MSWs

Each non-character field in an MSW has a character field counterpart in the corresponding COW. Except for an item called the HND (discussed below in the sub-section on house number fields), each character field in an MSW appears in identical form in the corresponding COW. However, corresponding fields do not necessarily occupy the same byte positions or occur in the same order in the corresponding MSW and COW. In designing the COWs, the opportunity has been taken to reorganize the layouts to situate related fields near each other and to increase the amount of filler space available for adding new data items in the future.

The data items for which the MSWs contain non-character fields are house numbers, street codes, segment lengths, and count fields. Each of these is discussed in detail below.

House Number Fields. The Geosupport System uses three different formats for standardized or 'normalized' house numbers: the House Number in Display format (HND), the House Number in Internal format (HNI), and the new House Number in Sort format (HNS).

- The **HND** is a character item that is present in both the COWs and the MSWs, but it has a different length in each: 16 bytes in the COWs and 12 bytes in the MSWs. The length of the HND was increased in the COWs to insure that house numbers having suffixes fit within the HND field without the suffix having to be abbreviated. (House number suffixes are certain character strings that occur at the ends of some New York City house numbers, such as 1/2, 1/4, REAR, GARAGE.) For compatibility with MSW, by default Geosupport uses only the first 12 characters of the 16-byte COW HND. The remaining 4 characters are blank. To use all 16 characters, the user can specify an HNL (House Number Length) of 16.

- The **HNI** is a six-byte data item with a hybrid format: the first five bytes are in packed decimal format, and the sixth byte contains a binary value. HNIs occur only in the MSW.

- The **HNS** is a new 11-byte item that is the character equivalent of the HNI in the COWs.

The HND is the appropriate format for displaying house numbers on application screens, reports and computer-generated maps, and is specifically designed for that purpose. In particular, the HND is left-justified and space-filled. However, the HND renders unsatisfactory results when used as a field to sort addresses. For example, it would, inappropriately, cause 102 MAIN STREET to sort ahead of 98 MAIN STREET.

In contrast to the HND, both the HNI and the HNS are suitable to use as fields to sort addresses. For example, both would, appropriately, cause 98 MAIN STREET to sort ahead of 102 MAIN STREET. However, neither the HNI nor the HNS is suitable for display:

- The HNI is not a character item and so cannot be displayed as intelligible data unless first converted to character format. Any of the Geosupport display functions (Functions D, DG and DN) can be used with the MSWs to convert an HNI to an HND.

- The HNS, although it is a character item, is unsuitable for display. In particular, the HNS is in an internal format with a unique layout and flags. If the house number has a suffix, the HNS does not contain the suffix itself, but instead, contains a code for the suffix meaningful only to the Geosupport software. Any of the Geosupport display functions (Function D, DG and DN) can be used with the COWs to convert an HNS to an HND.

To reiterate, **the HND should be used for display, and the HNI (in MSWs) or the HNS (in COWs) should be used for sorting.**

Street Code Fields. A notable feature of the Geosupport System is its set of numeric street codes assigned to the names of New York City streets and selected non-street geographic features. The street code feature provides specialized capabilities that are essential for certain types of applications.

Street codes appear in several forms in the Geosupport work areas. In many of the MSWs, there are four-byte fields for a packed decimal data item called the Packed Borough and 5-Digit Street Code (PB5SC). The COW counterparts of PB5SC fields can take one of the following three forms:

- A six-byte field for an item called the Borough and 5-Digit Street Code (B5SC). This is simply the unpacked version of the PB5SC

- The first six bytes (constituting the B5SC) of an eight-byte field for an item called the Borough and 7-Digit Street Code (B7SC)

- The first six bytes (constituting the B5SC) of an 11-byte field for an item called the Borough and 10-Digit Street Code (B10SC)

Segment Length Fields. Both Work Area 2 for Function 3 and Work Area 2 for Function 3C contain fields for the segment length expressed in feet. In the MSW format, these are 3-byte packed decimal fields. In the COW format, they are 5-byte character fields.

Count Fields. Some count fields, e.g. Number of Street Names in List, are packed decimal fields in the MSW format, and character fields in the COW format.

Consideration When Using the COWs

The Long Work Area 2 option that is available when using the MSWs is occasionally not needed or not supported when using the COWs, as follows:

- When using the COWs, Functions 1, 1E and 3 do not have the long Work Area 2 option. This option is unnecessary in these cases, since the COW versions of the regular Work Area 2s for these functions already accommodate all the requisite fields. However, Functions 1A and BL continue to have the long Work Area 2 option when COWs are used. (See Section II.5 for a general discussion of the long Work Area 2 option.)

Work Area Lengths (COWs and MSWs)

The following table lists the lengths of the members of both sets of work areas. Note that the lengths of corresponding members from the two sets differ in most cases.

Table A12-1: Lengths of Work Areas (COWs and MSWs)

Work Area	Length of COW	Length of MSW
Work Area 1 (used with all functions)	1200	884
Regular WA2 for Functions 1, 1E	300	200
Long WA2 for Functions 1, 1E	N/A	300
Extended WA2 for Functions 1, 1E	1500	NA
Regular WA2 for Functions 1A, BL, BN	1363	939
Long WA2 for Functions 1A, BL	17750	17683
Extended WA2 for Functions 1A	2800	NA
WA2 for Function 1B	4300	N/A
WA2 for Function 2	200	200
Regular WA2 for Function 3	450	200

Work Area	Length of COW	Length of MSW
Long WA2 for Function 3	N/A	300
Extended WA2 for Function 3	1000	N/A
Auxiliary Segment WA2 for Function 3	950	N/A
Extended WA2 with Auxiliary Segment for Function 3	1500	N/A
WA2 for Function 3C	300	200
Auxiliary Segment WA2 for Function 3C	800	N/A
Extended WA2 with Auxiliary Segment for Function 3C	1350	N/A
Regular WA2 for Function AP	1363	N/A
Extended WA2 for Functions AP	2800	N/A
WA2 for Function 3S	19274	4224

Specifying a Work Area Format (COW or MSW)

To indicate which set of work areas is being used in a call to Geosupport, an application program uses a new field called the Work Area Format Indicator. This field is one byte long and is located at position 213 of both the COW Work Area 1 and the MSW Work Area 1.

- The value 'C' in the Work Area Format Indicator indicates to Geosupport that COWs are being used for the given call.
- A blank in the Work Area Format Indicator indicates that MSWs are being used.
- If the Work Area Format Indicator is invalid, the call is rejected with a Geosupport Return Code of 27 and an appropriate message.

Since every call to Geosupport is an independent event, application programs must insure that the Work Area Format Indicator is appropriately set for each call; Geosupport doesn't 'remember' previous calls.

Note that the MSWs are the default work areas, that is, the work areas that Geosupport expects when the Work Area Format Indicator is blank. Therefore, **existing applications that use the MSWs will continue to execute properly without modification, provided Work Area 1 is being passed to Geosupport with position 213 containing a blank**. (As a matter of course, every application program should be designed so that, each time a call to Geosupport is to be made, the program clears Work Area 1 entirely to blanks prior to moving the input data for that call into the requisite Work Area 1 fields. This insures that Work Area 1 will not be 'polluted' by stray input data lingering from a previous call.)

GBAT Considerations for COWs

When executing GBAT, the set of work areas that are used affects the length and format of the records written into OUTFILE (the output file of successfully processed data records).

To specify the set of work areas GBAT is to use, the user codes a control entry in CARDIN (the input control file) containing the keyword WORKAREA, as follows:

- WORKAREA=COW specifies the COWs.
- WORKAREA=MSW specifies the MSWs.
- (Default:) If no WORKAREA control entry is coded, GBAT uses the MSWs.

Since the MSWs are GBAT's default set of work areas, existing GBAT jobs will continue to execute properly without modification.

When COWs are used, GBAT options that involve processing packed decimal input data are, of course, invalid. Specifically, the following control entries or control entry variable values are **invalid** when COWs are being used:

- HNI=YES is invalid.
- In the control entries STRTCODE, CRSCOD1 and CRSCOD2, the values 3 and 4 are invalid for the length variable.
- If MSWs are being used,
  the default is 1ABLVERSION=L (or 1ABLVERSION=LEGACY), which results in an error, since Legacy is no longer supported.

GBAT forms each OUTFILE record by appending Geosupport information to a copy of the data input record. The information that is appended is determined by three factors: the set of work areas being used, the function being executed and the value of the GEOCODE control entry that is in effect. The GEOCODE value affects the appended information as follows:

- When GEOCODE=NO, the appended items consist only of selected output items from Work Area 1 (and, in case of MSW Functions 1, 1A, and 1E, an item created by GBAT called the HNHPD). See Table A12-2 below for lists of the appended COW items and their lengths by function and set of work areas. For MSW format, see Tables 9-4 and 9-5.

  When GEOCODE =YES the appended information consists only of work area 2 in its entirety. Table A12-1 above lists the lengths of these work areas by function and work area format. Appendix 2 contains the MSW Work Area Layouts and Appendix 13 contains the COW Work Area layouts.

- When GEOCODE=ALL, the appended information consists of the data for GEOCODE=NO followed by the data appended for GEOCODE=YES. Table A12-3 lists the lengths of the appended information by function and set of work areas. These lengths typically are the sums of the corresponding lengths listed in Tables A12-1 and A12-2 (and A12-2A if GEOUNIT=YES).

YES and ALL are invalid GEOCODE options for Functions 1N, D, DG and DN, since these functions do not have a Work Area 2.

The information appended for GEOCODE=NO is as follows.

- For the functions that allow an input house number other than the display functions (viz. Functions 1, 1A, 1B and 1E): the appended information includes normalized house number items as follows:

    - If COWs are being used, the HND and the HNS are appended.

    - If MSWs are being used, the HND and an 8-byte item called the HNHPD are appended. The HNHPD is a normalized house number created by GBAT in a special format for use only by the Department of Housing Preservation and Development.

- For the display functions (Functions D, DG and DN), which allow input house numbers in the form of HNIs when using MSWs: the appended information includes the normalized house numbers only in the HND format for a length of 12.

- For the display functions (Functions D, DG and DN), which allow input house numbers in the form of HNSs when using COWs: the appended information includes the normalized house numbers only in the HND format for a length of between 12 and 16.

- For the functions that involve input street names (Functions 1, 1A, 1B, 1E, 1N, 2, 3, 3C, 3S, D, DG and DN): the appended information includes normalized street name(s) and street codes, as follows:

    - Regardless of which set of work areas is being used, normalized street names are provided in 32-byte fields, left-justified and blank-filled.

    - If COWs are being used, street codes are provided as B10SCs, an 11-byte item.

- If MSWs are being used, street codes are provided as 10SCs (ten-digit street codes without a borough code), a 10-byte item.

- For Function BL: the appended information when 1ABLVERSION=STANDARD is specified consists of the standard 10-byte BBL, which is composed of the one-byte borough code followed by the five-byte tax block followed by the four-byte tax lot. Note: STANDARD is the only valid value for 1ABLVERSION.

- For Function BN: the appended information consists of ten bytes containing the seven-byte Building Identification Number (BIN) followed by a three-byte filler.

Table A12-2 below lists the appended items when GEOCODE=NO, itemized by function and set of work areas. When an item of appended data has no value for a particular record (such as a house number item, when the input location is a non-addressable place name), the given field is still present in the appended data but it contains all blanks. The only exception to this involves the display functions (D, DG and DN) when using MSWs, where there is no field for the second house number unless it is provided as an input datum by the user.

Table A12-2A, which follows Table A12-2, lists the additional appended items when GEOUNIT=YES. Note that that the GEOUNIT option is for COW only. The GEOUNIT items are appended in the output file record immediately after the GEOCODE=NO items (when GEOCODE=NO or GEOCODE=ALL).

Table A12-2: GBAT-Appended Items when GEOCODE=NO (COWs and MSWs)

See Table A12-2A for additional GBAT-Appended Items when GEOUNIT=YES (COW only)

Functions	**COWs**		**MSWs**	
[Options]	**Appended Items**	**Length**	**Appended Items**	**Length**
1, 1A, 1B[15], 1E, AP[16]	HND HNS Normalized Street Name B10SC	16 11 32 11	HND HNHPD Normalized Street Name 10SC	12 8 32 10
	Total Length:	70	Total Length:	62
1N	Normalized Street Name B10SC	32 11	Normalized Street Name 10SC	32 10
	Total Length:	43	Total Length:	42
2	Normalized Street Name-1 B10SC-1 Normalized Street Name-2 B10SC-2	32 11 32 11	Normalized Street Name-1 10SC-1 Normalized Street Name-2 10SC-2	32 10 32 10
	Total Length:	86	Total Length:	84
2 - NODE input	Filler	86	Invalid	
	Total Length:	86		
3, 3C, 3S	Normalized Street Name-1 B10SC-1 Normalized Street Name-2 B10SC-2 Normalized Street Name-3 B10SC-3	32 11 32 11 32 11	Normalized Street Name-1 10SC-1 Normalized Street Name-2 10SC-2 Normalized Street Name-3 10SC-3	32 10 32 10 32 10
	Total Length:	129	Total Length:	126

[15] GEOCODE=NO is invalid for Function 1B, but the 70 bytes are appended when GEOCODE=ALL.
[16] Functions 1B and AP are valid for COW only

Functions [Options]	COWs		MSWs	
	Appended Items	**Length**	**Appended Items**	**Length**
AP	See 1, 1A, 1E, 1B, AP above	70	Invalid	
	Total Length:	70		
BL (Standard)	BBL : Borough Code Tax Block Tax Lot	 1 5 4 ---------- -	BBL : Borough Code Tax Block Tax Lot	 1 5 4 ----------
	Total Length:	10	Total Length:	10
BL (Legacy)	Invalid		Invalid	
BN	BIN Filler	7 3	BIN Filler	7 3
	Total Length:	10	Total Length:	10
D, DG, DN [HOUSENUM2 control entry not coded]	HND-1 Normalized Street Name-1 Normalized Street Name-2 Normalized Street Name-3 HND-2	16 32 32 32 16	HND Normalized Street Name-1 Normalized Street Name-2 Normalized Street Name-3	12 32 32 32
	Total Length:	128	Total Length:	108
D, DG, DN [HOUSENUM2 control entry coded]	HND-1 Normalized Street Name-1 Normalized Street Name-2 Normalized Street Name-3 HND-2	16 32 32 32 16	HND-1 Normalized Street Name-1 Normalized Street Name-2 Normalized Street Name-3 HND-2	12 32 32 32 12
	Total Length:	128	Total Length:	120

Table A12-2A: Additional GBAT-Appended Items when GEOUNIT=YES (COW only)

Functions [Options]	COW only	
	Appended Items	**Length**
1, 1E, 1A, 1B	Normalized Display- Format Unit Output Filler	 14 56
	Total Length	70

Table A12-3 lists the length of the data appended by GBAT, itemized by function and option within function, GEOCODE value and set of work areas being used.

Note: CROSSSTNAMES=YES
For Functions 1, 1E, 1B, 2, 3 and 3C, when GEOCODE=ALL (and, optionally, GEOUNIT=YES) and CROSSSTNAMES=YES, the appended data consist of the concatenation of the GEOCODE=NO data, (followed, optionally, by GEOUNIT=YES data,) followed by a 320-byte block of data containing cross street names, followed by the GEOCODE=YES data. For further information about the layout of the appended CROSSSTNAMES data, refer to the Appendix 3 entry for the List of Street Names (see paragraph on List of Cross Street Names).

Table A12-3: Length of GBAT-Appended Data (COWs and MSWs)
Note: The data is appended to the user's input record

Functions	Options[17]	GEOCODE=NO		GEOCODE=YES		GEOCODE=ALL	
		COWs	**MSWs**	**COWs**	**MSWs**	**COWs**	**MSWs**
1, 1E	LONGWA2=NO	70	62	300	200	370	262
	LONGWA2=NO GEOUNIT=YES	140	Invalid	Invalid	Invalid	440	Invalid
	LONGWA2=YES	Invalid	Invalid	Invalid	300	Invalid	362
	MODE=X	Invalid	Invalid	1500	Invalid	1570	Invalid
	MODE=X GEOUNIT=YES	Invalid	Invalid	Invalid	Invalid	1640	Invalid
1A	LONGWA2=NO	70	62	1363	939	1433	1001
	LONGWA2=NO, GEOUNIT=YES	140	Invalid	Invalid	Invalid	1503	Invalid
	LONGWA2=YES	Invalid	Invalid	17750	17683	17820	17745
	LONGWA2=YES, GEOUNIT=YES	Invalid	Invalid	Invalid	Invalid	17890	Invalid
	MODE=X, LONGWA2=NO	Invalid	Invalid	2800	Invalid	2870	Invalid
	MODE=X, LONGWA2=NO, GEOUNIT=YES	Invalid	Invalid	Invalid	Invalid	2940	Invalid
1B		Invalid	Invalid	4300	Invalid	4370	Invalid
	GEOUNIT=YES	Invalid	Invalid	Invalid	Invalid	4440	Invalid

[17] MODE=X signifies Extended WA2
AUXSEG=YES signifies Auxiliary Segments
See Note above table for CROSSSTNAMES

Functions	Options[17]	GEOCODE=NO		GEOCODE=YES		GEOCODE=ALL	
		COWs	MSWs	COWs	MSWs	COWs	MSWs
1N		43	42	Invalid	Invalid	Invalid	Invalid
2		86	84	200	200	286	284
	RELATEDNODES =YES (ERRFIL3)	Invalid	Invalid	3352	Invalid	3352	Invalid
3	LONGWA2=NO with AUXSEG=NO	129	126	450	200	579	326
	LONGWA2=YES	Invalid	Invalid	Invalid	300	Invalid	426
	AUXSEG=YES	Invalid	Invalid	950	Invalid	1079	Invalid
	MODE=X	Invalid	Invalid	1000	Invalid	1129	Invalid
	MODE=X with AUXSEG=YES	Invalid	Invalid	1500	Invalid	1629	Invalid
3C	AUXSEG=NO	129	126	300	200	429	326
	AUXSEG=YES	Invalid	Invalid	800	Invalid	929	Invalid
	MODE=X	Invalid	Invalid	850	Invalid	979	Invalid
	MODE=X with AUXSEG=YES	Invalid	Invalid	1350	Invalid	1479	Invalid
3S		129	126	19274	4224	19403	4350
AP		70	Invalid	1363	Invalid	1433	Invalid
	MODE=X	Invalid	Invalid	2800	Invalid	2870	Invalid
BL	LONGWA2=NO	10	10	1363	939	1373	949
	LONGWA2=YES	Invalid	Invalid	17750	17683	17760	17693
	MODE=X, LONGWA2=NO	Invalid	Invalid	2800	Invalid	2810	Invalid
BN		10	10	1363	939	1373	949
	MODE=X	Invalid	Invalid	2800	Invalid	2810	Invalid
D, DG, DN	HOUSENUM2 not coded	128	108	Invalid	Invalid	Invalid	Invalid
	HOUSENUM2 coded	128	120	Invalid	Invalid	Invalid	Invalid

COPY Files for COWs

For COBOL, PL/1, BAL and C programmers, copy files have been created to enable you to easily use the new work areas (COWs) in your programming work. Local Data Areas will be available for Natural programmers. If you use the MVSP LPAR at DoITT, these items will be found in library ‘A030.GEO.COPYLIB’. If you use any other LPAR at DoITT or if you work at a different data center, contact your system programming staff to learn the name of the library in which these members are stored. The following table shows you the copy file name by language and Geosupport Function.

Table A12-4: List of COPY Files for COWs

Language	COW Work Area	Copy File
COBOL	Work Area 1 (used with all Functions)	P1COB
	Regular Work Area 2 for Functions 1 and 1E	P2COB
	Extended Work Area 2 for Functions 1 and 1E	P2COB1AL
	Regular Work Area 2 for Functions 1A, BL, BN	P2COB1A
	Long Work Area 2 for Functions 1A and BL	P2COB1AL
	Work Area 2 for Function 2	P2COB
	Regular Work Area 2 for Function 3	P2COB
	Auxiliary Segment Work Area 2 for Function 3	P2COB
	Regular Work Area 2 for Function 3C	P2COB
	Auxiliary Segment Work Area 2 for Function 3C	P2COB
	Work Area 2 for Function 3S	P2COB3S
	Regular Work Area 2 for Function AP	P2COBAP
	Extended Work Area 2 for Function AP	P2COBAP
PL/1	Work Area 1 (used with all Functions)	P1PL1
	Regular Work Area 2 for Functions 1 and 1E	P2PL1
	Extended Work Area 2 for Functions 1 and 1E	P2PL11AL
	Regular Work Area 2 for Functions 1A, BL, BN	P2PL11A
	Long Work Area 2 for Functions 1A and BL	P2PL11AL
	Work Area 2 for Function 2	P2PL1
	Regular Work Area 2 for Function 3	P2PL1
	Auxiliary Segment Work Area 2 for Function 3	P2PL1
	Regular Work Area 2 for Function 3C	P2PL1
	Auxiliary Segment Work Area 2 for Function 3C	P2PL1
	Work Area 2 for Function 3S	P2PL13S
	Regular Work Area 2 for Function AP	P2PLIAP
	Extended Work Area 2 for Function AP	P2PLIAP

Language	COW Work Area	Copy File
NATURAL	Work Area 1 (used with all Functions) Regular Work Area 2 for Functions 1 and 1E Extended Work Area 2 for Functions 1 and 1E Regular Work Area 2 for Functions 1A, BL, BN Long Work Area 2 for Functions 1A and BL Work Area 2 for Function 2 Regular Work Area 2 for Function 3 Auxiliary Segment Work Area 2 for Function 3 Regular Work Area 2 for Function 3C Auxiliary Segment Work Area 2 for Function 3C Work Area 2 for Function 3S Regular Work Area 2 for Function AP Extended Work Area 2 for Function AP	GEOLP1 GEOLP2 GEOLP2AL GEOLP21A GEOLP2AL GEOLP2 GEOLP2 GEOLP2 GEOLP2 GEOLP2 GEOLP23S GEOL2AP GEOL2APX
BAL	Work Area 1 (used with all Functions) Regular Work Area 2 for Functions 1 and 1E Extended Work Area 2 for Functions 1 and 1E Regular Work Area 2 for Functions 1A, BL, BN Long Work Area 2 for Functions 1A and BL Work Area 2 for Function 2 Regular Work Area 2 for Function 3 Auxiliary Segment Work Area 2 for Function 3 Regular Work Area 2 for Function 3C Auxiliary Segment Work Area 2 for Function 3C Work Area 2 for Function 3S Regular Work Area 2 for Function AP Extended Work Area 2 for Function AP	P1BAL P2BAL P2BAL1A P2BAL1A P2BAL1A P2BAL P2BAL P2BAL P2BAL P2BAL P2BAL3S P2PLIAP P2PLIAP
C	All Work Areas for all Functions	PAC

APPENDIX 13: CHARACTER-ONLY WORK AREA LAYOUTS (COW)
(as of Geosupport System Software Version 17.2 - unchanged since V17.1)

This appendix contains layouts of all of the COW work areas used with the Geosupport System's API. These layouts are current as of the Geosupport software version indicated above. The layouts are in the Character-Only Work Area (COW) format[18].

Some Geosupport functions can only be called using one work area, Work Area 1 (WA1). Other functions can be called using two work areas, WA1 and Work Area 2 (WA2). WA1 contains both input fields (fields used to pass data from the application to Geosupport) and output fields (fields used to pass data from Geosupport to the application). WA1 is organized so that all the input fields occur first, followed by all the output fields. WA2 contains output fields only.

All functions use the same WA1 layout, but the set of WA1 fields that are used depends on the function. In the layout of WA1 in this appendix, the column labeled 'Functions' indicates which functions use each field.

The functions that can be called using two work areas use various WA2 layouts of various lengths. In some cases, several functions share a single WA2 layout. For functions 1A and BL, the user has a choice of two WA2 layouts, a 'regular' WA2 and a 'long' WA2.

The majority of the COW fields are identical to the MSW (Mainframe-Specific Work Area) fields.

Appendix 3 consists of a data item dictionary describing the fields that occur in the work areas.

Appendix 12 describes the differences between the COWs and MSWs.

The Geosupport Character-Only work areas (COWs) contain no packed decimal or binary fields; all fields are character. The work areas are divided into logical groups. For example work area 1 is divided into three parts; namely,

- Input information from user
- Input flags set by user
- Output information supplied by Geosupport

For precise information on work areas, refer to the appropriate section below.

NOTE: The notation "*Not Implemented*" in the comments column of the work area layout means the field is blank, its contents are not reliable or the functionality has not yet been implemented. Only items that we intend to implement and/or correct at a later date are listed in this fashion.

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[4]The mainframe version of Geosupport supports both the Character-Only Work Area (COW) format and the Mainframe-Specific Work Area (MSW (a.k.a. MFS)) format. The layout of the MSWs is in Appendix 2.

The following is a list of all of the Geosupport COW work areas, indicating the length of each in bytes. Functions that are listed together share a single Work Area 2 layout.

Character-Only Work Area (COW)	**Length**
WA1, All Functions	1,200
WA2, Functions 1, 1E Regular	300
WA2, Functions 1, 1E Extended	1,500
WA2, Functions 1A, BL, BN Regular	1,363
Long WA2, Functions 1A, BL	17,750
TPAD Long WA2, Functions 1A, BL	17,750
WA2, Functions 1A, BL, BN Extended	2,800
WA2, Function 1B	4,300
WA2, Function AP Regular	1,363
WA2, Function AP Extended	2,800
WA2, Function 2	200
WA2, Function 2W (Wide)	4000
WA2, Function 3 Regular	450
WA2, Function 3 with Auxiliary Segment	950
WA2, Function 3 Extended	1,000
WA2, Function 3 Extended with Auxiliary Segment	1,500
WA2, Function 3C Regular	300
WA2, Function 3C with Auxiliary Segment	800
WA2, Function 3C Extended	850
WA2, Function 3C Extended with Auxiliary Segment	1,350
WA2, Function 3S	19,274

Notes:

1. When a group of fields are listed together in a layout, the name of the group appears in UPPER CASE and is followed by a colon (:). The fields within the group appear in mixed case and are indented under the group name. The 'FROM' and 'TO' POSITIONS are listed for the group and for the individual fields within the group.

   Example:

(Field Name)	(Size)	(From)	(To)	(Function)
BOROUGH BLOCK LOT (BBL):	10	186	195	BL
Borough Code	1	186	186	BL
Tax Block	5	187	191	BL
Tax Lot	4	192	195	BL

2. If there is a multi-field entry that may be repeated a variable number of times in the work area, then the relative positions of the fields within the entry are published and those relative positions appear in parentheses '( )'.

   Example:

(Field Name)	(Size)	(From)	(To)	(Comment)
LIST OF GEOGRAPHIC IDENTIFIERS: Variable length list of up to 21 entries; each is 53 bytes long, structured as follows:	1113	251	1363	Maximum of 21 entries, each 53 bytes long: 21x53 = 1,113
Low House Number	(16)	(1)	(16)	
High House Number	(16)	(17)	(32)	
* * *				
TPAD BIN Status	(1)	(50)	(50)	TPAD Request
Filler	(3)	(51)	(53)	
* End of 53-byte entry *				

Character-Only Work Area 1 (COW) – All Functions

FIELD	SIZE	POSITION FROM	POSITION TO	FUNCTIONS[19]
INPUT Fields				
Geosupport Function Code	2	1	2	All
House Number - Display Format	16	3	18	1, 1A, 1B, 1E, AP
House Number - Sort Format	11	19	29	1, 1A, 1B, 1E, AP, D*
Low House Number - Display Format[20]	16	30	45	Internal Use
Low House Number – Sort Format	11	46	56	D*, Internal Use
B10SC-1 (includes Borough Code 1, B5SC-1 and B7SC-1):	11	57	67	See next 2 entries
Borough Code-1	1	57	57	Required for All Functions but BL, BN. Ignored if Fn 2 has Node Number input
10SC[21]-1	10	58	67	All but 1N, B*
Street Name-1	32	68	99	All but BL, BN, D*
B10SC-2 (includes Borough Code 2, B5SC-2 and B7SC-2):	11	100	110	2, 3*, D*
Borough Code[22]-2	1	100	100	2, 3*, D*
10SC-2	10	101	110	2, 3*, D*
Street Name-2	32	111	142	2, 3*

[19]Note: An asterisk in the second position of a function code is used as a shorthand notation to represent all function codes having the indicated value in the first position, as follows:

1* = 1, 1A, 1B, 1E, 1N, AP
3* = 3, 3C, 3S
B* = BB, BF, BL, BN
D* = D, DG, DN

Typically, any function listed with an asterisk also includes the various forms of the function, e.g. Extended, Long, Auxiliary Segments etc.

[20]The Low House Number fields are for Internal Use (Fn 5). In addition the low House Number in Sort Format can be used with Functions D*.

[21]The user may supply either a 5-Digit, 7-Digit or 10-Digit Street code in this field. The contents are to be left-justified and blank-filled.

[22]When using street name input, the second and third borough codes are required only if they differ from the first.

Character-Only Work Area 1 (COW) – All Functions (cont.)

FIELD	SIZE	POSITION FROM	POSITION TO	FUNCTIONS[19]
B10SC-3 (includes Borough Code 3, B5SC-3 and B7SC-3):	11	143	153	3*, D*
Borough Code-3	1	143	143	3*, D*
10SC-3	10	144	153	3*, D*
Street Name-3	32	154	185	3*
BOROUGH BLOCK LOT (BBL):	10	186	195	BL
Borough Code	1	186	186	BL
Tax Block	5	187	191	BL
Tax Lot	4	192	195	BL
Filler for Tax Lot Version Number	1	196	196	*Not Implemented*
Building Identification Number (BIN)	7	197	203	BN
Compass Direction	1	204	204	2, 3C, 3S
Compass Direction for 2nd Intersection	1	205	205	3S
Node Number	7	206	212	2, 2W
Work Area Format Indicator[23]	1	213	213	All
ZIP Code Input	5	214	218	1*, AP
Unit Input	14	219	232	1*
Filler	82	233	314	
Input Flags				
Long Work Area 2 Flag	1	315	315	1A, BL
House Number Justification Flag[24]	1	316	316	*Not Implemented*
House Number Normalization Length[25]	2	317	318	*Not Implemented*
House Number Normalization Override Flag	1	319	319	Internal Use
Street Name Normalization Length Limit (SNL)	2	320	321	All but B*

[23] When this indicator, also known as the Platform Indicator, is set to C or P, the Character-Only formats of the work areas (i.e., the formats documented herein) are used. A blank in this indicator means that the IBM mainframe specific work areas, known as MSW (a.k.a. MFS), are used.

[24] If the house number is to be right justified, the House Number Justification Flag is set to R and if the house number is to be left justified, the House Number Justification Flag is set to L or left blank.

[25] The House Number Normalization Length field is used to achieve compatibility between the Main Frame Specific (MSW) work areas and the COWs. In the COWs, the House Number is permitted to be 16 characters, but, in the MSW, it is limited to 12 characters. It is not anticipated that users will make use of this field.

Character-Only Work Area 1 (COW) – All Functions (cont.)

FIELD	SIZE	POSITION		FUNCTIONS[19]
		FROM	TO	
Street Name Normalization Format Flag[26]	1	322	322	All but B*
Cross Street Names Flag[27] a.k.a. Expanded Format Flag	1	323	323	1, 1A, 1B, 1E, 2, 3, 3C
Roadbed Request Switch	1	324	324	1, 1B, 1E, 3S (Limited)
Reserved for Internal Use	1	325	325	Internal GRC Flag
Auxiliary Segment Switch	1	326	326	3, 3C
Browse Flag	1	327	327	1*, 2, 3, 3C, BB, BF
Real Streets Only Flag	1	328	328	3S
TPAD Switch	1	329	329	1A, 1B, BL, BN
Mode Switch	1	330	330	1, 1E, 1A, 3, 3C, AP
WTO Switch	1	331	331	All
Filler	29	332	360	
OUTPUT Fields				
First Borough Name	9	361	369	All but D*
House Number - Display Format	16	370	385	1, 1A, 1B, 1E, AP, D*
House Number - Sort Format	11	386	396	1, 1A, 1B, 1E, AP, D*
B10SC - First Borough and Street Code	11	397	407	All but BL, BN
First Street Name Normalized	32	408	439	All but BL, BN
B10SC - Second Borough and Street Code	11	440	450	2, 3*, D*
Second Street Name Normalized	32	451	482	2, 3*, D*
B10SC - Third Borough and Street Code	11	483	493	3*, D*
Third Street Name Normalized	32	494	525	3*, D*
BOROUGH BLOCK LOT (BBL):	10	526	535	BL (Also 1, 1A, 1B, 1E if Cross Street Names Flag is 'E'; Also 1, 1E if Mode Switch is 'X')

[26]This field, Street Name Normalization Format Flag, was formerly known as the Compact Option. If the Street Name Normalization Format Flag is set to S or blank, then the street name is returned in sort format. If it is set to C, then the street name is returned in compact format.

[27]The Cross Street Names Flag (a.k.a. Expanded Format Flag), if set to E, will return the Cross Street Names and Cross Street Codes in the List of Street Names and List of Street Codes fields respectively for Functions 1, 1E, 2, 3, 3C. These lists are in the output section of Work Area 1. These lists are also used for Similar Names processing and the Browse function. (The cross street names and codes lists are not returned for Functions 1A and 1B.) The BBL and BIN are returned in the output area of Work Area 1 where possible for Functions 1, 1A, 1B, 1E.

Character-Only Work Area 1 (COW) – All Functions (cont.)

FIELD	SIZE	POSITION		FUNCTIONS[19]
		FROM	TO	
Borough Code	1	526	526	BL (see BL comment above)
Tax Block	5	527	531	BL (see BL comment above)
Tax Lot	4	532	535	BL (see BL comment above)
Filler for Tax Lot Version Number	1	536	536	*Not Implemented*
Low House Number - Display Format	16	537	552	Internal Use, D*
Low House Number - Sort Format	11	553	563	Internal Use, D*
Building Identification Number (BIN)	7	564	570	BN (see BBL functions list above)
Street Attribute Indicators	3	571	573	Internal Use
Reason Code 2	1	574	574	1B - reflects 1A Extended
Reason Code Qualifier 2	1	575	575	1B (See Reason Code 2)
Warning Code 2	2	576	577	1B (not used)
Geosupport Return Code 2 (GRC 2)	2	578	579	1B (See Reason Code 2)
Message 2	80	580	659	1B (See Reason Code 2)
Node Number	7	660	666	2, 2W
UNIT – SORT FORMAT	14	667	680	1*
Unit – Type	4	667	670	1*
Unit – Identifier	10	671	680	1*
Unit – Display Format	14	681	694	1*
Filler	11	695	705	
NIN[28]	6	706	711	*Not Implemented*
Street Attribute Indicator	1	712	712	Internal Use
Reason Code	1	713	713	All
Reason Code Qualifier	1	714	714	1A, BL, BN
Warning Code	2	715	716	All (not used)
Geosupport Return Code (GRC)	2	717	718	All
Message	80	719	798	All
Number of Street Codes and Street Names in List (up to 10)	2	799	800	1*, 2, 3*, BB, BF
List of Street Codes (10 B7SC's)	80	801	880	1*, 2, 3*, BB, BF
List of Street Names (10 Street Name Fields, 32 Bytes Each)	320	881	1200	1*, 2, 3*, BB, BF

[28] NAP Identification Number

Work Area 2 (COW) - Functions 1, 1E

Block Face Defined by Address Range Along a Street

FIELD	SIZE	POSITION FROM	POSITION TO	COMMENT
Internal Use	21	1	21	
Continuous Parity Indicator/Duplicate Address Indicator	1	22	22	
Low House Number of Block Face	11	23	33	Sort Format
High House Number of Block Face	11	34	44	Sort Format
DCP Preferred LGC (For Function 1E, See comment)				For Function 1E, the BOE preferred LGC is provided.
No. of Cross Streets at Low Address End	1	47	47	
List of Cross Streets at Low Address End (Up to 5 B5SCs)	30	48	77	B5SC – Blank-Filled
No. of Cross Streets at High Address End	1	78	78	
List of Cross Streets at High Address End (Up to 5 B5SCs)	30	79	108	B5SC – Blank-Filled
LION KEY:	10	109	118	
Borough Code	1	109	109	
Face Code	4	110	113	
Sequence Number	5	114	118	
Special Address Generated Record Flag	1	119	119	
Side of Street Indicator	1	120	120	
Segment Length in Feet	5	121	125	
SPATIAL X-Y COORDINATES OF ADDRESS:	14	126	139	
X Coordinate	7	126	132	
Y Coordinate	7	133	139	
Reserved for Possible Z Coordinate	7	140	146	
Community Development Eligibility Indicator	1	147	147	
Marble Hill/Rikers Island Alternative Borough Flag	1	148	148	
DOT Street Light Contractor Area	1	149	149	
COMMUNITY DISTRICT:	3	150	152	
Community District Borough Code	1	150	150	
Community District Number	2	151	152	
ZIP Code	5	153	157	

Work Area 2 (COW) - Functions 1, 1E (cont.)

Block Face Defined by Address Range Along a Street

FIELD	SIZE	POSITION FROM	POSITION TO	COMMENT
FUNCTION 1E ITEMS:	14	158	171	**Use ONLY for Function 1E**
Election District	3	158	160	Invalid for Fn 1
Assembly District	2	161	162	Invalid for Fn 1
Split Election District Flag	1	163	163	Invalid for Fn 1
Congressional District	2	164	165	Invalid for Fn 1
State Senatorial District	2	166	167	Invalid for Fn 1
Civil Court District	2	168	169	Invalid for Fn 1
City Council District	2	170	171	Invalid for Fn 1
Health Center District	2	172	173	
Health Area	4	174	177	
Sanitation District	3	178	180	
Sanitation Collection Scheduling Section and Subsection	2	181	182	
Sanitation Regular Collection Schedule	5	183	187	
Sanitation Recycling Collection Schedule	3	188	190	
Police Patrol Borough Command	1	191	191	
Police Precinct	3	192	194	
Fire Division	2	195	196	
Fire Battalion	2	197	198	
Fire Company Type	1	199	199	
Fire Company Number	3	200	202	
Filler	1	203	203	Was Split Comm School Dist Flag
Community School District	2	204	205	
Atomic Polygon	3	206	208	Was Dynamic Block
Police Patrol Borough	2	209	210	
Feature Type Code	1	211	211	
Segment Type Code	1	212	212	
Alley or Cross Street List Flag	1	213	213	A - Alley Split X - Cross Street List Modified
Coincidence Segment Count	1	214	214	
Filler	2	215	216	
Borough of Census Tract	1	217	217	Internal
1990 Census Tract	6	218	223	
2010 Census Tract	6	224	229	

Work Area 2 (COW) - Functions 1, 1E (cont.)

Block Face Defined by Address Range Along a Street

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
2010 Census Block	4	230	233	
2010 Census Block Suffix	1	234	234	*Not Implemented*
2000 Census Tract	6	235	240	
2000 Census Block	4	241	244	
2000 Census Block Suffix	1	245	245	
Neighborhood Tabulation Area (NTA)	4	246	249	
DSNY Snow Priority Code	1	250	250	Dept. of Sanitation
DSNY Organic Recycling Schedule	5	251	255	Dept. of Sanitation
DSNY Bulk Pickup Schedule	5	256	260	Dept. of Sanitation
Hurricane Evacuation Zone (HEZ)	2	261	262	
Filler	11	263	273	
Underlying Address Number on True Street (for NAPs, Vanity, etc)	11	274	284	Sort Format
Underlying B7SC of True Street (NAPs etc)	8	285	292	
Segment Identifier	7	293	299	
Curve Flag	1	300	300	

Work Area 2 (COW) - Functions 1, 1E Extended

Block Face Defined by Address Range Along a Street

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
Same as Regular Work Area 2 for Functions 1, 1E	300	1	300	
List of 4 LGC's	8	301	308	
BOE LGC Pointer	1	309	309	
Segment Azimuth	3	310	312	
Segment Orientation	1	313	313	
SPATIAL COORDINATES OF SEGMENT:	42	314	355	
X Coordinate, Low Address End	7	314	320	From Node
Y Coordinate, Low Address End	7	321	327	
Z Coordinate, Low Address End	7	328	334	*Not Implemented*
X Coordinate, High Address End	7	335	341	To Node
Y Coordinate, High Address End	7	342	348	
Z Coordinate, High Address End	7	349	355	*Not Implemented*
SPATIAL COORDINATES OF CENTER OF CURVATURE:	21	356	376	
X Coordinate	7	356	362	
Y Coordinate	7	363	369	
Z Coordinate	7	370	376	*Not Implemented*
Radius of Circle	7	377	383	
Secant Location Related to Curve	1	384	384	L - Left, R - Right
Angle to From Node – Beta Value	5	385	389	Beta & Alpha Used to Calculate Coordinates
Angle to To Node – Alpha Value	5	390	394	
From LION Node ID	7	395	401	From Node
To LION Node ID	7	402	408	To Node
LION KEY FOR VANITY ADDRESS:	10	409	418	
Borough Code	1	409	409	
Face Code	4	410	413	
Sequence Number	5	414	418	
Side of Street of Vanity Address	1	419	419	
Split Low House Number	11	420	430	
Traffic Direction	1	431	431	
Turn Restrictions	10	432	441	*Not Implemented*
Fraction for Curve Calculation	3	442	444	Internal Use
Roadway Type	2	445	446	

Work Area 2 (COW) - Functions 1, 1E Extended (cont.)

Block Face Defined by Address Range Along a Street

FIELD	SIZE	POSITION FROM	POSITION TO	COMMENT
Physical ID	7	447	453	
Generic ID	7	454	460	
NYPD ID	7	461	467	
FDNY ID	7	468	474	
Bike Lane 2	2	475	476	
Bike Traffic Direction	2	477	478	
Filler	3	479	481	Was Blockface ID, See bytes 730-739
Street Status	1	482	482	
Street Width	3	483	485	
Street Width Irregular	1	486	486	
Bike Lane	1	487	487	Will be retired. See Bike Lane 2
Federal Classification Code	2	488	489	
Right Of Way Type	1	490	490	
List of Second Set of 5 LGCs	10	491	500	
Legacy Segment ID	7	501	507	
From Preferred LGCs First Set of 5	10	508	517	
To Preferred LGCs First Set of 5	10	518	527	
From Preferred LGCs Second Set of 5	10	528	537	
To Preferred LGCs Second Set of 5	10	538	547	
No Cross Street Calculation Flag	1	548	548	
Individual Segment Length	5	549	553	
NTA Name	75	554	628	
USPS Preferred City Name	25	629	653	
Latitude	9	654	662	
Longitude	11	663	673	
From Actual Segment Node ID	7	674	680	
To Actual Segment Node ID	7	681	687	
SPATIAL COORDINATES OF ACTUAL SEGMENT:	42	688	729	
X Coordinate, Low Address End	7	688	694	Actual From Node
Y Coordinate, Low Address End	7	695	701	
Z Coordinate, Low Address End	7	702	708	*Not Implemented*
X Coordinate, High Address End	7	709	715	Actual To Node
Y Coordinate, High Address End	7	716	722	
Z Coordinate, High Address End	7	723	729	*Not Implemented*
Blockface ID	10	730	739	Previously 7 bytes

Work Area 2 (COW) - Functions 1, 1E Extended (cont.)

Block Face Defined by Address Range Along a Street

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
Number of Travel Lanes on the Street	2	740	741	
Number of Parking Lanes on the Street	2	742	743	
Number of Total Lanes on the Street	2	744	745	
Street Width Maximum	3	746	748	
Filler	252	749	1000	
Reason Code	1	1001	1001	
Reason Code Qualifier	1	1002	1002	
Warning Code Filler	2	1003	1004	
Return Code	2	1005	1006	
Number of Cross Streets at Low Address End	1	1007	1007	
List of Cross Streets at Low Address End (Up to 5 B7SCs)	40	1008	1047	B7SC-Blank-Filled
Number of Cross Streets at High Address End	1	1048	1048	
List of Cross Streets at High Address End (Up to 5 B7SCs)	40	1049	1088	B7SC-Blank-Filled
List of Cross Street Names at Low Address End	160	1089	1248	5 x 32 = 160 Up to 5 Street Names
List of Cross Street Names at High Address End	160	1249	1408	5 x 32 = 160 Up to 5 Street Names
BOE Preferred B7SC	8	1409	1416	
BOE Preferred Street Name	32	1417	1448	
Filler	52	1449	1500	

Work Area 2 (COW) - Functions 1A, BL, BN

Property Level Information Defined by Address, BBL or BIN

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
Internal Use	21	1	21	
Continuous Parity Indicator /Duplicate Address Indicator	1	22	22	
Low House Number of Defining Address Range	11	23	33	Sort Format
BOROUGH BLOCK LOT (BBL):	10	34	43	Billing BBL if Condo
Borough Code	1	34	34	
Tax Block	5	35	39	
Tax Lot	4	40	43	
Filler for Tax Lot Version Number	1	44	44	*Not Implemented*
RPAD Self-Check Code (SCC) for BBL	1	45	45	
Filler	1	46	46	
RPAD Building Classification Code	2	47	48	
Corner Code	2	49	50	
Number of Existing Structures on Lot	4	51	54	
Number of Street Frontages of Lot	2	55	56	
Interior Lot Flag	1	57	57	
Vacant Lot Flag	1	58	58	
Irregularly-Shaped Lot Flag	1	59	59	
Marble Hill/Rikers Island Alternate Borough Flag	1	60	60	
List of Geographic Identifiers (LGI) Overflow Flag	1	61	61	When = 'E', there are more than 21 addrs for Fns 1A and BL.
STROLLING KEY:	19	62	80	*Not Implemented*
Borough	1	62	62	*Not Implemented*
5-Digit Street Code of ‘On’ Street	5	63	67	*Not Implemented*
Side of Street Indicator	1	68	68	*Not Implemented*
High House Number – Sort Format	11	69	79	*Not Implemented*
Filler	1	80	80	*Not Implemented*
Reserved for Internal Use	1	81	81	
Building Identification Number (BIN) of Input Address or NAP	7	82	88	
Condominium Flag	1	89	89	If condo, = ‘C’
Filler	1	90	90	
DOF Condominium Identification Number	4	91	94	

Work Area 2 (COW) - Functions 1A, BL, BN (cont.)

Property Level Information Defined by Address, BBL or BIN

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
Condominium Unit ID Number	7	95	101	*Not Implemented*
Condominium Billing BBL	10	102	111	
Filler - Tax Lot Version No. for Billing BBL	1	112	112	*Not Implemented*
Self-Check Code (SCC) of Billing BBL	1	113	113	
LOW BBL OF THIS BUILDING'S CONDOMINIUM UNITS:	10	114	123	
Borough Code	1	114	114	Condo
Tax Block	5	115	119	
Tax Lot	4	120	123	
Filler for Tax Lot Version No. of Low BBL	1	124	124	*Not Implemented*
HIGH BBL OF THIS BUILDING'S CONDOMINIUM UNITS:	10	125	134	
Borough Code	1	125	125	Condo
Tax Block	5	126	130	
Tax Lot	4	131	134	
Filler for Tax Lot Version No. of High BBL	1	135	135	*Not Implemented*
Filler	15	136	150	
Cooperative ID Number	4	151	154	
SBVP (SANBORN MAP IDENTIFIER):	8	155	162	
Sanborn Borough Code	1	155	155	
Volume Number	2	156	157	
Volume Number Suffix	1	158	158	
Page Number	3	159	161	
Page Number Suffix	1	162	162	
DCP Commercial Study Area	5	163	167	
Tax Map Number Section & Volume	5	168	172	
Reserved for Tax Map Page Number	4	173	176	*Not Implemented*
Filler	3	177	179	
Latitude	9	180	188	
Longitude	11	189	199	
X-Y Coordinates of Tax Lot Centroid (Internal to Lot)	14	200	213	Previously X-Y Coordinates of COGIS Annotation Point
Business Improvement District (BID)	6	214	219	
TPAD BIN Status (for DM job)	1	220	220	TPAD request
TPAD New BIN	7	221	227	TPAD request
TPAD New BIN Status	1	228	228	TPAD request
TPAD Conflict Flag	1	229	229	TPAD request

Work Area 2 (COW) - Functions 1A, BL, BN (cont.)

Property Level Information Defined by Address, BBL or BIN

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
Filler	9	230	238	
List of 4 LGCs	8	239	246	Internal Use
Number of Entries in List of Geographic Identifiers	4	247	250	Maximum of 21 entries
LIST OF GEOGRAPHIC IDENTIFIERS: Variable length list of up to 21 entries, each 53-bytes long, structured as follows:	1113	251	1363	Maximum of 21 entries, each 53 bytes long: 21x53 = 1,113
Low House Number	(16)	(1)	(16)	Display format
High House Number	(16)	(17)	(32)	Display format
Borough Code	(1)	(33)	(33)	Start of B7SC
5-Digit Street Code	(5)	(34)	(38)	Part of B7SC
DCP-Preferred Local Group Code (LGC)	(2)	(39)	(40)	End of B7SC
Building Identification Number (BIN)	(7)	(41)	(47)	
Side of Street Indicator	(1)	(48)	(48)	L - Left, R - Right
Geographic Identifier Entry Type Code	(1)	(49)	(49)	N - NAP (Simplex) G - Complex NAP X - Constituent entity of Complex NAP B - NAUB F - Frontage W - Blank Wall Q - Pseudo Addr T - Tunnel U - Misc. Structure V - Vanity Address O - Out-of Sequence Address Blank - Normal
TPAD BIN Status	(1)	(50)	(50)	TPAD Request
Filler	(3)	(51)	(53)	
* End of 53-byte entry *				
*** End of Work Area *** (1,363 bytes)				

Long Work Area 2 (COW) - Functions 1A, BL

Property Level Information (BIN Number) Defined by Address, BBL

FIELD	SIZE	POSITION FROM	POSITION TO	COMMENT
Same as Regular Work Area 2 – Functions 1A, BL, BN	246	1	246	
Number of Buildings on Tax Lot	4	247	250	Maximum of 2,500
LIST OF BUILDINGS ON TAX LOT: Variable length list of up to 2,500 entries; each is 7 bytes long, structured as follows:	17500	251	17750	Maximum of 2,500 entries, each 7 bytes long. 7 x 2,500 = 17,500
Building Identification Number (BIN)	(7)	(1)	(7)	
* End of 7-byte entry *				
*** End of Work Area *** (17,750 bytes)				

TPAD Long Work Area 2 (COW) - Functions 1A, BL

Property Level Information Defined by Address/BBL

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
Same as Regular Work Area 2 – Functions 1A, BL, BN	246	1	246	
Number of Buildings on Tax Lot	4	247	250	Maximum is 2,187
LIST OF BUILDINGS ON TAX LOT: Variable length list of up to 2,187 entries; each is 8 bytes long, structured as follows:	17496	251	17746	Maximum of 2,187 entries, each 8 bytes long. 8 x 2,187 = 17,496
TPAD BIN	(7)	(1)	(7)	
TPAD BIN Status	(1)	(8)	(8)	
* End of 8-byte entry *				
Filler	4	17747	17750	

Work Area 2 (COW) - Functions 1A, BL, BN Extended

Property Level Information Defined by Address, BBL or BIN

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
Same as Regular Work Area 2 – Functions 1A, BL, BN	1	1	246	
Reason Code	1	247	247	Same as Work Area 1
Reason Code Qualifier	1	248	248	Same as Work Area 1
Warning Code	2	249	250	Not used
Return Code (GRC)	2	251	252	Same as Work Area 1
Filler	108	253	360	
Number of Entries in List of Geographic Identifiers	4	361	364	Maximum number is 21
LIST OF GEOGRAPHIC IDENTIFIERS: Variable length list of up to 21 entries; each is 116 bytes long, structured as follows:	2436	365	2800	Maximum of 21 entries, each 116 bytes long: 116 x 21 = 2,436
Low House Number	(16)	(1)	(16)	Display format
High House Number	(16)	(17)	(32)	Display format
Borough Code	(1)	(33)	(33)	Start of B7SC
5-Digit Street Code	(5)	(34)	(38)	Part of B7SC
DCP-Preferred Local Group Code (LGC)	(2)	(39)	(40)	End of B7SC
Building Identification Number (BIN)	(7)	(41)	(47)	
Side of Street Indicator	(1)	(48)	(48)	L - Left, R - Right
Geographic Identifier Entry Type Code	(1)	(49)	(49)	N - NAP (Simplex) G - Complex NAP X - Constituent Entity of Complex NAP B - NAUB F - Frontage W - Blank Wall Q - Pseudo Address T - Tunnel U - Misc Structure V - Vanity Address O - Out-of-Sequence Addr Blank - Normal
TPAD BIN Status	(1)	(50)	(50)	TPAD Request
Street Name (Principal Street Name)	(32)	(51)	(82)	Based on B7SCin Address List
Filler	(34)	(83)	(116)	
* End of 116-byte entry *				

Work Area 2 (COW) - Functions 1A, BL, BN Extended (cont.)

Property Level Information Defined by Address, BBL or BIN

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
*** End of Work Area *** (2,800 bytes)				

Work Area 2 (COW) - Function 1B

Block Face Information Defined by Address Range Along a Street & Property Level Information Defined by Address

FIELD	SIZE	POSITION FROM	POSITION TO	COMMENT
BLOCK FACE INFORMATION (Based On Function 1E Extended)				
Internal Use	21	1	21	
Continuous Parity Indicator/Duplicate Address Indicator	1	22	22	
Low House Number of Block Face	11	23	33	Sort Format
High House Number of Block Face	11	34	44	Sort Format
DCP Preferred LGC	2	45	46	
Number of Cross Streets at Low Address End	1	47	47	
List of Cross Streets at Low Address End (Up to 5 B5SCs)	30	48	77	B5SC - Blank-Filled
Number of Cross Streets at High Address End	1	78	78	
List of Cross Streets at High Address End (Up to 5 B5SCs)	30	79	108	B5SC - Blank-Filled
LION KEY:	10	109	118	
Borough Code	1	109	109	
Face Code	4	110	113	
Sequence Number	5	114	118	
Special Address Generated Record Flag	1	119	119	
Side of Street Indicator	1	120	120	
Segment Length in Feet	5	121	125	
Spatial X-Y Coordinates of Address	14	126	139	
Reserved for Possible Z Coordinate	7	140	146	
Community Development Eligibility Indicator	1	147	147	
Marble Hill/Rikers Island Alternative Borough Flag	1	148	148	
DOT Street Light Contractor Area	1	149	149	
COMMUNITY DISTRICT:	3	150	152	
Community District Borough Code	1	150	150	
Community District Number	2	151	152	
ZIP Code	5	153	157	
Election District	3	158	160	
Assembly District	2	161	162	

Work Area 2 (COW) - Function 1B (cont.)

Block Face Information Defined by Address Range Along a Street & Property Level Information Defined by Address

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
Split Election District Flag	1	163	163	
Congressional District	2	164	165	
State Senatorial District	2	166	167	
Civil Court District	2	168	169	
City Council District	2	170	171	
Health Center District	2	172	173	
Health Area	4	174	177	
Sanitation District	3	178	180	
Sanitation Collection Scheduling Section and Subsection	2	181	182	
Sanitation Regular Collection Schedule	5	183	187	
Sanitation Recycling Collection Schedule	3	188	190	
Police Patrol Borough Command	1	191	191	
Police Precinct	3	192	194	
Fire Division	2	195	196	
Fire Battalion	2	197	198	
Fire Company Type	1	199	199	
Fire Company Number	3	200	202	
Filler	1	203	203	Was Split Community School District Flag
Community School District	2	204	205	
Atomic Polygon	3	206	208	Was Dynamic Block
Police Patrol Borough	2	209	210	
Feature Type Code	1	211	211	
Segment Type Code	1	212	212	
Alley or Cross Street List Flag	1	213	213	A - Alley Split X - Cross Street List Modified
Coincidence Segment Count	1	214	214	
Filler	3	215	217	
1990 Census Tract	6	218	223	
2010 Census Tract	6	224	229	
2010 Census Block	4	230	233	
2010 Census Block Suffix	1	234	234	*Not Implemented*
2000 Census Tract	6	235	240	
2000 Census Block	4	241	244	
2000 Census Block Suffix	1	245	245	

Work Area 2 (COW) - Function 1B (cont.)

Block Face Information Defined by Address Range Along a Street & Property Level Information Defined by Address

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
Neighborhood Tabulation Area (NTA)	4	246	249	
DSNY Snow Priority Code	1	250	250	Dept. of Sanitation
DSNY Organic Recycling Schedule	5	251	255	Dept. of Sanitation
DSNY Bulk Pickup Schedule	5	256	260	Dept. of Sanitation
Hurricane Evacuation Zone (HEZ)	2	261	262	
Filler	11	263	273	
Underlying Address Number for NAPs	11	274	284	Sort Format
Underlying B7SC	8	285	292	
Segment Identifier	7	293	299	
Curve Flag	1	300	300	
List of 4 LGC's	8	301	308	
BOE LGC Pointer	1	309	309	
Segment Azimuth	3	310	312	
Segment Orientation	1	313	313	
SPATIAL COORDINATES OF SEGMENT:	42	314	355	
X Coordinate, Low Address End	7	314	320	
Y Coordinate, Low Address End	7	321	327	
Z Coordinate, Low Address End	7	328	334	*Not Implemented*
X Coordinate, High Address End	7	335	341	
Y Coordinate, High Address End	7	342	348	
Z Coordinate, High Address End	7	349	355	*Not Implemented*
SPATIAL COORDINATES OF CENTER OF CURVATURE:	21	356	376	
X Coordinate	7	356	362	
Y Coordinate	7	363	369	
Z Coordinate	7	370	376	*Not Implemented*
Radius of Circle	7	377	383	
Secant Location Related to Curve	1	384	384	L - Left, R - Right
Angle to From Node – Beta Value	5	385	389	Beta & Alpha Used to Calculate Coordinates
Angle to To Node – Alpha Value	5	390	394	
From LION Node ID	7	395	401	
To LION Node ID	7	402	408	
LION Key for Vanity Address	10	409	418	
Side of Street of Vanity Address	1	419	419	
Split Low House Number	11	420	430	
Traffic Direction	1	431	431	

Work Area 2 (COW) - Function 1B (cont.)

Block Face Information Defined by Address Range Along a Street & Property Level Information Defined by Address

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
Turn Restrictions	10	432	441	
Fraction for Curve Calculation	3	442	444	
Roadway Type	2	445	446	
Physical ID	7	447	453	
Generic ID	7	454	460	
NYPD ID	7	461	467	
FDNY ID	7	468	474	
Bike Lane 2	2	475	476	
Bike Traffic Direction	2	477	478	
Filler	3	479	481	Was Blockface ID See bytes 730-739
Street Status	1	482	482	
Street Width	3	483	485	
Street Width Irregular	1	486	486	
Bike Lane	1	487	487	Will be retired. See Bike Lane 2
Federal Classification Code	2	488	489	
Right Of Way Type	1	490	490	
List of Second Set of 5 LGCs	10	491	500	
Legacy Segment ID	7	501	507	
From Preferred LGCs First Set of 5	10	508	517	
To Preferred LGCs First Set of 5	10	518	527	
From Preferred LGCs Second Set of 5	10	528	537	
To Preferred LGCs Second Set of 5	10	538	547	
No Cross Street Calculation Flag	1	548	548	
Individual Segment Length	5	549	553	
NTA Name	75	554	628	
USPS Preferred City Name	25	629	653	
Latitude	9	654	662	
Longitude	11	663	673	
From Actual Segment Node ID	7	674	680	
To Actual Segment Node ID	7	681	687	
SPATIAL COORDINATES OF ACTUAL SEGMENT:	42	688	729	
X Coordinate, Low Address End	7	688	694	Actual From Node
Y Coordinate, Low Address End	7	695	701	
Z Coordinate, Low Address End	7	702	708	*Not Implemented*

Work Area 2 (COW) - Function 1B (cont.)

Block Face Information Defined by Address Range Along a Street & Property Level Information Defined by Address

FIELD	SIZE	POSITION FROM	POSITION TO	COMMENT
X Coordinate, High Address End	7	709	715	Actual To Node
Y Coordinate, High Address End	7	716	722	
Z Coordinate, High Address End	7	723	729	*Not Implemented*
Blockface ID	10	730	739	
Number of Travel Lanes on the Street	2	740	741	
Number of Parking Lanes on the Street	2	742	743	
Number of Total Lanes on the Street	2	744	745	
Street Width Maximum	3	746	748	
Filler	252	749	1000	
Reason Code	1	1001	1001	
Reason Code Qualifier	1	1002	1002	
Warning Code	2	1003	1004	
Return Code	2	1005	1006	
Number of Cross Streets at Low Address End	1	1007	1007	
List of Cross Streets at Low Address End (Up to 5 B7SCs)	40	1008	1047	B7SC - Blank Filled
No. of Cross Streets at High Address End	1	1048	1048	
List of Cross Streets at High Address End (Up to 5 B7SCs)	40	1049	1088	B7SC - Blank Filled
List of Cross Street Names at Low Address End	160	1089	1248	5 x 32 = 160 Up to 5 Street Names
List of Cross Street Names at High Address End	160	1249	1408	5 x 32 = 160 Up to 5 Street Names
BOE Preferred B7SC	8	1409	1416	
BOE Preferred Street Name	32	1417	1448	
Filler	52	1449	1500	
PROPERTY LEVEL INFORMATION (Based On Functions 1A, BL, BN Extended)				
Internal Use	21	1501	1521	
Continuous Parity Indicator / Duplicate Address Indicator	1	1522	1522	
Low House Number of Defining Address Range	11	1523	1533	Sort Format
BOROUGH BLOCK LOT (BBL):	10	1534	1543	Billing BBL if Condo
Borough Code	1	1534	1534	
Tax Block	5	1535	1539	

Work Area 2 (COW) - Function 1B (cont.)

Block Face Information Defined by Address Range Along a Street & Property Level Information Defined by Address

FIELD	SIZE	POSITION FROM	POSITION TO	COMMENT
Tax Lot	4	1540	1543	
Filler for Tax Lot Version Number	1	1544	1544	*Not Implemented*
RPAD Self-Check Code (SCC) for BBL	1	1545	1545	
Filler	1	1546	1546	
RPAD Building Classification Code	2	1547	1548	
Corner Code	2	1549	1550	
Number of Existing Structures on Lot	4	1551	1554	
Number of Street Frontages of Lot	2	1555	1556	
Interior Lot Flag	1	1557	1557	
Vacant Lot Flag	1	1558	1558	
Irregularly-Shaped Lot Flag	1	1559	1559	
Marble Hill/Rikers Island Alternate Borough Flag	1	1560	1560	
List of Geographic Identifiers Overflow Flag	1	1561	1561	When = 'E', there are more than 21 addrs for Fn 1B (based on Fn 1A)
STROLLING KEY:	19	1562	1580	*Not Implemented*
Borough	1	1562	1562	
5-Digit Street Code of ON- Street	5	1563	1567	
Side of Street Indicator	1	1568	1568	
High House Number	11	1569	1579	Sort Format
Filler	1	1580	1580	
Reserved for Internal Use	1	1581	1581	
Building Identification Number (BIN) of Input Address or NAP	7	1582	1588	
Condominium Flag	1	1589	1589	If condo, = ‘C’
Filler	1	1590	1590	
DOF Condominium Identification Number	4	1591	1594	
Condominium Unit ID Number	7	1595	1601	*Not Implemented*
Condominium Billing BBL	10	1602	1611	
Filler - Tax Lot Version No. Billing BBL	1	1612	1612	*Not Implemented*
Self-Check Code (SCC) of Billing BBL	1	1613	1613	
Low BBL of this Building’s Condominium Units	10	1614	1623	
Filler - Tax Lot Version No. of Low BBL	1	1624	1624	*Not Implemented*
High BBL of this Building’s	10	1625	1634	

Work Area 2 (COW) - Function 1B (cont.)

Block Face Information Defined by Address Range Along a Street & Property Level Information Defined by Address

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
Condominium Units				
Filler - Tax Log Version No. of High BBL	1	1635	1635	*Not Implemented*
Filler	15	1636	1650	
Cooperative ID Number	4	1651	1654	
SBVP (SANBORN MAP IDENTIFIER):	8	1655	1662	
Sanborn Borough Code	1	1655	1655	
Volume Number	2	1656	1657	
Volume Number Suffix	1	1658	1658	
Page Number	3	1659	1661	
Page Number Suffix	1	1662	1662	
DCP Commercial Study Area	5	1663	1667	
Tax Map Number Section & Volume	5	1668	1672	
Reserved for Tax Map Page Number	4	1673	1676	*Not Implemented*
Filler	3	1677	1679	
Latitude	9	1680	1688	
Longitude	11	1689	1699	
X-Y Coordinates of Lot Centroid	14	1700	1713	
Business Improvement District (BID)	6	1714	1719	
TPAD BIN Status	1	1720	1720	TPAD Request
TPAD New BIN	7	1721	1727	TPAD Request
TPAD New BIN Status	1	1728	1728	TPAD Request
TPAD Conflict Flag	1	1729	1729	TPAD Request
Filler	9	1730	1738	
Internal Use	8	1739	1746	
Reason Code	1	1747	1747	
Reason Code Qualifier	1	1748	1748	
Warning Code	2	1749	1750	
Return Code	2	1751	1752	
Filler	108	1753	1860	
Number of Entries in List of Geographic Identifiers	4	1861	1864	Maximum is 21
LIST OF GEOGRAPHIC IDENTIFIERS: Variable length list of up to 21 entries; each is 116 bytes long, structured as follows:	2436	1865	4300	Maximum is 21 entries. 21 x 116 = 2436
Low House Number	16	(1)	(16)	Display format
High House Number	16	(17)	(32)	Display format

Work Area 2 (COW) - Function 1B (cont.)

Block Face Information Defined by Address Range Along a Street & Property Level Information Defined by Address

FIELD	SIZE	POSITION FROM	POSITION TO	COMMENT
Borough Code	1	(33)	(33)	Start of B7SC
5-Digit Street Code	5	(34)	(38)	
DCP-Preferred Local Group Code (LGC)	2	(39)	(40)	
Building Identification Number	7	(41)	(47)	
Side of Street Indicator	1	(48)	(48)	L - Left, R - Right
Geographic Identifier Entry Type Code	1	(49)	(49)	N - NAP (Simplex) G - Complex NAP X - Constituent Entity of Complex NAP B - NAUB F - Frontage W - Blank Wall Q - Pseudo Address T - Tunnel U - Misc. Structure V - Vanity Address O - Out-of-Sequence Address Blank – Normal
TPAD BIN Status	1	(50)	(50)	TPAD Request
Street Name	32	(51)	(82)	
Filler	34	(83)	(116)	
* End of 116-byte entry *				
*** End of Work Area *** (4,300 bytes)				

Work Area 2 (COW) - Function AP

Address Point Information Defined by Address

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
Internal Use	21	1	21	
Continuous Parity Indicator /Duplicate Address Indicator	1	22	22	
Low House Number of Defining Address Range	11	23	33	Sort Format
BOROUGH BLOCK LOT (BBL):	10	34	43	Billing BBL if Condo
Borough Code	1	34	34	
Tax Block	5	35	39	
Tax Lot	4	40	43	
Filler	7	44	50	
Number of Existing Structures on Lot	4	51	54	
Filler	26	55	80	
Reserved for Internal Use	1	81	81	
Building Identification Number (BIN) of Input Address or NAP	7	82	88	
Condominium Flag	1	89	89	If condo, = ‘C’
Filler	1	90	90	
DOF Condominium Identification Number	4	91	94	
Filler	7	95	101	
Condominium Billing BBL	10	102	111	
Filler - Tax Lot Version No. for Billing BBL	1	112	112	*Not Implemented*
Filler	1	113	113	
LOW BBL OF THIS BUILDING’S CONDOMINIUM UNITS:	10	114	123	
Borough Code	1	114	114	Condo
Tax Block	5	115	119	
Tax Lot	4	120	123	
Filler for Tax Lot Version No. of Low BBL	1	124	124	*Not Implemented*
HIGH BBL OF THIS BUILDING’S CONDOMINIUM UNITS:	10	125	134	
Borough Code	1	125	125	Condo
Tax Block	5	126	130	
Tax Lot	4	131	134	
Filler for Tax Lot Version No. of High BBL	1	135	135	*Not Implemented*
Filler	15	136	150	
Cooperative ID Number	4	151	154	

Work Area 2 (COW) - Function AP (cont.)

Address Point Information Defined by Address

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
Filler	22	155	176	
Filler	3	177	179	
Latitude	9	180	188	
Longitude	11	189	199	
X-Y Coordinates of Address Point	14	200	213	
Filler	16	214	229	
Address Point ID	9	230	238	
List of 4 LGCs – Internal Use	8	239	246	Internal Use
Number of Entries in List of Geographic Identifiers	4	247	250	For Fn AP # is ‘0001’. Always ‘0001’
LIST OF GEOGRAPHIC IDENTIFIERS: For Function AP, the list contains one entry. Variable length list of up to 21 entries, each is 53 bytes long, structured as follows:	1113	251	1363	For Function AP – there is only 1 entry. (Potential Max of 21) 21x53 = 1,113
Low House Number	(16)	(1)	(16)	Display format
High House Number	(16)	(17)	(32)	Display format
Borough Code	(1)	(33)	(33)	Start of B7SC
5-Digit Street Code	(5)	(34)	(38)	Part of B7SC
DCP-Preferred Local Group Code (LGC)	(2)	(39)	(40)	End of B7SC
Building Identification Number (BIN)	(7)	(41)	(47)	
Side of Street Indicator	(1)	(48)	(48)	L - Left, R - Right
Geographic Identifier Entry Type Code	(1)	(49)	(49)	V - Vanity Address Blank - Normal
Filler	(4)	(50)	(53)	
* End of 53-byte entry *				
*** End of Work Area *** (1,363 bytes)				

Work Area 2 (COW) - Function AP Extended

Address Point Information Defined by Address

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
Same as Regular Work Area 2 – Function AP	1	1	246	
Reason Code	1	247	247	Same as Work Area 1
Reason Code Qualifier	1	248	248	Same as Work Area 1
Warning Code	2	249	250	Not used
Return Code (GRC)	2	251	252	Same as Work Area 1
Filler	108	253	360	
Number of Entries in List of Geographic Identifiers	4	361	364	Fn APX # is ‘0001’ Always ‘0001’
LIST OF GEOGRAPHIC IDENTIFIERS: For Function APX, the list contains one entry Variable length list of up to 21 entries; each is 116 bytes long, structured as follows:	2436	365	2800	For Function APX – there is only 1 entry. (Potential Max of 21) 21 x 116 = 2,436
Low House Number	(16)	(1)	(16)	Display format
High House Number	(16)	(17)	(32)	Display format
Borough Code	(1)	(33)	(33)	Start of B7SC
5-Digit Street Code	(5)	(34)	(38)	Part of B7SC
DCP-Preferred Local Group Code (LGC)	(2)	(39)	(40)	End of B7SC
Building Identification Number (BIN)	(7)	(41)	(47)	
Side of Street Indicator	(1)	(48)	(48)	L - Left, R - Right
Geographic Identifier Entry Type Code	(1)	(49)	(49)	V - Vanity Address Blank - Normal
Filler	(1)	(50)	(50)	
Street Name (Principal Street Name)	(32)	(51)	(82)	Based on B7SC in Address List
Filler	(34)	(83)	(116)	
* End of 116-byte entry *				
*** End of Work Area *** (2,800 bytes)				

Work Area 2 (COW) - Function 2

Intersection Defined by Two Intersecting Streets

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
Internal Use	21	1	21	
Intersection Replication Counter	1	22	22	
DCP-Preferred LGC for Street 1	2	23	24	
DCP-Preferred LGC for Street 2	2	25	26	
Number of Intersecting Streets	1	27	27	
List of Intersecting Streets (Up to five B5SCs, 6 bytes each)	30	28	57	
Compass Direction for Intersection Key or Counter for Multiple Intersections	1	58	58	
Atomic Polygon	3	59	61	Was Dynamic Block
Filler	2	62	63	
LION Node Number	7	64	70	
SPATIAL COORDINATES:	21	71	91	
X Coordinate	7	71	77	
Y Coordinate	7	78	84	
Reserved for possible Z Coordinate	7	85	91	
SBVP1 (SANBORN MAP IDENTIFIER):	8	92	99	
Borough Code	1	92	92	
Volume Number	2	93	94	
Volume Number Suffix	1	95	95	
Page Number	3	96	98	
Page Number Suffix	1	99	99	
SBVP2 (SANBORN MAP IDENTIFIER):	8	100	107	
Borough Code	1	100	100	
Volume Number	2	101	102	
Volume Number Suffix	1	103	103	
Page Number	3	104	106	
Page Number Suffix	1	107	107	
Marble Hill/Rikers Island Alternative Borough Flag	1	108	108	
DOT Street Light Contractor Area	1	109	109	
COMMUNITY DISTRICT:	3	110	112	
Community District Borough Code	1	110	110	
Community District Number	2	111	112	
ZIP Code	5	113	117	
Health Area	4	118	121	

Work Area 2 (COW) - Function 2 (cont.)

Intersection Defined by Two Intersecting Streets

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
Police Patrol Borough Command	1	122	122	
Police Precinct	3	123	125	
Fire Division	2	126	127	
Fire Battalion	2	128	129	
Fire Company Type	1	130	130	
Fire Company Number	3	131	133	
Community School District	2	134	135	
2010 Census Tract	6	136	141	
1990 Census Tract	6	142	147	
List of Pairs of Level Codes	10	148	157	*Not Implemented*
Police Patrol Borough	2	158	159	
Assembly District	2	160	161	
Congressional District	2	162	163	
State Senatorial District	2	164	165	
Civil Court District	2	166	167	
City Council District	2	168	169	
CD Eligibility	1	170	170	
Distance Between Duplicate Intersections	5	171	175	
2000 Census Tract	6	176	181	
Health Center District	2	182	183	
Sanitation District	3	184	186	
Sanitation Section/Subsection	2	187	188	
Filler	12	189	200	

Work Area 2 (COW) - Function 2W (Wide)

Intersection Defined by Two Intersecting Streets

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
Same as regular work area 2 for Function 2	200	1	200	
Filler	22	201	222	
LGC List for Street 1	8	223	230	
LGC List for Street 2	8	231	238	
Turn Restrictions	10	239	248	
Preferred LGCs for Intersecting B5SCs	10	249	258	
True Replication Counter	2	259	260	
List of Up To 20 7-Byte Nodes	140	261	400	GRC 03 / Reason B
B7SCs For The Above 20 Nodes – List of intersecting streets (B7SCs) for node list (8 byte street code * 4 LGCs * 5 streets * 20 nodes) - See table below for detail	3200	401	3600	GRC 03/ B See detail layout below.
Reason Code	1	3601	3601	
Reason Code Qualifier	1	3602	3602	
Warning Code	2	3603	3604	
Return Code	2	3605	3606	
Latitude	9	3607	3615	
Longitude	11	3616	3626	
Filler	374	3627	4000	

Detail of List of intersecting streets for node list (bytes 401-3600)

LIST OF B7SCS FOR EACH NODE IN NODE LIST (Up to 20 nodes, Up to 5 streets per node, Up to 4 LGCs per street, 8 bytes per B7SC) Each node is structured as follows:	3200	401	3600	GRC 03 /B generates bytes 261-400 & 401-3600 20x5x4x8=3,200
NODE 1 (entire node entry repeats 20 times) STREET 1 (entire street entry repeats 5 times) B7SC for LGC1 B7SC for LGC2 B7SC for LGC3 B7SC for LGC4 Note: The first 2 streets may have up to four LGCs defined. As of this release, the remaining 3 streets at each node may have only 1 LGC defined (resulting in 1 B7SC) and the remaining 3 blank.	(160) (32) (8) (8) (8) (8)	(1) (1) (1) (9) (17) (25)	(160) (32) (8) (16) (24) (32)	Each street has up to 4 B7SCs. (8x4=32 byte) Each node has up to 5 streets (32x5=160) Each situation has up to 20 nodes (160x20=3200)

Work Area 2 (COW) - Function 3

Street Segment Defined By 'On' and Two Cross Streets

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
Internal Use	21	1	21	
Duplicate Key Flag or Continuous Parity	1	22	22	
Locational Status of Segment	1	23	23	
County Boundary Indicator	1	24	24	
DCP-Preferred LGC for Street 1	2	25	26	‘On’ Street
DCP-Preferred LGC for Street 2	2	27	28	Input Cross Street with Lower B5SC value
DCP-Preferred LGC for Street 3	2	29	30	Input Cross Street with Higher B5SC value
Number of Cross Streets at Low Address End	1	31	31	
List of Cross Streets at Low Address End (Up to five B5SCs, 6 bytes each)	30	32	61	Blank Filled
Number of Cross Streets at High Address End	1	62	62	
List of Cross Streets at High Address End (Up to five B5SCs, 6 bytes each)	30	63	92	Blank Filled
Cross Street Reversal Flag	1	93	93	
LION KEY	10	94	103	
LION Borough Code	1	94	94	
LION Face Code	4	95	98	
LION Sequence Number	5	99	103	
Generated Record Flag	1	104	104	
Length of Segment in Feet	5	105	109	
Segment Azimuth	3	110	112	
Segment Orientation	1	113	113	
Marble Hill/Rikers Island Alternative Borough Flag	1	114	114	
From Node	7	115	121	
To Node	7	122	128	
DSNY Snow Priority Code	1	129	129	Dept. of Sanitation
Filler	4	130	133	
Segment Identifier	7	134	140	

Work Area 2 (COW) - Function 3 (cont.)

Street Segment Defined By 'On' and Two Cross Streets

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
DOT Street Light Contractor Area	1	141	141	
Curve Flag	1	142	142	
Dog Leg Flag	1	143	143	
Feature Type Code	1	144	144	
Segment Type Code	1	145	145	
Coincident Segment Count	1	146	146	
Filler	4	147	150	
LEFT SIDE:				
COMMUNITY DISTRICT:	3	151	153	
Community District Borough Code	1	151	151	
Community District Number	2	152	153	
Low House Number	16	154	169	Display Format
High House Number	16	170	185	Display Format
Future Use	32	186	217	
Community Development Eligibility Indicator	1	218	218	
ZIP Code	5	219	223	
Health Area	4	224	227	
Police Patrol Borough Command	1	228	228	
Police Precinct	3	229	231	
Fire Division	2	232	233	
Fire Battalion	2	234	235	
Fire Company Type	1	236	236	
Fire Company Number	3	237	239	
Community School District	2	240	241	
Atomic Polygon	3	242	244	Was Dynamic Block
Election District (ED)	3	245	247	
Assembly District (AD)	2	248	249	
Police Patrol Borough	2	250	251	
Filler	1	252	252	
Borough Code	1	253	253	
1990 Census Tract	6	254	259	
2010 Census Tract	6	260	265	
2010 Census Block	4	266	269	
2010 Census Block Suffix	1	270	270	*Not Implemented*
2000 Census Tract	6	271	276	

Work Area 2 (COW) - Function 3 (cont.)

Street Segment Defined By 'On' and Two Cross Streets

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
2000 Census Block	4	277	280	
2000 Census Block Suffix	1	281	281	
Filler	7	282	288	Was Blockface ID. See Function 3 Extended
Neighborhood Tabulation Area (NTA)	4	289	292	
Filler	8	293	300	
RIGHT SIDE:				
COMMUNITY DISTRICT:	3	301	303	
Community District Borough Code	1	301	301	
Community District Number	2	302	303	
Low House Number	16	304	319	Display Format
High House Number	16	320	335	Display Format
Future Use	32	336	367	
Community Development Eligibility Indicator	1	368	368	
ZIP Code	5	369	373	
Health Area	4	374	377	
Police Patrol Borough Command	1	378	378	
Police Precinct	3	379	381	
Fire Division	2	382	383	
Fire Battalion	2	384	385	
Fire Company Type	1	386	386	
Fire Company Number	3	387	389	
Community School District	2	390	391	
Atomic Polygon	3	392	394	Was Dynamic Block
Election District (ED)	3	395	397	
Assembly District (AD)	2	398	399	
Police Patrol Borough	2	400	401	
Filler	1	402	402	
Borough Code	1	403	403	Internal Use
1990 Census Tract	6	404	409	
2010 Census Tract	6	410	415	
2010 Census Block	4	416	419	
2010 Census Block Suffix	1	420	420	*Not Implemented*
2000 Census Tract	6	421	426	

Work Area 2 (COW) - Function 3 (cont.)

Street Segment Defined By 'On' and Two Cross Streets

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
2000 Census Block	4	427	430	
2000 Census Block Suffix	1	431	431	
Filler	7	432	438	Was Blockface ID See Function 3 Extended
Neighborhood Tabulation Area (NTA)	4	439	442	
Filler	8	443	450	

Work Area 2 (COW) - Function 3 with Auxiliary Segment List

Street Segment Defined By 'On' and Two Cross Streets (List of Segment IDs)

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
Same as Regular Work Area 2 for Function 3	450	1	450	
Filler	6	451	456	
Segment Count	4	457	460	Number of Segments
Segment IDs	490	461	950	Up to 70 Segment IDs 7 bytes each; 7 x 70 = 490

Work Area 2 (COW) - Function 3 Extended

Street Segment Defined By 'On' and Two Cross Streets

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
Same as Regular Work Area 2 Function 3	450	1	450	
List of 4 LGCs for Street 1	8	451	458	‘On’ Street
List of 4 LGCs for Street 2	8	459	466	Input Cross Street with Lower B5SC
List of 4 LGCs for Street 3	8	467	474	Input Cross Street with Higher B5SC
Left Health Center District	2	475	476	
Right Health Center District	2	477	478	
Filler	1	479	479	Was Split Comm Schl District Flag
Traffic Direction	1	480	480	
Roadway Type	2	481	482	
Physical ID	7	483	489	
Generic ID	7	490	496	
NYPD ID	7	497	503	
FDNY ID	7	504	510	
Street Status	1	511	511	
Street Width	3	512	514	
Street Width Irregular	1	515	515	*Not Implemented*
Bike Lane	1	516	516	Will be retired. See Bike Lane 2
Federal Classification Code	2	517	518	*Not Implemented*
Right of Way Type	1	519	519	
List of 5 Additional LGCs for Street 1	10	520	529	*Not Implemented*
Legacy ID	7	530	536	
Left NTA Name	75	537	611	
Right NTA Name	75	612	686	
FROM SPATIAL COORDINATES:	14	687	700	From Node
From X Coordinate	7	687	693	
From Y Coordinate	7	694	700	
TO SPATIAL COORDINATES:	14	701	714	To Node
To X Coordinate	7	701	707	
To Y Coordinate	7	708	714	
Latitude of From Intersection	9	715	723	

Work Area 2 (COW) - Function 3 Extended (cont.)

Street Segment Defined By 'On' and Two Cross Streets

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
Longitude of From Intersection	11	724	734	
Latitude of To Intersection	9	735	743	
Longitude of To Intersection	11	744	754	
Left Blockface ID	10	755	764	
Right Blockface ID	10	765	774	
Number of Travel Lanes on the Street	2	775	776	
Number of Parking Lanes on the Street	2	777	778	
Number of Total Lanes on the Street	2	779	780	
Bike Lane 2	2	781	782	
Street Width Maximum	3	783	785	
Bike Traffic Direction	2	786	787	
Filler	213	788	1000	

Work Area 2 (COW) - Function 3 Extended with Auxiliary Segment List

Street Segment Defined by 'On' and Two Cross Streets

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
Same as Work Area 2 for Function 3 Extended	1000	1	1000	
Filler	6	1001	1006	
Segment Count	4	1007	1010	Number of Segments
Segment IDs	490	1011	1500	Up to 70 Segment IDs 7 bytes each; 7 x 70 = 490

Work Area 2 (COW) - Function 3C

Block Face Defined by 'On' and Two Cross Streets and Compass Direction

FIELD	SIZE	POSITION FROM	POSITION TO	COMMENT
Internal Use	21	1	21	
Duplicate Key Flag or Continuous Parity	1	22	22	
Locational Status of Segment	1	23	23	
County Boundary Indicator	1	24	24	
DCP-Preferred LGC for Street 1	2	25	26	‘On’ Street
DCP-Preferred LGC for Street 2	2	27	28	Input Cross Street with Lower B5SC value
DCP-Preferred LGC for Street 3	2	29	30	Input Cross Street with Higher B5SC value
No. of Cross Streets at Low Addr End	1	31	31	
List of Cross Streets at Low Address End (Up to five B5SCs, 6 bytes each)	30	32	61	Blank Filled
No. of Cross Streets at High Addr End	1	62	62	
List of Cross Streets at High Address End (Up to five B5SCs, 6 bytes each)	30	63	92	Blank Filled
Cross Street Reversal Flag	1	93	93	
LION KEY	10	94	103	
LION Borough Code	1	94	94	
LION Face Code	4	95	98	
LION Sequence Number	5	99	103	
Generated Record Flag	1	104	104	
Length of Segment in Feet	5	105	109	
Segment Azimuth	3	110	112	
Segment Orientation	1	113	113	
Marble Hill/Rikers Island Alternative Borough Flag	1	114	114	
From Node	7	115	121	
To Node	7	122	128	
DSNY Snow Priority Code	1	129	129	Dept. of Sanitation
Filler	4	130	133	
Segment Identifier	7	134	140	
DOT Street Light Contractor Area	1	141	141	
Side-of-Street Indicator	1	142	142	

Work Area 2 (COW) - Function 3C (cont.)

Block Face Defined by 'On' and Two Cross Streets and Compass Direction

FIELD	SIZE	POSITION FROM	POSITION TO	COMMENT
Curve Flag	1	143	143	
Feature Type Code	1	144	144	
Segment Type Code	1	145	145	
Coincident Segment Count	1	146	146	
Filler	4	147	150	
COMMUNITY DISTRICT:	3	151	153	
Community District Borough Code	1	151	151	
Community District Number	2	152	153	
Low House Number	16	154	169	Display Format
High House Number	16	170	185	Display Format
Future Use	32	186	217	
Community Development Eligibility Indicator	1	218	218	
ZIP Code	5	219	223	
Health Area	4	224	227	
Police Patrol Borough Command	1	228	228	
Police Precinct	3	229	231	
Fire Division	2	232	233	
Fire Battalion	2	234	235	
Fire Company Type	1	236	236	
Fire Company Number	3	237	239	
Community School District	2	240	241	
Atomic Polygon	3	242	244	Was Dynamic Block
Election District (ED)	3	245	247	
Assembly District (AD)	2	248	249	
Police Patrol Borough	2	250	251	
Filler	1	252	252	
Borough Code	1	253	253	Internal Use
1990 Census Tract	6	254	259	
2010 Census Tract	6	260	265	
2010 Census Block	4	266	269	
2010 Census Block Suffix	1	270	270	*Not Implemented*
2000 Census Tract	6	271	276	
2000 Census Block	4	277	280	
2000 Census Block Suffix	1	281	281	
Filler	7	282	288	Was Blockface ID See Function 3C Extended
Neighborhood Tabulation Area (NTA)	4	289	292	

Work Area 2 (COW) - Function 3C (cont.)

Block Face Defined by 'On' and Two Cross Streets and Compass Direction

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
Filler	8	293	300	

Work Area 2 (COW) - Function 3C with Auxiliary Segment List

Block Face Defined by 'On' and Two Cross Streets and Compass Direction

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
Same as Regular Work Area 2 for Function 3C	300	1	300	
Filler	6	301	306	
Segment Count	4	307	310	Number of Segments
Segment IDs	490	311	800	Up to 70 Segment IDs; 7 bytes each 7 x 70 = 490

Work Area 2 (COW) - Function 3C Extended

Block Face Defined by 'On' Street, Two Cross Streets and Compass Direction

FIELD	SIZE	POSITION FROM	POSITION TO	COMMENT
Same as Regular Work Area 2 Function 3C	300	1	300	
List of 4 LGCs for Street 1	8	301	308	‘On’ Street
List of 4 LGCs for Street 2	8	309	316	Input Cross Street with Lower B5SC
List of 4 LGCs for Street 3	8	317	324	Input Cross Street with Higher B5SC
Left Health Center District	2	325	326	
Right Health Center District	2	327	328	
Filler	1	329	329	Was Split Community School District Flag
Traffic Direction	1	330	330	
Roadway Type	2	331	332	
Physical ID	7	333	339	
Generic ID	7	340	346	
NYPD ID	7	347	353	
FDNY ID	7	354	360	
Street Status	1	361	361	
Street Width	3	362	364	
Street Width Irregular	1	365	365	*Not Implemented*
Bike Lane	1	366	366	Will be retired. See Bike Lane 2
Federal Classification Code	2	367	368	*Not Implemented*
Right Of Way Type	1	369	369	
List of 5 Additional LGCs for Street 1	10	370	379	*Not Implemented*
Legacy ID	7	380	386	
NTA Name	75	387	461	
FROM SPATIAL COORDINATES:	14	462	475	From Node
From X Coordinate	7	462	468	
From Y Coordinate	7	469	475	
TO SPATIAL COORDINATES:	14	476	489	To Node
To X Coordinate	7	476	482	
To Y Coordinate	7	483	489	
Latitude of From Intersection	9	490	498	From Node
Longitude of From Intersection	11	499	509	
Latitude of To Intersection	9	510	518	To Node

Work Area 2 (COW) - Function 3C Extended (cont.)

Block Face Defined by 'On' Street, Two Cross Streets and Compass Direction

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
Longitude of To Intersection	11	519	529	
Blockface ID	10	530	539	
Number of Travel Lanes on the Street	2	540	541	
Number of Parking Lanes on the Street	2	542	543	
Number of Total Lanes on the Street	2	544	545	
Bike Lane 2	2	546	547	
Street Width Maximum	3	548	550	
Bike Traffic Direction	2	551	552	
Filler	298	553	850	

Work Area 2 (COW) - Function 3C Extended with Auxiliary Segment List

Street Segment Defined By 'On' Street and Two Cross Streets

FIELD	SIZE	POSITION		COMMENT
		FROM	TO	
Same as Work Area 2 for Function 3C Extended	850	1	850	
Filler	6	851	856	
Segment Count	4	857	860	Number of Segments
Segment IDs	490	861	1350	Up to 70 Segment IDs 7 bytes each 7 x 70 = 490

Work Area 2 (COW) - Function 3S

Street Stretch Defined by 'On' Street and Optionally Two Cross Streets

FIELD	SIZE	POSITION FROM	POSITION TO	COMMENT
Internal Use	2	1	2	
Generic/Roadbed Street Name Indicator	1	3	3	G - Generic R - Roadbed
Borough Code	1	4	4	
5-Digit Street Code of 'On' Street	5	5	9	
LGC	2	10	11	
Filler	10	12	21	Always Blank
Number of Intersections	3	22	24	Maximum of 350
LIST OF INTERSECTIONS: Variable length list of up to 350 entries; each is 55 bytes long, structured as follows:	19250	25	19274	Max. of 350 entries, each 55 bytes long: 350 x 55 = 19,250
Marble Hill/Rikers Island Flag	(1)	(1)	(1)	
Distance from previous intersection in list	(5)	(2)	(60	
Gap Flag	(1)	(7)	(7)	
Node Number	(7)	(8)	(14)	
Number of streets at this intersection	(1)	(15)	(15)	
List of Cross Streets at this Intersection (Up to 5 B7SCs)	(40)	(16)	(55)	B7SC = B5SC + DCP Preferred LGC
* End of 55-byte entry *				
*** End of Work Area *** (19,274 bytes)				

APPENDIX 14: GEOSUPPORT COPY FILES (COW)

This appendix contains printouts of the Geosupport COW COPY files for COBOL, Assembler, PL/1, C and NATURAL. (For C, COPY files take the form of header files. For NATURAL, COPY files take the form of Local Data Areas.)

The Geosupport COPY files contain source code layouts of the Geosupport work areas. These files are stored in a COPY library that can be accessed by user application programs at compile time. Each supported programming language has an appropriate declarative statement for referencing COPY files at compile time. The Geosupport COPY files are listed in the following table.

GEOSUPPORT SYSTEM WORK AREA COPY FILES (COW)

Table 14-1: COW COPY Files for COBOL, Assembler, PL/1, C and NATURAL

COW WORK AREA	FUNCTION(S)	LENGTH (bytes)	COPY File Name COBOL	ASSEMBLER	PL/1	C	NATURAL
WA1	All	1,200	P1COB	P1BAL	P1PL1	PAC	GEOLP1
WA2	1 & 1E (Regular WA2), 3C (Regular WA2)	300	P2COB	P2BAL	P2PL1	PAC	GEOLP2
WA2	2	200	P2COB	P2BAL	P2PL1	PAC	GEOLP2
WA2	3 (Regular WA2)	450	P2COB	P2BAL	P2PL1	PAC	GEOLP2
WA2	3 (WA2 with AUXSEG option)	950	P2COB	P2BAL	P2PL1	PAC	GEOLP2
WA2	3C (WA2 with AUXSEG option)	800	P2COB	P2BAL	P2PL1	PAC	GEOLP2
WA2	3 (Extended WA2)	1,000	P2COB	P2BAL	P2PL1	PAC	GEOLP2
WA2	3C (Extended WA2)	850	P2COB	P2BAL	P2PL1	PAC	GEOLP2
WA2	3 (Extended WA2 w/AUXSEG)	1,500	P2COB	P2BAL	P2PL1	PAC	GEOLP2
WA2	3C (Extended WA2 w/AUXSEG)	1,350	P2COB	P2BAL	P2PL1	PAC	GEOLP2
WA2	1A & BL (Regular WA2), BN (*)	1,363	P2COB1A	P2BAL1A	P2PL11A	PAC	GEOLP21A
WA2	1A & BL (Long WA2) (**) 1A & BL (TPAD Long WA2) (***)	17,750	P2COB1AL	P2BAL1A	P2PL11AL	PAC	GEOLP2AL
WA2	1A & BL & BN (Extended WA2) (****)	2,800	P2COB1AL	P2BAL1A	P2PL11AL	PAC	GEOLP2AL

COW WORK AREA	FUNCTION(S)	LENGTH (bytes)	- - - - - - - - - - - - - **COPY File Name** - - - - - - - - - - - - - -				
			COBOL	ASSEMBLER	PL/1	C	NATURAL
WA2	1 & 1E (Extended WA2)	1,500	P2COB1AL	P2BAL1A	P2PL11AL	PAC	GEOLP2AL
WA2	1B	4,300	P2COB1AL	P2BAL1A	P2PL11AL	PAC	GEOLP2AL
WA2	3S	19,274	P2COB3S	P2BAL3S	P2PL13S	PAC	GEOLP23S
WA2	AP	1,363	P2COBAP	P2BALAP	P2PL1AP	PAC	GEOL2AP
WA2	AP (Extended WA2)	2,800	P2COBAP	P2BALAP	P2PL1AP	PAC	GEOL2APX

(*) Functions 1A, BL and BN share a single regular WA2 layout.
(**) Functions 1A and BL share a single long WA2 layout. (Function BN has no long WA2 option.).
(***) Functions 1A and BL share a single TPAD long WA2 layout. (Function BN has no TPAD long WA2 option.).
(****) Functions 1A, BL and BN share a single extended WA2 layout.

See Section VIII.4 for a detailed discussion of the Geosupport COPY feature.

COBOL COPY Files (COW)

P1COB COPY File

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*****************************************************************   00010010
**** LAST UPDATED OCTOBER 2016                               ***   00020021
**** OCT. 2016 ADDED UNIT IN INPUT AND OUTPUT V16.4          ***   00020121
**** THIS IS THE COBOL STRUCTURE FOR GEOSUPPORT SYSTEM PLATFORM ***   00021021
**** INDEPENDENT WORK AREA 1.                                ***   00030010
**** COPY FILE - P1COB.                          04/07/98    ***   00040010
*****************************************************************   00050010
****              INPUT FIELDS                              ****   00060010
*****************************************************************   00070010
         05  PIWA1-IN-FUNC-CODE                PIC X(2).            00080010
         05  GEO-WA1-IN-FUNCTION-CODE REDEFINES PIWA1-IN-FUNC-CODE.   00090010
            10  GEO-WA1-IN-FUNCTION-1          PIC X.               00100010
            10  GEO-WA1-IN-FUNCTION-2          PIC X.               00110010
         05  PIWA1-IN-HOUSENUM-DISPLAY         PIC X(16).           00120010
         05  GEO-WA1-IN-HOUSENUM-DISPLAY REDEFINES                  00130010
             PIWA1-IN-HOUSENUM-DISPLAY.                             00140010
           10  GEO-WA1-IN-HOUSENUM             PIC X(12).           00150010
           10  FILLER                          PIC X(4).            00160010
         05  PIWA1-IN-HOUSENUM-SORT            PIC X(11).           00170010
         05  PIWA1-IN-LOW-HOUSENUM-DISPLAY     PIC X(16).           00180010
         05  GEO-WA1-IN-LO-HOUSENUM-DISPLAY REDEFINES               00190010
             PIWA1-IN-LOW-HOUSENUM-DISPLAY.                         00200010
           10  GEO-WA1-IN-LOW-HOUSENUM         PIC X(12).           00210010
           10  FILLER                          PIC X(4).            00220010
         05  PIWA1-IN-LOW-HOUSENUM-SORT        PIC X(11).           00230010
         05  GEO-WA1-IN-10SC-1.                                     00240010
           10  GEO-WA1-IN-BORO                 PIC X.               00250010
           10  PIWA1-IN-10SC-1                 PIC X(10).           00260010
         05  GEO-WA1-IN-STREET-1               PIC X(32).           00270010
         05  GEO-WA1-IN-10SC-2.                                     00280010
           10  GEO-WA1-IN-BORO-2               PIC X.               00290010
           10  PIWA1-IN-10SC-2                 PIC X(10).           00300010
         05  GEO-WA1-IN-STREET-2               PIC X(32).           00310010
         05  GEO-WA1-IN-10SC-3.                                     00320010
           10  GEO-WA1-IN-BORO-3               PIC X.               00330010
           10  PIWA1-IN-10SC-3                 PIC X(10).           00340010
         05  GEO-WA1-IN-STREET-3               PIC X(32).           00350010
         05  GEO-WA1-IN-BBL.                                        00360010
            10  GEO-WA1-IN-BL-BORO             PIC X.               00370010
            10  GEO-WA1-IN-BLOCKNUM            PIC X(5).            00380010
            10  GEO-WA1-IN-LOTNUM              PIC X(5).            00390010
         05  PIWA1-IN-BIN                      PIC X(7).            00400010
         05  GEO-WA1-IN-COMPASS.                                    00410010
           10  PIWA1-IN-COMPASS1               PIC X.               00420010
           10  PIWA1-IN-COMPASS2               PIC X.               00430010
         05  PIWA1-IN-NODE                     PIC X(7).            00440018
         05  GEO-WA1-IN-NON-IBM-MAIN-FRAME     PIC X(1).            00450010
         05  GEO-WA1-IN-ZIPIN                  PIC X(5).            00460010
         05  GEO-WA1-IN-UNIT                   PIC X(14).           00471021
         05  FILLER                            PIC X(82).           00471121
   ***** 05  FILLER   V16.4                    PIC X(96).           00472021
         05  GEO-WA1-IN-LONG-WORKAREA2-FLAG    PIC X.               00480010
         05  PIWA1-IN-HSE-NBR-JUSTIFY          PIC X.               00490010
         05  PIWA1-IN-HNL                      PIC X(2).            00500010
         05  PIWA1-IN-HSE-NBR-OVER-FLAG        PIC X.               00510010
         05  GEO-WA1-IN-SNL                    PIC X(2).            00520010
         05  GEO-WA1-IN-COMPACT-NAME-FLAG      PIC X.               00530010
         05  GEO-WA1-IN-XSTREET-FLAG           PIC X.               00540010
         05  PIWA1-IN-ROADBED-REQ-SWITCH       PIC X.               00550010
         05  PIWA1-IN-INTERNAL-USE-LEGACY      PIC X.               00560010
         05  PIWA1-IN-SEGAUX-SWITCH            PIC X.               00570010
         05  PIWA1-IN-BROWSE-FLAG              PIC X.               00580010
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           05  PIWA1-IN-REAL-STREET-ONLY           PIC X.                 00590010
           05  PIWA1-IN-TPAD-SWITCH                PIC X.                 00600010
           05  PIWA1-IN-MODE-SWITCH                PIC X.                 00601013
           05  PIWA1-IN-WTO-SWITCH                 PIC X.                 00602016
           05  FILLER                              PIC X(29).             00610017
      ******************************************************************  00620010
      *****             OUTPUT FIELDS                               *****  00630010
      ******************************************************************  00640010
           05  GEO-WA1-OUT-BORONAME                PIC X(9).              00650010
           05  PIWA1-OUT-HOUSENUM-DISPLAY          PIC X(16).             00660010
           05  GEO-WA1-OUT-HOUSENUM-DISPLAY REDEFINES                     00670010
               PIWA1-OUT-HOUSENUM-DISPLAY.                                00680010
             10  GEO-WA1-OUT-HOUSENUM              PIC X(12).             00690010
             10  FILLER                            PIC X(4).              00700010
           05  PIWA1-OUT-HOUSENUM-SORT             PIC X(11).             00710010
           05  GEO-WA1-OUT-10SC-1                  PIC X(11).             00720010
           05  GEO-WA1-OUT-STREET-1                PIC X(32).             00730010
           05  GEO-WA1-OUT-10SC-2                  PIC X(11).             00740010
           05  GEO-WA1-OUT-STREET-2                PIC X(32).             00750010
           05  GEO-WA1-OUT-10SC-3                  PIC X(11).             00760010
           05  GEO-WA1-OUT-STREET-3                PIC X(32).             00770010
           05  GEO-WA1-OUT-BBL.                                           00780010
              10  GEO-WA1-OUT-BBL-BORO             PIC X.                 00790010
              10  GEO-WA1-OUT-BLOCKNUM             PIC X(5).              00800010
              10  GEO-WA1-OUT-LOTNUM               PIC X(5).              00810010
           05  PIWA1-OUT-LOW-HN-DISPLAY            PIC X(16).             00820010
           05  GEO-WA1-OUT-LOW-HN-DISPLAY REDEFINES                       00830010
               PIWA1-OUT-LOW-HN-DISPLAY.                                  00840010
             10  GEO-WA1-OUT-LOW-HOUSENUM          PIC X(12).             00850012
             10  FILLER                            PIC X(4).              00860010
           05  PIWA1-OUT-LOW-HN-SORT               PIC X(11).             00870010
           05  GEO-WA1-OUT-BIN                     PIC X(7).              00880010
           05  GEO-WA1-OUT-STREET-ATTR OCCURS 3 TIMES PIC X.              00890010
           05  GEO-WA1-OUT-REASON-CODE2            PIC X.                 00891013
           05  GEO-WA1-OUT-REASON-CODE-QUAL-2      PIC X.                 00891115
           05  GEO-WA1-OUT-WARNING-CODE2           PIC XX.                00893013
           05  GEO-WA1-OUT-RETURN-CODE2.                                  00894013
              10  GEO-WA1-OUT-RC2-1                PIC X.                 00895013
              10  GEO-WA1-OUT-RC2-2                PIC X.                 00896013
           05  GEO-WA1-OUT-ERROR-MESSAGE2          PIC X(80).             00897013
           05  PIWA1-OUT-NODE                      PIC X(7).              00899019
           05  PIWA1-OUT-UNIT-SORT.                                       00899122
              10  PIWA1-OUT-UNIT-TYPE              PIC X(4).              00899221
              10  PIWA1-OUT-UNIT-ID                PIC X(10).             00899321
           05  PIWA1-OUT-UNIT-DISP                 PIC X(14).             00899421
           05  FILLER                              PIC X(17).             00900021
      *****05  FILLER   V16.4                      PIC X(45).             00901021
           05  GEO-WA1-OUT-SND-ATTR                PIC X.                 00910010
           05  GEO-WA1-OUT-REASON-CODE             PIC X.                 00920010
           05  GEO-WA1-OUT-REASON-CODE-QUAL        PIC X.                 00921014
           05  GEO-WA1-OUT-WARNING-CODE            PIC XX.                00940010
           05  GEO-WA1-OUT-RETURN-CODE.                                   00950010
              10  GEO-WA1-OUT-RC-1                 PIC X.                 00960010
              10  GEO-WA1-OUT-RC-2                 PIC X.                 00970010
           05  GEO-WA1-OUT-ERROR-MESSAGE           PIC X(80).             00980010
           05  PIWA1-OUT-NUM-SIMILAR-STRS          PIC X(2).              00990010
           05  PIWA1-OUT-SIMILAR-B7SC              PIC X(8)               01000010
                             OCCURS 10 TIMES.                             01010010
           05  GEO-WA1-OUT-SIMILAR-NAMES           PIC X(32)              01020010
                             OCCURS 10 TIMES.                             01030010
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P2COB COPY File

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*******************************************************************
****                     P2COB                                  **
****            LAST MODIFIED DECEMBER 2016                     **
**** ADD NEW 2 BYTE BIKE TRAFFIC DIRECTION    YNL 12/16 V17,1   **
**** THIS IS THE COBOL- STRUCTURE FOR GEOSUPPORT SYSTEM PLATFORM**
**** INDEPENDENT WORK AREA 2 FOR FUNCTIONS: 1, 1E, 2, 2C, 3,    **
**** 3C, AND 5.                                                 **
****                                                            **
**** COPY FILE - P2COB.                                         **
**** PLEASE NOTE THAT FUNCTIONS 1 AND 1E SHARE A SINGLE         **
**** WORK AREA 2 LAYOUT, AND FUNCTIONS 2 AND 2C ALSO            **
**** SHARE A SINGLE WORK AREA 2 LAYOUT.            04/03/01     **
*******************************************************************
****                LAST MODIFIED FEBRUARY 2016                 **
*******************************************************************

       05  PIWA2                              PIC X(7000).

*******************************************************************
****     FOR: FUNCTIONS 1 & 1E      *****************************

       05  PIWA2-FUNCTION1   REDEFINES PIWA2.
          10  GEO-WA2-FN1-ACCESS-KEY          PIC X(21).
          10  GEO-WA2-FN1-CONT-PARITY         PIC X.
          10  PIWA2-FN1-LOW-HOUSENUM-SORT     PIC X(11).
          10  PIWA2-FN1-HI-HOUSENUM-SORT      PIC X(11).
          10  GEO-WA2-FN1-PREFERRED-LGC       PIC X(2).
          10  GEO-WA2-FN1-NUM-X-ST-LOW-END    PIC X.
          10  PIWA2-FN1-LOW-B5SC              PIC X(6)
                                                OCCURS 5 TIMES.
          10  GEO-WA2-FN1-NUM-X-ST-HI-END       PIC X.
          10  PIWA2-FN1-HI-B5SC               PIC X(6)
                                                OCCURS 5 TIMES.
          10  PIWA2-FN1-LIONKEY.
              15  PIWA2-FN1-LION-BORO         PIC X.
              15  GEO-WA2-FN1-LIONFACECODE    PIC X(4).
              15  GEO-WA2-FN1-LIONSEQ         PIC X(5).
          10  GEO-WA2-FN1-SPECIAL-ADDR-FLAG   PIC X(1).
          10  PIWA2-FN1-SIDE-OF-STR           PIC X.
          10  GEO-WA2-FN1-SEGMENTLENGTH       PIC X(5).
          10  GEO-WA2-FN1-XCOORD              PIC X(7).
          10  GEO-WA2-FN1-YCOORD              PIC X(7).
          10  FILLER-GSS                      PIC X(8).
          10  GEO-WA2-FN1-MARBLE-RIKER-FLAG   PIC X(1).
          10  GEO-WA2-FN1-SLA                 PIC X.
          10  GEO-WA2-FN1-COMDIST.
              15  GEO-WA2-FN1-COMDIST-BORO    PIC X(1).
              15  GEO-WA2-FN1-COMDIST-NUMBER  PIC X(2).
          10  GEO-WA2-FN1-ZIP                 PIC X(5).

 ***  THE FN1E FIELDS ARE VALID ONLY FOR FUNCTION 1E, NOT FUNC 1.**
          10  GEO-WA2-FN1E-ELECTDIST          PIC X(3).
          10  GEO-WA2-FN1E-ASSEMDIST          PIC X(2).
          10  GEO-WA2-FN1E-SPLIT-ED-FLAG      PIC X(1).
          10  GEO-WA2-FN1E-CONGDIST           PIC X(2).
          10  GEO-WA2-FN1E-SENATEDIST         PIC X(2).
          10  GEO-WA2-FN1E-COURTDIST          PIC X(2).
          10  GEO-WA2-FN1E-COUNCILDIST        PIC X(2).

          10  GEO-WA2-FN1-HCD                 PIC X(2).
          10  GEO-WA2-FN1-HEALTHAREA          PIC X(4).
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             10  GEO-WA2-FN1-SANIDIST.                                  00590032
                 15  GEO-WA2-FN1-SANIDIST-BORO   PIC X(1).              00600032
                 15  GEO-WA2-FN1-SANIDIST-NUMBER PIC X(2).              00610032
             10  GEO-WA2-FN1-SANITATION-SUBSEC   PIC X(2).              00620032
             10  GEO-WA2-FN1-SANI-REG            PIC X(5).              00630032
             10  GEO-WA2-FN1-SANI-REC            PIC X(3).              00640032
             10  GEO-WA2-FN1-POLICEDIST.                                00650032
                15 GEO-WA2-FN1-POL-PATR-BORO-CMD PIC X(1).              00660032
                15 GEO-WA2-FN1-POL-PRECINCT      PIC X(3).              00670032
     ** NOTE:10  GEO-WA2-FN1-FIRESEC ==> FIRE DIVISION **               00680032
             10  GEO-WA2-FN1-FIRESEC             PIC X(2).              00690032
             10  GEO-WA2-FN1-FIREBAT             PIC X(2).              00700032
             10  GEO-WA2-FN1-FIRECO.                                    00710032
                 15  GEO-WA2-FN1-FIRECO-TYPE     PIC X(1).              00720032
                 15  GEO-WA2-FN1-FIRECO-NUM      PIC X(3).              00730032
     ***     NEXT LINE WAS PREVIOUSLY SPLIT SCHOOL FLAG                 00731044
             10  GEO-WA2-FN1-FILL-SCHOOL-FLAG    PIC X.                 00740044
             10  GEO-WA2-FN1-SCHOOLDIST          PIC X(2).              00750032
             10  GEO-WA2-FN1-DYN-BLOCK           PIC X(3).              00760032
             10  PIWA2-FN1-POLICE-PAT-BORO       PIC X(2).              00770073
             10  GEO-WA2-FN1-FEATURE-TYPE        PIC X.                 00790032
             10  GEO-WA2-FN1-SEGMENT-TYPE        PIC X.                 00800032
             10  GEO-WA2-FN1-ALX                 PIC X.                 00810032
             10  GEO-WA2-FN1-COINCIDENT-CNT      PIC X.                 00820032
             10  FILLER                          PIC X(2).              00830058
             10  PIWA2-FN1-CENS-TRCT-BORO        PIC X.                 00840158
             10  GEO-WA2-FN1-1990-CENSUSTRACT    PIC X(6).              00841058
             10  GEO-WA2-FN1-2010-CENS-TRCT      PIC X(6).              00850035
             10  GEO-WA2-FN1-2010-CENS-BLK       PIC X(4).              00860035
             10  GEO-WA2-FN1-2010-CENS-BLK-SFX   PIC X.                 00870035
             10  GEO-WA2-FN1-2000-CENS-TRACT     PIC X(6).              00890035
             10  GEO-WA2-FN1-2000-CENS-BLOCK     PIC X(4).              00900035
             10  GEO-WA2-FN1-2000-CENS-BLK-SUF   PIC X.                 00910035
             10  GEO-WA2-FN1-NTA                 PIC X(4).              00911050
             10  GEO-WA2-FN1-SANIT-SNOW-PRRTY    PIC X.                 00912050
             10  PIWA2-FN1-SANIT-ORGANICS        PIC X(5).              00922061
             10  PIWA2-FN1-SANIT-BULK-PICK-UP    PIC X(5).              00924080
     **V16.4 10  PIWA2-FN1-SANIT-RESERVED        PIC X(5).              00924180
             10  PIWA2-FN1-HURRICANE-ZONE        PIC XX.                00925072
             10  FILLER                          PIC X(11).             00926072
             10  GEO-WA2-FN1-TRUE-HNS            PIC X(11).             00930032
             10  GEO-WA2-FN1-TRUE-B7SC           PIC X(8).              00940032
             10  GEO-WA2-FN1-SEG-ID              PIC X(7).              00950032
             10  GEO-WA2-FN1-CURVE-FLAG          PIC X(1).              00960032
                                                                        00970032
   ******************************************************************   00980032
   ****     FOR: FUNCTIONS 2        **********************************   00990032
                                                                        01000032
          05  PIWA2-FUNCTION2   REDEFINES PIWA2.                        01010032
             10  PIWA2-FN2-ACCESS-KEY            PIC X(21).             01020032
             10  GEO-WA2-FN2-DUPINTERFLAG        PIC X.                 01030032
             10  GEO-WA2-FN2-PREFERRED-LGC1      PIC X(2).              01040032
             10  GEO-WA2-FN2-PREFERRED-LGC2      PIC X(2).              01050032
             10  GEO-WA2-FN2-NUM-OF-INTERSECTS   PIC X.                 01060032
             10  PIWA2-FN2-INTERSECT-B5SC        PIC X(6)               01070032
                                                 OCCURS 5 TIMES.        01080032
             10  GEO-WA2-FN2-COMPDIR             PIC X.                 01090032
             10  GEO-WA2-FN2-ATOMIC-POLYGON      PIC X(3).              01091064
             10  FILLER                          PIC X(2).              01100057
             10  GEO-WA2-FN2-NODE-NUM            PIC X(7).              01110032
             10  GEO-WA2-FN2-XCOORD              PIC X(7).              01120032
             10  GEO-WA2-FN2-YCOORD              PIC X(7).              01130032
             10  FILLER-GSS                      PIC X(7).              01140032
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           10  GEO-WA2-FN2-SANBORN1-BVOLPAGE.                               01150032
              15 GEO-WA2-FN2-SANBORN1-BORO     PIC X(1).                    01160032
              15 GEO-WA2-FN2-SANBORN1-VOL-NUM  PIC X(3).                    01170032
              15 GEO-WA2-FN2-SANBORN1-PAGE-NUM PIC X(4).                    01180032
           10  GEO-WA2-FN2-SANBORN2-BVOLPAGE.                               01190032
              15 GEO-WA2-FN2-SANBORN2-BORO     PIC X(1).                    01200032
              15 GEO-WA2-FN2-SANBORN2-VOL-NUM  PIC X(3).                    01210032
              15 GEO-WA2-FN2-SANBORN2-PAGE-NUM PIC X(4).                    01220032
           10  GEO-WA2-FN2-MARBLE-RIKER-FLAG   PIC X(1).                    01230032
           10  GEO-WA2-FN2-SLA                   PIC X.                     01240032
           10  GEO-WA2-FN2-COMDIST.                                         01250032
               15  GEO-WA2-FN2-COMDIST-BORO    PIC X(1).                    01260032
               15  GEO-WA2-FN2-COMDIST-NUMBER  PIC X(2).                    01270032
           10  GEO-WA2-FN2-ZIP                 PIC X(5).                    01280032
           10  GEO-WA2-FN2-HEALTHAREA          PIC X(4).                    01290053
           10  GEO-WA2-FN2-POLICEDIST.                                      01300032
              15 GEO-WA2-FN2-POL-PATR-BORO-CMD PIC X(1).                    01310032
              15 GEO-WA2-FN2-POL-PRECINCT      PIC X(3).                    01320032
   ** NOTE:10  GEO-WA2-FN2-FIRESEC ==> FIRE DIVISION **                     01330032
           10  GEO-WA2-FN2-FIRESEC             PIC X(2).                    01340032
           10  GEO-WA2-FN2-FIREBAT             PIC X(2).                    01350032
           10  GEO-WA2-FN2-FIRECO.                                          01360032
               15  GEO-WA2-FN2-FIRECO-TYPE     PIC X(1).                    01370032
               15  GEO-WA2-FN2-FIRECO-NUM      PIC X(3).                    01380032
           10  GEO-WA2-FN2-SCHOOLDIST          PIC X(2).                    01390032
           10  GEO-WA2-FN2-2010-CENS-TRCT      PIC X(6).                    01400035
           10  GEO-WA2-FN2-1990-CENSUSTRACT    PIC X(6).                    01410032
           10  GEO-WA2-FN2-LEVEL-LIST OCCURS 5 TIMES.                       01420032
               15 GEO-WA2-FN2-LEVEL-CODES                                   01430032
                  OCCURS 2 TIMES               PIC X.                       01440032
           10  PIWA2-FN2-POLICE-PAT-BORO       PIC X(2).                    01470073
           10  GEO-WA2-FN2-ASSEMDIST           PIC X(2).                    01471073
           10  GEO-WA2-FN2-CONGDIST            PIC X(2).                    01480032
           10  GEO-WA2-FN2-SENATEDIST          PIC X(2).                    01490032
           10  GEO-WA2-FN2-COURTDIST           PIC X(2).                    01500032
           10  GEO-WA2-FN2-COUNCILDIST         PIC X(2).                    01510032
           10  GEO-WA2-FN2-CDELIG              PIC X(1).                    01520032
           10  GEO-WA2-FN2-DUP-INT-DISTANCE    PIC X(5).                    01530032
           10  GEO-WA2-FN2-2000-CENS-TRACT     PIC X(6).                    01550035
           10  PIWA2-FN2-HCD                   PIC X(2).                    01551053
           10  PIWA2-FN2-SANITATION-DIST       PIC X(3).                    01552045
           10  PIWA2-FN2-SANITATION-SUBSEC     PIC X(2).                    01553047
           10  FILLER                          PIC X(12).                   01560047
                                                                            01561059
******************************************************************          01562059
****     FOR: FUNCTIONS 2W      **********************************          01563065
                                                                            01564059
        05  PIWA2-FUNCTION2W  REDEFINES PIWA2.                              01565065
           10  PIWA2-2W-ACCESS-KEY             PIC X(21).                   01566065
           10  GEO-WA2-2W-DUPINTERFLAG         PIC X.                       01567065
           10  GEO-WA2-2W-PREFERRED-LGC1       PIC X(2).                    01568065
           10  GEO-WA2-2W-PREFERRED-LGC2       PIC X(2).                    01569065
           10  GEO-WA2-2W-NUM-OF-INTERSECTS    PIC X.                       01569165
           10  PIWA2-2W-INTERSECT-B5SC         PIC X(6)                     01569265
                                               OCCURS 5 TIMES.              01569359
           10  GEO-WA2-2W-COMPDIR              PIC X.                       01569465
           10  GEO-WA2-2W-ATOMIC-POLYGON       PIC X(3).                    01569565
           10  FILLER                          PIC X(2).                    01569659
           10  GEO-WA2-2W-NODE-NUM             PIC X(7).                    01569765
           10  GEO-WA2-2W-XCOORD               PIC X(7).                    01569865
           10  GEO-WA2-2W-YCOORD               PIC X(7).                    01569965
           10  FILLER-GSS                      PIC X(7).                    01570059
           10  GEO-WA2-2W-SANBORN1-BVOLPAGE.                                01570165
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                 15 GEO-WA2-2W-SANBORN1-BORO      PIC X(1).             01570265
                 15 GEO-WA2-2W-SANBORN1-VOL-NUM   PIC X(3).             01570365
                 15 GEO-WA2-2W-SANBORN1-PAGE-NUM PIC X(4).              01570465
              10  GEO-WA2-2W-SANBORN2-BVOLPAGE.                         01570565
                 15 GEO-WA2-2W-SANBORN2-BORO      PIC X(1).             01570665
                 15 GEO-WA2-2W-SANBORN2-VOL-NUM   PIC X(3).             01570765
                 15 GEO-WA2-2W-SANBORN2-PAGE-NUM PIC X(4).              01570865
              10  GEO-WA2-2W-MARBLE-RIKER-FLAG    PIC X(1).             01570965
              10  GEO-WA2-2W-SLA                    PIC X.              01571065
              10  GEO-WA2-2W-COMDIST.                                   01571165
                  15  GEO-WA2-2W-COMDIST-BORO     PIC X(1).             01571265
                  15  GEO-WA2-2W-COMDIST-NUMBER   PIC X(2).             01571365
              10  GEO-WA2-2W-ZIP                  PIC X(5).             01571465
              10  GEO-WA2-2W-HEALTHAREA           PIC X(4).             01571565
              10  GEO-WA2-2W-POLICEDIST.                                01571665
                 15 GEO-WA2-2W-POL-PATR-BORO-CMD PIC X(1).              01571765
                 15 GEO-WA2-2W-POL-PRECINCT       PIC X(3).             01571865
      ** NOTE:10  GEO-WA2-2W-FIRESEC ==> FIRE DIVISION **               01571965
              10  GEO-WA2-2W-FIRESEC              PIC X(2).             01572065
              10  GEO-WA2-2W-FIREBAT              PIC X(2).             01572165
              10  GEO-WA2-2W-FIRECO.                                    01572265
                  15  GEO-WA2-2W-FIRECO-TYPE      PIC X(1).             01572365
                  15  GEO-WA2-2W-FIRECO-NUM       PIC X(3).             01572465
              10  GEO-WA2-2W-SCHOOLDIST           PIC X(2).             01572565
              10  GEO-WA2-2W-2010-CENS-TRCT       PIC X(6).             01572665
              10  GEO-WA2-2W-1990-CENSUSTRACT     PIC X(6).             01572765
              10  GEO-WA2-2W-LEVEL-LIST OCCURS 5 TIMES.                 01572865
                  15 GEO-WA2-2W-LEVEL-CODES                             01572965
                     OCCURS 2 TIMES               PIC X.                01573059
              10  PIWA2-2W-POLICE-PAT-BORO        PIC X(2).             01573373
              10  GEO-WA2-2W-ASSEMDIST            PIC X(2).             01573473
              10  GEO-WA2-2W-CONGDIST             PIC X(2).             01573573
              10  GEO-WA2-2W-SENATEDIST           PIC X(2).             01573673
              10  GEO-WA2-2W-COURTDIST            PIC X(2).             01573773
              10  GEO-WA2-2W-COUNCILDIST          PIC X(2).             01573873
              10  GEO-WA2-2W-CDELIG               PIC X(1).             01573973
              10  GEO-WA2-2W-DUP-INT-DISTANCE     PIC X(5).             01574073
              10  GEO-WA2-2W-2000-CENS-TRACT      PIC X(6).             01574173
              10  PIWA2-2W-HCD                    PIC X(2).             01574273
              10  PIWA2-2W-SANITATION-DIST        PIC X(3).             01574373
              10  PIWA2-2W-SANITATION-SUBSEC      PIC X(2).             01574473
              10  FILLER                          PIC X(12).            01574573
              10  FILLER                          PIC X(22).            01574673
              10  PIWA2-2W-LGCS-1                 PIC X(8).             01574773
              10  PIWA2-2W-LGCS-2                 PIC X(8).             01574873
              10  PIWA2-2W-TURN-RESTRICTIONS      PIC X(10).            01574965
              10  PIWA2-2W-LGCS-FOR-B5SCS         PIC X(2)              01575065
                                                  OCCURS 5 TIMES.       01575160
              10  PIWA2-2W-TRUE-REP-COUNTER       PIC XX.               01575265
              10  PIWA2-2W-NODE-LIST              PIC X(7)              01575365
                                                  OCCURS 20 TIMES.      01575463
              10 PIWA2-2W-NODE-LIST-B7SCS-LIST    OCCURS 20 TIMES.      01575771
               15 PIWA2-2W-NODE-LIST-B7SCS        OCCURS 5  TIMES.      01575871
                20 PIWA2-2W-NODE-LIST-B7SC        PIC X(8)              01575971
                                                  OCCURS 4 TIMES.       01576067
              10  PIWA2-2W-REASON-CODE            PIC X.                01585471
              10  PIWA2-2W-REASON-CODE-QUAL       PIC X.                01585571
              10  PIWA2-2W-WARN-CODE              PIC XX.               01585671
              10  PIWA2-2W-RETURN-CODE            PIC XX.               01585771
              10  PIWA2-2W-LATITUDE               PIC X(9).             01585874
              10  PIWA2-2W-LONGITUDE              PIC X(11).            01585974
              10  FILLER                          PIC X(374).           01586474
      ****    10  FILLER  V15.3                   PIC X(394).           01586574
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           05  PIWA2-FUNCTION3   REDEFINES PIWA2.                       01610032
              10  GEO-WA2-FN3-ACCESS-KEY          PIC X(21).            01620032
              10  GEO-WA2-FN3-DUP-KEY-FLAG        PIC X.                01630032
              10  GEO-WA2-FN3-LOCATION-STATUS     PIC X.                01640032
              10  GEO-WA2-FN3-COUNTY-BOUNDARY     PIC X.                01650032
              10  GEO-WA2-FN3-PREFERRED-LGC1      PIC X(2).             01660032
              10  GEO-WA2-FN3-PREFERRED-LGC2      PIC X(2).             01670032
              10  GEO-WA2-FN3-PREFERRED-LGC3      PIC X(2).             01680032
              10  GEO-WA2-FN3-NUM-X-ST-LOW-END    PIC X.                01690032
              10  PIWA2-FN3-LOW-B5SC              PIC X(6)              01700032
                                                    OCCURS 5 TIMES.     01710032
              10  GEO-WA2-FN3-NUM-X-ST-HI-END     PIC X.                01720032
              10  PIWA2-FN3-HI-B5SC               PIC X(6)              01730032
                                                    OCCURS 5 TIMES.     01740032
              10  GEO-WA2-FN3-REVERSALFLAG        PIC X.                01750032
              10  PIWA2-FN3-LIONKEY.                                    01760032
                  15  PIWA2-FN3-LION-BORO         PIC X.                01770032
                  15  GEO-WA2-FN3-LIONFACECODE    PIC X(4).             01780032
                  15  GEO-WA2-FN3-LIONSEQ         PIC X(5).             01790032
              10  GEO-WA2-FN3-GENRECFLAG          PIC X.                01800032
              10  PIWA2-FN3-SEG-LEN               PIC X(5).             01810032
              10  GEO-WA2-FN3-SEGMENTSLOPE        PIC X(3).             01820032
              10  GEO-WA2-FN3-SEGMENTORIENT       PIC X.                01830032
              10  GEO-WA2-FN3-MARBLE-RIKER-FLAG   PIC X(1).             01840032
              10  GEO-WA2-FN3-FROM-NODE           PIC X(7).             01850032
              10  GEO-WA2-FN3-TO-NODE             PIC X(7).             01860032
              10  GEO-WA2-FN3-SANIT-SNOW-PRRTY    PIC X.                01861050
              10  FILLER                          PIC X(4).             01870050
              10  GEO-WA2-FN3-SEG-ID              PIC X(7).             01880032
              10  GEO-WA2-FN3-SLA                 PIC X.                01890032
              10  GEO-WA2-FN3-CURVE-FLAG          PIC X.                01900032
              10  GEO-WA2-FN3-DOG-LEG             PIC X.                01910032
              10  GEO-WA2-FN3-FEATURE-TYPE        PIC X.                01920032
              10  GEO-WA2-FN3-SEGMENT-TYPE        PIC X.                01930032
              10  GEO-WA2-FN3-COINCIDENT-CNT      PIC X.                01940032
              10  FILLER                          PIC X(4).             01950032
              10  PIWA2-FN3-LEFT-SIDE-OF-STR.                           01960032
                  15  GEO-WA2-FN3-LEFT-COMDIST.                         01970032
                    20  GEO-WA2-FN3-LEFT-COMDIST-BORO PIC X(1).         01980032
                    20  GEO-WA2-FN3-LEFT-COMDIST-NUM  PIC X(2).         01990032
                  15  PIWA2-FN3-L-LOW-HOUSENUM        PIC X(16).        02000032
                  15  PIWA2-FN3-L-HI-HOUSENUM         PIC X(16).        02010032
                  15  FILLER-GSS                      PIC X(33).        02020032
                  15  GEO-WA2-FN3-LEFT-ZIP            PIC X(5).         02030032
                  15  GEO-WA2-FN3-LEFT-HEALTHAREA     PIC X(4).         02040053
                  15  GEO-WA2-FN3-LEFT-POLDIST.                         02050032
                   20  GEO-WA2-FN3-L-POL-PATR-BOR-CMD PIC X(1).         02060032
                   20  GEO-WA2-FN3-L-POL-PRECINCT     PIC X(3).         02070032
         ** NOTE:10  GEO-WA2-3L-R-FIRESEC ==> FIRE DIV **               02080032
                  15  GEO-WA2-3L-L-FIRESEC            PIC X(2).         02090032
                  15  GEO-WA2-3L-L-FIREBAT            PIC X(2).         02100032
                  15  GEO-WA2-3L-L-FIRECO.                              02110032
                      20  GEO-WA2-3L-L-FIRECO-TYPE    PIC X(1).         02120032
                      20  GEO-WA2-3L-L-FIRECO-NUM     PIC X(3).         02130032
                  15  GEO-WA2-FN3-LEFT-SCHLDIST       PIC X(2).         02140032
                  15  GEO-WA2-3L-L-DYN-BLOCK          PIC X(3).         02150032
                  15  PIWA2-FN3-L-ED                  PIC X(3).         02161036
                  15  PIWA2-FN3-L-AD                  PIC X(2).         02162036
                  15  PIWA2-FN3-L-POLICE-PAT-BORO     PIC X(2).         02163073
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                15  FILLER                          PIC X.               02170073
                15  GEO-WA2-3L-L-BORO               PIC X .              02190051
                15  GEO-WA2-3L-L-1990-CENSUSTRACT   PIC X(6) .           02191051
                15  GEO-WA2-3L-L-2010-CENS-TRCT     PIC X(6).            02200035
                15  GEO-WA2-3L-L-2010-CENS-BLK      PIC X(4).            02210035
                15  GEO-WA2-3L-L-2010-CENS-BLK-SFX  PIC X.               02220035
                15  GEO-WA2-3L-L-2000-CENS-TRACT    PIC X(6).            02240035
                15  GEO-WA2-3L-L-2000-CENS-BLOCK    PIC X(4).            02250035
                15  GEO-WA2-3L-L-2000-CENS-BLK-SUF  PIC X.               02260035
                15  FILLER                          PIC X(7).            02260176
****            15  PIWA2-FN3-L-BLOCKFACE-ID *V16.1*PIC X(7)**           02261076
                15  PIWA2-FN3-L-NTA                 PIC X(4).            02261150
                15  FILLER                          PIC X(8).            02270050
            10  PIWA2-FN3-RIGHT-SIDE-OF-STR.                             02280032
                15  GEO-WA2-FN3-RIGHT-COMDIST.                           02290032
                  20 GEO-WA2-FN3-RIGHT-COMDIST-BORO PIC X(1).            02300032
                  20 GEO-WA2-FN3-RIGHT-COMDIST-NUM  PIC X(2).            02310032
                15  PIWA2-FN3-R-LOW-HOUSENUM        PIC X(16).           02320032
                15  PIWA2-FN3-R-HI-HOUSENUM         PIC X(16).           02330032
                15  FILLER-GSS                      PIC X(33).           02340032
                15  GEO-WA2-FN3-RIGHT-ZIP           PIC X(5).            02350032
                15  GEO-WA2-FN3-RIGHT-HEALTHAREA    PIC X(4).            02360053
                15  GEO-WA2-FN3-RIGHT-POLDIST.                           02370032
                 20 GEO-WA2-FN3-R-POL-PATR-BOR-CMD  PIC X(1).            02380032
                 20 GEO-WA2-FN3-R-POL-PRECINCT      PIC X(3).            02390032
                15  GEO-WA2-3L-R-FIRESEC            PIC X(2).            02400032
                15  GEO-WA2-3L-R-FIREBAT            PIC X(2).            02410032
                15  GEO-WA2-3L-R-FIRECO.                                 02420032
                    20  GEO-WA2-3L-R-FIRECO-TYPE    PIC X(1).            02430032
                    20  GEO-WA2-3L-R-FIRECO-NUM     PIC X(3).            02440032
                15  GEO-WA2-FN3-RIGHT-SCHLDIST      PIC X(2).            02450032
                15  GEO-WA2-3L-R-DYN-BLOCK          PIC X(3).            02460032
                15  PIWA2-FN3-R-ED                  PIC X(3).            02471036
                15  PIWA2-FN3-R-AD                  PIC X(2).            02472036
                15  PIWA2-FN3-R-POLICE-PAT-BORO     PIC X(2).            02473073
                15  FILLER                          PIC X.               02490073
                15  GEO-WA2-3L-R-BORO               PIC X.               02500051
                15  GEO-WA2-3L-R-1990-CENSUSTRACT   PIC X(6).            02501051
                15  GEO-WA2-3L-R-2010-CENS-TRCT     PIC X(6).            02510035
                15  GEO-WA2-3L-R-2010-CENS-BLK      PIC X(4).            02520035
                15  GEO-WA2-3L-R-2010-CENS-BLK-SFX  PIC X.               02530035
                15  GEO-WA2-3L-R-2000-CENS-TRACT    PIC X(6).            02550035
                15  GEO-WA2-3L-R-2000-CENS-BLOCK    PIC X(4).            02560035
                15  GEO-WA2-3L-R-2000-CENS-BLK-SUF  PIC X.               02570035
                15  FILLER                          PIC X(7).            02570176
****            15  PIWA2-FN3-R-BLOCKFACE-ID *V16.1*PIC X(7)**           02570276
                15  PIWA2-FN3-R-NTA                 PIC X(4).            02572050
                15  FILLER                          PIC X(8).            02580050
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         05  PIWA2-AUX-FUNCTION3 REDEFINES PIWA2.                        02600032
            10  FILLER                              PIC X(450).          02610032
            10  PIWA2-FN3-SEGAUX.                                        02620032
                15  PIWA2-FN3-SEGAUX-FILL           PIC X(6).            02630032
                15  PIWA2-FN3-SEGAUX-CTR            PIC X(4).            02640032
                15  PIWA2-FN3-SEGAUX-SEGS OCCURS 70 TIMES                02650032
                                                    PIC X(7).            02660032
                                                                         02670032
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         05  PIWA2-FUNCTION3X  REDEFINES PIWA2.                          02673036
            10  PIWA2-3X-ACCESS-KEY             PIC X(21).               02674042
            10  PIWA2-3X-DUP-KEY-FLAG           PIC X.                   02675042
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           10  PIWA2-3X-LOCATION-STATUS        PIC X.                02676042
           10  PIWA2-3X-COUNTY-BOUNDARY        PIC X.                02677042
           10  PIWA2-3X-PREFERRED-LGC1         PIC X(2).             02678042
           10  PIWA2-3X-PREFERRED-LGC2         PIC X(2).             02679042
           10  PIWA2-3X-PREFERRED-LGC3         PIC X(2).             02679142
           10  PIWA2-3X-NUM-X-ST-LOW-END       PIC X.                02679242
           10  PIWA2-3X-LOW-B5SC               PIC X(6)              02679338
                                                 OCCURS 5 TIMES.     02679436
           10  PIWA2-3X-NUM-X-ST-HI-END        PIC X.                02679542
           10  PIWA2-3X-HI-B5SC                PIC X(6)              02679638
                                                 OCCURS 5 TIMES.     02679736
           10  PIWA2-3X-REVERSALFLAG           PIC X.                02679842
           10  PIWA2-3X-LIONKEY.                                     02679938
               15  PIWA2-3X-LION-BORO          PIC X.                02680038
               15  PIWA2-3X-LIONFACECODE       PIC X(4).             02680142
               15  PIWA2-3X-LIONSEQ            PIC X(5).             02680242
           10  PIWA2-3X-GENRECFLAG             PIC X.                02680342
           10  PIWA2-3X-SEG-LEN                PIC X(5).             02680438
           10  PIWA2-3X-SEGMENTSLOPE           PIC X(3).             02680542
           10  PIWA2-3X-SEGMENTORIENT          PIC X.                02680642
           10  PIWA2-3X-MARBLE-RIKER-FLAG      PIC X(1).             02680742
           10  PIWA2-3X-FROM-NODE              PIC X(7).             02680842
           10  PIWA2-3X-TO-NODE                PIC X(7).             02680942
           10  PIWA2-3X-SANIT-SNOW-PRRTY       PIC X.                02681050
           10  FILLER                          PIC X(4).             02681150
           10  PIWA2-3X-SEG-ID                 PIC X(7).             02681250
           10  PIWA2-3X-SLA                    PIC X.                02681350
           10  PIWA2-3X-CURVE-FLAG             PIC X.                02681450
           10  PIWA2-3X-DOG-LEG                PIC X.                02681550
           10  PIWA2-3X-FEATURE-TYPE           PIC X.                02681650
           10  PIWA2-3X-SEGMENT-TYPE           PIC X.                02681750
           10  PIWA2-3X-COINCIDENT-CNT         PIC X.                02681850
           10  FILLER                          PIC X(4).             02681950
           10  PIWA2-3X-LEFT-SIDE-OF-STR.                            02682050
               15  PIWA2-3X-LEFT-COMDIST.                            02682150
                 20  PIWA2-3X-LEFT-COMDIST-BORO    PIC X(1).         02682250
                 20  PIWA2-3X-LEFT-COMDIST-NUM     PIC  X(2).        02682350
               15  PIWA2-3X-L-LOW-HOUSENUM         PIC X(16).        02682450
               15  PIWA2-3X-L-HI-HOUSENUM          PIC X(16).        02682550
               15  FILLER-GSS                      PIC X(33).        02682650
               15  PIWA2-3X-LEFT-ZIP               PIC X(5).         02682750
               15  PIWA2-3X-LEFT-HEALTHAREA        PIC X(4).         02682853
               15  PIWA2-3X-LEFT-POLDIST.                            02682950
                20  PIWA2-3X-L-POL-PATR-BOR-CMD    PIC X(1).         02683050
                20  PIWA2-3X-L-POL-PRECINCT        PIC X(3).         02683150
** NOTE:10  PIWA2-3XL-R-FIRESEC ==> FIRE DIV **                      02683250
               15  PIWA2-3X-L-FIRESEC              PIC X(2).         02683350
               15  PIWA2-3X-L-FIREBAT              PIC X(2).         02683450
               15  PIWA2-3X-L-FIRECO.                                02683550
                   20  PIWA2-3X-L-FIRECO-TYPE      PIC X(1).         02683650
                   20  PIWA2-3X-L-FIRECO-NUM       PIC X(3).         02683750
               15  PIWA2-3X-LEFT-SCHLDIST          PIC X(2).         02683850
               15  PIWA2-3X-L-DYN-BLOCK            PIC X(3).         02683950
               15  PIWA2-3X-L-ED                   PIC X(3).         02684138
               15  PIWA2-3X-L-AD                   PIC X(2).         02684238
               15  PIWA2-3X-L-POLICE-PAT-BORO      PIC X(2).         02684373
               15  FILLER                          PIC X.            02684473
               15  PIWA2-3X-L-BORO                 PIC X .           02684551
               15  PIWA2-3X-L-1990-CENSUSTRACT     PIC X(6) .        02684651
               15  PIWA2-3X-L-2010-CENS-TRCT       PIC X(6).         02684751
               15  PIWA2-3X-L-2010-CENS-BLK        PIC X(4).         02684851
               15  PIWA2-3X-L-2010-CENS-BLK-SFX    PIC X.            02684951
               15  PIWA2-3X-L-2000-CENS-TRACT      PIC X(6).         02685051
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               15  GIWA2-3X-L-2000-CENS-BLOCK      PIC X(4).          02685151
               15  PIWA2-3X-L-2000-CENS-BLK-SUF    PIC X.             02685251
               15  FILLER                          PIC X(7).          02685376
****           15  PIWA2-3X-L-BLOCKFACE-ID *V16.1* PIC X(7)***        02685476
               15  PIWA2-3X-L-NTA                  PIC X(4).          02685551
               15  FILLER                          PIC X(8).          02685651
           10  PIWA2-3X-RIGHT-SIDE-OF-STR.                            02685751
               15  PIWA2-3X-RIGHT-COMDIST.                            02685851
                 20 PIWA2-3X-RIGHT-COMDIST-BORO    PIC X(1).          02685951
                 20 PIWA2-3X-RIGHT-COMDIST-NUM     PIC X(2).          02686051
               15  PIWA2-3X-R-LOW-HOUSENUM         PIC X(16).         02686151
               15  PIWA2-3X-R-HI-HOUSENUM          PIC X(16).         02686251
               15  FILLER-GSS                      PIC X(33).         02686351
               15  PIWA2-3X-RIGHT-ZIP              PIC X(5).          02686451
               15  PIWA2-3X-RIGHT-HEALTHAREA       PIC X(4).          02686553
               15  PIWA2-3X-RIGHT-POLDIST.                            02686651
                20 PIWA2-3X-R-POL-PATR-BOR-CMD     PIC X(1).          02686751
                20 PIWA2-3X-R-POL-PRECINCT         PIC X(3).          02686851
               15  PIWA2-3X-R-FIRESEC              PIC X(2).          02686951
               15  PIWA2-3X-R-FIREBAT              PIC X(2).          02687051
               15  PIWA2-3X-R-FIRECO.                                 02687151
                   20  PIWA2-3X-R-FIRECO-TYPE      PIC X(1).          02687251
                   20  PIWA2-3X-R-FIRECO-NUM       PIC X(3).          02687351
               15  PIWA2-3X-RIGHT-SCHLDIST         PIC X(2).          02687451
               15  PIWA2-3X-R-DYN-BLOCK            PIC X(3).          02687551
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               15  PIWA2-3X-R-ED                   PIC X(3).          02687751
               15  PIWA2-3X-R-AD                   PIC X(2).          02687851
               15  PIWA2-3X-R-POLICE-PAT-BORO      PIC X(2).          02687973
               15  FILLER                          PIC X.             02688073
               15  PIWA2-3X-R-BORO                 PIC X.             02688173
               15  PIWA2-3X-R-1990-CENSUSTRACT     PIC X(6).          02688273
               15  PIWA2-3X-R-2010-CENS-TRCT       PIC X(6).          02688373
               15  PIWA2-3X-R-2010-CENS-BLK        PIC X(4).          02688473
               15  PIWA2-3X-R-2010-CENS-BLK-SFX    PIC X.             02688573
               15  PIWA2-3X-R-2000-CENS-TRACT      PIC X(6).          02688673
               15  PIWA2-3X-R-2000-CENS-BLOCK      PIC X(4).          02688773
               15  PIWA2-3X-R-2000-CENS-BLK-SUF    PIC X.             02688873
               15  FILLER                          PIC X(7).          02688976
****           15  PIWA2-3X-R-BLOCKFACE-ID *V16.1* PIC X(7)***        02689076
               15  PIWA2-3X-R-NTA                  PIC X(4).          02689273
               15  FILLER                          PIC X(8).          02689373
               15  PIWA2-3X-LGCS                   PIC X(8).          02689473
               15  PIWA2-3X-LGCS-FROM              PIC X(8).          02689573
               15  PIWA2-3X-LGCS-TO                PIC X(8).          02689673
               15  PIWA2-3X-L-HCD                  PIC X(2).          02689773
               15  PIWA2-3X-R-HCD                  PIC X(2).          02689873
               15  FILLER                          PIC X(1).          02689973
               15  PIWA2-3X-TRAFFIC-DIR            PIC X(1).          02690073
               15  PIWA2-3X-ROADWAY-TYPE           PIC X(2).          02690173
               15  PIWA2-3X-PHYSICAL-ID            PIC X(7).          02690273
               15  PIWA2-3X-GENERIC-ID             PIC X(7).          02690373
               15  PIWA2-3X-INTP-ID-INT-USE        PIC X(7).          02690473
               15  PIWA2-3X-INFD-ID-INT-USE        PIC X(7).          02690573
               15  PIWA2-3X-STR-STATUS             PIC X(1).          02690673
               15  PIWA2-3X-STR-WIDTH              PIC X(3).          02690773
               15  PIWA2-3X-STR-WIDTH-IRREG        PIC X(1).          02690873
               15  PIWA2-3X-BIKE-LANE              PIC X(1).          02690973
               15  PIWA2-3X-FED-CLASS-CODE         PIC X(2).          02691073
               15  PIWA2-3X-ROW-TYPE               PIC X(1).          02691173
               15  PIWA2-3X-LGC-LIST               PIC X(10).         02691273
               15  PIWA2-3X-LEGACY-ID              PIC X(7).          02691373
               15  PIWA2-3X-L-NTA-NAME             PIC X(75).         02691473
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                 15  PIWA2-3X-R-NTA-NAME             PIC X(75).        02691573
                 15  PIWA2-3X-FROM-XCOORD            PIC X(7).         02691673
                 15  PIWA2-3X-FROM-YCOORD            PIC X(7).         02691773
                 15  PIWA2-3X-TO-XCOORD              PIC X(7).         02691873
                 15  PIWA2-3X-TO-YCOORD              PIC X(7).         02691973
                 15  PIWA2-3X-FROM-LATITUDE          PIC X(9).         02692075
                 15  PIWA2-3X-FROM-LONGITUDE         PIC X(11).        02692175
                 15  PIWA2-3X-TO-LATITUDE            PIC X(9).         02692275
                 15  PIWA2-3X-TO-LONGITUDE           PIC X(11).        02692375
                 15  PIWA2-3X-L-BLOCKFACE-ID         PIC X(10).        02692476
                 15  PIWA2-3X-R-BLOCKFACE-ID         PIC X(10).        02692576
                 15  PIWA2-3X-NBR-TRAVEL-LANES       PIC X(2).         02692676
                 15  PIWA2-3X-NBR-PARK-LANES         PIC X(2).         02692776
                 15  PIWA2-3X-NBR-TOTAL-LANES        PIC X(2).         02692876
                 15  PIWA2-3X-BIKE-LANE-2            PIC X(2).         02692979
                 15  PIWA2-3X-STR-WIDTH-MAX          PIC X(3).         02693079
                 15  PIWA2-3X-BIKE-TRAFFIC-DIR       PIC X(2).         02693181
                 15  FILLER                          PIC X(213).       02693281
     ****        15  FILLER   V17.1                  PIC X(215).       02693381
     ****        15  FILLER   V16.4                  PIC X(220).       02693481
     ****        15  FILLER   V16.1                  PIC X(246).       02693581
     ****        15  FILLER   V15.3                  PIC X(286).       02693681
                                                                       02693781
         05  PIWA2-AUX-FUNCTION3X REDEFINES PIWA2.                     02693881
            10  FILLER                               PIC X(1000).      02693981
            10  PIWA2-3X-SEGAUX.                                       02694081
                 15  PIWA2-3X-SEGAUX-FILL            PIC X(6).         02694181
                 15  PIWA2-3X-SEGAUX-CTR             PIC X(4).         02694281
                 15  PIWA2-3X-SEGAUX-SEGS OCCURS 70 TIMES              02694381
                                                     PIC X(7).         02694481
                                                                       02694581
******************************************************************    02694681
****     FOR: FUNCTION  3C          ******************************    02695076
                                                                       02700032
         05  PIWA2-FUNCTION3C  REDEFINES PIWA2.                        02710032
            10  GEO-WA2-FN3C-ACCESS-KEY          PIC X(21).            02720032
            10  PIWA2-FN3C-DUP-KEY-FLAG          PIC X.                02730032
            10  GEO-WA2-FN3C-LOCATION-STATUS     PIC X.                02740032
            10  GEO-WA2-FN3C-COUNTY-BOUNDARY     PIC X.                02750032
            10  GEO-WA2-FN3C-PREFERRED-LGC1      PIC X(2).             02760032
            10  GEO-WA2-FN3C-PREFERRED-LGC2      PIC X(2).             02770032
            10  GEO-WA2-FN3C-PREFERRED-LGC3      PIC X(2).             02780032
            10  GEO-WA2-FN3C-NUM-X-ST-LOW-END    PIC X.                02790032
            10  PIWA2-FN3C-LOW-B5SC              PIC X(6)              02800032
                                                  OCCURS 5 TIMES.      02810032
            10  GEO-WA2-FN3C-NUM-X-ST-HI-END     PIC X.                02820032
            10  PIWA2-FN3C-HI-B5SC               PIC X(6)              02830032
                                                  OCCURS 5 TIMES.      02840032
            10  GEO-WA2-FN3C-REVERSALFLAG        PIC X.                02850032
            10  PIWA2-FN3C-LIONKEY.                                    02860032
                15  PIWA2-FN3C-LION-BORO         PIC X.                02870032
                15  GEO-WA2-FN3C-LIONFACECODE    PIC X(4).             02880032
                15  GEO-WA2-FN3C-LIONSEQ         PIC X(5).             02890032
            10  GEO-WA2-FN3C-GENRECFLAG          PIC X.                02900032
            10  PIWA2-FN3C-SEG-LEN               PIC X(5).             02910032
            10  GEO-WA2-FN3C-SEGMENTSLOPE        PIC X(3).             02920032
            10  GEO-WA2-FN3C-SEGMENTORIENT       PIC X.                02930032
            10  GEO-WA2-FN3C-MARBLE-RIKER-FLAG   PIC X(1).             02940032
            10  GEO-WA2-FN3C-FROM-NODE           PIC X(7).             02950032
            10  GEO-WA2-FN3C-TO-NODE             PIC X(7).             02960032
            10  GEO-WA2-FN3C-SANIT-SNOW-PRRTY    PIC X.                02961050
            10  FILLER                           PIC X(4).             02970050
            10  GEO-WA2-FN3C-SEG-ID              PIC X(7).             02980032
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           10  GEO-WA2-FN3C-SLA                 PIC X.              02990032
           10  PIWA2-FN3C-SIDE-OF-STR           PIC X.              03000032
           10  GEO-WA2-FN3C-CURVE-FLAG          PIC X.              03010032
           10  GEO-WA2-FN3C-FEATURE-TYPE        PIC X.              03020032
           10  GEO-WA2-FN3C-SEGMENT-TYPE        PIC X.              03030032
           10  GEO-WA2-FN3C-COINCIDENT-CNT      PIC X.              03040032
           10  FILLER                           PIC X(4).           03050032
           10  PIWA2-FN3C-BLOCKFACE-INFO.                           03060032
               15  GEO-WA2-FN3C-COMDIST.                            03070032
                  20  GEO-WA2-FN3C-COMDIST-BORO   PIC X(1).         03080032
                  20  GEO-WA2-FN3C-COMDIST-NUMBER PIC X(2).         03090032
               15  PIWA2-FN3C-LOW-HOUSENUM        PIC X(16).        03100032
               15  PIWA2-FN3C-HI-HOUSENUM         PIC X(16).        03110032
               15  PIWA2-FN3C-LOW-HOUSENUM2       PIC X(16).        03120032
               15  PIWA2-FN3C-HI-HOUSENUM2        PIC X(16).        03130032
               15  FILLER-GSS                     PIC X.            03140032
               15  GEO-WA2-FN3C-ZIP               PIC X(5).         03150032
               15  GEO-WA2-FN3C-HEALTHAREA        PIC X(4).         03160053
               15  GEO-WA2-FN3C-POLICEDIST.                         03170032
                20 GEO-WA2-FN3C-POL-PATR-BORO-CMD PIC X(1).         03180032
                20 GEO-WA2-FN3C-POL-PRECINCT      PIC X(3).         03190032
   ** NOTE:10  GEO-WA2-FN3C-FIRESEC ==> FIRE DIVISION **            03200032
               15  GEO-WA2-FN3C-FIRESEC           PIC X(2).         03210032
               15  GEO-WA2-FN3C-FIREBAT           PIC X(2).         03220032
               15  GEO-WA2-FN3C-FIRECO.                             03230032
                   20  GEO-WA2-FN3C-FIRECO-TYPE   PIC X(1).         03240032
                   20  GEO-WA2-FN3C-FIRECO-NUM    PIC X(3).         03250032
               15  GEO-WA2-FN3C-SCHOOLDIST        PIC X(2).         03260032
               15  GEO-WA2-FN3C-DYN-BLOCK         PIC X(3).         03270032
               15  PIWA2-FN3C-ED                  PIC X(3).         03281041
               15  PIWA2-FN3C-AD                  PIC X(2).         03282041
               15  PIWA2-FN3C-POLICE-PAT-BORO     PIC X(2).         03282173
               15  FILLER                         PIC X.            03283073
               15  GEO-WA2-FN3C-BORO              PIC X.            03310051
               15  GEO-WA2-FN3C-1990-CENSUSTRACT  PIC X(6).         03311051
               15  GEO-WA2-FN3C-2010-CENS-TRCT    PIC X(6).         03320035
               15  GEO-WA2-FN3C-2010-CENS-BLK     PIC X(4).         03330035
               15  GEO-WA2-FN3C-2010-CENS-BLK-SFX PIC X.            03340035
               15  GEO-WA2-FN3C-2000-CENS-TRACT   PIC X(6).         03360035
               15  GEO-WA2-FN3C-2000-CENS-BLOCK   PIC X(4).         03370035
               15  GEO-WA2-FN3C-2000-CENS-BLK-SUF PIC X.            03380035
               15  FILLER                         PIC X(7).         03380177
   ******      15  PIWA2-FN3C-BLOCKFACE-ID  V16.1 PIC X(7)***       03381077
               15  PIWA2-FN3C-NTA                 PIC X(4).         03382050
               15  FILLER                         PIC X(8).         03390050
                                                                    03400032
        05  PIWA2-AUX-FUNCTION3C REDEFINES PIWA2.                   03410032
           10  FILLER                             PIC X(300).       03420037
           10  PIWA2-FN3C-SEGAUX.                                   03430032
               15  PIWA2-FN3C-SEGAUX-FILL         PIC X(4).         03440032
               15  PIWA2-FN3C-SEGAUX-CTR          PIC X(4).         03450032
               15  PIWA2-FN3C-SEGAUX-SEGS OCCURS 70 TIMES           03460032
                                                  PIC X(7).         03470032
                                                                    03480032
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 ****     FOR: FUNCTION  3C EXTENDED *****************************  03482036
                                                                    03483036
        05  PIWA2-FUNCTION3CX REDEFINES PIWA2.                      03484036
           10  PIWA2-3CX-ACCESS-KEY             PIC X(21).          03485042
           10  PIWA2-3CX-DUP-KEY-FLAG           PIC X.              03486039
           10  PIWA2-3CX-LOCATION-STATUS        PIC X.              03487042
           10  PIWA2-3CX-COUNTY-BOUNDARY        PIC X.              03488042
           10  PIWA2-3CX-PREFERRED-LGC1         PIC X(2).           03489042
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         10  PIWA2-3CX-PREFERRED-LGC2        PIC X(2).           03489142
         10  PIWA2-3CX-PREFERRED-LGC3        PIC X(2).           03489242
         10  PIWA2-3CX-NUM-X-ST-LOW-END      PIC X.              03489342
         10  PIWA2-3CX-LOW-B5SC              PIC X(6)            03489439
                                             OCCURS 5 TIMES.     03489536
         10  PIWA2-3CX-NUM-X-ST-HI-END       PIC X.              03489642
         10  PIWA2-3CX-HI-B5SC               PIC X(6)            03489739
                                             OCCURS 5 TIMES.     03489836
         10  PIWA2-3CX-REVERSALFLAG          PIC X.              03489942
         10  PIWA2-3CX-LIONKEY.                                  03490039
             15  PIWA2-3CX-LION-BORO         PIC X.              03490139
             15  PIWA2-3CX-LIONFACECODE      PIC X(4).           03490242
             15  PIWA2-3CX-LIONSEQ           PIC X(5).           03490342
         10  PIWA2-3CX-GENRECFLAG            PIC X.              03490442
         10  PIWA2-3CX-SEG-LEN               PIC X(5).           03490539
         10  PIWA2-3CX-SEGMENTSLOPE          PIC X(3).           03490642
         10  PIWA2-3CX-SEGMENTORIENT         PIC X.              03490742
         10  PIWA2-3CX-MARBLE-RIKER-FLAG     PIC X(1).           03490842
         10  PIWA2-3CX-FROM-NODE             PIC X(7).           03490942
         10  PIWA2-3CX-TO-NODE               PIC X(7).           03491042
         10  PIWA2-3CX-SANIT-SNOW-PRRTY      PIC X.              03491150
         10  FILLER                          PIC X(4).           03491250
         10  PIWA2-3CX-SEG-ID                PIC X(7).           03491342
         10  PIWA2-3CX-SLA                   PIC X.              03491442
         10  PIWA2-3CX-SIDE-OF-STR           PIC X.              03491539
         10  PIWA2-3CX-CURVE-FLAG            PIC X.              03491642
         10  PIWA2-3CX-FEATURE-TYPE          PIC X.              03491742
         10  PIWA2-3CX-SEGMENT-TYPE          PIC X.              03491842
         10  PIWA2-3CX-COINCIDENT-CNT        PIC X.              03491942
         10  FILLER                          PIC X(4).           03492036
         10  PIWA2-3CX-BLOCKFACE-INFO.                           03492139
             15  PIWA2-3CX-COMDIST.                              03492242
                20  PIWA2-3CX-COMDIST-BORO   PIC X(1).           03492342
                20  PIWA2-3CX-COMDIST-NUMBER PIC X(2).           03492442
             15  PIWA2-3CX-LOW-HOUSENUM        PIC X(16).        03492539
             15  PIWA2-3CX-HI-HOUSENUM         PIC X(16).        03492639
             15  PIWA2-3CX-LOW-HOUSENUM2       PIC X(16).        03492739
             15  PIWA2-3CX-HI-HOUSENUM2        PIC X(16).        03492839
             15  FILLER-GSS                    PIC X.            03492936
             15  PIWA2-3CX-ZIP                 PIC X(5).         03493042
             15  PIWA2-3CX-HEALTHAREA          PIC X(4).         03493153
             15  PIWA2-3CX-POLICEDIST.                           03493242
              20 PIWA2-3CX-POL-PATR-BORO-CMD   PIC X(1).         03493342
              20 PIWA2-3CX-POL-PRECINCT        PIC X(3).         03493442
** NOTE:10   PIWA2-3CX-FIRESEC ==> FIRE DIVISION **              03493542
             15  PIWA2-3CX-FIRESEC             PIC X(2).         03493642
             15  PIWA2-3CX-FIREBAT             PIC X(2).         03493742
             15  PIWA2-3CX-FIRECO.                               03493842
                 20  PIWA2-3CX-FIRECO-TYPE     PIC X(1).         03493942
                 20  PIWA2-3CX-FIRECO-NUM      PIC X(3).         03494042
             15  PIWA2-3CX-SCHOOLDIST          PIC X(2).         03494142
             15  PIWA2-3CX-DYN-BLOCK           PIC X(3).         03494242
             15  PIWA2-3CX-ED                  PIC X(3).         03494439
             15  PIWA2-3CX-AD                  PIC X(2).         03494539
             15  PIWA2-3CX-POLICE-PAT-BORO     PIC X(2).         03494673
             15  FILLER                        PIC X.            03494773
             15  PIWA2-3CX-BORO                PIC X.            03494851
             15  PIWA2-3CX-1990-CENSUSTRACT    PIC X(6).         03494951
             15  PIWA2-3CX-2010-CENS-TRCT      PIC X(6).         03495051
             15  PIWA2-3CX-2010-CENS-BLK       PIC X(4).         03495151
             15  PIWA2-3CX-2010-CENS-BLK-SFX   PIC X.            03495251
             15  PIWA2-3CX-2000-CENS-TRACT     PIC X(6).         03495351
             15  PIWA2-3CX-2000-CENS-BLOCK     PIC X(4).         03495451
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                 15  PIWA2-3CX-2000-CENS-BLK-SUF     PIC X.              03495551
                 15  FILLER                          PIC X(7).           03495677
      *****      15  PIWA2-3CX-BLOCKFACE-ID V16.1    PIC X(7)***         03495777
                 15  PIWA2-3CX-NTA                   PIC X(4).           03495851
                 15  FILLER                          PIC X(8).           03495951
                 15  PIWA2-3CX-LGCS                  PIC X(8).           03496051
                 15  PIWA2-3CX-LGCS-FROM             PIC X(8).           03496151
                 15  PIWA2-3CX-LGCS-TO               PIC X(8).           03496251
                 15  PIWA2-3CX-L-HCD                 PIC X(2).           03496353
                 15  PIWA2-3CX-R-HCD                 PIC X(2).           03496453
                 15  FILLER                          PIC X(1).           03496551
                 15  PIWA2-3CX-TRAFFIC-DIR           PIC X(1).           03496651
                 15  PIWA2-3CX-ROADWAY-TYPE          PIC X(2).           03496751
                 15  PIWA2-3CX-PHYSICAL-ID           PIC X(7).           03496851
                 15  PIWA2-3CX-GENERIC-ID            PIC X(7).           03496951
                 15  PIWA2-3CX-INTP-ID               PIC X(7).           03497051
                 15  PIWA2-3CX-INFD-ID               PIC X(7).           03497151
                 15  PIWA2-3CX-STR-STATUS            PIC X(1).           03497251
                 15  PIWA2-3CX-STR-WIDTH             PIC X(3).           03497351
                 15  PIWA2-3CX-STR-WIDTH-IRREF       PIC X(1).           03497451
                 15  PIWA2-3CX-BIKE-LANE             PIC X(1).           03497551
                 15  PIWA2-3CX-FED-CLASS-CODE        PIC X(2).           03497651
                 15  PIWA2-3CX-ROW-TYPE              PIC X(1).           03497751
                 15  PIWA2-3CX-LGC-LIST              PIC X(10).          03497851
                 15  PIWA2-3CX-LEGACY-ID             PIC X(7).           03497951
                 15  PIWA2-3CX-NTA-NAME              PIC X(75).          03498052
                 15  PIWA2-3CX-FROM-XCOORD           PIC X(7).           03498156
                 15  PIWA2-3CX-FROM-YCOORD           PIC X(7).           03498256
                 15  PIWA2-3CX-TO-XCOORD             PIC X(7).           03498356
                 15  PIWA2-3CX-TO-YCOORD             PIC X(7).           03498456
                 15  PIWA2-3CX-FROM-LATITUDE         PIC X(9).           03498575
                 15  PIWA2-3CX-FROM-LONGITUDE        PIC X(11).          03498675
                 15  PIWA2-3CX-TO-LATITUDE           PIC X(9).           03498775
                 15  PIWA2-3CX-TO-LONGITUDE          PIC X(11).          03498875
                 15  PIWA2-3CX-BLOCKFACE-ID          PIC X(10).          03498977
                 15  PIWA2-3CX-NBR-TRAVEL-LANES      PIC X(2).           03499077
                 15  PIWA2-3CX-NBR-PARK-LANES        PIC X(2).           03499177
                 15  PIWA2-3CX-NBR-TOTAL-LANES       PIC X(2).           03499277
                 15  PIWA2-3CX-BIKE-LANE-2           PIC X(2).           03499379
                 15  PIWA2-3CX-STR-WIDTH-MAX         PIC X(3).           03499479
                 15  PIWA2-3CX-BIKE-TRAFFIC-DIR      PIC X(2).           03499581
                 15  FILLER                          PIC X(298).         03499681
      ****       15  FILLER   V17.1                  PIC X(300).         03499781
      ****       15  FILLER   V16.4                  PIC X(305).         03499881
      ****       15  FILLER   V16.1                  PIC X(321).         03499981
      ****       15  FILLER   V15.3                  PIC X(361).         03500081
                                                                         03500181
          05  PIWA2-AUX-FUNCTION3CX REDEFINES PIWA2.                     03500281
             10  FILLER                             PIC X(850).          03500381
             10  PIWA2-3CX-SEGAUX.                                       03500481
                 15  PIWA2-3CX-SEGAUX-FILL           PIC X(4).           03500581
                 15  PIWA2-3CX-SEGAUX-CTR            PIC X(4).           03500681
                 15  PIWA2-3CX-SEGAUX-SEGS OCCURS 70 TIMES               03500781
                                                     PIC X(7).           03500881
                                                                         03500981
   ******************************************************************   03501081
   ****     FOR: FUNCTION 5            ******************************   03502081
                                                                         03510032
          05  PIWA2-FUNCTION5   REDEFINES PIWA2.                         03520032
             10  GEO-WA2-FN5-ADDR-MATCHING-KEY       PIC X(33).          03530034
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P2COB1A COPY File

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**  THIS IS THE COBOL STRUCTURE FOR GEOSUPPORT SYSTEM PLATFORM **
**  INDEPENDENT REGULAR WORK AREA 2 FOR FUNCTIONS: 1A, BL, AND **
**  BN.  THESE THREE FUNCTIONS SHARE A SINGLE WORK AREA 2      **
**  LAYOUT.  COPY FILE - P2COB1A.                10/10/97     **
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      05  GEO-WA2-1A-ACCESS-KEY            PIC X(21).
      05  GEO-WA2-1A-CONT-PARITY           PIC X.
      05  PIWA2-1A-LOW-HOUSENUM            PIC X(11).
      05  GEO-WA2-1A-ALTKEY-1.
         10 GEO-WA2-1A-ALTKEY-1-BORO       PIC X.
         10 GEO-WA2-1A-ALTKEY-1-TAXBLOCK   PIC X(5).
         10 GEO-WA2-1A-ALTKEY-1-TAXLOT     PIC X(4).
      05  FILLER                           PIC X.
      05  GEO-WA2-1A-SCC                   PIC X(1).
      05  FILLER                           PIC X.
      05  GEO-WA2-1A-GENERAL-LOT-INFO.
         10 GEO-WA2-1A-RPAD-BLDG-CLASS     PIC X(2).
         10 GEO-WA2-1A-CORNER-CODE         PIC X(2).
         10 GEO-WA2-1A-TOT-NBR-BLDG        PIC X(4).
         10 GEO-WA2-1A-NUM-OF-BLOCKFACES   PIC X(2).
         10 GEO-WA2-1A-INTERIOR-FLAG       PIC X.
         10 GEO-WA2-1A-VACANT-FLAG         PIC X.
         10 GEO-WA2-1A-IRREG-FLAG          PIC X.
      05  GEO-WA2-1A-ALT-BORO-FLAG         PIC X.
      05  GEO-WA2-1A-OVERFLOW-FLAG         PIC X(1).
      05  PIWA2-1A-STROLL-KEY              PIC X(19).
      05  FILLER-GSS                       PIC X.
      05  GEO-WA2-1A-BLDG-ID-NUM           PIC X(7).
      05  GEO-WA2-1A-CONDO-LOT-FLAG        PIC X.
      05  FILLER                           PIC X.
      05  GEO-WA2-1A-RPAD-COND-NUM         PIC X(4).
      05  FILLER                           PIC X(7).
      05  GEO-WA2-1A-CONDO-BILLING-BBL     PIC X(10).
      05  FILLER                           PIC X.
      05  GEO-WA2-1A-CONDO-BILL-BBL-SCC    PIC X(1).
      05  GEO-WA2-1A-CONDO-LOW-BBL         PIC X(10).
      05  FILLER                           PIC X.
      05  GEO-WA2-1A-CONDO-HIGH-BBL        PIC X(10).
      05  FILLER                           PIC X.
      05  FILLER                           PIC X(15).
      05  GEO-WA2-1A-CO-OP-NBR             PIC X(4).
      05  GEO-WA2-1A-SANBORN-BVOLPAGE.
          10  GEO-WA2-1A-SANBORN-BORO      PIC X(1).
          10  GEO-WA2-1A-SANBORN-VOL-PAGE.
            15  GEO-WA2-1A-SANBORN-VOL-NUM   PIC X(3).
            15  GEO-WA2-1A-SANBORN-PAGE-NUM  PIC X(4).
      05  GEO-WA2-1A-COMMERC-DIST          PIC X(5).
      05  GEO-WA2-1A-DOF-MAP-BOROUGH       PIC X.
      05  GEO-WA2-1A-TAX-MAP-NBR           PIC X(4).
      05  FILLER-FOR-TAX-MAP-PAGE          PIC X(4).
      05  FILLER                           PIC X(3).
      05  PIWA2-1A-LATITUDE                PIC X(9).
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P2COB1A COPY File

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           05  PIWA2-1A-LONGITUDE                PIC X(11).               00540110
           05  PIWA2-1A-X-COORD                  PIC X(7).                00541009
           05  PIWA2-1A-Y-COORD                  PIC X(7).                00550007
           05  PIWA2-1A-BID                      PIC X(6).                00560007
           05  PIWA2-1A-TPAD-BIN-ST              PIC X.                   00570007
           05  PIWA2-1A-TPAD-NEW-BIN             PIC X(7).                00580007
           05  PIWA2-1A-TPAD-NEW-BIN-ST          PIC X.                   00590007
           05  PIWA2-1A-TPAD-CONFLICT            PIC X.                   00600007
           05  FILLER                            PIC X(9).                00610007
           05  FILLER-GSS                        PIC X(8).                00620007
           05  PIWA2-1A-NUM-OF-ADDR              PIC X(4).                00630007
           05  PIWA2-1A-ADDR-LIST                OCCURS 21 TIMES.         00640007
              10  PIWA2-1A-LIST-LOW-HOUSENUM     PIC X(16).               00650007
              10  PIWA2-1A-LIST-HI-HOUSENUM      PIC X(16).               00660007
              10  PIWA2-1A-LIST-BORO             PIC X.                   00670007
              10  PIWA2-1A-LIST-5SC              PIC X(5).                00680007
              10  PIWA2-1A-LIST-LGC              PIC X(2).                00690007
              10  GEO-WA2-1A-LIST-BIN            PIC X(7).                00700007
              10  GEO-WA2-1A-LIST-SOS            PIC X.                   00710007
              10  GEO-WA2-1A-ADDR-TYPE           PIC X.                   00720007
              10  PIWA2-1A-TPAD-STATUS           PIC X.                   00730007
              10  FILLER                         PIC X(3).                00740007
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P2COB1AL COPY File

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      ******************************************************************
      **                     P2COBIAL                                 **
      **           LAST MODIFIED DECEMBER 2016                        **
      ** ADD NEW 2 BYTE BIKE TRAFFIC DIRECTION    YNL 12/16 V17,1     **
      **  THIS IS THE COBOL STRUCTURE FOR GEOSUPPORT SYSTEM PLATFORM **
      **  INDEPENDENT LONG WORK AREA 2 FOR FUNCTIONS: 1A, AND BL.     **
      **  THESE TWO FUNCTIONS SHARE A SINGLE LONG WORK AREA 2 LAYOU. **
      **  COPY FILE - P2COB1AL.                          11/06/97     **
      ******************************************************************
      **               LAST MODIFIED OCTOBER  2016                    **
      ******************************************************************
      **  JANUARY 2011 YNL ADDED THREE WORK AREAS:                    **
      **  1. P2COB1EX - FUNCTION 1E EXTENDED.                         **
      **  2. P2COB1AX - FUNCTION 1A   EXTENDED.                       **
      **  2. P2COB1B  - P2COB1EX COMBINED WITH P2COB1AX               **
      ******************************************************************
            03  PIWA2                               PIC X(17750).
     ******************************************************************
     ****       FOR: FUNCTION 1A LONG      ******************************

            03  PIWA2-FUNCTION1AL  REDEFINES PIWA2.

             05 GEO-WA2-1AL-ACCESS-KEY              PIC X(21).
             05 GEO-WA2-1AL-CONT-PARITY             PIC X.
             05 PIWA2-1AL-LOW-HOUSENUM              PIC X(11).
             05 GEO-WA2-1AL-ALTKEY-1.
               10 GEO-WA2-1AL-ALTKEY-1-BORO         PIC X.
               10 GEO-WA2-1AL-ALTKEY-1-TAXBLOCK     PIC X(5).
               10 GEO-WA2-1AL-ALTKEY-1-TAXLOT       PIC X(4).
             05 FILLER                              PIC X.
             05 GEO-WA2-1AL-SCC                     PIC X.
             05 FILLER                              PIC X.
             05 GEO-WA2-1AL-GENERAL-LOT-INFO.
               10 GEO-WA2-1AL-RPAD-BLDG-CLASS       PIC X(2).
               10 GEO-WA2-1AL-CORNER-CODE           PIC X(2).
               10 GEO-WA2-1AL-NUM-OF-STRUCTURES     PIC X(4).
               10 GEO-WA2-1AL-NUM-OF-BLOCKFACES     PIC X(2).
               10 GEO-WA2-1AL-INTERIOR-FLAG         PIC X.
               10 GEO-WA2-1AL-VACANT-FLAG           PIC X.
               10 GEO-WA2-1AL-IRREG-FLAG            PIC X.
             05 GEO-WA2-1AL-ALT-BORO-FLAG           PIC X.
             05 FILLER                              PIC X.
             05 PIWA2-1AL-STROLL-KEY                PIC X(19).
             05 FILLER-GSS                          PIC X.
             05 GEO-WA2-1AL-BLDG-ID-NUM             PIC X(7).
             05 GEO-WA2-1AL-CONDO-LOT-FLAG          PIC X.
             05 FILLER                              PIC X.
             05 GEO-WA2-1AL-RPAD-COND-NUM           PIC X(4).
             05 FILLER                              PIC X(7).
             05 GEO-WA2-1AL-CONDO-BILLING-BBL       PIC X(10).
             05 FILLER                              PIC X.
             05 GEO-WA2-1AL-CONDO-BILL-BBL-SCC      PIC X.
             05 GEO-WA2-1AL-CONDO-LOW-BBL           PIC X(10).
             05 FILLER                              PIC X.
             05 GEO-WA2-1AL-CONDO-HIGH-BBL          PIC X(10).
             05 FILLER                              PIC X.
             05 FILLER                              PIC X(15).
             05 GEO-WA2-1AL-CO-OP-NBR               PIC X(4).
             05 GEO-WA2-1AL-SANBORN-BVOLPAGE.
                10  GEO-WA2-1AL-SANBORN-BORO        PIC X(1).
                10  GEO-WA2-1AL-SANBORN-VOL-PAGE.
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           15  GEO-WA2-1AL-SANBORN-VOL-NUM   PIC X(3).
           15  GEO-WA2-1AL-SANBORN-PAGE-NUM  PIC X(4).
      05 GEO-WA2-1AL-COMMERC-DIST            PIC X(5).
      05 PIWA2-1AL-DOF-MAP-BORO              PIC X.
      05 PIWA2-1AL-DOF-MAP-SECVOL            PIC X(4).
*******  PIWA2-1AL-DOF-MAP-PAGE  NOT IMPLEMENTED
      05 PIWA2-1AL-DOF-MAP-PAGE              PIC X(4).
      05 FILLER                              PIC X(3).
      05 PIWA2-1AL-LATITUDE                  PIC X(9).
      05 PIWA2-1AL-LONGITUDE                 PIC X(11).
      05 PIWA2-1AL-X-COORD                   PIC X(7).
      05 PIWA2-1AL-Y-COORD                   PIC X(7).
      05 PIWA2-1AL-BID                       PIC X(6).
      05 PIWA2-1AL-TPAD-BIN-ST               PIC X.
      05 PIWA2-1AL-TPAD-NEW-BIN              PIC X(7).
      05 PIWA2-1AL-TPAD-NEW-BIN-ST           PIC X.
      05 PIWA2-1AL-TPAD-CONFLICT             PIC X.
      05 FILLER                              PIC X(9).
      05 FILLER-GSS                          PIC X(8).
      05 GEO-WA2-1AL-NUM-OF-BINS             PIC X(4).
      05 PIWA2-1AL-TPAD-BINLIST.
         10 PIWA2-1AL-TPAD-BINS OCCURS 2187 TIMES.
           15 PIWA2-1AL-TPAD-BINS-BIN          PIC X(7).
           15 PIWA2-1AL-TPAD-BINS-STAT         PIC X.
         10 PIWA2-1AL-TPAD-FILL                PIC X(4).
      05 GEO-WA2-1AL-BINS REDEFINES PIWA2-1AL-TPAD-BINLIST
         PIC X(7)  OCCURS 2500 TIMES.

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***    FOR: FUNCTION 1/1E EXTENDED  ****************3**********

     03  PIWA2-FUNCTION1EX   REDEFINES PIWA2.

      05 PIWA2-FN1EX-ACCESS-KEY              PIC X(21).
      05 PIWA2-FN1EX-CONT-PARITY             PIC X.
      05 PIWA2-FN1EX-LOW-HOUSENUM-SORT       PIC X(11).
      05 PIWA2-FN1EX-HI-HOUSENUM-SORT        PIC X(11).
      05 PIWA2-FN1EX-PREFERRED-LGC           PIC X(2).
      05 PIWA2-FN1EX-NUM-X-ST-LOW-END        PIC X.
      05 PIWA2-FN1EX-LOW-B5SC                PIC X(6)
                                              OCCURS 5 TIMES.
      05 PIWA2-FN1EX-NUM-X-ST-HI-END         PIC X.
      05 PIWA2-FN1EX-HI-B5SC                 PIC X(6)
                                              OCCURS 5 TIMES.
      05 PIWA2-FN1EX-LIONKEY.
          10  PIWA2-FN1EX-LION-BORO          PIC X.
          10  PIWA2-FN1EX-LIONFACECODE       PIC X(4).
          10  PIWA2-FN1EX-LIONSEQ            PIC X(5).
      05 PIWA2-FN1EX-SPECIAL-ADDR-FLAG       PIC X(1).
      05 PIWA2-FN1EX-SIDE-OF-STR             PIC X.
      05 PIWA2-FN1EX-SEGMENTLENGTH           PIC X(5).
      05 PIWA2-FN1EX-XCOORD                  PIC X(7).
      05 PIWA2-FN1EX-YCOORD                  PIC X(7).
      05 FILLER-GSS                          PIC X(8).
      05 PIWA2-FN1EX-MARBLE-RIKER-FLAG       PIC X(1).
      05 PIWA2-FN1EX-SLA                     PIC X.
      05 PIWA2-FN1EX-COMDIST.
          10  PIWA2-FN1EX-COMDIST-BORO       PIC X(1).
          10  PIWA2-FN1EX-COMDIST-NUMBER     PIC X(2).
      05 PIWA2-FN1EX-ZIP                     PIC X(5).

      05 PIWA2-FN1EX-ELECTDIST               PIC X(3).
      05 PIWA2-FN1EX-ASSEMDIST               PIC X(2).
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           05 PIWA2-FN1EX-SPLIT-ED-FLAG          PIC X(1).                00020319
           05 PIWA2-FN1EX-CONGDIST               PIC X(2).                00020419
           05 PIWA2-FN1EX-SENATEDIST             PIC X(2).                00020519
           05 PIWA2-FN1EX-COURTDIST              PIC X(2).                00020619
           05 PIWA2-FN1EX-COUNCILDIST            PIC X(2).                00020719
                                                                          00020819
           05 PIWA2-FN1EX-HCD                    PIC X(2).                00020919
           05 PIWA2-FN1EX-HEALTHAREA             PIC X(4).                00021019
           05 PIWA2-FN1EX-SANIDIST.                                       00021119
               10  PIWA2-FN1EX-SANIDIST-BORO     PIC X(1).                00021219
               10  PIWA2-FN1EX-SANIDIST-NUMBER   PIC X(2).                00021319
           05 PIWA2-FN1EX-SANITATION-SUBSEC      PIC X(2).                00021419
           05 PIWA2-FN1EX-SANI-REG               PIC X(5).                00021519
           05 PIWA2-FN1EX-SANI-REC               PIC X(3).                00021619
           05 PIWA2-FN1EX-POLICEDIST.                                     00021719
                15 PIWA2-FN1EX-POL-PATR-BORO-CMD PIC X(1).                00021819
                15 PIWA2-FN1EX-POL-PRECINCT      PIC X(3).                00021919
      ** NOTE:10  PIWA2-FN1EX-FIRESEC ==> FIRE DIVISION **                00022019
           05 PIWA2-FN1EX-FIRESEC                PIC X(2).                00022119
           05 PIWA2-FN1EX-FIREBAT                PIC X(2).                00022219
           05 PIWA2-FN1EX-FIRECO.                                         00022319
               10  PIWA2-FN1EX-FIRECO-TYPE       PIC X(1).                00022419
               10  PIWA2-FN1EX-FIRECO-NUM        PIC X(3).                00022519
           05 PIWA2-FN1EX-SPLIT-SCHOOL-FLAG      PIC X.                   00022619
           05 PIWA2-FN1EX-SCHOOLDIST             PIC X(2).                00022719
           05 PIWA2-FN1EX-DYN-BLOCK              PIC X(3).                00022819
           05 PIWA2-FN1EX-POLICE-PAT-BORO        PIC X(2).                00023022
           05 PIWA2-FN1EX-FEATURE-TYPE           PIC X.                   00023119
           05 PIWA2-FN1EX-SEGMENT-TYPE           PIC X.                   00023219
           05 PIWA2-FN1EX-ALX                    PIC X.                   00023319
           05 PIWA2-FN1EX-COINCIDENT-CNT         PIC X.                   00023419
           05 FILLER                             PIC X(3).                00023519
           05 PIWA2-FN1EX-1990-CENSUSTRACT       PIC X(6).                00023619
           05 PIWA2-FN1EX-2010-CENS-TRCT         PIC X(6).                00023719
           05 PIWA2-FN1EX-2010-CENS-BLK          PIC X(4).                00023819
           05 PIWA2-FN1EX-2010-CENS-BLK-SFX      PIC X.                   00023919
           05 PIWA2-FN1EX-2000-CENS-TRCT         PIC X(6).                00024019
           05 PIWA2-FN1EX-2000-CENS-BLK          PIC X(4).                00024119
           05 PIWA2-FN1EX-2000-CENS-BLK-SFX      PIC X.                   00024219
           05 PIWA2-FN1EX-NTA                    PIC X(4).                00024319
           05 PIWA2-FN1EX-SANIT-SNOW-PRRTY       PIC X.                   00024419
           05 PIWA2-FN1EX-SANIT-ORGANICS         PIC X(5).                00024519
           05 PIWA2-FN1EX-SANIT-BULK-PICK-UP     PIC X(5).                00024630
      **** 05 PIWA2-FN1EX-SANIT-RESERVED V16.4   PIC X(5).                00024730
           05 PIWA2-FN1EX-HURRICANE-ZONE         PIC XX.                  00024829
           05 FILLER                             PIC X(11).               00024929
           05 PIWA2-FN1EX-TRUE-HNS               PIC X(11).               00025029
           05 PIWA2-FN1EX-TRUE-B7SC              PIC X(8).                00025129
           05 PIWA2-FN1EX-SEG-ID                 PIC X(7).                00025229
           05 PIWA2-FN1EX-CURVE-FLAG             PIC X(1).                00025329
           05 PIWA2-FN1EX-LGCS                   PIC X(8).                00025429
           05 PIWA2-FN1EX-BOE-PTR                PIC X(1).                00025529
           05 PIWA2-FN1EX-AZIMUTH                PIC X(3).                00025629
           05 PIWA2-FN1EX-ORIENT                 PIC X(1).                00025729
           05 PIWA2-FN1EX-X-LOW                  PIC X(7).                00025829
           05 PIWA2-FN1EX-Y-LOW                  PIC X(7).                00025929
           05 PIWA2-FN1EX-Z-LOW                  PIC X(7).                00026029
           05 PIWA2-FN1EX-X-HI                   PIC X(7).                00026129
           05 PIWA2-FN1EX-Y-HI                   PIC X(7).                00026229
           05 PIWA2-FN1EX-Z-HI                   PIC X(7).                00026329
           05 PIWA2-FN1EX-X-CC                   PIC X(7).                00026429
           05 PIWA2-FN1EX-Y-CC                   PIC X(7).                00026529
           05 PIWA2-FN1EX-Z-CC                   PIC X(7).                00026629
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       05 PIWA2-FN1EX-RADIUS                 PIC X(7).           00026729
       05 PIWA2-FN1EX-SECANT                 PIC X(1).           00026829
       05 PIWA2-FN1EX-ANGLE-FROM             PIC X(5).           00026929
       05 PIWA2-FN1EX-ANGLE-TO               PIC X(5).           00027029
       05 PIWA2-FN1EX-NODE-FROM              PIC X(7).           00027129
       05 PIWA2-FN1EX-NODE-TO                PIC X(7).           00027229
       05 PIWA2-FN1EX-VANITY-LION            PIC X(10).          00027329
       05 PIWA2-FN1EX-SOS                    PIC X(1).           00027429
       05 PIWA2-FN1EX-SPLIT-LOHSN            PIC X(11).          00027529
       05 PIWA2-FN1EX-TD                     PIC X(1).           00027629
       05 PIWA2-FN1EX-TR                     PIC X(10).          00027729
       05 PIWA2-FN1EX-CURVE-FRACTION         PIC X(3).           00027829
       05 PIWA2-FN1EX-ROADWAY-TYPE           PIC X(2).           00027929
       05 PIWA2-FN1EX-PHYICAL-ID             PIC X(7).           00028029
       05 PIWA2-FN1EX-GENERIC-ID             PIC X(7).           00028129
       05 PIWA2-FN1EX-NYPD-ID-FILL           PIC X(7).           00028229
       05 PIWA2-FN1EX-FDNY-ID-FILL           PIC X(7).           00028329
       05 PIWA2-FN1EX-BIKE-LANE-2            PIC X(2).           00028429
       05 PIWA2-FN1EX-BIKE-TRAFFIC-DIR       PIC X(2).           00028535
       05 FILLER                             PIC X(3).           00028633
****   05 FILLER              ******V17.1 ** PIC X(5).           00028833
****   05 FILLER              ******V16.4 ** PIC X(7).           00028933
****   05 PIWA2-FN1EX-BLOCKFACE-ID *V16.1 ** PIC X(7) ***        00029033
       05 PIWA2-FN1EX-STREET-STATUS          PIC X(1).           00029133
       05 PIWA2-FN1EX-STREET-WIDTH           PIC X(3).           00029233
       05 PIWA2-FN1EX-STREET-WIDTH-IRR       PIC X(1).           00029333
       05 PIWA2-FN1EX-BIKE-LANE              PIC X(1).           00029433
       05 PIWA2-FN1EX-FED-CLASS-CODE         PIC X(2).           00029533
       05 PIWA2-FN1EX-ROW-TYPE               PIC X(1).           00029633
       05 PIWA2-FN1EX-LGC-LIST-2             PIC X(10).          00029733
       05 PIWA2-FN1EX-LEGACY-SEG-ID          PIC X(7).           00029833
       05 PIWA2-FN1EX-LGC-LIST-FROM-1        PIC X(10).          00029933
       05 PIWA2-FN1EX-LGC-LIST-TO-1          PIC X(10).          00030033
       05 PIWA2-FN1EX-LGC-LIST-FROM-2        PIC X(10).          00030133
       05 PIWA2-FN1EX-LGC-LIST-TO-2          PIC X(10).          00030233
       05 PIWA2-FN1EX-NOCROSS-FLG            PIC X(1).           00030333
       05 PIWA2-FN1EX-IND-SEG-LEN            PIC X(5).           00030433
       05 PIWA2-FN1EX-NTA-NAME               PIC X(75).          00030533
       05 PIWA2-FN1EX-USPS-CITY-NAME         PIC X(25).          00030633
       05 PIWA2-FN1EX-LATITUDE               PIC X(9).           00030733
       05 PIWA2-FN1EX-LONGITUDE              PIC X(11).          00030833
       05 PIWA2-FN1EX-SEG-FROM-NODE          PIC X(7).           00030933
       05 PIWA2-FN1EX-SEG-TO-NODE            PIC X(7).           00031033
       05 PIWA2-FN1EX-SEG-FROM-XYZ           PIC X(21).          00031133
       05 PIWA2-FN1EX-SEG-TO-XYZ             PIC X(21).          00031233
       05 PIWA2-FN1EX-BLOCKFACE-ID           PIC X(10).          00031333
       05 PIWA2-FN1EX-NBR-TRAVEL-LANES       PIC X(2).           00031433
       05 PIWA2-FN1EX-NBR-PARK-LANES         PIC X(2).           00031533
       05 PIWA2-FN1EX-NBR-TOTAL-LANES        PIC X(2).           00031633
       05 PIWA2-FN1EX-STREET-WIDTH-MAX       PIC X(3).           00031733
       05 PIWA2-FN1EX-FILL500                PIC X(252).         00031833
****   05 PIWA2-FN1EX-FILL500   ** V16.4 **  PIC X(255).         00031933
****   05 PIWA2-FN1EX-FILL500   ** V16.1 **  PIC X(271) ***      00032033
****   05 PIWA2-FN1EX-FILL500   ** V15.3 **  PIC X(327) ***      00032133
***************************************************************/ 00032233
*                                                           ***/ 00032333
*THE FOLLOWING FIELDS ARE AN ADDITION TO GRID1              ***/ 00032433
***************************************************************/ 00032533
       05 PIWA2-FN1EX-REASON-CODE            PIC X(1).           00032633
       05 PIWA2-FN1EX-REASON-CODE-QUAL       PIC X(1).           00032733
       05 PIWA2-FN1EX-WARN-CODE              PIC X(2).           00032833
       05 PIWA2-FN1EX-RETURN-CODE            PIC X(2).           00032933
       05 PIWA2-FN1EX-NUM-X-STS-LO-END       PIC X(1).           00033033
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           05 PIWA2-FN1EX-LO-B7SC OCCURS 5 TIMES  PIC X(8).           00033133
           05 PIWA2-FN1EX-NUM-X-STS-HI-END        PIC X(1).           00033233
           05 PIWA2-FN1EX-HI-B7SC OCCURS 5 TIMES  PIC X(8).           00033333
           05 PIWA2-FN1EX-LO-ST-NAME OCCURS 5 TIMES PIC X(32).        00033433
           05 PIWA2-FN1EX-HI-ST-NAME OCCURS 5 TIMES PIC X(32).        00033533
           05 PIWA2-FN1EX-BOE-B7SC                PIC X(8).           00033633
           05 PIWA2-FN1EX-BOE-ST-NAME             PIC X(32).          00033733
           05 PIWA2-FN1EX-FILL600                 PIC X(52).          00033833
                                                                      00033933
      ***************************************************************  00034033
      ***    FOR: FUNCTION 1A   EXTENDED  ***************************  00034133
                                                                      00034233
          03  PIWA2-FUNCTION1AX  REDEFINES PIWA2.                     00034333
           05 PIWA2-1AX-ACCESS-KEY                PIC X(21).          00034433
           05 PIWA2-1AX-CONT-PARITY               PIC X.              00034533
           05 PIWA2-1AX-LOW-HOUSENUM              PIC X(11).          00034633
           05 PIWA2-1AX-ALTKEY-1.                                     00034733
             10 PIWA2-1AX-ALTKEY-1-BORO           PIC X.              00034833
             10 PIWA2-1AX-ALTKEY-1-TAXBLOCK       PIC X(5).           00034933
             10 PIWA2-1AX-ALTKEY-1-TAXLOT         PIC X(4).           00035033
           05 FILLER                              PIC X.              00035133
           05 PIWA2-1AX-SCC                       PIC X(1).           00035233
           05 FILLER                              PIC X.              00035333
           05 PIWA2-1AX-GENERAL-LOT-INFO.                             00035433
             10 PIWA2-1AX-RPAD-BLDG-CLASS         PIC X(2).           00035533
             10 PIWA2-1AX-CORNER-CODE             PIC X(2).           00035633
             10 PIWA2-1AX-TOT-NBR-BLDG            PIC X(4).           00035733
             10 PIWA2-1AX-NUM-OF-BLOCKFACES       PIC X(2).           00035833
             10 PIWA2-1AX-INTERIOR-FLAG           PIC X.              00035933
             10 PIWA2-1AX-VACANT-FLAG             PIC X.              00036033
             10 PIWA2-1AX-IRREG-FLAG              PIC X.              00036133
           05 PIWA2-1AX-ALT-BORO-FLAG             PIC X.              00036233
           05 PIWA2-1AX-OVERFLOW-FLAG             PIC X(1).           00036333
           05 PIWA2-1AX-STROLL-KEY                PIC X(19).          00036433
           05 FILLER-GSS                          PIC X.              00036533
           05 PIWA2-1AX-BLDG-ID-NUM               PIC X(7).           00036633
           05 PIWA2-1AX-CONDO-LOT-FLAG            PIC X.              00036733
           05 FILLER                              PIC X.              00036833
           05 PIWA2-1AX-RPAD-COND-NUM             PIC X(4).           00036933
           05 FILLER                              PIC X(7).           00037033
           05 PIWA2-1AX-CONDO-BILLING-BBL         PIC X(10).          00037133
           05 FILLER                              PIC X.              00037233
           05 PIWA2-1AX-CONDO-BILL-BBL-SCC        PIC X(1).           00037333
           05 PIWA2-1AX-CONDO-LOW-BBL             PIC X(10).          00037433
           05 FILLER                              PIC X.              00037533
           05 PIWA2-1AX-CONDO-HIGH-BBL            PIC X(10).          00037633
           05 FILLER                              PIC X.              00037733
           05 FILLER                              PIC X(15).          00037833
           05 PIWA2-1AX-CO-OP-NBR                 PIC X(4).           00037933
           05 PIWA2-1AX-SANBORN-BVOLPAGE.                             00038033
              10  PIWA2-1AX-SANBORN-BORO          PIC X(1).           00038133
              10  PIWA2-1AX-SANBORN-VOL-PAGE.                         00038233
                15  PIWA2-1AX-SANBORN-VOL-NUM     PIC X(3).           00038333
                15  PIWA2-1AX-SANBORN-PAGE-NUM    PIC X(4).           00038433
           05 PIWA2-1AX-COMMERC-DIST              PIC X(5).           00038533
           05 PIWA2-1AX-DOF-MAP-BOROUGH           PIC X.              00038633
           05 PIWA2-1AX-TAX-MAP-NBR               PIC X(4).           00038733
           05 FILLER-FOR-TAX-MAP-PAGE             PIC X(4).           00038833
           05 FILLER                              PIC X(3).           00038933
           05 PIWA2-1AX-LATITUDE                  PIC X(9).           00039033
           05 PIWA2-1AX-LONGITUDE                 PIC X(11).          00039133
           05 PIWA2-1AX-X-COORD                   PIC X(7).           00039233
           05 PIWA2-1AX-Y-COORD                   PIC X(7).           00039333
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           05 PIWA2-1AX-BID                       PIC X(6).
           05 PIWA2-1AX-TPAD-BIN-ST               PIC X.
           05 PIWA2-1AX-TPAD-NEW-BIN              PIC X(7).
           05 PIWA2-1AX-TPAD-NEW-BIN-ST           PIC X.
           05 PIWA2-1AX-TPAD-CONFLICT             PIC X.
           05 FILLER                              PIC X(9).
           05 FILLER-GSS                          PIC X(8).
           05 PIWA2-1AX-REASON-CODE               PIC X(1).
           05 PIWA2-1AX-REASON-CODE-QUAL          PIC X(1).
           05 PIWA2-1AX-WARN-CODE                 PIC X(2).
           05 PIWA2-1AX-RETURN-CODE               PIC X(2).
           05 PIWA2-1AX-FILLER                    PIC X(108).
           05 PIWA2-1AX-NUM-OF-ADDR               PIC X(4).
           05 PIWA2-1AX-ADDR-LIST                OCCURS 21 TIMES.
             10  PIWA2-1AX-LIST-LOW-HOUSENUM      PIC X(16).
             10  PIWA2-1AX-LIST-HI-HOUSENUM       PIC X(16).
             10  PIWA2-1AX-LIST-BORO              PIC X.
             10  PIWA2-1AX-LIST-5SC               PIC X(5).
             10  PIWA2-1AX-LIST-LGC               PIC X(2).
             10  PIWA2-1AX-LIST-BIN               PIC X(7).
             10  PIWA2-1AX-LIST-SOS               PIC X.
             10  PIWA2-1AX-ADDR-TYPE              PIC X.
             10  PIWA2-1AX-TPAD-STATUS            PIC X.
             10  PIWA2-1AX-ST-NAME                PIC X(32).
             10  FILLER                           PIC X(34).

      ***************************************************************
      ***    FOR: FUNCTION 1B          ****************************

          03  PIWA2-FUNCTION1B   REDEFINES PIWA2.

           05 PIWA2-1B-1-ACCESS-KEY               PIC X(21).
           05 PIWA2-1B-1-CONT-PARITY              PIC X.
           05 PIWA2-1B-1-LOW-HOUSENUM-SORT        PIC X(11).
           05 PIWA2-1B-1-HI-HOUSENUM-SORT         PIC X(11).
           05 PIWA2-1B-1-PREFERRED-LGC            PIC X(2).
           05 PIWA2-1B-1-NUM-X-ST-LOW-END         PIC X.
           05 PIWA2-1B-1-LOW-B5SC                 PIC X(6)
                                                   OCCURS 5 TIMES.
           05 PIWA2-1B-1-NUM-X-ST-HI-END          PIC X.
           05 PIWA2-1B-1-HI-B5SC                  PIC X(6)
                                                   OCCURS 5 TIMES.
           05 PIWA2-1B-1-LIONKEY.
               10  PIWA2-1B-1-LION-BORO           PIC X.
               10  PIWA2-1B-1-LIONFACECODE        PIC X(4).
               10  PIWA2-1B-1-LIONSEQ             PIC X(5).
           05 PIWA2-1B-1-SPECIAL-ADDR-FLAG        PIC X(1).
           05 PIWA2-1B-1-SIDE-OF-STR              PIC X.
           05 PIWA2-1B-1-SEGMENTLENGTH            PIC X(5).
           05 PIWA2-1B-1-XCOORD                   PIC X(7).
           05 PIWA2-1B-1-YCOORD                   PIC X(7).
           05 FILLER-GSS                          PIC X(8).
           05 PIWA2-1B-1-MARBLE-RIKER-FLAG        PIC X(1).
           05 PIWA2-1B-1-SLA                      PIC X.
           05 PIWA2-1B-1-COMDIST.
               10  PIWA2-1B-1-COMDIST-BORO        PIC X(1).
               10  PIWA2-1B-1-COMDIST-NUMBER      PIC X(2).
           05 PIWA2-1B-1-ZIP                      PIC X(5).

           05 PIWA2-1B-1-ELECTDIST                PIC X(3).
           05 PIWA2-1B-1-ASSEMDIST                PIC X(2).
           05 PIWA2-1B-1-SPLIT-ED-FLAG            PIC X(1).
           05 PIWA2-1B-1-CONGDIST                 PIC X(2).
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            05 PIWA2-1B-1-SENATEDIST              PIC X(2).
            05 PIWA2-1B-1-COURTDIST               PIC X(2).
            05 PIWA2-1B-1-COUNCILDIST             PIC X(2).

            05 PIWA2-1B-1-HCD                     PIC X(2).
            05 PIWA2-1B-1-HEALTHAREA              PIC X(4).
            05 PIWA2-1B-1-SANIDIST.
                10  PIWA2-1B-1-SANIDIST-BORO      PIC X(1).
                10  PIWA2-1B-1-SANIDIST-NUMBER    PIC X(2).
            05 PIWA2-1B-1-SANITATION-SUBSEC       PIC X(2).
            05 PIWA2-1B-1-SANI-REG                PIC X(5).
            05 PIWA2-1B-1-SANI-REC                PIC X(3).
            05 PIWA2-1B-1-POLICEDIST.
                 15 PIWA2-1B-1-POL-PATR-BORO-CMD PIC X(1).
                 15 PIWA2-1B-1-POL-PRECINCT       PIC X(3).
      ** NOTE:10  PIWA2-1B-1-FIRESEC ==> FIRE DIVISION **
            05 PIWA2-1B-1-FIRESEC                 PIC X(2).
            05 PIWA2-1B-1-FIREBAT                 PIC X(2).
            05 PIWA2-1B-1-FIRECO.
                10  PIWA2-1B-1-FIRECO-TYPE        PIC X(1).
                10  PIWA2-1B-1-FIRECO-NUM         PIC X(3).
            05 PIWA2-1B-1-SPLIT-SCHOOL-FLAG       PIC X.
            05 PIWA2-1B-1-SCHOOLDIST              PIC X(2).
            05 PIWA2-1B-1-DYN-BLOCK               PIC X(3).
            05 PIWA2-1B-1-POLICE-PAT-BORO         PIC X(2).
            05 PIWA2-1B-1-FEATURE-TYPE            PIC X.
            05 PIWA2-1B-1-SEGMENT-TYPE            PIC X.
            05 PIWA2-1B-1-ALX                     PIC X.
            05 PIWA2-1B-1-COINCIDENT-CNT          PIC X.
            05 FILLER                             PIC X(3).
            05 PIWA2-1B-1-1990-CENSUSTRACT        PIC X(6).
            05 PIWA2-1B-1-2010-CENS-TRCT          PIC X(6).
            05 PIWA2-1B-1-2010-CENS-BLK           PIC X(4).
            05 PIWA2-1B-1-2010-CENS-BLK-SFX       PIC X.
            05 PIWA2-1B-1-2000-CENS-TRCT          PIC X(6).
            05 PIWA2-1B-1-2000-CENS-BLK           PIC X(4).
            05 PIWA2-1B-1-2000-CENS-BLK-SFX       PIC X.
            05 PIWA2-1B-1-NTA                     PIC X(4).
            05 PIWA2-1B-1-SANIT-SNOW-PRRTY        PIC X.
            05 PIWA2-1B-1-SANIT-ORGANICS          PIC X(5).
            05 PIWA2-1B-1-SANIT-BULK-PICK-UP      PIC X(5).
      ****  05 PIWA2-1B-1-SANIT-RESERVED V16.4    PIC X(5).
            05 PIWA2-1B-1-HURRICANE-ZONE          PIC XX.
            05 FILLER                             PIC X(11).
            05 PIWA2-1B-1-TRUE-HNS                PIC X(11).
            05 PIWA2-1B-1-TRUE-B7SC               PIC X(8).
            05 PIWA2-1B-1-SEG-ID                  PIC X(7).
            05 PIWA2-1B-1-CURVE-FLAG              PIC X(1).
            05 PIWA2-1B-1-LGCS                    PIC X(8).
            05 PIWA2-1B-1-BOE-PTR                 PIC X(1).
            05 PIWA2-1B-1-AZIMUTH                 PIC X(3).
            05 PIWA2-1B-1-ORIENT                  PIC X(1).
            05 PIWA2-1B-1-X-LOW                   PIC X(7).
            05 PIWA2-1B-1-Y-LOW                   PIC X(7).
            05 PIWA2-1B-1-Z-LOW                   PIC X(7).
            05 PIWA2-1B-1-X-HI                    PIC X(7).
            05 PIWA2-1B-1-Y-HI                    PIC X(7).
            05 PIWA2-1B-1-Z-HI                    PIC X(7).
            05 PIWA2-1B-1-X-CC                    PIC X(7).
            05 PIWA2-1B-1-Y-CC                    PIC X(7).
            05 PIWA2-1B-1-Z-CC                    PIC X(7).
            05 PIWA2-1B-1-RADIUS                  PIC X(7).
            05 PIWA2-1B-1-SECANT                  PIC X(1).
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       05 PIWA2-1B-1-ANGLE-FROM               PIC X(5).           00052033
       05 PIWA2-1B-1-ANGLE-TO                 PIC X(5).           00052133
       05 PIWA2-1B-1-NODE-FROM                PIC X(7).           00052233
       05 PIWA2-1B-1-NODE-TO                  PIC X(7).           00052333
       05 PIWA2-1B-1-VANITY-LION              PIC X(10).          00052433
       05 PIWA2-1B-1-SOS                      PIC X(1).           00052533
       05 PIWA2-1B-1-SPLIT-LOHSN              PIC X(11).          00052633
       05 PIWA2-1B-1-TD                       PIC X(1).           00052733
       05 PIWA2-1B-1-TR                       PIC X(10).          00052833
       05 PIWA2-1B-1-CURVE-FRACTION           PIC X(3).           00052933
       05 PIWA2-1B-1-ROADWAY-TYPE             PIC X(2).           00053033
       05 PIWA2-1B-1-PHYICAL-ID               PIC X(7).           00053133
       05 PIWA2-1B-1-GENERIC-ID               PIC X(7).           00053233
       05 PIWA2-1B-1-NYPD-ID-FILL             PIC X(7).           00053333
       05 PIWA2-1B-1-FDNY-ID-FILL             PIC X(7).           00053433
       05 PIWA2-1B-1-BIKE-LANE-2              PIC X(2).           00053533
       05 PIWA2-1B-1-BIKE-TRAFFIC-DIR         PIC X(2).           00053633
       05 FILLER                              PIC X(3).           00053733
****   05 FILLER                  ** V17.1 ** PIC X(5) ***        00053833
****   05 FILLER                  ** V16.4 ** PIC X(7) ***        00053933
****   05 PIWA2-FN-1-BLOCKFACE-ID ** V16.1 ** PIC X(7) ***        00054033
       05 PIWA2-1B-1-STREET-STATUS            PIC X(1).           00054133
       05 PIWA2-1B-1-STREET-WIDTH             PIC X(3).           00054233
       05 PIWA2-1B-1-STREET-WIDTH-IRR         PIC X(1).           00054333
       05 PIWA2-1B-1-BIKE-LANE                PIC X(1).           00054433
       05 PIWA2-1B-1-FED-CLASS-CODE           PIC X(2).           00054533
       05 PIWA2-1B-1-ROW-TYPE                 PIC X(1).           00054633
       05 PIWA2-1B-1-LGC-LIST-2               PIC X(10).          00054733
       05 PIWA2-1B-1-LEGACY-SEG-ID            PIC X(7).           00054833
       05 PIWA2-1B-1-LGC-LIST-FROM-1          PIC X(10).          00054933
       05 PIWA2-1B-1-LGC-LIST-TO-1            PIC X(10).          00055033
       05 PIWA2-1B-1-LGC-LIST-FROM-2          PIC X(10).          00055133
       05 PIWA2-1B-1-LGC-LIST-TO-2            PIC X(10).          00055233
       05 PIWA2-1B-1-NOCROSS-FLG              PIC X(1).           00055333
       05 PIWA2-1B-1-IND-SEG-LEN              PIC X(5).           00055433
       05 PIWA2-1B-1-NTA-NAME                 PIC X(75).          00055533
       05 PIWA2-1B-1-USPS-CITY-NAME           PIC X(25).          00055633
       05 PIWA2-1B-1-LATITUDE                 PIC X(9).           00055733
       05 PIWA2-1B-1-LONGITUDE                PIC X(11).          00055833
       05 PIWA2-1B-1-SEG-FROM-NODE            PIC X(7).           00055933
       05 PIWA2-1B-1-SEG-TO-NODE              PIC X(7).           00056033
       05 PIWA2-1B-1-SEG-FROM-XYZ             PIC X(21).          00056133
       05 PIWA2-1B-1-SEG-TO-XYZ               PIC X(21).          00056233
       05 PIWA2-1B-1-BLOCKFACE-ID             PIC X(10).          00056333
       05 PIWA2-1B-1-NBR-TRAVEL-LANES         PIC X(2).           00056433
       05 PIWA2-1B-1-NBR-PARK-LANES           PIC X(2).           00056533
       05 PIWA2-1B-1-NBR-TOTAL-LANES          PIC X(2).           00056633
       05 PIWA2-1B-1-STREET-WIDTH-MAX         PIC X(3).           00056733
       05 PIWA2-1B-1-FILL500                  PIC X(252).         00056833
****   05 PIWA2-1B-1-FILL500   ** V16.4 **    PIC X(255).         00056933
****   05 PIWA2-1B-1-FILL500   ** V16.1 **    PIC X(271) **       00057033
****   05 PIWA2-1B-1-FILL500   ** V15,3 **    PIC X(327) **       00057133
***************************************************************/ 00057233
*                                                           ***/ 00057333
*THE FOLLOWING FIELDS ARE AN ADDITION TO 1/1E               ***/ 00057433
***************************************************************/ 00057533
       05 PIWA2-1B-1-REASON-CODE              PIC X(1).           00057633
       05 PIWA2-1B-1-REASON-CODE-QUAL         PIC X(1).           00057733
       05 PIWA2-1B-1-WARN-CODE                PIC X(2).           00057833
       05 PIWA2-1B-1-RETURN-CODE              PIC X(2).           00057933
       05 PIWA2-1B-1-NUM-X-STS-LO-END         PIC X(1).           00058033
       05 PIWA2-1B-1-LO-B7SC OCCURS 5 TIMES   PIC X(8).           00058133
       05 PIWA2-1B-1-NUM-X-STS-HI-END         PIC X(1).           00058233
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05 PIWA2-1B-1-HI-B7SC OCCURS 5 TIMES   PIC X(8).
05 PIWA2-1B-1-LO-ST-NAME OCCURS 5 TIMES PIC X(32).
05 PIWA2-1B-1-HI-ST-NAME OCCURS 5 TIMES PIC X(32).
05 PIWA2-1B-1-BOE-B7SC                 PIC X(8).
05 PIWA2-1B-1-BOE-ST-NAME              PIC X(32).
05 PIWA2-1B-1-FILL600                  PIC X(52).

05 PIWA2-1B-1A-ACCESS-KEY              PIC X(21).
05 PIWA2-1B-1A-CONT-PARITY             PIC X.
05 PIWA2-1B-1A-LOW-HOUSENUM            PIC X(11).
05 PIWA2-1B-1A-ALTKEY-1.
  10 PIWA2-1B-1A-ALTKEY-1-BORO         PIC X.
  10 PIWA2-1B-1A-ALTKEY-1-TAXBLOCK     PIC X(5).
  10 PIWA2-1B-1A-ALTKEY-1-TAXLOT       PIC X(4).
05 FILLER                              PIC X.
05 PIWA2-1B-1A-SCC                     PIC X(1).
05 FILLER                              PIC X.
05 PIWA2-1B-1A-GENERAL-LOT-INFO.
  10 PIWA2-1B-1A-RPAD-BLDG-CLASS       PIC X(2).
  10 PIWA2-1B-1A-CORNER-CODE           PIC X(2).
  10 PIWA2-1B-1A-TOT-NBR-BLDG          PIC X(4).
  10 PIWA2-1B-1A-NUM-OF-BLOCKFACES     PIC X(2).
  10 PIWA2-1B-1A-INTERIOR-FLAG         PIC X.
  10 PIWA2-1B-1A-VACANT-FLAG           PIC X.
  10 PIWA2-1B-1A-IRREG-FLAG            PIC X.
05 PIWA2-1B-1A-ALT-BORO-FLAG           PIC X.
05 PIWA2-1B-1A-OVERFLOW-FLAG           PIC X(1).
05 PIWA2-1B-1A-STROLL-KEY              PIC X(19).
05 FILLER-GSS                          PIC X.
05 PIWA2-1B-1A-BLDG-ID-NUM             PIC X(7).
05 PIWA2-1B-1A-CONDO-LOT-FLAG          PIC X.
05 FILLER                              PIC X.
05 PIWA2-1B-1A-RPAD-COND-NUM           PIC X(4).
05 FILLER                              PIC X(7).
05 PIWA2-1B-1A-CONDO-BILLING-BBL       PIC X(10).
05 FILLER                              PIC X.
05 PIWA2-1B-1A-CONDO-BILL-BBL-SCC      PIC X(1).
05 PIWA2-1B-1A-CONDO-LOW-BBL           PIC X(10).
05 FILLER                              PIC X.
05 PIWA2-1B-1A-CONDO-HIGH-BBL          PIC X(10).
05 FILLER                              PIC X.
05 FILLER                              PIC X(15).
05 PIWA2-1B-1A-CO-OP-NBR               PIC X(4).
05 PIWA2-1B-1A-SANBORN-BVOLPAGE.
   10  PIWA2-1B-1A-SANBORN-BORO        PIC X(1).
   10  PIWA2-1B-1A-SANBORN-VOL-PAGE.
     15  PIWA2-1B-1A-SANBORN-VOL-NUM   PIC X(3).
     15  PIWA2-1B-1A-SANBORN-PAGE-NUM  PIC X(4).
05 PIWA2-1B-1A-COMMERC-DIST            PIC X(5).
05 PIWA2-1B-1A-DOF-MAP-BOROUGH         PIC X.
05 PIWA2-1B-1A-TAX-MAP-NBR             PIC X(4).
05 FILLER-FOR-TAX-MAP-PAGE             PIC X(4).
05 FILLER                              PIC X(3).
05 PIWA2-1B-1A-LATITUDE                PIC X(9).
05 PIWA2-1B-1A-LONGITUDE               PIC X(11).
05 PIWA2-1B-1A-X-COORD                 PIC X(7).
05 PIWA2-1B-1A-Y-COORD                 PIC X(7).
05 PIWA2-1B-1A-BID                     PIC X(6).
05 PIWA2-1B-1A-TPAD-BIN-ST             PIC X.
05 PIWA2-1B-1A-TPAD-NEW-BIN            PIC X(7).
05 PIWA2-1B-1A-TPAD-NEW-BIN-ST         PIC X.
05 PIWA2-1B-1A-TPAD-CONFLICT           PIC X.
05 FILLER                              PIC X(9).
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P2COB1AL COPY File

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           05 FILLER-GSS                        PIC X(8).            00064633
           05 PIWA2-1B-1A-REASON-CODE           PIC X(1).            00064733
           05 PIWA2-1B-1A-REASON-CODE-QUAL      PIC X(1).            00064833
           05 PIWA2-1B-1A-WARN-CODE             PIC X(2).            00064933
           05 PIWA2-1B-1A-RETURN-CODE           PIC X(2).            00065033
           05 FILLER                            PIC X(108).          00065133
           05 PIWA2-1B-1A-NUM-OF-ADDR           PIC X(4).            00065233
           05 PIWA2-1B-1A-ADDR-LIST            OCCURS 21 TIMES.      00065333
             10  PIWA2-1B-1A-LIST-LOW-HOUSENUM  PIC X(16).           00065433
             10  PIWA2-1B-1A-LIST-HI-HOUSENUM   PIC X(16).           00065533
             10  PIWA2-1B-1A-LIST-BORO          PIC X.               00065633
             10  PIWA2-1B-1A-LIST-5SC           PIC X(5).            00065733
             10  PIWA2-1B-1A-LIST-LGC           PIC X(2).            00065833
             10  PIWA2-1B-1A-LIST-BIN           PIC X(7).            00065933
             10  PIWA2-1B-1A-LIST-SOS           PIC X.               00066033
             10  PIWA2-1B-1A-ADDR-TYPE          PIC X.               00066133
             10  PIWA2-1B-1A-TPAD-STATUS        PIC X.               00066233
             10  PIWA2-1B-1A-ST-NAME            PIC X(32).           00066333
             10  FILLER                         PIC X(34).           00067028
                                                                     00070010
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P2COB3S COPY File

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*****************************************************************
***  THIS IS THE COBOL STRUCTURE FOR GEOSUPPORT SYSTEM PLATFORM **
***  INDEPENDENT WORK AREA 2 FOR FUNCTION 3S.                   **
***  COPY FILE - P2COB3S.                        09/17/97       **
*****************************************************************
       05  PIWA2-3S-ACCESS-KEY.
          10 FILLER-GSS                      PIC X(2).
          10 PIWA2-3S-PORS-STNAME-IND        PIC X.
          10 PIWA2-3S-BORO                   PIC X.
          10 PIWA2-3S-5SC                    PIC X(5).
          10 PIWA2-3S-LGC                    PIC X(2).
          10 FILLER                          PIC X(10).
       05  PIWA2-3S-NUM-OF-INTERSECTS        PIC X(3).
       05  PIWA2-3S-LIST-OFINTERSECTS        OCCURS 350 TIMES.
          10 PIWA2-3S-MARBLE-RIKERS-FLAG     PIC X.
          10 PIWA2-3S-DISTANCE               PIC X(5).
          10 PIWA2-3S-GAP-FLAG               PIC X.
          10 FILLER                          PIC X(7).
          10 PIWA2-3S-NUM-OF-STR             PIC X.
          10 PIWA2-3S-B7SC                   PIC X(8)
                                             OCCURS 5 TIMES.
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P2COBAP COPY File

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****************************************************************  00010006
**  MARCH   2015 YNL                - COPYLIB AP / APX    V15.2**  00020028
**  THIS IS THE COBOL STRUCTURE FOR GEOSUPPORT SYSTEM PLATFORM **  00030006
**  INDEPENDENT WORK AREA 2 FOR FUNCTION: AP.                  **  00040028
****************************************************************  00050006
****************************************************************  00060006
                                                                   00070006
      03  PIWA2                             PIC X(2800).           00080024
                                                                   00090006
 **************************************************************   00100023
 ***   FOR: FUNCTION AP           ******** ADDAP  V15.2 ******    00110024
                                                                   00120023
      03  PIWA2-FUNCTIONAP   REDEFINES PIWA2.                      00130024
       05 PIWA2-AP-ACCESS-KEY               PIC X(21).             00140024
       05 PIWA2-AP-CONT-PARITY              PIC X.                 00150024
       05 PIWA2-AP-LOW-HOUSENUM             PIC X(11).             00160024
       05 PIWA2-AP-ALTKEY-1.                                       00170024
         10 PIWA2-AP-ALTKEY-1-BORO          PIC X.                 00180024
         10 PIWA2-AP-ALTKEY-1-TAXBLOCK      PIC X(5).              00190024
         10 PIWA2-AP-ALTKEY-1-TAXLOT        PIC X(4).              00200024
       05 FILLER                            PIC X(7).              00210025
       05 PIWA2-AP-TOT-NBR-BLDG             PIC X(4).              00220024
       05 FILLER                            PIC X(26).             00230023
       05 FILLER-GSS                        PIC X.                 00240023
       05 PIWA2-AP-BLDG-ID-NUM              PIC X(7).              00250024
       05 PIWA2-AP-CONDO-LOT-FLAG           PIC X.                 00260024
       05 FILLER                            PIC X.                 00270023
       05 PIWA2-AP-RPAD-COND-NUM            PIC X(4).              00280024
       05 FILLER                            PIC X(7).              00290023
       05 PIWA2-AP-CONDO-BILLING-BBL        PIC X(10).             00300024
       05 FILLER                            PIC X(2).              00310025
       05 PIWA2-AP-CONDO-LOW-BBL            PIC X(10).             00320024
       05 FILLER                            PIC X.                 00330023
       05 PIWA2-AP-CONDO-HIGH-BBL           PIC X(10).             00340024
       05 FILLER                            PIC X(16).             00350025
       05 PIWA2-AP-CO-OP-NBR                PIC X(4).              00360024
       05 FILLER                            PIC X(22).             00370031
       05 PIWA2-AP-RESERVED                 PIC X(3).              00380031
       05 PIWA2-AP-LATITUDE                 PIC X(9).              00400024
       05 PIWA2-AP-LONGITUDE                PIC X(11).             00410024
       05 PIWA2-AP-X-COORD                  PIC X(7).              00420024
       05 PIWA2-AP-Y-COORD                  PIC X(7).              00430024
       05 FILLER                            PIC X(16).             00440029
       05 PIWA2-AP-AP-ID                    PIC X(9).              00450029
       05 FILLER-GSS                        PIC X(8).              00460023
       05 PIWA2-AP-NUM-OF-ADDR              PIC X(4).              00470024
       05 PIWA2-AP-ADDR-LIST               OCCURS 21 TIMES.        00480024
         10  PIWA2-AP-LIST-LOW-HOUSENUM     PIC X(16).             00490024
         10  PIWA2-AP-LIST-HI-HOUSENUM      PIC X(16).             00500024
         10  PIWA2-AP-LIST-BORO             PIC X.                 00510024
         10  PIWA2-AP-LIST-5SC              PIC X(5).              00520024
         10  PIWA2-AP-LIST-LGC              PIC X(2).              00530024
         10  PIWA2-AP-LIST-BIN              PIC X(7).              00540024
         10  PIWA2-AP-LIST-SOS              PIC X.                 00550024
         10  PIWA2-AP-ADDR-TYPE             PIC X.                 00560024
```

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          10  FILLER                              PIC X(4).          00570024
                                                                     00580024
******************************************************************   00590024
***    FOR: FUNCTION AP EXTENDED  ******** ADDAP  V15.2 ********     00600026
                                                                     00610024
     03  PIWA2-FUNCTIONAPX  REDEFINES PIWA2.                         00620024
      05 PIWA2-APX-ACCESS-KEY                 PIC X(21).             00630024
      05 PIWA2-APX-CONT-PARITY                PIC X.                 00640024
      05 PIWA2-APX-LOW-HOUSENUM               PIC X(11).             00650024
      05 PIWA2-APX-ALTKEY-1.                                         00660024
        10 PIWA2-APX-ALTKEY-1-BORO            PIC X.                 00670024
        10 PIWA2-APX-ALTKEY-1-TAXBLOCK        PIC X(5).              00680024
        10 PIWA2-APX-ALTKEY-1-TAXLOT          PIC X(4).              00690024
      05 FILLER                               PIC X(7).              00700025
      05 PIWA2-APX-TOT-NBR-BLDG               PIC X(4).              00710024
      05 FILLER                               PIC X(26).             00720024
      05 FILLER-GSS                           PIC X.                 00730024
      05 PIWA2-APX-BLDG-ID-NUM                PIC X(7).              00740024
      05 PIWA2-APX-CONDO-LOT-FLAG             PIC X.                 00750024
      05 FILLER                               PIC X.                 00760024
      05 PIWA2-APX-RPAD-COND-NUM              PIC X(4).              00770024
      05 FILLER                               PIC X(7).              00780024
      05 PIWA2-APX-CONDO-BILLING-BBL          PIC X(10).             00790024
      05 FILLER                               PIC X(2).              00800025
      05 PIWA2-APX-CONDO-LOW-BBL              PIC X(10).             00810024
      05 FILLER                               PIC X.                 00820024
      05 PIWA2-APX-CONDO-HIGH-BBL             PIC X(10).             00830024
      05 FILLER                               PIC X(16).             00840025
      05 PIWA2-APX-CO-OP-NBR                  PIC X(4).              00850024
      05 FILLER                               PIC X(18).             00860024
      05 FILLER-FOR-TAX-MAP-PAGE              PIC X(4).              00870024
      05 FILLER                               PIC X(3).              00880024
      05 PIWA2-APX-LATITUDE                   PIC X(9).              00890024
      05 PIWA2-APX-LONGITUDE                  PIC X(11).             00900024
      05 PIWA2-APX-X-COORD                    PIC X(7).              00910024
      05 PIWA2-APX-Y-COORD                    PIC X(7).              00920024
      05 FILLER                               PIC X(16).             00930029
      05 PIWA2-APX-AP-ID                      PIC X(9).              00940029
      05 FILLER-GSS                           PIC X(8).              00950024
      05 PIWA2-APX-REASON-CODE                PIC X(1).              00960024
      05 PIWA2-APX-REASON-CODE-QUAL           PIC X(1).              00970024
      05 PIWA2-APX-WARN-CODE                  PIC X(2).              00980024
      05 PIWA2-APX-RETURN-CODE                PIC X(2).              00990024
      05 PIWA2-APX-FILLER                     PIC X(108).            01000024
      05 PIWA2-APX-NUM-OF-ADDR                PIC X(4).              01010024
      05 PIWA2-APX-ADDR-LIST                 OCCURS 21 TIMES.        01020024
        10  PIWA2-APX-LIST-LOW-HOUSENUM       PIC X(16).             01030024
        10  PIWA2-APX-LIST-HI-HOUSENUM        PIC X(16).             01040024
        10  PIWA2-APX-LIST-BORO               PIC X.                 01050024
        10  PIWA2-APX-LIST-5SC                PIC X(5).              01060024
        10  PIWA2-APX-LIST-LGC                PIC X(2).              01070024
        10  PIWA2-APX-LIST-BIN                PIC X(7).              01080024
        10  PIWA2-APX-LIST-SOS                PIC X.                 01090024
        10  PIWA2-APX-ADDR-TYPE               PIC X.                 01100024
        10  FILLER                            PIC X.                 01110024
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P2COBAP COPY File

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           10  PIWA2-APX-ST-NAME                 PIC X(32).          01120024
           10  FILLER                            PIC X(34).          01130024
                                                                     01140024
```

ASSEMBLER COPY Files (COW)

P1BAL COPY File

```
*/*********************************************************************/ 00010000
*/*****  THIS IS GEOSUPPORT INFORMATION SYSTEM COPY FILE P1BAL,    ***/ 00020000
*/*****  CONTAINING THE Platform Independent LAYOUT OF WORK AREA 1 ***/ 00030000
*/*********************************************************************/ 00040000
*/*****        Last Updated:  August 2016  - Unit added by meb     ***/ 00040136
*/*****        Last Updated:  December 2013                        ***/ 00040336
*/*********************************************************************/ 00041014
P1BAL    DS   0H                                                        00050000
*/****************************                                          00060000
*/*****  INPUT FIELDS  *******                                          00070000
*/****************************                                          00080000
P1IFUNC  DS   0CL2      FUNCTION CODE                                   00090000
P1IFUNC1 DS    CL1      FUNCTION CODE, BYTE 1                           00100000
P1IFUNC2 DS    CL1      FUNCTION CODE, BYTE 2                           00110000
         SPACE                                                          00120000
P1IHSE#  DS    CL16      UNFORMATED HSNUM FOR FUNCTION: 1; 1A; 1E.      00130001
P1IHSE#S DS    CL11      HOUSE NUMBER (SORT FORMAT)                     00140005
*                        The Following two fields are for Fn 5          00150001
P1ILHS#  DS    CL16      UNFORMATED HSNUM                               00160001
P1ILHS#S DS    CL11      HOUSE NUMBER (SORT FORMAT)                     00170005
         SPACE                                                          00180001
P1IBCD1  DS   0CL11     11 Digit Street Code for Street one             00190000
P1IBORO1 DS    CL1      BORO CODE  (1=MN;2=BX;3=BK;4=QN;5=SI)           00200000
P1ICDE1  DS    CL10      STREET CODE FOR STREET ONE                     00210000
P1ISTRT1 DS    CL32      STREET NAME 1                                  00220000
         SPACE                                                          00230000
P1IBCD2  DS   0CL11     11 Digit Street Code for Street two             00240000
P1IBORO2 DS    CL1       BORO CODE OF CROSS ST. 1                       00250000
P1ICDE2  DS    CL10      STREET CODE FOR STREET TWO                     00260000
P1ISTRT2 DS    CL32      STREET NAME 2                                  00270000
         SPACE                                                          00280000
P1IBCD3  DS   0CL11     11 Digit Street Code for Street Three           00290001
P1IBORO3 DS    CL1       BORO CODE OF CROSS ST. 2                       00300000
P1ICDE3  DS    CL10      STREET CODE FOR STREET THREE                   00310000
P1ISTRT3 DS    CL32      STREET NAME 3                                  00320000
         SPACE                                                          00330000
P1IBBL   DS   0CL10     BORO,BLOCK,LOT FOR "BL" FUNCTION                00340002
P1IBLBOR DS    CL1      BORO FOR FUNCTION "BL"                          00350000
P1IBLOCK DS    CL5      TAX BLOCK - FOR  FUNCTION "BL"                  00360000
P1ILOT   DS    CL4      TAX LOT   - FOR  FUNCTION "BL"                  00370000
P1ITLV#  DS    CL1       Tax Lot Version Number (Not Implemented)       00380000
P1IBIN   DS    CL7       BUILDING ID NUMBER                             00390000
P1ICOMP  DS    CL1       COMPASS DIRECTION (TYPES 2, 3C & 3S)           00400010
P1ICOMP2 DS    CL1       COMPASS DIRECTION (TYPE 3S)                    00401010
P1INODE  DS    CL7       Node as inpur for Fn 2                         00410032
P1IPLIND DS    CL1       Platform Indicator                             00420003
*                        Blank = St'd Mainframe                         00430000
*                        P = Platform Independent                       00440000
P1IZIPIN DS    CL5       Input Zip Code                                 00450036
P1IUNIT  DS    CL14      Input Unit V16.4                               00451036
         DS    CL82      Filler                                         00460036
         SPACE                                                          00470000
*/****************************                                          00480000
*/*****     FLAGS     *******                                           00490000
*/****************************                                          00500000
         SPACE                                                          00510000
P1ILONG  DS    CL1       'L' IF LONG WORKAREA 2 FOR FUNC 1A/BL          00520000
P1IJUST  DS    CL1       HOUSE NUMBER JUSTIFICATION FLAG                00520109
P1IHNL   DS    CL2       House Number Length                            00521009
P1IHNBRF DS    CL1       House Number Override Flag - *, $ or blank     00522009
```

P1BAL COPY File

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P1ISNL   DS    CL2         LENGTH STREET NAME IS TO BE NORMALIZED TO     00523009
P1ICMPCT DS    CL1         'C' IF STREET NAMES ARE TO BE COMPACTED       00524009
P1IEXPND DS    CL1         EXPANDED FORMAT FLAG                          00530009
P1IRBRQS DS    CL1         ROADBED REQUEST SWITCH                        00550013
P1IRES01 DS    CL1         RESERVED FOR INTERNAL USE                     00581015
P1ISEGAX DS    CL1         Segment Auxiliary Switch                      00582018
P1IBRFLG DS    CL1         BROWSE FLAG P=PRIMARY ONLY F=PRINCIPAL ONLY   00583020
P1IRSTON DS    CL1         Real Street Only Flag used with Function 3S   00584021
P1ITPADS DS    CL1         Read TPAD for PAD Processing                  00585023
P1IMODES DS    CL1         Mode Switch                                   00586027
*                          X = Extended                                  00586131
P1IWTOS  DS    CL1         WTO Switch  N=No WTO                          00586231
         DS    CL29        FILLER                                        00590031
         SPACE                                                           00600000
*/*****************************                                          00610000
*/*****  OUTPUT FIELDS  *******                                          00620000
*/*****************************                                          00630000
         SPACE                                                           00640000
P1OBORO  DS    CL9         BORO NAME                                     00650000
P1OHSE#  DS    CL16        HOUSE NUMBER, NORMALIZED, DISPLAY FORMAT      00660000
P1OHSE#S DS    CL11        HOUSE NUMBER (SORT FORMAT)                    00670005
P1OBCD1  DS   0CL11       11 Digit Street Code for Street one            00680000
P1OBORO1 DS    CL1        BORO CODE  (1=MN;2=BX;3=BK;4=QN;5=SI)          00690000
P1OCDE1  DS    CL10        STREET CODE FOR STREET ONE                    00700000
P1OSTRT1 DS    CL32        STREET 1 NAME, NORMALIZED                     00710004
         SPACE                                                           00720000
P1OBCD2  DS   0CL11       11 Digit Street Code for Street two            00730000
P1OBORO2 DS    CL1         BORO CODE OF CROSS ST. 1                      00740000
P1OCDE2  DS    CL10        STREET CODE FOR STREET TWO                    00750000
P1OSTRT2 DS    CL32        STREET 2 NAME, NORMALIZED                     00760004
         SPACE                                                           00770000
P1OBCD3  DS   0CL11       11 Digit Street Code for Street three          00780000
P1OBORO3 DS    CL1         BORO CODE OF street 3                         00790000
P1OCDE3  DS    CL10        STREET CODE FOR STREET THREE                  00800000
P1OSTRT3 DS    CL32        STREET 3 NAME, NORMALIZED                     00810004
         SPACE                                                           00820000
P1OBBL   DS   0CL11       BORO,BLOCK,LOT FOR "BL" FUNCTION               00830000
P1OBLBOR DS    CL1        BORO FOR FUNCTION "BL"                         00840000
P1OBLOCK DS    CL5        TAX BLOCK - FOR  FUNCTION "BL"                 00850000
P1OLOT   DS    CL4        TAX LOT   - FOR  FUNCTION "BL"                 00860000
P1OTLV#  DS    CL1         Tax Lot Version Number (Not Implemented)      00870000
P1OLHSE  DS    CL16        LOW HOUSE NUMBER DISPLAY FORM                 00880006
P1OLHSES DS    CL11        LOW HOUSE NUMBER SORT FORM                    00881006
P1OBIN   DS    CL7         Output Building Identification Number         00882011
P1OATTR3 DS    CL3         Attribute Bytes - Internal Use                00883011
         SPACE                                                           00890000
P1OREAS2 DS    CL1         2ND REASON CODE                               00891024
P1ORCQ2  DS    CL1         2ND REASON CODE TPAD QUALIFIER                00892130
P1OWARN2 DS    CL2         2ND WARNING RETURN CODE-NOT IMPL              00892226
P1ORC2   DS    CL2         2ND GEOSUPPORT RETURN CODE                    00893025
P1OERR2  DS    CL80        2ND ERROR MESSAGE                             00894024
P1ONODE  DS    CL7         NODE NORMALIZED FOR FN 2                      00895032
P1OUNITS DS   0CL14        UNIT IN SORT FORMAT                           00896037
P1OUNITT DS    CL4         UNIT TYPE                                     00897036
P1OUNITI DS    CL10        UNIT IDENTIFIER                               00898036
P1OUNITD DS    CL14        UNIT IN DISPLAY FORMAT                        00899036
         DS    CL11        FILLER                                        00900036
P1ONIN   DS    CL6         NAP IDENTIFICATION NUMBER                     00900107
P1OATTRB DS    CL1         ATTRIBUTE BYTE FROM SND                       00901006
P1OREASN DS    CL1         REASON CODE                                   00910000
P1ORCQ   DS    CL1         REASON CODE TPAD QUALIFIER                    00920030
```

P1BAL COPY File

```
P1OWARNC DS     CL2        WARNING RETURN CODE                                      00930025
P1ORC    DS     CL2        GEOSUPPORT RETURN CODE                                   00940025
P1OERROR DS     CL80       ERROR MESSAGE                                            00950000
P1O#NAME DS     CL2        NUMBER OF STREET NAMES                                   00960002
P1OBRWSE DS     CL80       10 B7SC'S                                                00970002
P1ONAMES DS   10CL32       UP TO 10 STREET NAMES                                    00980002
P1END    EQU    *                                                                   00990000
P1LENGTH EQU    P1END-P1BAL     LENGTH OF P1BAL                                     01000000
```

P2BAL COPY File

```
*/**********************************************************************/
*/*****  THIS IS GEOSUPPORT INFORMATION SYSTEM COPY FILE P2BAL,    ***/
*/*****  CONTAINING THE LAYOUT OF WORK AREA 2 FOR FUNCTIONS         ***/
*/*****  1, 1E, 2, 2C, 3, 3C. PLEASE NOTE THAT FUNCTIONS 2 AND 2C  ***/
*/*****  SHARE A SINGLE WORK AREA 2 LAYOUT.                         ***/
*/*****  ADDED 3 EXTENDED (MODE OF X)                   6/2011     ***/
*/*****  ADDED 2 WIDE     (2W       )                   2/2014     ***/
*/*****  ADDED 2 byte field "Police Patrol Borough" for functions: ***/
*/*****  1/1E; 2/2W; 3/3X-left side;3/3X-right side; 3C/3CX.       ***/
*/*****                                                8/2014     ***/
*/*****  ADDED 2 fields: "Bike Lane 2" and "Street Width Maximum"  ***/
*/*****  for functions 3X/3CX                          9/2016     ***/
*/*****  Replaced "Saniitation Reserved" with "Sanitation Bulk     ***/
*/*****  Pick Up" for function 1                       10/2016    ***/
*/*****  ADDED 2 bytes field "Bike Traffic Direction" for          ***/
*/*****  for functions 1/1E (extended),1B,3X,3CX         12/2016 ***/
*/**********************************************************************/
*/*****        Last Date Modified -   FEBRUARY 2016                ***/
*/**********************************************************************/
P2BAL    DS   0H
P2ACCKEY DS    CL21          ACCESS KEY
P2LAYOUT DS   0CL279
P2F1CPAR DS    CL1           CONTINUOUS PARITY INDICATOR
P2F1LHNS DS    CL11          LOW HOUSE NUMBER
P2F1HHNS DS    CL11          HIGH HOUSE NUMBER
P2F1LGC  DS    CL2           DCP Prefered LGC (Fn 1) - BOE (Fn 1E)
P2F1#STL DS    CL1           NUMBER OF CROSS STREETS AT LOW END
P2F1CDEL DS    CL30          UP TO FIVEPB5SC'S FOR LOW END
P2F1#STH DS    CL1           NUMBER OF CROSS STREETS AT HIGH END
P2F1CDEH DS    CL30          UP TO FIVE B5SC'S FOR HIGH END
P2F1LBOR DS    CL1           LION BOROUGH CODE
P2F1FACE DS    CL4           LION FACE CODE
P2F1SEQ  DS    CL5           LION SEQUENCE NUMBER
P2F1SPAD DS    CL1           SPECIAL ADDRESS FLAG
P2F1SOS  DS    CL1           SIDE OF STREET INDICATOR
P2F1SEGL DS    CL5           SEGMENT LEGNTH
P2F1XCOR DS    CL7           X COORDINATE
P2F1YCOR DS    CL7           Y COORDINATE
P2F1ZCOR DS    CL7           Z Coordinate - Not Impl.
P2F1RES1 DS    CL1           RESERVED FOR DCP/GSS USE
P2F1MHRI DS    CL1           MARBLE HILL/RIKERS ISLAND FLAG
P2F1SLA  DS    CL1           STREET LIGHT AREA
P2F1CD   DS   0CL3           COMMUNITY DISTRICT
P2F1CDB  DS    CL1           COMMUNITY DISTRICT BORO
P2F1CDN  DS    CL2           COMMUNITY DISTRICT NUMBER
P2F1ZIP  DS    CL5           ZIP CODE
P2F1EED  DS    CL3           ELECTION DISTRICT
P2F1EAD  DS    CL2           ASSEMBLY DISTRICT
P2F1ESED DS    CL1           SPLIT E.D. FLAG
*                 Next four fields are valid only for Fn 1E
P2F1ECON DS    CL2           CONGRESSIONAL DISTRICT
P2F1ESEN DS    CL2           SENATORIAL DISTRICT
P2F1ECIV DS    CL2           CIVIL COURT DISTRICT
P2F1ECOU DS    CL2           CITY COUNCIL DISTRICT
*
P2F1HCD  DS    CL2           HEALTH CODE DISTRICT
P2F1HA   DS    CL4           HEALTH AREA
P2F1SAND DS    CL3           SANITATION DISTRICT
P2F1SANT DS    CL2           SANITATION DEPT SUBSECTION
P2F1SREG DS    CL5           SANITATION REGULAR PICK-UP
P2F1SREC DS    CL3           SANITATION RECYCLE PICK-UP
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P2BAL COPY File

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P2F1POL  DS     0CL4            POLICE DISTRICT                             00620092
P2F1PBC  DS     CL1             POLICE PATROL BORO COMMAND                  00630092
P2F1POP  DS     CL3             POLICE PRECINCT                             00640092
P2F1FS   DS     CL2             FIRE DIVISION                               00650092
P2F1FB   DS     CL2             FIRE BATTALION                              00660092
P2F1FC   DS    0CL4             FIRE COMPANY                                00670092
P2F1FCT  DS     CL1             FIRE COMPANY TYPE                           00680092
P2F1FCN  DS     CL3             FIRE COMPANY NUMBER                         00690092
P2F1FILS DS     CL1             FILLER_WAS SPLIT SCHOOL DISTRICT FLAG       00700092
P2F1SCH  DS     CL2             SCHOOL DISTRICT                             00710092
P2F1CPB  DS     CL3             DYNAMIC  BLOCK/ATOMIC POLYGON               00720092
P2F1PPB  DS     CL2             Police Patrol Borough                       00730092
P2F1FEAT DS     CL1             Feature Type Code                           00740092
P2F1STC  DS     CL1             SEGMENT TYPE CODE                           00750092
P2F1ALX  DS     CL1             A=Segment split by Alley                    00760092
*                               X=Cross Streets modified                    00770092
P2F1CSC  DS     CL1             Coincident Segment Count                    00780092
         DS     CL2             Filler                                      00790092
P2F1CTB  DS     CL1             CENSUS TRACT BOROUGH                        00800092
P2F1CT90 DS     CL6             1990 CENSUS TRACT                           00810092
P2F1CT10 DS     CL6             2010 CENSUS TRACT                           00820092
P2F1BL10 DS     CL4             2010 CENSUS BLOCK                           00830092
P2F1BLS1 DS     CL1             2010 CENSUS BLOCK SUFFIX NOT IMPLEMENTED    00840092
P2F1T00  DS     CL6             2000 CENSUS TRACT                           00850092
P2F1B00  DS     CL4             2000 CENSUS BLOCK                           00860092
P2F1S00  DS     CL1             2000 CENSUS BLOCK SUFFIX                    00870092
P2F1NTA  DS     CL4             Neighborhood Tabulation Area                00880092
P2F1SP   DS     CL1             Sanitation Street Snow Priority             00890092
P2F1SORG DS     CL5             Sanitation Organics Pick Up                 00900092
P2F1SBLK DS     CL5             Sanitation Bulk Pick Up                     00910092
*        DS     CL5             Sanitation Reserved                         00920092
P2F1HZ   DS     CL2             Hurricane Evacuation Zone                   00930092
         DS     CL11            Filler                                      00940092
P2F1UHNS DS     CL11            Underlying HNS                              00950092
P2F1B7SC DS     CL8             "True" Borough 7 Digit Street Code          00960092
P2F1SEGT DS     CL7             Segment Identifier                          00970092
P2F1CURV DS     CL1             Curve Flag                                  00980092
P2F1END  EQU    *                                                           00990092
P2F1LEN  EQU    P2F1END-P2BAL       Length of WA 2 for Fn 1                 01000092
*                                                                           01010092
*********************************************************************      01020092
         ORG    P2LAYOUT        RESET LOCATION COUNTER FOR FUNCTION 2       01030092
*********************************************************************      01040092
*                                                                           01050092
P2F2DUPI DS     CL1             DUPLICATE INTERSECT FLAG                    01060092
P2F2LGC1 DS     CL2             STREET 1 PREFERRED LGC                      01070092
P2F2LGC2 DS     CL2             STREET 2 PREFERRED LGC                      01080092
P2F2#INT DS     CL1             NUMBER OF INTERSECTING STREETS              01090092
P2F2CODE DS     CL30            INTERSECTING B5SC'S                         01100092
P2F2CDUP DS     CL1             COMPASS DIRECTION FOR TWO LOWEST            01110092
P2F2AP   DS     CL3             ATOMIC POLYGON                              01120092
         DS     CL2             FILLER                                      01130092
P2F2NDNB DS     CL7             LION NODE NUMBER                            01140092
P2F2XCOR DS     CL7             X COORDINATE                                01150092
P2F2YCOR DS     CL7             Y COORDINATE                                01160092
P2F2ZCOR DS     CL7             Z Coordinate - Not Impl.                    01170092
P2F2SVP1 DS    0CL8             FIRST SANBORN BOROUGH, PAGE, VOLUME         01180092
P2F2SB1  DS     CL1             FIRST SANBORN BOROUGH CODE                  01190092
P2F2SP1  DS     CL3             FIRST SANBORN PAGE                          01200092
P2F2SV1  DS     CL4             FIRST SANBORN VOLUME                        01210092
P2F2SVP2 DS    0CL8             SECOND SANBORN BOROUGH, PAGE, VOLUME        01220092
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P2F2SB2  DS     CL1            SECOND SANBORN BOROUGH CODE                01230092
P2F2SP2  DS     CL3            SECOND SANBORN PAGE                        01240092
P2F2SV2  DS     CL4            SECOND SANBORN VOLUME                      01250092
P2F2MHRI DS     CL1            MARBLE HILL/RIKERS ISLAND FLAG             01260092
P2F2SLA  DS     CL1            STREET LIGHT AREA                          01270092
P2F2CD   DS    0CL3            COMMUNITY DISTRICT                         01280092
P2F2CDB  DS     CL1            COMMUNITY DISTRICT BORO                    01290092
P2F2CDN  DS     CL2            COMMUNITY DISTRICT NUMBER                  01300092
P2F2ZIP  DS     CL5            ZIP CODE                                   01310092
P2F2HA   DS     CL4            HEALTH AREA                                01320092
P2F2POL  DS    0CL4            POLICE DISTRICT                            01330092
P2F2PBC  DS     CL1            POLICE PATROL BORO COMMAND                 01340092
P2F2POP  DS     CL3            POLICE PRECINCT                            01350092
P2F2FS   DS     CL2            FIRE DIVISION                              01360092
P2F2FB   DS     CL2            FIRE BATTALION                             01370092
P2F2FC   DS    0CL4            FIRE COMPANY                               01380092
P2F2FCT  DS     CL1            FIRE COMPANY TYPE                          01390092
P2F2FCN  DS     CL3            FIRE COMPANY NUMBER                        01400092
P2F2SCH  DS     CL2            SCHOOL DISTRICT                            01410092
P2F2CT10 DS     CL6            2010 CENSUS TRACT                          01420092
P2F2CT90 DS     CL6            1990 CENSUS TRACT                          01430092
P2F2LEVC DS     CL10           Level Codes                                01440092
P2F2PPB  DS     CL2            Police Patrol Borough                      01450092
P2F2AD   DS     CL2            ASSEMBLY DISTRICT                          01460092
P2F2CON  DS     CL2            CONGRESSIONAL DISTRICT                     01470092
P2F2SEN  DS     CL2            SENATORIAL DISTRICT                        01480092
P2F2CIV  DS     CL2            CIVIL COURT DISTRICT                       01490092
P2F2COU  DS     CL2            CITY COUNCIL DISTRICT                      01500092
P2F2RES1 DS     CL1            CD ELIGIBILITY                             01510092
P2F2DDST DS     CL5            DUPLICATE INTERSECTION DISTANCE            01520092
P2F2T00  DS     CL6            2000 CENSUS TRACT                          01530092
P2F2HCD  DS     CL2            HEALTH CENTER DISTRICT                     01540092
P2F2SD   DS     CL3            SANITATION DISTRICT                        01550092
P2F2SANT DS     CL2            SANITATION DEPT SECTION/SUBSECTION         01560092
         DS     CL12           FILLER                                     01570092
P2F2END  EQU    *                                                         01580092
P2F2LEN  EQU    P2F2END-P2BAL       Length of WA 2 for Fn 2/2C            01590092
*                                                                         01600092
********************************************************************      01610092
         ORG    P2LAYOUT       RESET LOCATION COUNTER FOR FUNCTION 2W     01620092
********************************************************************      01630092
*                                                                         01640092
P22WDUPI DS     CL1            DUPLICATE INTERSECT FLAG                   01650092
P22WLGC1 DS     CL2            STREET 1 PREFERRED LGC                     01660092
P22WLGC2 DS     CL2            STREET 2 PREFERRED LGC                     01670092
P22W#INT DS     CL1            NUMBER OF INTERSECTING STREETS             01680092
P22WCODE DS     CL30           INTERSECTING B5SC'S                        01690092
P22WCDUP DS     CL1            COMPASS DIRECTION FOR TWO LOWEST           01700092
P22WAP   DS     CL3            ATOMIC POLYGON                             01710092
         DS     CL2            FILLER                                     01720092
P22WNDNB DS     CL7            LION NODE NUMBER                           01730092
P22WXCOR DS     CL7            X COORDINATE                               01740092
P22WYCOR DS     CL7            Y COORDINATE                               01750092
P22WZCOR DS     CL7            Z Coordinate - Not Impl.                   01760092
P22WSVP1 DS    0CL8            FIRST SANBORN BOROUGH, PAGE, VOLUME        01770092
P22WSB1  DS     CL1            FIRST SANBORN BOROUGH CODE                 01780092
P22WSP1  DS     CL3            FIRST SANBORN PAGE                         01790092
P22WSV1  DS     CL4            FIRST SANBORN VOLUME                       01800092
P22WSVP2 DS    0CL8            SECOND SANBORN BOROUGH, PAGE, VOLUME       01810092
P22WSB2  DS     CL1            SECOND SANBORN BOROUGH CODE                01820092
P22WSP2  DS     CL3            SECOND SANBORN PAGE                        01830092
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P22WSV2  DS     CL4             SECOND SANBORN VOLUME                      01840092
P22WMHRI DS     CL1             MARBLE HILL/RIKERS ISLAND FLAG             01850092
P22WSLA  DS     CL1             STREET LIGHT AREA                          01860092
P22WCD   DS    0CL3             COMMUNITY DISTRICT                         01870092
P22WCDB  DS     CL1             COMMUNITY DISTRICT BORO                    01880092
P22WCDN  DS     CL2             COMMUNITY DISTRICT NUMBER                  01890092
P22WZIP  DS     CL5             ZIP CODE                                   01900092
P22WHA   DS     CL4             HEALTH AREA                                01910092
P22WPOL  DS    0CL4             POLICE DISTRICT                            01920092
P22WPBC  DS     CL1             POLICE PATROL BORO COMMAND                 01930092
P22WPOP  DS     CL3             POLICE PRECINCT                            01940092
P22WFS   DS     CL2             FIRE DIVISION                              01950092
P22WFB   DS     CL2             FIRE BATTALION                             01960092
P22WFC   DS    0CL4             FIRE COMPANY                               01970092
P22WFCT  DS     CL1             FIRE COMPANY TYPE                          01980092
P22WFCN  DS     CL3             FIRE COMPANY NUMBER                        01990092
P22WSCH  DS     CL2             SCHOOL DISTRICT                            02000092
P22WCT10 DS     CL6             2010 CENSUS TRACT                          02010092
P22WCT90 DS     CL6             1990 CENSUS TRACT                          02020092
P22WLEVC DS     CL10            Level Codes                                02030092
P22WPPB  DS     CL2             Police Patrol Borough                      02040092
*        DS     CL2             FILLER                                     02050092
P22WAD   DS     CL2             ASSEMBLY DISTRICT                          02060092
P22WCON  DS     CL2             CONGRESSIONAL DISTRICT                     02070092
P22WSEN  DS     CL2             SENATORIAL DISTRICT                        02080092
P22WCIV  DS     CL2             CIVIL COURT DISTRICT                       02090092
P22WCOU  DS     CL2             CITY COUNCIL DISTRICT                      02100092
P22WRES1 DS     CL1             CD ELIGIBILITY                             02110092
P22WDDST DS     CL5             DUPLICATE INTERSECTION DISTANCE            02120092
P22WT00  DS     CL6             2000 CENSUS TRACT                          02130092
P22WHCD  DS     CL2             HEALTH CENTER DISTRICT                     02140092
P22WSD   DS     CL3             SANITATION DISTRICT                        02150092
P22WSANT DS     CL2             SANITATION DEPT SECTION/SUBSECTION         02160092
         DS     CL12            FILLER                                     02170092
P22WGFIL DS     CL22            FILLER FOR GRID GENERATION                 02180092
P22WLGCF DS     CL8             UP TO 4 LGCS FOR FIRST INTERSECTING STR    02190092
P22WLGCS DS     CL8             UP TO 4 LGCS FOR SECOND INTERSECTING STR   02200092
P22WTR   DS     CL10            TURN RESTRICTIONS                          02210092
P22WPLGC DS     CL10            PREFERRED LGCS FOR 5 STS IN ST LIST        02220092
P22WTRC  DS     CL2             TRUE REPLICATION COUNTER                   02230092
P22WDNOD DS     20CL7           LIST OF 20 7-BYTE DUPLICATE NODES          02240092
P22WS7SC DS     CL3200          B7SCS FOR NODE LIST(20*5*4*8)              02250092
P22WRC   DS     CL1             REASON CODE                                02260092
P22WRCQ  DS     CL1             REASON CODE QUALIFIER                      02270092
P22WWC   DS     CL2             WARNING CODE                               02280092
P22WGRC  DS     CL2             RETURN CODE                                02290092
P22WLAT  DS     CL9             LATITUDE CALC FROM X-Y                     02300092
P22WLON  DS     CL11            LONGITUDE CALC FROM X-Y                    02310092
         DS     CL374           FILLER                                     02320092
P22WEND  EQU    *                                                          02330092
P22WLEN  EQU    P22WEND-P2BAL        Length of WA 2 for Fn 2W              02340092
*********************************************************************      02350092
         ORG    P2LAYOUT        RESET LOCATION COUNTER FOR FUNCTION 3      02360092
*********************************************************************      02370092
*                                                                          02380092
P2F3DUPF DS    0CL1             DUPLICATE KEY FLAG                         02390092
P2F3PAR  DS     CL1             CONTINUOUS PARITY INDICATOR                02400092
P2F3LST  DS     CL1             Locational Status of Segment               02410092
P2F3CBI  DS     CL1             County Boundary Indicator                  02420092
P2F3LGC1 DS     CL2             STREET 1 PREFERRED LGC                     02430092
P2F3LGC2 DS     CL2             STREET 2 PREFERRED LGC                     02440092
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P2F3LGC3 DS    CL2           STREET 3 PREFERRED LGC                     02450092
P2F3#STL DS    CL1           NUMBER OF CROSS STREETS AT LOW END         02460092
P2F3CDEL DS    CL30          CROSS STREET B5SC'S AT LOW END             02470092
P2F3#STH DS    CL1           NUMBER OF CROSS STREETS AT HIGH END        02480092
P2F3CDEH DS    CL30          CROSS STREET B5SC'S AT HIGH END            02490092
P2F3REVF DS    CL1           REVERSAL FLAG                              02500092
P2F3KEY  DS   0CL10          LION KEY                                   02510092
P2F3BOR  DS    CL1           LION BOROUGH CODE                          02520092
P2F3FACE DS    CL4           LION FACE CODE                             02530092
P2F3SEQ  DS    CL5           LION SEQUENCE NUMBER                       02540092
P2F3GEN  DS    CL1           GENERATED RECORD FLAG                      02550092
P2F3SEGL DS    CL5           SEGMENT LENGTH IN FEET                     02560092
P2F3SLOP DS    CL3           SEGMENT SLOPE IN DEGREES                   02570092
P2F3ORNT DS    CL1           SEGMENT ORIENTATION                        02580092
P2F3MHRI DS    CL1           MARBLE HILL/RIKERS ISLAND FLAG             02590092
P2F3FROM DS    CL7           FROM NODE                                  02600092
P2F3TO   DS    CL7           TO NODE                                    02610092
P2F3SP   DS    CL1           SANITATION STREET SNOW PRIORITY            02620092
         DS    CL4           Future Use                                 02630092
*                                                                       02640092
*                            Apply to both sides of street              02650092
*                                                                       02660092
P2F3SEGT DS    CL7           Segment Identifier                         02670092
P2F3SLA  DS    CL1           STREET LIGHT AREA                          02680092
P2F3CURV DS    CL1           Curve Flag                                 02690092
P2F3DGLG DS    CL1           Dog Leg Flag                               02700092
P2F3FEAT DS    CL1           Feature Type Code                          02710092
P2F3STC  DS    CL1           Segment Type Code                          02720092
P2F3CSC  DS    CL1           Coincident Segment Count                   02730092
         DS    CL4           Future Use                                 02740092
*                                                                       02750092
*                            Left Side of Street                        02760092
*                                                                       02770092
P2F3CDL  DS   0CL3           LEFT COMMUNITY DISTRICT                    02780092
P2F3CDBL DS    CL1           LEFT COMMUNITY DISTRICT BORO               02790092
P2F3CDNL DS    CL2           LEFT COMMUNITY DISTRICT NUMBER             02800092
P2F3LO#L DS    CL16          LEFT LOW HOUSE NUMBER                      02810092
P2F3HI#L DS    CL16          LEFT HIGH HOUSE NUMBER                     02820092
         DS    CL32               Future Use                            02830092
P2F3RS2L DS    CL1           RESERVED FOR DCP/GSS USE                   02840092
P2F3ZIPL DS    CL5           LEFT ZIP CODE                              02850092
P2F3HAL  DS    CL4           LEFT HEALTH AREA                           02860092
P2F3POLL DS   0CL4           LEFT POLICE DISTRICT                       02870092
P2F3PBCL DS    CL1           LEFT POLICE PATROL BORO COMMAND            02880092
P2F3POPL DS    CL3           LEFT POLICE PRECINCT                       02890092
P2F3FSL  DS    CL2           LEFT FIRE DIVISION                         02900092
P2F3FBL  DS    CL2           LEFT FIRE BATTALION                        02910092
P2F3FCL  DS   0CL4           LEFT FIRE COMPANY                          02920092
P2F3FCTL DS    CL1           LEFT FIRE COMPANY TYPE                     02930092
P2F3FCNL DS    CL3           LEFT FIRE COMPANY NUMBER                   02940092
P2F3SCHL DS    CL2           LEFT SCHOOL DISTRICT                       02950092
P2F3CPBL DS    CL3           LEFT DYNAMIC BLOCK/ATOMIC POLYGON          02960092
P2F3EDL  DS    CL3           LEFT ED                                    02970092
P2F3ADL  DS    CL2           LEFT AD                                    02980092
P2F3PPBL DS    CL2           Left Police Patrol Borough                 02990092
         DS    CL1           Filler                                     03000092
P2F3BROL DS    CL1           Left BOROUGH CODE                          03010092
P2F3TR9L DS    CL6           Left 1990 CENSUS TRACT                     03020092
P2F3C10L DS    CL6           Left 2010 CENSUS TRACT                     03030092
P2F3B10L DS    CL4           Left 2010 CENSUS BLOCK NUMBER              03040092
P2F3BS1L DS    CL1           Left 2010 CENSUS BLOCK SUFFIX-NOT IMPLEMNT 03050092
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P2F3T00L DS    CL6           Left 2000 CENSUS TRACT
P2F3B00L DS    CL4           Left 2000 CENSUS BLOCK NUMBER
P2F3S00L DS    CL1           Left 2000 CENSUS BLOCK SUFFIX
         DS    CL7           Filler
*P2F3BIDL DS    CL7           Left BLOCKFACE ID
P2F3NTAL DS    CL4           Left NEIGHBORHOOD TABULATION AREA
         DS    CL8           Future Use
*
*                            Right Side of Street
*
P2F3CDR  DS   0CL3           RIGHT COMMUNITY DISTRICT
P2F3CDBR DS    CL1           RIGHT COMMUNITY DISTRICT BORO
P2F3CDNR DS    CL2           RIGHT COMMUNITY DISTRICT NUMBER
P2F3LO#R DS    CL16          RIGHT LOW HOUSE NUMBER
P2F3HI#R DS    CL16          RIGHT HIGH HOUSE NUMBER
         DS    CL32                Future Use
P2F3RS2R DS    CL1           RESERVED FOR DCP/GSS USE
P2F3ZIPR DS    CL5           RIGHT ZIP CODE
P2F3HAR  DS    CL4           RIGHT HEALTH AREA
P2F3POLR DS   0CL4           RIGHT POLICE DISTRICT
P2F3PBCR DS    CL1           RIGHT POLICE PATROL BORO COMMAND
P2F3POPR DS    CL3           RIGHT POLICE PRECINCT
P2F3FSR  DS    CL2           RIGHT FIRE DIVISION
P2F3FBR  DS    CL2           RIGHT FIRE BATTALION
P2F3FCR  DS   0CL4           RIGHT FIRE COMPANY
P2F3FCTR DS    CL1           RIGHT FIRE COMPANY TYPE
P2F3FCNR DS    CL3           RIGHT FIRE COMPANY NUMBER
P2F3SCHR DS    CL2           RIGHT SCHOOL DISTRICT
P2F3CPBR DS    CL3           RIGHT DYNAMIC BLOCK/ATOMIC POLYGON
P2F3EDR  DS    CL3           RIGHT ED
P2F3ADR  DS    CL2           RIGHT AD
P2F3PPBR DS    CL2           Right Police Patrol Borough
         DS    CL1           Filler
P2F3BROR DS    CL1           Right BOROUGH CODE
P2F3TR9R DS    CL6           Right 1990 CENSUS TRACT
P2F3C10R DS    CL6           Right 2010 CENSUS TRACT
P2F3B10R DS    CL4           Right 2010 CENSUS BLOCK
P2F3BS1R DS    CL1           Right 2010 CENSUS BLOCK SUFFIX NOT IMPLM
P2F3T00R DS    CL6           Right 2000 CENSUS TRACT
P2F3B00R DS    CL4           Right 2000 CENSUS BLOCK
P2F3S00R DS    CL1           Right 2000 CENSUS BLOCK SUFFIX
*P2F3BIDR DS    CL7           RIGHT BLOCKFACE ID
         DS    CL7           Filler V16.1
P2F3NTAR DS    CL4           RIGHT NEIGHBORHOOD TABULATION AREA
         DS    CL8           Future Use
P2F3END  EQU   *
P2F3LEN  EQU   P2F3END-P2BAL      Length of WA 2 for Fn 3
*
*********************************************************************
         ORG   P2F3END       Auxiliary Segment Overlay - FUNCTION 3
*********************************************************************
*
P2F3FILR DS    CL6           Future Use
P2F3SCNT DS    CL4           Number of segment ids
P2F3SGID DS    CL490         up to 70 Seven Byte Segment IDS
P2F3SEND EQU   *
P2F3SLEN EQU   P2F3SEND-P2BAL  Length of WA 2 for Fn 3 w/segments
*
*********************************************************************
         ORG   P2LAYOUT  RESET LOCATION COUNTER-FUNCTION 3 EXTENDED
*********************************************************************
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*                                                                      03670092
P23XDUPF DS   0CL1         DUPLICATE KEY FLAG                          03680092
P23XPAR  DS    CL1         CONTINUOUS PARITY INDICATOR                 03690092
P23XLST  DS    CL1         Locational Status of Segment                03700092
P23XCBI  DS    CL1         County Boundary Indicator                   03710092
P23XLGC1 DS    CL2         STREET 1 PREFERRED LGC                      03720092
P23XLGC2 DS    CL2         STREET 2 PREFERRED LGC                      03730092
P23XLGC3 DS    CL2         STREET 3 PREFERRED LGC                      03740092
P23X#STL DS    CL1         NUMBER OF CROSS STREETS AT LOW END          03750092
P23XCDEL DS    CL30        CROSS STREET B5SC'S AT LOW END              03760092
P23X#STH DS    CL1         NUMBER OF CROSS STREETS AT HIGH END         03770092
P23XCDEH DS    CL30        CROSS STREET B5SC'S AT HIGH END             03780092
P23XREVF DS    CL1         REVERSAL FLAG                               03790092
P23XKEY  DS   0CL10        LION KEY                                    03800092
P23XBOR  DS    CL1         LION BOROUGH CODE                           03810092
P23XFACE DS    CL4         LION FACE CODE                              03820092
P23XSEQ  DS    CL5         LION SEQUENCE NUMBER                        03830092
P23XGEN  DS    CL1         GENERATED RECORD FLAG                       03840092
P23XSEGL DS    CL5         SEGMENT LENGTH IN FEET                      03850092
P23XSLOP DS    CL3         SEGMENT SLOPE IN DEGREES                    03860092
P23XORNT DS    CL1         SEGMENT ORIENTATION                         03870092
P23XMHRI DS    CL1         MARBLE HILL/RIKERS ISLAND FLAG              03880092
P23XFROM DS    CL7         FROM NODE                                   03890092
P23XTO   DS    CL7         TO NODE                                     03900092
P23XSP   DS    CL1         SANITATION STREET SNOW PRIORITY             03910092
         DS    CL4         Future Use                                  03920092
*                                                                      03930092
*                          Apply to both sides of street               03940092
*                                                                      03950092
P23XSEGT DS    CL7         Segment Identifier                          03960092
P23XSLA  DS    CL1         STREET LIGHT AREA                           03970092
P23XCURV DS    CL1         Curve Flag                                  03980092
P23XDGLG DS    CL1         Dog Leg Flag                                03990092
P23XFEAT DS    CL1         Feature Type Code                           04000092
P23XSTC  DS    CL1         Segment Type Code                           04010092
P23XCSC  DS    CL1         Coincident Segment Count                    04020092
         DS    CL4         Future Use                                  04030092
*                                                                      04040092
*                          Left Side of Street                         04050092
*                                                                      04060092
P23XCDL  DS   0CL3         LEFT COMMUNITY DISTRICT                     04070092
P23XCDBL DS    CL1         LEFT COMMUNITY DISTRICT BORO                04080092
P23XCDNL DS    CL2         LEFT COMMUNITY DISTRICT NUMBER              04090092
P23XLO#L DS    CL16        LEFT LOW HOUSE NUMBER                       04100092
P23XHI#L DS    CL16        LEFT HIGH HOUSE NUMBER                      04110092
         DS    CL32             Future Use                             04120092
P23XRS2L DS    CL1         RESERVED FOR DCP/GSS USE                    04130092
P23XZIPL DS    CL5         LEFT ZIP CODE                               04140092
P23XHAL  DS    CL4         LEFT HEALTH AREA                            04150092
P23XPOLL DS   0CL4         LEFT POLICE DISTRICT                        04160092
P23XPBCL DS    CL1         LEFT POLICE PATROL BORO COMMAND             04170092
P23XPOPL DS    CL3         LEFT POLICE PRECINCT                        04180092
P23XFSL  DS    CL2         LEFT FIRE DIVISION                          04190092
P23XFBL  DS    CL2         LEFT FIRE BATTALION                         04200092
P23XFCL  DS   0CL4         LEFT FIRE COMPANY                           04210092
P23XFCTL DS    CL1         LEFT FIRE COMPANY TYPE                      04220092
P23XFCNL DS    CL3         LEFT FIRE COMPANY NUMBER                    04230092
P23XSCHL DS    CL2         LEFT SCHOOL DISTRICT                        04240092
P23XCPBL DS    CL3         LEFT DYNAMIC BLOCK/ATOMIC POLYGON           04250092
P23XEDL  DS    CL3         LEFT ED                                     04260092
P23XADL  DS    CL2         LEFT AD                                     04270092
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P23XPPBL DS    CL2           Left Police Patrol Borough                  04280092
         DS    CL1           Filler                                      04290092
P23XBROL DS    CL1           Left BOROUGH CODE                           04300092
P23XTR9L DS    CL6           Left 1990 CENSUS TRACT                      04310092
P23XC10L DS    CL6           Left 2010 CENSUS TRACT                      04320092
P23XB10L DS    CL4           Left 2010 CENSUS BLOCK NUMBER               04330092
P23XBS1L DS    CL1           Left 2010 CENSUS BLOCK SUFFIX-NOT IMPLEMNT  04340092
P23XT00L DS    CL6           Left 2000 CENSUS TRACT                      04350092
P23XB00L DS    CL4           Left 2000 CENSUS BLOCK NUMBER               04360092
P23XS00L DS    CL1           Left 2000 CENSUS BLOCK SUFFIX               04370092
*P23XBIDL DS    CL7           Left BLOCKFACE ID                          04380092
         DS    CL7           Filler                                      04390092
P23XNTAL DS    CL4           Left NEIGHBORHOOD TABULATION AREA           04400092
         DS    CL8           Future Use                                  04410092
*                                                                        04420092
*                            Right Side of Street                        04430092
*                                                                        04440092
P23XCDR  DS   0CL3           RIGHT COMMUNITY DISTRICT                    04450092
P23XCDBR DS    CL1           RIGHT COMMUNITY DISTRICT BORO               04460092
P23XCDNR DS    CL2           RIGHT COMMUNITY DISTRICT NUMBER             04470092
P23XLO#R DS    CL16          RIGHT LOW HOUSE NUMBER                      04480092
P23XHI#R DS    CL16          RIGHT HIGH HOUSE NUMBER                     04490092
         DS    CL32                Future Use                            04500092
P23XRS2R DS    CL1           RESERVED FOR DCP/GSS USE                    04510092
P23XZIPR DS    CL5           RIGHT ZIP CODE                              04520092
P23XHAR  DS    CL4           RIGHT HEALTH AREA                           04530092
P23XPOLR DS   0CL4           RIGHT POLICE DISTRICT                       04540092
P23XPBCR DS    CL1           RIGHT POLICE PATROL BORO COMMAND            04550092
P23XPOPR DS    CL3           RIGHT POLICE PRECINCT                       04560092
P23XFSR  DS    CL2           RIGHT FIRE DIVISION                         04570092
P23XFBR  DS    CL2           RIGHT FIRE BATTALION                        04580092
P23XFCR  DS   0CL4           RIGHT FIRE COMPANY                          04590092
P23XFCTR DS    CL1           RIGHT FIRE COMPANY TYPE                     04600092
P23XFCNR DS    CL3           RIGHT FIRE COMPANY NUMBER                   04610092
P23XSCHR DS    CL2           RIGHT SCHOOL DISTRICT                       04620092
P23XCPBR DS    CL3           RIGHT DYNAMIC BLOCK/ATOMIC POLYGON          04630092
P23XEDR  DS    CL3           RIGHT ED                                    04640092
P23XADR  DS    CL2           RIGHT AD                                    04650092
P23XPPBR DS    CL2           Right Police Patrol Borough                 04660092
         DS    CL1           Filler                                      04670092
P23XBROR DS    CL1           Right BOROUGH CODE                          04680092
P23XTR9R DS    CL6           Right 1990 CENSUS TRACT                     04690092
P23XC10R DS    CL6           Right 2010 CENSUS TRACT                     04700092
P23XB10R DS    CL4           Right 2010 CENSUS BLOCK                     04710092
P23XBS1R DS    CL1           Right 2010 CENSUS BLOCK SUFFIX NOT IMPLM    04720092
P23XT00R DS    CL6           Right 2000 CENSUS TRACT                     04730092
P23XB00R DS    CL4           Right 2000 CENSUS BLOCK                     04740092
P23XS00R DS    CL1           Right 2000 CENSUS BLOCK SUFFIX              04750092
*P23XBIDR DS    CL7           RIGHT BLOCKFACE ID                         04760092
         DS    CL7           Filler                                      04770092
P23XNTAR DS    CL4           RIGHT NEIGHBORHOOD TABULATION AREA          04780092
         DS    CL8           Future Use                                  04790092
P23XLGCS DS    CL8           List of 4 LGCs                              04800092
P23XLGCF DS    CL8           List of 4 From LGCs                         04810092
P23XLGCT DS    CL8           List of 4 To LGCs                           04820092
P23XLHCD DS    CL2           Left Health Center District                 04830092
P23XRHCD DS    CL2           Right Health Center District                04840092
P23XFILS DS    CL1           Filler                                      04850092
P23XTD   DS    CL1           Traffic Direction                           04860092
P23XRTP  DS    CL2           Roadway Type                                04870092
P23XPID  DS    CL7           Physical Id                                 04880092
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P23XGID  DS    CL7           Generic Id                               04890092
P23XPDID DS    CL7           For DCP Use Only                         04900092
P23XFDID DS    CL7           For DCP Use Only                         04910092
P23XSTST DS    CL1           Street Status                            04920092
P23XSTW  DS    CL3           Street Width                             04930092
P23XSTWI DS    CL1           Street Width Irregular                   04940092
P23XBL   DS    CL1           Bike Lane                                04950092
P23XFCC  DS    CL2           Federal Classification Code              04960092
P23XROW  DS    CL1           Row Type                                 04970092
P23XLGC5 DS    CL10          List of 5 LGCs                           04980092
P23XLGID DS    CL7           Legacy Id                                04990092
P23XLNTA DS    CL75          Left NTA Name                            05000092
P23XRNTA DS    CL75          Right NTA Name                           05010092
P23XFXC  DS    CL7           From X Coordinate                        05020092
P23XFYC  DS    CL7           From Y Coordinate                        05030092
P23XTXC  DS    CL7           To X Coordinate                          05040092
P23XTYC  DS    CL7           To Y Coordinate                          05050092
P23XFLAT DS    CL9           LATITUDE OF FROM INTERSCT.               05060092
P23XFLON DS    CL11          LONGITUDE OF FROM INTERSCT.              05070092
P23XTLAT DS    CL9           LATITUDE OF TO INTERSCT.                 05080092
P23XTLON DS    CL11          LONGITUDE OF TO INTERSCT.                05090092
P23XBIDL DS    CL10          NEW location Left Blockface Id V16.1     05100092
P23XBIDR DS    CL10          NEW location Right Blockface Id V16.1    05110092
P23X#TRL DS    CL2           nbr of traveling lanes                   05120092
P23X#PKL DS    CL2           nbr of parking lanes                     05130092
P23X#TLL DS    CL2           nbr of total lanes                       05140092
P23XBL2  DS    CL2           Bike Lane 2 (has 2 bytes numeric value)  05150092
P23XSTWX DS    CL3           Street Width Maximum                     05160092
P23XBTD  DS    CL2           Bike Traffic Direction                   05170092
P23XFILL DS    CL213         FILLER                                   05180092
P23XEND  EQU   *                                                      05190092
P23XLEN  EQU   P23XEND-P2BAL      Length of WA 2 for Fn 3 Extended    05200092
*                                                                     05210092
********************************************************************  05220092
         ORG   P23XEND  Auxiliary Seg Overlay - FUNCTION 3 EXTENDED   05230092
********************************************************************  05240092
*                                                                     05250092
P23XFILR DS    CL6           Future Use                               05260092
P23XSCNT DS    CL4           Number of segment ids                    05270092
P23XSGID DS    CL490         up to 70 Seven Byte Segment IDS          05280092
P23XSEND EQU   *                                                      05290092
P23XSLEN EQU   P23XSEND-P2BAL  Len of WA2 for Fn3 MODE=X w/segments   05300092
*                                                                     05310092
********************************************************************  05320092
         ORG   P2LAYOUT      RESET LOCATION COUNTER FOR FUNCTION 3C   05330092
********************************************************************  05340092
*                                                                     05350092
P23CDUPF DS   0CL1           DUPLICATE KEY FLAG                       05360092
P23CPAR  DS    CL1           CONTINUOUS PARITY INDICATOR              05370092
P23CLST  DS    CL1           Locational Status of Segment             05380092
P23CCBI  DS    CL1           County Boundary Indicator                05390092
P23CLGC1 DS    CL2           STREET 1 PREFERRED LGC                   05400092
P23CLGC2 DS    CL2           STREET 2 PREFERRED LGC                   05410092
P23CLGC3 DS    CL2           STREET 3 PREFERRED LGC                   05420092
P23C#STL DS    CL1           NUMBER OF CROSS STREETS AT LOW END       05430092
P23CCDEL DS    CL30          CROSS STREET B5SC'S AT LOW END           05440092
P23C#STH DS    CL1           NUMBER OF CROSS STREETS AT HIGH END      05450092
P23CCDEH DS    CL30          CROSS STREET B5SC'S AT HIGH END          05460092
P23CREVF DS    CL1           REVERSAL FLAG                            05470092
P23CKEY  DS   0CL10          LION KEY                                 05480092
P23CBOR  DS    CL1           LION BOROUGH CODE                        05490092
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P2BAL COPY File

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P23CFACE DS     CL4             LION FACE CODE                                05500092
P23CSEQ  DS     CL5             LION SEQUENCE NUMBER                          05510092
P23CGEN  DS     CL1             GENERATED RECORD FLAG                         05520092
P23CSEGL DS     CL5             SEGMENT LENGTH IN FEET                        05530092
P23CSLOP DS     CL3             SEGMENT SLOPE IN DEGREES                      05540092
P23CORNT DS     CL1             SEGMENT ORIENTATION                           05550092
P23CMHRI DS     CL1             MARBLE HILL/RIKERS ISLAND FLAG                05560092
P23CFROM DS     CL7             FROM NODE                                     05570092
P23CTO   DS     CL7             TO NODE                                       05580092
P23CSP   DS     CL1             SANITATION STREET SNOW PRIORITY               05590092
         DS     CL4             Future Use                                    05600092
*                                                                             05610092
*                               Side of Street Information                    05620092
*                                                                             05630092
P23CSEGT DS     CL7             Segment Identifier                            05640092
P23CSLA  DS     CL1             STREET LIGHT AREA                             05650092
P23CSOS  DS     CL1             Side of Street Indicator                      05660092
P23CCURV DS     CL1             Curve Flag                                    05670092
P23CFEAT DS     CL1             Feature Type Code                             05680092
P23CSTC  DS     CL1             Segment Type Code                             05690092
P23CCSC  DS     CL1             COINCIDENT SEGMENT COUNT                      05700092
         DS     CL4             Future Use                                    05710092
P23CCD   DS    0CL3             COMMUNITY DISTRICT                            05720092
P23CCDB  DS     CL1             COMMUNITY DISTRICT BORO                       05730092
P23CCDN  DS     CL2             COMMUNITY DISTRICT NUMBER                     05740092
P23CLO#  DS     CL16            LOW HOUSE NUMBER                              05750092
P23CHI#  DS     CL16            HIGH HOUSE NUMBER                             05760092
P23CHS2L DS     CL16            2ND LOW HSE # - USED IF ODD & EVEN RANGES     05770092
P23CHS2H DS     CL16            2ND HI HSE #    ARE ON SAME SIDE OF STREET    05780092
P23CRES2 DS     CL1             RESERVED FOR DCP/GSS USE                      05790092
P23CZIP  DS     CL5             ZIP CODE                                      05800092
P23CHAL  DS     CL4             HEALTH AREA                                   05810092
P23CPOL  DS    0CL4             POLICE DISTRICT                               05820092
P23CPBC  DS     CL1             POLICE PATROL BORO COMMAND                    05830092
P23CPOP  DS     CL3             POLICE PRECINCT                               05840092
P23CFS   DS     CL2             FIRE DIVISION                                 05850092
P23CFB   DS     CL2             FIRE BATTALION                                05860092
P23CFC   DS    0CL4             FIRE COMPANY                                  05870092
P23CFCT  DS     CL1             FIRE COMPANY TYPE                             05880092
P23CFCN  DS     CL3             FIRE COMPANY NUMBER                           05890092
P23CSCH  DS     CL2             SCHOOL DISTRICT                               05900092
P23CCPB  DS     CL3             DYNAMIC  BLOCK / ATOMIC POLYGON               05910092
P23CED   DS     CL3             ED                                            05920092
P23CAD   DS     CL2             AD                                            05930092
P23CPPB  DS     CL2             Police Patrol Borough                         05940092
         DS     CL1             Filler                                        05950092
P23CBRO  DS     CL1             BOROUGH CODE                                  05960092
P23CTR9  DS     CL6             1990 CENSUS TRACT                             05970092
P23CCT10 DS     CL6             2010 CENSUS TRACT                             05980092
P23CBL10 DS     CL4             2010 CENSUS BLOCK                             05990092
P23CBL1S DS     CL1             2010 CENSUS BLOCK SUFFIX NOT IMPLEMENTED      06000092
P23CT00  DS     CL6             2000 CENSUS TRACT                             06010092
P23CB00  DS     CL4             2000 CENSUS BLOCK                             06020092
P23CS00  DS     CL1             2000 CENSUS BLOCK SUFFIX                      06030092
*P23CBID  DS     CL7            BLOCKFACE ID                                  06040092
         DS     CL7             Filler V16.1                                  06050092
P23CNTA  DS     CL4             NEIGHBORHOOD TABULATION AREA                  06060092
         DS     CL8             Future Use                                    06070092
P23CEND  EQU   *                                                              06080092
P23CLEN  EQU   P23CEND-P2BAL         Length of WA 2 for Fn 3C                 06090092
********************************************************************         06100092
```

```
         ORG   P23CEND       Auxiliary Segment Overlay - FUNCTION 3C    06110092
*********************************************************************** 06120092
*                                                                       06130092
P23CFILR DS    CL6           FUTURE USE                                 06140092
P23CSCNT DS    CL4           Number of segment ids                      06150092
P23CSGID DS    CL490         up to 70 Seven Byte Segment IDS            06160092
P23CSEND EQU   *                                                        06170092
P23CSLEN EQU   P23CSEND-P2BAL  Length of WA 2 for Fn 3C w/Segments      06180092
*                                                                       06190092
*********************************************************************** 06200092
         ORG   P2LAYOUT RESET LOC COUNTER FOR FUNCTION 3C EXTENDED      06210092
*********************************************************************** 06220092
*                                                                       06230092
P2CXDUPF DS   0CL1           DUPLICATE KEY FLAG                         06240092
P2CXPAR  DS    CL1           CONTINUOUS PARITY INDICATOR                06250092
P2CXLST  DS    CL1           Locational Status of Segment               06260092
P2CXCBI  DS    CL1           County Boundary Indicator                  06270092
P2CXLGC1 DS    CL2           STREET 1 PREFERRED LGC                     06280092
P2CXLGC2 DS    CL2           STREET 2 PREFERRED LGC                     06290092
P2CCLGC3 DS    CL2           STREET 3 PREFERRED LGC                     06300092
P2CX#STL DS    CL1           NUMBER OF CROSS STREETS AT LOW END         06310092
P2CXCDEL DS    CL30          CROSS STREET B5SC'S AT LOW END             06320092
P2CX#STH DS    CL1           NUMBER OF CROSS STREETS AT HIGH END        06330092
P2CXCDEH DS    CL30          CROSS STREET B5SC'S AT HIGH END            06340092
P2CXREVF DS    CL1           REVERSAL FLAG                              06350092
P2CXKEY  DS   0CL10          LION KEY                                   06360092
P2CXBOR  DS    CL1           LION BOROUGH CODE                          06370092
P2CXFACE DS    CL4           LION FACE CODE                             06380092
P2CXSEQ  DS    CL5           LION SEQUENCE NUMBER                       06390092
P2CXGEN  DS    CL1           GENERATED RECORD FLAG                      06400092
P2CXSEGL DS    CL5           SEGMENT LENGTH IN FEET                     06410092
P2CXSLOP DS    CL3           SEGMENT SLOPE IN DEGREES                   06420092
P2CXORNT DS    CL1           SEGMENT ORIENTATION                        06430092
P2CXMHRI DS    CL1           MARBLE HILL/RIKERS ISLAND FLAG             06440092
P2CXFROM DS    CL7           FROM NODE                                  06450092
P2CXTO   DS    CL7           TO NODE                                    06460092
P2CXSP   DS    CL1           SANITATION STREET SNOW PRIORITY            06470092
         DS    CL4           Future Use                                 06480092
*                                                                       06490092
*                            Side of Street Information                 06500092
*                                                                       06510092
P2CXSEGT DS    CL7           Segment Identifier                         06520092
P2CXSLA  DS    CL1           STREET LIGHT AREA                          06530092
P2CXSOS  DS    CL1           Side of Street Indicator                   06540092
P2CXCURV DS    CL1           Curve Flag                                 06550092
P2CXFEAT DS    CL1           Feature Type Code                          06560092
P2CXSTC  DS    CL1           Segment Type Code                          06570092
P2CXCSC  DS    CL1           COINCIDENT SEGMENT COUNT                   06580092
         DS    CL4           Future Use                                 06590092
P2CXCD   DS   0CL3           COMMUNITY DISTRICT                         06600092
P2CXCDB  DS    CL1           COMMUNITY DISTRICT BORO                    06610092
P2CXCDN  DS    CL2           COMMUNITY DISTRICT NUMBER                  06620092
P2CXLO#  DS    CL16          LOW HOUSE NUMBER                           06630092
P2CXHI#  DS    CL16          HIGH HOUSE NUMBER                          06640092
P2CXHS2L DS    CL16          2ND LOW HSE # - USED IF ODD & EVEN RANGES  06650092
P2CXHS2H DS    CL16          2ND HI HSE #    ARE ON SAME SIDE OF STREET 06660092
P2CXRES2 DS    CL1           RESERVED FOR DCP/GSS USE                   06670092
P2CXZIP  DS    CL5           ZIP CODE                                   06680092
P2CXHAL  DS    CL4           HEALTH AREA                                06690092
P2CXPOL  DS   0CL4           POLICE DISTRICT                            06700092
P2CXPBC  DS    CL1           POLICE PATROL BORO COMMAND                 06710092
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P2BAL COPY File

P2CXPOP	DS	CL3	POLICE PRECINCT	06720092
P2CXFS	DS	CL2	FIRE DIVISION	06730092
P2CXFB	DS	CL2	FIRE BATTALION	06740092
P2CXFC	DS	0CL4	FIRE COMPANY	06750092
P2CXFCT	DS	CL1	FIRE COMPANY TYPE	06760092
P2CXFCN	DS	CL3	FIRE COMPANY NUMBER	06770092
P2CXSCH	DS	CL2	SCHOOL DISTRICT	06780092
P2CXCPB	DS	CL3	DYNAMIC BLOCK / ATOMIC POLYGON	06790092
P2CXED	DS	CL3	ED	06800092
P2CXAD	DS	CL2	AD	06810092
P2CXPPB	DS	CL2	Police Patrol Borough	06820092
	DS	CL1	Filler	06830092
P2CXBRO	DS	CL1	BOROUGH CODE	06840092
P2CXTR9	DS	CL6	1990 CENSUS TRACT	06850092
P2CXCT10	DS	CL6	2010 CENSUS TRACT	06860092
P2CXBL10	DS	CL4	2010 CENSUS BLOCK	06870092
P2CXBL1S	DS	CL1	2010 CENSUS BLOCK SUFFIX NOT IMPLEMENTED	06880092
P2CXT00	DS	CL6	2000 CENSUS TRACT	06890092
P2CXB00	DS	CL4	2000 CENSUS BLOCK	06900092
P2CXS00	DS	CL1	2000 CENSUS BLOCK SUFFIX	06910092
*P2CXBID	DS	CL7	BLOCKFACE ID	06920092
	DS	CL7	Filler V16.1	06930092
P2CXNTA	DS	CL4	NEIGHBORHOOD TABULATION AREA	06940092
	DS	CL8	Future Use	06950092
P2CXLGCS	DS	CL8	List of 4 LGCs	06960092
P2CXLGCF	DS	CL8	List of 4 From LGCs	06970092
P2CXLGCT	DS	CL8	List of 4 To LGCs	06980092
P2CXLHCD	DS	CL2	Left Health Center District	06990092
P2CXRHCD	DS	CL2	Right Health Center District	07000092
P2CXFILS	DS	CL1	Filler	07010092
P2CXTD	DS	CL1	Traffic Direction	07020092
P2CXRTP	DS	CL2	Roadyway Type	07030092
P2CXPID	DS	CL7	Physical Id	07040092
P2CXGID	DS	CL7	Generic Id	07050092
P2CXPDID	DS	CL7	For DCP Use Only	07060092
P2CXFDID	DS	CL7	For DCP Use Only	07070092
P2CXSTST	DS	CL1	Street Status	07080092
P2CXSTW	DS	CL3	Street Width	07090092
P2CXSTWI	DS	CL1	Street Width Irregular	07100092
P2CXBL	DS	CL1	Bike Lane	07110092
P2CXFCC	DS	CL2	Federal Classification Code	07120092
P2CXROW	DS	CL1	Row Type	07130092
P2CXLGC5	DS	CL10	List of 5 LGCs	07140092
P2CXLGID	DS	CL7	Legacy Id	07150092
P2CXNTAN	DS	CL75	NTA Name	07160092
P2CXFXC	DS	CL7	From X Coordinate	07170092
P2CXFYC	DS	CL7	From Y Coordinate	07180092
P2CXTXC	DS	CL7	To X Coordinate	07190092
P2CXTYC	DS	CL7	To Y Coordinate	07200092
P2CXFLAT	DS	CL9	LATITUDE OF FROM INTERSCT.	07210092
P2CXFLON	DS	CL11	LONGITUDE OF FROM INTERSCT.	07220092
P2CXTLAT	DS	CL9	LATITUDE OF TO INTERSCT.	07230092
P2CXTLON	DS	CL11	LONGITUDE OF TO INTERSCT.	07240092
P2CXBFID	DS	CL10	NEW location Blockface Id V16.1	07250092
P2CX#TRL	DS	CL2	nbr of traveling lanes	07260092
P2CX#PKL	DS	CL2	nbr of parking lanes	07270092
P2CX#TLL	DS	CL2	nbr of total lanes	07280092
P2CXBL2	DS	CL2	Bike Lane2 (has 2bytes numeric value)	07290092
P2CXSTWX	DS	CL3	Street Width Maximum	07300092
P2CXBTD	DS	CL2	Bike Traffic Direction	07310092
P2CXFILL	DS	CL298	FILLER	07320092

```
P2CXEND  EQU   *                                                        07330092
P2CXLEN  EQU   P2CXEND-P2BAL      Length of WA 2 for Fn 3C              07340092
*********************************************************************** 07350092
         ORG   P2CXEND     Auxiliary Segment Overlay - FUNCTION 3C-X    07360092
*********************************************************************** 07370092
*                                                                       07380092
P2CXFILR DS    CL6           FUTURE USE                                 07390092
P2CXSCNT DS    CL4           Number of segment ids                      07400092
P2CXSGID DS    CL490         up to 70 Seven Byte Segment IDS            07410092
P2CXSEND EQU   *                                                        07420092
P2CXSLEN EQU   P2CXSEND-P2BAL  Length of WA 2 for Fn 3C-X w/Segments    07430092
*                                                                       07440092
*                                                                       07450092
*********************************************************************** 07460092
         ORG   P2BAL         RESET LOCATION COUNTER FOR FUNCTION 5      07470092
*********************************************************************** 07480092
*                                                                       07490092
P2F5AMK  DS    CL28          ACCESS MATCHING KEY                        07500092
         DS    CL172                                                    07510092
P2F5END  EQU   *                                                        07520092
P2F5LEN  EQU   P2F5END-P2BAL      Length of WA 2 for Fn 5               07530092
         ORG                                                            07540092
```

P2BAL1A COPY File

```
*/*********************************************************************/ 00010064
*/*****  THIS IS GEOSUPPORT INFORMATION SYSTEM COPY FILE P2BAL1A,  ***/ 00020064
*/*****  CONTAINING THE LAYOUT OF WORK AREA 2 FOR FUNCTION         ***/ 00030064
*/*****  1A, BL And BN WHICH SHARE A SINGLE WORK AREA 2 LAYOUT.    ***/ 00040064
*/*****  The Long Work Area only applies to Functions 1A and BL.   ***/ 00050064
*/*****  The long work area only exists if the Address Overflow    ***/ 00060064
*/*****  Flag has been set on.                                     ***/ 00070064
*/*****  As of 2011, Function 1/1E Extended, Function 1A Extended  ***/ 00080064
*/*****  and Function 1B have been added to this Copy File         ***/ 00090064
*/*****  ADDED 2 byte field "Police Patrol Borough" for functions: ***/ 00100064
*/*****  1X/1EX/1B.                                  August 2014   ***/ 00110064
*/*****  ADDED 4 fields: "segment from node", "segment to node",   ***/ 00120064
*/*****  "segment from XYZ", "segment to XYZ" for func 1X/1EX/1B   ***/ 00130064
*/*****                                                May 2015   ***/ 00140064
*/*****  ADDED 2 fields: "Bike Lane 2" and "Street Width Maximum"  ***/ 00141068
*/*****  for functions 1EX/1B                       September 2016 ***/ 00142068
*/*****  Replaced "Saniitation Reserved" with "Sanitation Bulk     ***/ 00143070
*/*****  Pick Up" for functions 1E,1B                October   2016 ***/ 00144070
*/*****  ADDED 2 bytes field "Bike Traffic Direction" for          ***/ 00145072
*/*****  for functions 1/1E (extended),1B,3X,3CX          12/2016 ***/ 00146071
*/*********************************************************************/ 00150064
*/*****          LAST UPDATE -  February 2016                       ***/ 00160066
*/*********************************************************************/ 00170064
P2BAL1A  DS   0H                                                        00180064
         DS    CL21                                                     00190064
P21ACPAR DS    CL1           CONTINUOUS PARITY INDICATOR                00200064
P21AHSEL DS    CL11          LOW HOUSE NUMBER ON BLOCK - HNS Form       00210064
P21AALT1 DS   0CL11          ALTERNATE KEY                              00220064
P21ABOR1 DS    CL1           ALTERNATE KEY - BORO                       00230064
P21ATXB1 DS    CL5           ALTERNATE KEY - TAX BLOCK                  00240064
P21ATXL1 DS    CL4           ALTERNATE KEY - TAX LOT                    00250064
         DS    CL1              Future Use                              00260064
P21ARSCC DS    CL1           RPAD SCC                                   00270064
         DS    CL1           FILLER                                     00280064
P21AGLI  DS   0CL13          GENERAL LOT INFO                           00290064
P21ARBLC DS    CL2           RPAD BUILDING CLASSIFICATION               00300064
P21ACORC DS    CL2           CORNER CODE                                00310064
P21A#STC DS    CL4           TOTAL NUMBER STRUCTURES                    00320064
P21A#BFA DS    CL2           TOTAL NUMBER BLOCKFACES                    00330064
P21AINTF DS    CL1           INTERIOR LOT FLAG                          00340064
P21AVACF DS    CL1           VACANT LOT FLAG                            00350064
P21AIRLF DS    CL1           IRREGULARLY-SHAPED LOT FLAG                00360064
*                                                                       00370064
P21AABFL DS    CL1           Marble Hill/ Rikers ALTERNATE BORO FLAG    00380064
P21AOVFL DS    CL1           Address Overflow Flag                      00390064
*                                                                       00400064
P21ASTRK DS    CL19          STROLLING KEY                              00410064
*                                                                       00420064
P21ARFIU DS    CL1           RESERVED FOR INTERNAL USE                  00430064
P21ABIN  DS    CL7           BUILDING IDENTIFICATION NUMBER (BIN)       00440064
*                           Condo Information                           00450064
P21ACONF DS    CL1           CONDO LOT FLAG                             00460064
         DS    CL1           Filler for Future Use                      00470064
P21ARCO# DS    CL4           RPAD CONDO NUMBER                          00480064
         DS    CL7           Future Use - Condo Unit Number             00490064
P21ACBBL DS    CL11          CONDO BILLING BBL                          00500064
P21ACBBS DS    CL1           CONDO BILLING BBL SCC                      00510064
P21ACLBL DS    CL11          CONDO LOW BBL                              00520064
P21ACHBL DS    CL11          CONDO HIGH BBL                             00530064
         DS    CL15          Filler                                     00540064
P21ACOOP DS    CL4           Co-op Number                               00550064
```

P2BAL1A COPY File

```
*
P21ASBVP DS    CL8           SANDBORN BOROUGH/VOLUME/PAGE
*
P21ABUSA DS    CL5           BUSINESS AREA
P21ATAXM DS    CL5           Tax Map Number - Section and Volume
         DS    CL4           Reserved for Tax Map Page
         DS    CL3              FILLER
P21ALAT  DS    CL9           LATITUDE
P21ALONG DS    CL11          LONGITUDE
P21AXCO  DS    CL7           X Coordinate of Annotation Point
P21AYCO  DS    CL7           Y Coordinate of Annotation Point
P21ABID  DS    CL6           Business Improvement District
P21ATPBS DS    CL1           TPAD BIN Status
P21ATPNB DS    CL7           TPAD New BIN
P21ATPNS DS    CL1           TPAD New BIN Status
P21ATPCF DS    CL1           TPAD Conflict Flag
         DS    CL9           FILLER
         DS    CL8           Internal Use
P21A#ADR DS    CL4           TOTAL ADDRESSES FOR LOT
P21ALIST DS   0CL1113        LIST OF ADDRESSES, MAXIMUM OF 21
P21ALOW# DS    CL16          LOW HOUSE NUMBER-Display Form
P21AHI#  DS    CL16          HIGH HOUSE NUMBER-Display Form
P21ABCDE DS    CL1           Borough Code
P21ACODE DS    CL5           STREET CODE
P21APLGC DS    CL2           Preferred LGC
P21ALBIN DS    CL7           BIN
P21ALSOS DS    CL1           Side of Street Indicator
P21AATP  DS    CL1           Address Type Flag
P21AATPS DS    CL1           TPAD BIN Status
         DS    CL3           FILLER
*  STORAGE IS RESERVED FOR THE REMAINING 20 ADDRESS STRUCTURES.
*  EACH STRUCTURE IS IDENTICAL TO THE ONE DEFINED ABOVE.
         DS    CL1060        REMAINING ADDRESSES
P21ASEND EQU   *
P21ASLEN EQU   P21ASEND-P2BAL1A    LENGTH OF Short P2BAL1A
*
*        Long Work Area Overlay
*
         ORG   P21A#ADR
P21A#BIN DS    CL4           Total Nbr of BINs for Lot
P21ABINS DS    2500CL7
P21ALEND EQU   *
         ORG   P21ABINS      Redefine the list for TPAD
P21ATPL@ EQU   *             Start of TPAD List for Longwa2
P21ATPB  DS    (2187)CL8     2187 8-Byte Elements
         DS    CL4           Filler
P21ATPL  EQU   P21ATPL@,*-P21ATPL@  Define Start and Length
         ORG   P21ATPB       Element Breakdown
P21ATPBN DS    CL7           BIN
P21ATPST DS    CL1           BIN STATUS
         ORG   P21ATPL+L'P21ATPL   Point To End of List
P21ALLEN EQU   P21ALEND-P2BAL1A    Length of Long P2BAL1A
P21ATPLN EQU   P21ALEND-P2BAL1A    Length of TPAD Long P2BAL1A

**********************************************************************
******
         ORG   P2BAL1A           RESET LOCATION FOR FN 1/1E EXTENDED
******
**********************************************************************

P2EXKEY  DS    CL21          ACCESS KEY
```

P2BAL1A COPY File

```
P2EXCPAR DS    CL1              CONTINUOUS PARITY INDICATOR                 01170064
P2EXLHNS DS    CL11             LOW HOUSE NUMBER                            01180064
P2EXHHNS DS    CL11             HIGH HOUSE NUMBER                           01190064
P2EXLGC  DS    CL2              DCP Prefered LGC                            01200064
P2EX#STL DS    CL1              NUMBER OF CROSS STREETS AT LOW END          01210064
P2EXCDEL DS    CL30             UP TO FIVEPB5SC'S FOR LOW END               01220064
P2EX#STH DS    CL1              NUMBER OF CROSS STREETS AT HIGH END         01230064
P2EXCDEH DS    CL30             UP TO FIVE B5SC'S FOR HIGH END              01240064
P2EXLBOR DS    CL1              LION BOROUGH CODE                           01250064
P2EXFACE DS    CL4              LION FACE CODE                              01260064
P2EXSEQ  DS    CL5              LION SEQUENCE NUMBER                        01270064
P2EXSPAD DS    CL1              SPECIAL ADDRESS FLAG                        01280064
P2EXSOS  DS    CL1              SIDE OF STREET INDICATOR                    01290064
P2EXSEGL DS    CL5              SEGMENT LEGNTH                              01300064
P2EXXCOR DS    CL7              X COORDINATE                                01310064
P2EXYCOR DS    CL7              Y COORDINATE                                01320064
P2EXZCOR DS    CL7              Z Coordinate - Not Impl.                    01330064
P2EXRES1 DS    CL1              RESERVED FOR DCP/GSS USE                    01340064
P2EXMHRI DS    CL1              MARBLE HILL/RIKERS ISLAND FLAG              01350064
P2EXSLA  DS    CL1              STREET LIGHT AREA                           01360064
P2EXCD   DS   0CL3              COMMUNITY DISTRICT                          01370064
P2EXCDB  DS    CL1              COMMUNITY DISTRICT BORO                     01380064
P2EXCDN  DS    CL2              COMMUNITY DISTRICT NUMBER                   01390064
P2EXZIP  DS    CL5              ZIP CODE                                    01400064
P2EXEED  DS    CL3              ELECTION DISTRICT                           01410064
P2EXEAD  DS    CL2              ASSEMBLY DISTRICT                           01420064
P2EXESED DS    CL1              SPLIT E.D. FLAG                             01430064
P2EXECON DS    CL2              CONGRESSIONAL DISTRICT                      01440064
P2EXESEN DS    CL2              SENATORIAL DISTRICT                         01450064
P2EXECIV DS    CL2              CIVIL COURT DISTRICT                        01460064
P2EXECOU DS    CL2              CITY COUNCIL DISTRICT                       01470064
*                                                                           01480064
P2EXHCD  DS    CL2              HEALTH CODE DISTRICT                        01490064
P2EXHA   DS    CL4              HEALTH AREA                                 01500064
P2EXSAND DS    CL3              SANITATION DISTRICT                         01510064
P2EXSANT DS    CL2              SANITATION DEPT SUBSECTION                  01520064
P2EXSREG DS    CL5              SANITATION REGULAR PICK-UP                  01530064
P2EXSREC DS    CL3              SANITATION RECYCLE PICK-UP                  01540064
P2EXPOL  DS    0CL4             POLICE DISTRICT                             01550064
P2EXPBC  DS    CL1              POLICE PATROL BORO COMMAND                  01560064
P2EXPOP  DS    CL3              POLICE PRECINCT                             01570064
P2EXFS   DS    CL2              FIRE DIVISION                               01580064
P2EXFB   DS    CL2              FIRE BATTALION                              01590064
P2EXFC   DS   0CL4              FIRE COMPANY                                01600064
P2EXFCT  DS    CL1              FIRE COMPANY TYPE                           01610064
P2EXFCN  DS    CL3              FIRE COMPANY NUMBER                         01620064
         DS    CL1              FILLER-WAS SPLIT SCHOOL DIST                01630064
P2EXSCH  DS    CL2              SCHOOL DISTRICT                             01640064
P2EXCPB  DS    CL3              DYNAMIC BLOCK/ATOMIC POLYGON                01650064
P2EXPPB  DS    CL2              Police Patrol Borough                       01660064
P2EXFEAT DS    CL1              Feature Type Code                           01670064
P2EXSTC  DS    CL1              SEGMENT TYPE CODE                           01680064
P2EXALX  DS    CL1              A=Segment split by Alley                    01690064
*                               X=Cross Streets modified                    01700064
P2EXCSC  DS    CL1              Coincident Segment Count                    01710064
         DS    CL2              Filler                                      01720064
P2EXCTB  DS    CL1              CENSUS TRACT BORO USED FOR GRIDGEN          01730064
P2EXCT90 DS    CL6              1990 CENSUS TRACT                           01740064
P2EXCT10 DS    CL6              2010 CENSUS TRACT                           01750064
P2EXBL10 DS    CL4              2010 CENSUS BLOCK                           01760064
P2EXBLS1 DS    CL1              2010 CENSUS BLOCK SUFFIX NOT IMPLEMENTED    01770064
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P2BAL1A COPY File

P2EXT00	DS	CL6	2000 CENSUS TRACT	01780064
P2EXB00	DS	CL4	2000 CENSUS BLOCK	01790064
P2EXS00	DS	CL1	2000 CENSUS BLOCK SUFFIX	01800064
P2EXNTA	DS	CL4	NEIGHBORHOOD TABULATION AREA	01810064
P2EXSP	DS	CL1	SANITATION STREET SNOW PRIORITY	01820064
P2EXSORG	DS	CL5	SANITATION ORGANIC PICK UP	01830064
P2EXSBLK	DS	CL5	SANITATION BULK PICK UP	01831069
*	DS	CL5	SANITATION RESERVED	01840070
P2EXHZ	DS	CL2	HURRICANE EVACUATION ZONE-OEM	01850064
	DS	CL11	FILLER	01860064
P2EXUHNS	DS	CL11	Underlying HNS	01870064
P2EXB7SC	DS	CL8	"True" Borough 7 Digit Street Code	01880064
P2EXSEGT	DS	CL7	Segment Identifier	01890064
P2EXCURV	DS	CL1	Curve Flag	01900064
P2EXLGCS	DS	CL8	List of 4 LGCs	01910064
P2EXBOEP	DS	CL1	BOE LGC Pointer	01920064
P2EXAZM	DS	CL3	Segment Azimuth	01930064
P2EXORN	DS	CL1	Segment Orientation	01940064
P2EXXCL	DS	CL7	X Coordinate, Low Address end	01950064
P2EXYCL	DS	CL7	Y Coordinate, Low Address end	01960064
P2EXZCL	DS	CL7	Z Coordinate, Low Address Not Impl	01970064
P2EXXCH	DS	CL7	X Coordinate, Hi Address end	01980064
P2EXYCH	DS	CL7	Y Coordinate, Hi Address end	01990064
P2EXZCH	DS	CL7	Z Coordinate, Hi Address Not Impl	02000064
P2EXXCC	DS	CL7	X Coordinate, Center Curve	02010064
P2EXYCC	DS	CL7	Y Coordinate, Center Curve	02020064
P2EXZCC	DS	CL7	Z Coordinate, Center Curve Not Impl	02030064
P2EXRAD	DS	CL7	Radius of Circle	02040064
P2EXSEC	DS	CL1	Secant Location Related to Curve	02050064
P2EXBETA	DS	CL5	Angle to From Node	02060064
P2EXALFA	DS	CL5	Angle to To Node	02070064
P2EXFNOD	DS	CL7	From LION Node Id	02080064
P2EXTNOD	DS	CL7	To LION Node Id	02090064
P2EXLVA	DS	CL10	LION Key for Vanity Address	02100064
P2EXSVA	DS	CL1	Side of Street for Vanity Address	02110064
P2EXSLH	DS	CL11	Split Low House Number	02120064
P2EXTD	DS	CL1	Traffic Direction	02130064
P2EXTR	DS	CL10	Turn Restrictions	02140064
P2EXFRC	DS	CL3	Fraction for Curve Calculation	02150064
P2EXRT	DS	CL2	Roadway Type	02160064
P2EXPID	DS	CL7	Physical Id	02170064
P2EXGID	DS	CL7	Generic Id	02180064
P2EXPDID	DS	CL7	For DCP Use Only	02190064
P2EXFDID	DS	CL7	For DCP Use Only	02200064
P2EXBLN2	DS	CL2	Bike Lane 2 (has 2 byte numeric value)	02201068
P2EXBTD	DS	CL2	Bike Traffic Direction	02202072
	DS	CL3	filler	02210071
P2EXSTS	DS	CL1	Street Status	02220064
P2EXSTW	DS	CL3	Street Width	02230064
P2EXSTWI	DS	CL1	Street Width Irregular (Y/N)	02240064
P2EXBLN	DS	CL1	Bike Lane	02250064
P2EXFCC	DS	CL2	Federal Classification Code	02260064
P2EXROW	DS	CL1	Right of Way Type	02270064
P2EXSLGC	DS	CL10	Set of Second LGCs	02280064
P2EXLSID	DS	CL7	Legacy Segment ID	02290064
P2EXFPL1	DS	CL10	From Preferred LGCs First Set of 5	02300064
P2EXTPL1	DS	CL10	To Preferred LGCs First Set of 5	02310064
P2EXFPL2	DS	CL10	From Preferred LGCs Second Set of 5	02320064
P2EXTPL2	DS	CL10	To Preferred LGCs Second Set of 5	02330064
P2EXNCR	DS	CL1	No Cross Street Calc Flag	02340064
P2EXISL	DS	CL5	Individual Segment Length	02350064

P2BAL1A COPY File

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P2EXNTAN DS     CL75           NTA Name                                      02360064
P2EXUSPS DS     CL25           USPS PREFERRED CITY NAME                      02370064
P2EXLAT  DS     CL9            LATITUDE                                      02380064
P2EXLONG DS     CL11           LONGITUDE                                     02390064
P2EXSFRN DS     CL7            SEGMENT FROM NODE                             02400064
P2EXSTON DS     CL7            SEGMENT TO NODE                               02410064
P2EXFXYZ DS     CL21           XYZ COORD (SEGMENT FROM XYZ)                  02420064
P2EXTXYZ DS     CL21           XYZ COORD (SEGMENT TO XYZ)                    02430064
P2EXBFID DS     CL10           NEW location blockface_id because of          02460064
*                              length changed V16.1                          02470064
P2EX#TRL DS     CL2            nbr of traveling lanes                        02480064
P2EX#PKL DS     CL2            nbr of parking lanes                          02490064
P2EX#TLL DS     CL2            nbr of total lanes on street                  02500067
P2EXSTWX DS     CL3            Street Width-Maximum                          02501068
         DS     CL252          Filler                                        02510067
P2EXRC   DS     CL1            REASON CODE                                   02520064
P2EXRCQ  DS     CL1            REASON CODE QUALIFIER                         02530064
P2EXWC   DS     CL2            WARNING CODE FILLER                           02540064
P2EXGRC  DS     CL2            GEOSUPPORT RETURN CODE                        02550064
P2EX#SL  DS     CL1            NUMBER OF CROSS STREETS AT LOW END            02560064
P2EX7SL  DS     CL40           UP TO 5 B7SC'S FOR LOW END                    02570064
P2EX#SH  DS     CL1            NUMBER OF CROSS STREETS AT HIGH END           02580064
P2EX7SH  DS     CL40           UP TO 5 B7SC'S FOR HIGH END                   02590064
P2EXSNL  DS     CL160          UP TO 5 STREET NAMES FOR LOW END              02600064
P2EXSNH  DS     CL160          UP TO 5 STREET NAMES FOR HIGH END             02610064
P2EXBPC  DS     CL8            BOE PREFERRED B7SC STREET CODE                02620064
P2EXBPN  DS     CL32           BOE PREFERRED STREET NAME                     02630064
P2EXFIL  DS     CL52           Filler                                        02640064
*                                                                            02650064
P2EXEND  EQU    *                                                            02660064
P2EXLEN  EQU    P2EXEND-P2BAL1A  LENGTH OF P21EX WORKAREA 2                  02670064
*                                                                            02680064
                                                                             02690064
*********************************************************************** 02700064
******                                                                       02710064
         ORG    P2BAL1A              RESET LOCATION FOR FN 1A EXTENDED       02720064
******                                                                       02730064
*********************************************************************** 02740064
                                                                             02750064
P2AXKEY  DS     CL21           Internal Use Only                             02760064
P2AXCPIN DS     CL1            CONTINUOUS PARITY INDICATOR                   02770064
P2AXHSEL DS     CL11           LOW HOUSE NUMBER ON BLOCK - HNS Form          02780064
P2AXALT1 DS    0CL11           Alternate Key                                 02790064
P2AXBOR1 DS     CL1            ALTERNATE KEY - BORO                          02800064
P2AXTXB1 DS     CL5            ALTERNATE KEY - TAX BLOCK                     02810064
P2AXTXL1 DS     CL4            ALTERNATE KEY - TAX LOT                       02820064
         DS     CL1               Future Use                                 02830064
P2AXRSCC DS     CL1            RPAD SCC                                      02840064
         DS     CL1            FILLER                                        02850064
P2AXGLI  DS    0CL13           GENERAL LOT INFO                              02860064
P2AXRBLC DS     CL2            RPAD BUILDING CLASSIFICATION                  02870064
P2AXCORC DS     CL2            CORNER CODE                                   02880064
P2AX#STC DS     CL4            TOTAL NUMBER STRUCTURES                       02890064
P2AX#BFA DS     CL2            TOTAL NUMBER BLOCKFACES                       02900064
P2AXINTF DS     CL1            INTERIOR LOT FLAG                             02910064
P2AXVACF DS     CL1            VACANT LOT FLAG                               02920064
P2AXIRLF DS     CL1            IRREGULARLY-SHAPED LOT FLAG                   02930064
*                                                                            02940064
P2AXABFL DS     CL1            Marble Hill/ Rikers ALTERNATE BORO FLAG       02950064
P2AXOVFL DS     CL1            Address Overflow Flag                         02960064
*                                                                            02970064
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P2AXSTRK DS    CL19          STROLLING KEY - FILLER                    02980064
*                                                                      02990064
P2AXRFIU DS    CL1           RESERVED FOR INTERNAL USE                 03000064
P2AXBIN  DS    CL7           BUILDING IDENTIFICATION NUMBER (BIN)      03010064
*                            Condo Information                         03020064
P2AXCONF DS    CL1           CONDO LOT FLAG                            03030064
         DS    CL1           Filler for Future Use                     03040064
P2AXRCO# DS    CL4           RPAD CONDO NUMBER                         03050064
         DS    CL7           Future Use - Condo Unit Number            03060064
P2AXCBBL DS    CL11          CONDO BILLING BBL                         03070064
P2AXCBBS DS    CL1           CONDO BILLING BBL SCC                     03080064
P2AXCLBL DS    CL11          CONDO LOW BBL                             03090064
P2AXCHBL DS    CL11          CONDO HIGH BBL                            03100064
         DS    CL15          Filler                                    03110064
P2AXCOOP DS    CL4           Co-op Number                              03120064
*                                                                      03130064
P2AXSBVP DS    CL8           SANDBORN BOROUGH/VOLUME/PAGE              03140064
*                                                                      03150064
P2AXBUSA DS    CL5           BUSINESS AREA                             03160064
P2AXTAXM DS    CL5           Tax Map Number - Section and Volume       03170064
         DS    CL4           Reserved for Tax Map Page                 03180064
         DS    CL3              FILLER                                 03190064
P2AXLAT  DS    CL9           LATITUDE                                  03200064
P2AXLONG DS    CL11          LONGITUDE                                 03210064
P2AXXCO  DS    CL7           X Coordinate of Annotation Point          03220064
P2AXYCO  DS    CL7           Y Coordinate of Annotation Point          03230064
P2AXBID  DS    CL6           Business Improvement District             03240064
P2AXTPBS DS    CL1           TPAD BIN Status                           03250064
P2AXTPNB DS    CL7           TPAD New BIN                              03260064
P2AXTPNS DS    CL1           TPAD New BIN Status                       03270064
P2AXTPCF DS    CL1           TPAD Conflict Flag                        03280064
         DS    CL9           FILLER                                    03290064
         DS    CL8           Internal Use - LGCS                       03300064
P2AXRC   DS    CL1           REASON CODE                               03310064
P2AXRCQ  DS    CL1           REASON CODE QUALIFIER                     03320064
P2AXWC   DS    CL2           WARNING CODE FILLER                       03330064
P2AXGRC  DS    CL2           GEOSUPPORT RETURN CODE                    03340064
         DS    CL108         FILLER                                    03350064
P2AX#ADR DS    CL4           TOTAL ADDRESSES FOR LOT                   03360064
P2AXLIST DS   0CL116         LIST OF ADDRESSES, MAXIMUM OF 21          03370064
P2AXLOW# DS    CL16          LOW HOUSE NUMBER-Display Form             03380064
P2AXHI#  DS    CL16          HIGH HOUSE NUMBER-Display Form            03390064
P2AXBCDE DS    CL1           Borough Code                              03400064
P2AXCODE DS    CL5           STREET CODE                               03410064
P2AXPLGC DS    CL2           Preferred LGC                             03420064
P2AXLBIN DS    CL7           BIN                                       03430064
P2AXLSOS DS    CL1           Side of Street Indicator                  03440064
P2AXATP  DS    CL1           Address Type Flag                         03450064
P2AXATPS DS    CL1           TPAD BIN Status                           03460064
P2AXSTN  DS    CL32          STREET NAME                               03470064
         DS    CL34          FILLER                                    03480064
*  STORAGE IS RESERVED FOR THE REMAINING 20 ADDRESS STRUCTURES.        03490064
*  EACH STRUCTURE IS IDENTICAL TO THE ONE DEFINED ABOVE.               03500064
         DS    CL2320        REMAINING ADDRESSES                       03510064
P2AXEND  EQU   *                                                       03520064
P2AXLEN  EQU   P2AXEND-P2BAL1A  LENGTH OF P21A EXTEND WORKAREA 2       03530064
*                                                                      03540064
                                                                       03550064
*********************************************************************** 03560064
******                                                                 03570064
         ORG   P2BAL1A             RESET LOCATION FOR FN 1B            03580064
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P2BAL1A COPY File

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******                                                                     03590064
***********************************************************************  03600064
P21BKEY  DS    CL21          ACCESS KEY                                    03610064
P21BCPAR DS    CL1           CONTINUOUS PARITY INDICATOR                   03620064
P21BLHNS DS    CL11          LOW HOUSE NUMBER                              03630064
P21BHHNS DS    CL11          HIGH HOUSE NUMBER                             03640064
P21BLGC  DS    CL2           DCP PREFERREDLGC (FN 1) - BOE (FN 1E)         03650064
P21B#STL DS    CL1           NUMBER OF CROSS STREETS AT LOW END            03660064
P21BCDEL DS    CL30          UP TO FIVEPB5SC'S FOR LOW END                 03670064
P21B#STH DS    CL1           NUMBER OF CROSS STREETS AT HIGH END           03680064
P21BCDEH DS    CL30          UP TO FIVE B5SC'S FOR HIGH END                03690064
P21BLBOR DS    CL1           LION BOROUGH CODE                             03700064
P21BFACE DS    CL4           LION FACE CODE                                03710064
P21BSEQ  DS    CL5           LION SEQUENCE NUMBER                          03720064
P21BSPAD DS    CL1           SPECIAL ADDRESS FLAG                          03730064
P21BSOS  DS    CL1           SIDE OF STREET INDICATOR                      03740064
P21BSEGL DS    CL5           SEGMENT LEGNTH                                03750064
P21BXCOR DS    CL7           X COORDINATE                                  03760064
P21BYCOR DS    CL7           Y COORDINATE                                  03770064
P21BZCOR DS    CL7           Z Coordinate - Not Impl.                      03780064
P21BRES1 DS    CL1           RESERVED FOR DCP/GSS USE                      03790064
P21BMHRI DS    CL1           MARBLE HILL/RIKERS ISLAND FLAG                03800064
P21BSLA  DS    CL1           STREET LIGHT AREA                             03810064
P21BCD   DS   0CL3           COMMUNITY DISTRICT                            03820064
P21BCDB  DS    CL1           COMMUNITY DISTRICT BORO                       03830064
P21BCDN  DS    CL2           COMMUNITY DISTRICT NUMBER                     03840064
P21BZIP  DS    CL5           ZIP CODE                                      03850064
P21BEED  DS    CL3           ELECTION DISTRICT                             03860064
P21BEAD  DS    CL2           ASSEMBLY DISTRICT                             03870064
P21BESED DS    CL1           SPLIT E.D. FLAG                               03880064
*                Next four fields are valid only for Fn 1E                 03890064
P21BECON DS    CL2           CONGRESSIONAL DISTRICT                        03900064
P21BESEN DS    CL2           SENATORIAL DISTRICT                           03910064
P21BECIV DS    CL2           CIVIL COURT DISTRICT                          03920064
P21BECOU DS    CL2           CITY COUNCIL DISTRICT                         03930064
*                                                                          03940064
P21BHCD  DS    CL2           HEALTH CODE DISTRICT                          03950064
P21BHA   DS    CL4           HEALTH AREA                                   03960064
P21BSAND DS    CL3           SANITATION DISTRICT                           03970064
P21BSANT DS    CL2           SANITATION DEPT SUBSECTION                    03980064
P21BSREG DS    CL5           SANITATION REGULAR PICK-UP                    03990064
P21BSREC DS    CL3           SANITATION RECYCLE PICK-UP                    04000064
P21BPOL  DS   0CL4           POLICE DISTRICT                               04010064
P21BPBC  DS    CL1           POLICE PATROL BORO COMMAND                    04020064
P21BPOP  DS    CL3           POLICE PRECINCT                               04030064
P21BFS   DS    CL2           FIRE DIVISION                                 04040064
P21BFB   DS    CL2           FIRE BATTALION                                04050064
P21BFC   DS   0CL4           FIRE COMPANY                                  04060064
P21BFCT  DS    CL1           FIRE COMPANY TYPE                             04070064
P21BFCN  DS    CL3           FIRE COMPANY NUMBER                           04080064
P21BFILS DS    CL1           FILLER_WAS SPLIT SCHOOL DISTRICT FLAG         04090064
P21BSCH  DS    CL2           SCHOOL DISTRICT                               04100064
P21BCPB  DS    CL3           DYNAMIC BLOCK/ATOMIC POLYGON                  04110064
P21BPPB  DS    CL2           Police Patrol Borough                         04120064
P21BFEAT DS    CL1           FEATURE TYPE CODE                             04130064
P21BSTC  DS    CL1           SEGMENT TYPE CODE                             04140064
P21BALX  DS    CL1           A=Segment split by Alley                      04150064
*                            X=Cross Streets modified                      04160064
P21BCSC  DS    CL1           COINCIDENT SEGMENT COUNT                      04170064
         DS    CL2           Filler                                        04180064
P21BCTB  DS    CL1           CENSUS TRACT BORO USED FOR GRIDGEN            04190064
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P2BAL1A COPY File

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P21BCT90 DS     CL6           1990 CENSUS TRACT                           04200064
P21BCT10 DS     CL6           2010 CENSUS TRACT                           04210064
P21BBL10 DS     CL4           2010 CENSUS BLOCK                           04220064
P21BBLS1 DS     CL1           2010 CENSUS BLOCK SUFFIX NOT IMPLEMENTED    04230064
P21BT00  DS     CL6           2000 CENSUS TRACT                           04240064
P21BB00  DS     CL4           2000 CENSUS BLOCK                           04250064
P21BS00  DS     CL1           2000 CENSUS BLOCK SUFFIX                    04260064
P21BNTA  DS     CL4           NEIGHBORHOOD TABULATION AREA                04270064
P21BSP   DS     CL1           SANITATION STREET SNOW PRIORITY             04280064
P21BSORG DS     CL5           SANITATION ORGANIC PICK UP                  04290064
P21BSBLK DS     CL5           SANITATION BULK PICK UP                     04291069
*        DS     CL5           SANITATION RESERVED                         04300070
P21BHZ   DS     CL2           HURRICANE EVACUATION ZONE-OEM               04310064
         DS     CL11          FILLER                                      04320064
P21BUHNS DS     CL11          Underlying HNS                              04330064
P21BB7SC DS     CL8           "True" Borough 7 Digit Street Code          04340064
P21BSEGT DS     CL7           Segment Identifier                          04350064
P21BCURV DS     CL1           Curve Flag                                  04360064
P21BLGCS DS     CL8           List of 4 LGCs                              04370064
P21BBOEP DS     CL1           BOE LGC Pointer                             04380064
P21BAZM  DS     CL3           Segment Azimuth                             04390064
P21BORN  DS     CL1           Segment Orientation                         04400064
P21BXCL  DS     CL7           X Coordinate, Low Address end               04410064
P21BYCL  DS     CL7           Y Coordinate, Low Address end               04420064
P21BZCL  DS     CL7           Z Coordinate, Low Address Not Impl          04430064
P21BXCH  DS     CL7           X Coordinate, Hi Address end                04440064
P21BYCH  DS     CL7           Y Coordinate, Hi Address end                04450064
P21BZCH  DS     CL7           Z Coordinate, Hi Address Not Impl           04460064
P21BXCC  DS     CL7           X Coordinate, Center Curve                  04470064
P21BYCC  DS     CL7           Y Coordinate, Center Curve                  04480064
P21BZCC  DS     CL7           Z Coordinate, Center Curve Not Impl         04490064
P21BRAD  DS     CL7           Radius of Circle                            04500064
P21BSEC  DS     CL1           Secant Location Related to Curve            04510064
P21BBETA DS     CL5           Angle to From Node                          04520064
P21BALFA DS     CL5           Angle to To Node                            04530064
P21BFNOD DS     CL7           From LION Node Id                           04540064
P21BTNOD DS     CL7           To LION Node Id                             04550064
P21BLVA  DS     CL10          LION Key for Vanity Address                 04560064
P21BSVA  DS     CL1           Side of Street for Vanity Address           04570064
P21BSLH  DS     CL11          Split Low House Number                      04580064
P21BTD   DS     CL1           Traffic Direction                           04590064
P21BTR   DS     CL10          Turn Restrictions                           04600064
P21BFRC  DS     CL3           Fraction for Curve Calculation              04610064
P21BRT   DS     CL2           Roadway Type                                04620064
P21BPID  DS     CL7           Physical Id                                 04630064
P21BGID  DS     CL7           Generic Id                                  04640064
P21BPDID DS     CL7           For DCP Use Only                            04650064
P21BFDID DS     CL7           For DCP Use Only                            04660064
P21BBLN2 DS     CL2           Bike Lane 2 (has 2 bytes numeric value)     04661068
P21BBTD  DS     CL2           Bike Traffic Direction                      04662072
         DS     CL3           Filler                                      04670071
P21BSTS  DS     CL1           Street Status                               04680064
P21BSTW  DS     CL3           Street Width                                04690064
P21BSTWI DS     CL1           Street Width Irregular (Y/N)                04700064
P21BBLN  DS     CL1           Bike Lane                                   04710064
P21BFCC  DS     CL2           Federal Classification Code                 04720064
P21BRTP  DS     CL1           Row Type                                    04730064
P21BSLGC DS     CL10          Set of Second LGCs                          04740064
P21BLSID DS     CL7           Legacy Segment ID                           04750064
P21BFPL1 DS     CL10          From Preferred LGCs First Set of 5          04760064
P21BTPL1 DS     CL10          To Preferred LGCs First Set of 5            04770064
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P21BFPL2 DS    CL10          From Preferred LGCs Second Set of 5          04780064
P21BTPL2 DS    CL10          To Preferred LGCs Second Set of 5            04790064
P21BNCR  DS    CL1           No Cross Street Calc Flag                    04800064
P21BISL  DS    CL5           Individual Segment Length                    04810064
P21BNTAN DS    CL75          NTA Name                                     04820064
P21BUSPS DS    CL25          USPS PREFERRED CITY NAME                     04830064
P21B1LAT DS    CL9           LATITUDE                                     04840064
P21B1LON DS    CL11          LONGITUDE                                    04850064
P21BSFRN DS    CL7           SEGMENT FROM NODE                            04860064
P21BSTON DS    CL7           SEGMENT TO NODE                              04870064
P21BFXYZ DS    CL21          XYZ COORD (SEGMENT FROM XYZ)                 04880064
P21BTXYZ DS    CL21          XYZ COORD (SEGMENT TO XYZ)                   04890064
P21BBFID DS    CL10          NEW location blockface_id because of         04891065
*                            length changed V16.1                         04892065
P21B#TRL DS    CL2           nbr of traveling lanes                       04893065
P21B#PKL DS    CL2           nbr of parking lanes                         04894065
P21B#TLL DS    CL2           nbr of total lanes                           04895065
P21BSTWX DS    CL3           Street Width Maximum                         04895168
         DS    CL252         Filler                                       04896068
P21BRC   DS    CL1           REASON CODE                                  04910064
P21BRC1  DS    CL1           REASON CODE QUALIFIER                        04920064
P21BWC   DS    CL2           WARNING CODE FILLER                          04930064
P21BGRC  DS    CL2           GEOSUPPORT RETURN CODE                       04940064
P21B#SL  DS    CL1           NUMBER OF CROSS STREETS AT LOW END           04950064
P21B7SL  DS    CL40          UP TO 5 B7SC'S FOR LOW END                   04960064
P21B#SH  DS    CL1           NUMBER OF CROSS STREETS AT HIGH END          04970064
P21B7SH  DS    CL40          UP TO 5 B7SC'S FOR HIGH END                  04980064
P21BSNL  DS    CL160         UP TO 5 STREET NAMES FOR LOW END             04990064
P21BSNH  DS    CL160         UP TO 5 STREET NAMES FOR HIGH END            05000064
P21BBP7  DS    CL8           BOE PREFERRED B7SC                           05010064
P21BBSN  DS    CL32          BOE PREFERRED STREET NAME                    05020064
         DS    CL52          Filler                                       05030064
*                                                                         05040064
         DS    CL21          Internal Use Only                            05050064
P21BCPIN DS    CL1           CONTINUOUS PARITY INDICATOR                  05060064
P21BHSEL DS    CL11          LOW HOUSE NUMBER ON BLOCK - HNS Form         05070064
P21BALT1 DS   0CL11          Alternate Key    Y                           05080064
P21BBOR1 DS    CL1           ALTERNATE KEY - BORO                         05090064
P21BTXB1 DS    CL5           ALTERNATE KEY - TAX BLOCK                    05100064
P21BTXL1 DS    CL4           ALTERNATE KEY - TAX LOT                      05110064
         DS    CL1              Future Use                                05120064
P21BRSCC DS    CL1           RPAD SCC                                     05130064
         DS    CL1           FILLER                                       05140064
P21BGLI  DS   0CL13          GENERAL LOT INFO                             05150064
P21BRBLC DS    CL2           RPAD BUILDING CLASSIFICATION                 05160064
P21BCORC DS    CL2           CORNER CODE                                  05170064
P21B#STC DS    CL4           TOTAL NUMBER STRUCTURES                      05180064
P21B#BFA DS    CL2           TOTAL NUMBER BLOCKFACES                      05190064
P21BINTF DS    CL1           INTERIOR LOT FLAG                            05200064
P21BVACF DS    CL1           VACANT LOT FLAG                              05210064
P21BIRLF DS    CL1           IRREGULARLY-SHAPED LOT FLAG                  05220064
*                                                                         05230064
P21BABFL DS    CL1           Marble Hill/ Rikers ALTERNATE BORO FLAG      05240064
P21BOVFL DS    CL1           Address Overflow Flag                        05250064
*                                                                         05260064
P21BSTRK DS    CL19          STROLLING KEY - FILLER                       05270064
*                                                                         05280064
P21BRFIU DS    CL1           RESERVED FOR INTERNAL USE                    05290064
P21BBIN  DS    CL7           BUILDING IDENTIFICATION NUMBER (BIN)         05300064
*                            Condo Information                            05310064
P21BCONF DS    CL1           CONDO LOT FLAG                               05320064
```

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         DS    CL1            Filler for Future Use                     05330064
P21BRCO# DS    CL4            RPAD CONDO NUMBER                         05340064
         DS    CL7            Future Use - Condo Unit Number            05350064
P21BCBBL DS    CL11           CONDO BILLING BBL                         05360064
P21BCBBS DS    CL1            CONDO BILLING BBL SCC                     05370064
P21BCLBL DS    CL11           CONDO LOW BBL                             05380064
P21BCHBL DS    CL11           CONDO HIGH BBL                            05390064
         DS    CL15           Filler                                    05400064
P21BCOOP DS    CL4            Co-op Number                              05410064
*                                                                       05420064
P21BSBVP DS    CL8            SANDBORN BOROUGH/VOLUME/PAGE              05430064
*                                                                       05440064
P21BBUSA DS    CL5            BUSINESS AREA                             05450064
P21BTAXM DS    CL5            Tax Map Number - Section and Volume       05460064
         DS    CL4            Reserved for Tax Map Page                 05470064
         DS    CL3               FILLER                                 05480064
P21BALAT DS    CL9            LATITUDE                                  05490064
P21BALON DS    CL11           LONGITUDE                                 05500064
P21BXCO  DS    CL7            X Coordinate of Annotation Point          05510064
P21BYCO  DS    CL7            Y Coordinate of Annotation Point          05520064
P21BBID  DS    CL6            Business Improvement District             05530064
P21BTPBS DS    CL1            TPAD BIN Status                           05540064
P21BTPNB DS    CL7            TPAD New BIN                              05550064
P21BTPNS DS    CL1            TPAD New BIN Status                       05560064
P21BTPCF DS    CL1            TPAD Conflict Flag                        05570064
         DS    CL9            FILLER                                    05580064
         DS    CL8            Internal Use - LGCS                       05590064
P21BRCS2 DS    CL1            REASON CODE                               05600064
P21BRCQ2 DS    CL1            REASON CODE QUALIFIER                     05610064
P21BWC2  DS    CL2            WARNING CODE FILLER                       05620064
P21BGRC2 DS    CL2            GEOSUPPORT RETURN CODE                    05630064
         DS    CL108          FILLER                                    05640064
P21B#ADR DS    CL4            TOTAL ADDRESSES FOR LOT                   05650064
P21BLIST DS   0CL116          LIST OF ADDRESSES, MAXIMUM OF 21          05660064
P21BLOW# DS    CL16           LOW HOUSE NUMBER-Display Form             05670064
P21BHI#  DS    CL16           HIGH HOUSE NUMBER-Display Form            05680064
P21BBCDE DS    CL1            Borough Code                              05690064
P21BCODE DS    CL5            STREET CODE                               05700064
P21BPLGC DS    CL2            Preferred LGC                             05710064
P21BLBIN DS    CL7            BIN                                       05720064
P21BLSOS DS    CL1            Side of Street Indicator                  05730064
P21BATP  DS    CL1            Address Type Flag                         05740064
P21BATPS DS    CL1            TPAD BIN Status                           05750064
P21BSTN  DS    CL32           STREET NAME                               05760064
         DS    CL34           FILLER                                    05770064
*  STORAGE IS RESERVED FOR THE REMAINING 20 ADDRESS STRUCTURES.         05780064
*  EACH STRUCTURE IS IDENTICAL TO THE ONE DEFINED ABOVE.                05790064
         DS    CL2320         REMAINING ADDRESSES                       05800064
P21BEND  EQU   *                                                        05810064
P21BLEN  EQU   P21BEND-P2BAL1A LENGTH OF P21B WORKAREA 2                05820064
*                                                                       05830064
         ORG   ,                                                        05840064
*********************************************************************** 05850064
```

P2BAL3S COPY File

```
*/*****************************************************************/ 00000100
*/*****  THIS IS GEOSUPPORT INFORMATION SYSTEM COPY FILE P2BAL3S,  ***/ 00000200
*/*****  CONTAINING THE LAYOUT OF WORK AREA 2 FOR FUNCTION 3S.     ***/ 00000300
*/*****************************************************************/ 00000400
*/******        Last Modified - 3 April 2002                     ***/ 00000502
*/*****************************************************************/ 00000602
P2BAL3S  DS   0H                                                      00000700
P23SAKEY DS   0CL21          ACCESS KEY                               00000800
         DS    CL2           Internal Use Only                        00000900
P23SPORS DS    CL1           P=Primary, S=Secondary                   00001000
P23SBORO DS    CL1           Borough Code                             00001100
P23S5SC  DS    CL5           Street Code                              00001200
P23SLGC  DS    CL2           Blank if P in P23SPORS                   00001300
         DS    CL10          Internal use Only                        00001400
P23S#INT DS    CL3           NUMBER OF INTERSECTIONS ON STRETCH       00001500
*                            Up to 350 Intersections                  00001600
*P23SINT  DS    0CL87        INTERSECTION LAYOUT                      00001700
P23SINT  DS    0CL55         INTERSECTION LAYOUT                      00001800
P23SMHRI DS    CL1           Marble Hill / Rikers Island Flag         00001900
P23SDIST DS    CL5           DISTANCE IN FEET FROM PREVIOUS INTERSECT. 00002000
P23SGAPF DS    CL1           GAP FLAG ("G" IF NO SEGMENT CONNECTS THIS 00002100
*                            INTERSECTION TO THE PREVIOUS ONE)        00002200
P23SNODE DS    CL7           Node Number                              00002301
P23S#ST  DS    CL1           Number of Streets intersecting (max 5)   00002400
P23SCDE1 DS    CL8           NUMERICALLY SMALLEST B7SC                00002503
P23SCDE2 DS    CL8           NUMERICALLY 2ND SMALLEST B7SC            00002603
P23SCDE3 DS    CL8           Remaining Street Codes in any order      00002700
P23SCDE4 DS    CL8                                                    00002800
P23SCDE5 DS    CL8                                                    00002900
P23SREST DS    CL19195      REMAINING INTERSECTIONS Assuming Max size 00003402
P23SEND  EQU   *                                                      00003500
P23SLEN  EQU   P23SEND-P2BAL3S     LENGTH OF P2BAL3S                  00003600
```

P2BALAP COPY File

```
*/*****************************************************************/ 00000100
*/*****  THIS IS GEOSUPPORT INFORMATION SYSTEM COPY FILE P2BALAP,  ***/ 00000260
*/*****  CONTAINING THE LAYOUT OF WORK AREA 2 FOR FUNCTION AP AND  ***/ 00000360
*/*****  APX (ADDRESS POINT AND AP EXTENDED).   TLV 3/2015  V15.2  ***/ 00001260
*/*****************************************************************/ 00001315
P2BALAP  DS   0H                                                     00001760
         DS    CL21                                                  00001815
P2APCPAR DS    CL1           CONTINUOUS PARITY INDICATOR             00001960
P2APHSEL DS    CL11          LOW HOUSE NUMBER ON BLOCK - HNS FORM    00002060
P2APALT1 DS   0CL11          ALTERNATE KEY                           00002160
P2APBOR1 DS    CL1           ALTERNATE KEY - BORO                    00002260
P2APTXB1 DS    CL5           ALTERNATE KEY - TAX BLOCK               00002360
P2APTXL1 DS    CL4           ALTERNATE KEY - TAX LOT                 00002460
         DS    CL1              Future Use                           00002515
         DS    CL1           FILLER FOR FUNC AP                      00002661
         DS    CL1           FILLER                                  00002715
P2APGLI  DS   0CL13          GENERAL LOT INFO                        00002860
P2APFL01 DS    CL2           FILLER FOR AP ?fields name for fillers ?? 00002961
P2APFL02 DS    CL2           FILLER FOR FUNC AP                      00003061
P2AP#STC DS    CL4           TOTAL NUMBER STRUCTURES                 00003160
P2APFL03 DS    CL2           FILLER FOR FUNC AP ?                    00003261
P2APFL04 DS    CL1           FILLER FOR FUNC AP ?                    00003361
P2APFL05 DS    CL1           FILLER FOR FUNC AP ?                    00003461
P2APFL06 DS    CL1           FILLER FOR FUNC AP                      00003561
*                                                                    00003615
         DS    CL1           FILLER FOR FUNC AP                      00003761
         DS    CL1           FILLER FOR FUNC AP                      00003861
*                                                                    00003915
         DS    CL19          FILLER FOR FUNC AP                      00004061
*                                                                    00004115
P2APRFIU DS    CL1           RESERVED FOR INTERNAL USE               00004260
P2APBIN  DS    CL7           BUILDING IDENTIFICATION NUMBER (BIN)    00004360
*                           Condo Information                        00004463
P2APCONF DS    CL1           CONDO LOT FLAG                          00004560
         DS    CL1           Filler for Future Use                   00004615
P2APRCO# DS    CL4           RPAD CONDO NUMBER                       00004760
         DS    CL7           Future Use - Condo Unit Number          00004815
P2APCBBL DS    CL11          CONDO BILLING BBL                       00005063
         DS    CL1           FILLER FOR FUNC AP                      00005161
P2APCLBL DS    CL11          CONDO LOW BBL                           00005260
P2APCHBL DS    CL11          CONDO HIGH BBL                          00005360
         DS    CL15          Filler                                  00005415
P2APCOOP DS    CL4           CO-OP NUMBER                            00005560
*                                                                    00005615
         DS    CL8           FILLER FOR FUNC AP                      00005761
*                                                                    00005815
         DS    CL5           FILLER FOR FUNCTION AP                  00005961
         DS    CL5           FILLER FOR FUNCTION AP                  00006061
         DS    CL4           FILLER                                  00006161
         DS    CL3           FILLER                                  00006261
P2APLAT  DS    CL9           LATITUDE                                00006360
P2APLONG DS    CL11          LONGITUDE                               00006460
P2APXCO  DS    CL7           X COORDINATE OF ANNOTATION POINT        00006560
P2APYCO  DS    CL7           Y COORDINATE OF ANNOTATION POINT        00006660
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         DS    CL6           FILLER FOR FUNC AP                         00006761
         DS    CL1           FILLER FOR FUNC AP                         00006861
         DS    CL7           FILLER FOR FUNC AP                         00006961
         DS    CL1           FILLER FOR FUNC AP                         00007061
         DS    CL1           FILLER FOR FUNC AP                         00007162
P2APAPID DS    CL9           ADDRESS POINT ID                           00007367
         DS    CL8           Internal Use                               00007461
P2AP#ADR DS    CL4           TOTAL ADDRESSES FOR LOT                    00007561
P2APLIST DS   0CL1113        LIST OF ADDRESSES, MAXIMUM OF 21           00007661
P2APLOW# DS    CL16          LOW HOUSE NUMBER-Display Form              00007761
P2APHI#  DS    CL16          HIGH HOUSE NUMBER-DISPLAY FORM             00007863
P2APBCDE DS    CL1           Borough Code                               00007961
P2APCODE DS    CL5           STREET CODE                                00008061
P2APPLGC DS    CL2           Preferred LGC                              00008161
P2APLBIN DS    CL7           BIN                                        00008261
P2APLSOS DS    CL1           Side of Street Indicator                   00008361
P2APATP  DS    CL1           Address Type Flag                          00008461
         DS    CL1           FILLER FOR FUNC AP                         00008562
         DS    CL3           FILLER                                     00008661
*  STORAGE IS RESERVED FOR THE REMAINING 20 ADDRESS STRUCTURES.         00008761
*  EACH STRUCTURE IS IDENTICAL TO THE ONE DEFINED ABOVE.                00008861
         DS    CL1060        REMAINING ADDRESSES                        00008961
P2APSEND EQU   *                                                        00009061
P2APSLEN EQU   P2APSEND-P2BALAP    LENGTH OF P2BALAP                    00009162
                                                                        00021016
**********************************************************************  01222016
******                                                                  01223016
         ORG   P2BALAP             RESET LOCATION FOR FN AP EXTENDED    01224062
******                                                                  01225016
**********************************************************************  01226016
P2PXKEY  DS    CL21          INTERNAL USE ONLY                          01226166
P2PXCPAR DS    CL1           CONTINUOUS PARITY INDICATOR                01226366
P2PXHSEL DS    CL11          LOW HOUSE NUMBER ON BLOCK - HNS FORM       01226466
P2PXALT1 DS   0CL11          BBL                                        01226566
P2PXBOR1 DS    CL1           BORO                                       01226666
P2PXTXB1 DS    CL5           TAX BLOCK                                  01226766
P2PXTXL1 DS    CL4           TAX LOT                                    01226866
         DS    CL1              Future Use                              01226963
         DS    CL1           FILLER FOR FUNC AP                         01227063
         DS    CL1           FILLER                                     01227163
P2PXGLI  DS   0CL13          GENERAL LOT INFO                           01227266
P2PXFL01 DS    CL2           FILLER FOR AP ?FIELDS NAME FOR FILLERS ??  01227366
P2PXFL02 DS    CL2           FILLER FOR FUNC AP                         01227466
P2PX#STC DS    CL4           TOTAL NUMBER STRUCTURES                    01227566
P2PXFL03 DS    CL2           FILLER FOR FUNC AP ?                       01227666
P2PXFL04 DS    CL1           FILLER FOR FUNC AP ?                       01227766
P2PXFL05 DS    CL1           FILLER FOR FUNC AP ?                       01227866
P2PXFL06 DS    CL1           FILLER FOR FUNC AP                         01227966
*                                                                       01228063
         DS    CL1           FILLER FOR FUNC AP                         01228163
         DS    CL1           FILLER FOR FUNC AP                         01228263
*                                                                       01228363
         DS    CL19          FILLER FOR FUNC AP                         01228463
*                                                                       01228563
```

P2BALAP COPY File

```
P2PXRFIU DS    CL1           RESERVED FOR INTERNAL USE                  01228666
P2PXBIN  DS    CL7           BUILDING IDENTIFICATION NUMBER (BIN)       01228766
*                          Condo Information                            01228863
P2PXCONF DS    CL1           CONDO LOT FLAG                             01228966
         DS    CL1           Filler for Future Use                      01229063
P2PXRCO# DS    CL4           RPAD CONDO NUMBER                          01229166
         DS    CL7           Future Use - Condo Unit Number             01229263
P2PXCBBL DS    CL11          CONDO BILLING BBL                          01229366
         DS    CL1           FILLER FOR FUNC AP                         01229463
P2PXCLBL DS    CL11          CONDO LOW BBL                              01229566
P2PXCHBL DS    CL11          CONDO HIGH BBL                             01229666
         DS    CL15          Filler                                     01229763
P2PXCOOP DS    CL4           CO-OP NUMBER                               01229866
*                                                                       01229963
         DS    CL8           FILLER FOR FUNC AP                         01230063
*                                                                       01230163
         DS    CL5           FILLER FOR FUNCTION AP                     01230263
         DS    CL5           FILLER FOR FUNCTION AP                     01230363
         DS    CL4           FILLER                                     01230463
         DS    CL3           FILLER                                     01230563
P2PXLAT  DS    CL9           LATITUDE                                   01230666
P2PXLONG DS    CL11          LONGITUDE                                  01230766
P2PXXCO  DS    CL7           X COORDINATE OF ANNOTATION POINT           01230866
P2PXYCO  DS    CL7           Y COORDINATE OF ANNOTATION POINT           01230966
         DS    CL6           FILLER FOR FUNC AP                         01231063
         DS    CL1           FILLER FOR FUNC AP                         01231163
         DS    CL7           FILLER FOR FUNC AP                         01231263
         DS    CL1           FILLER FOR FUNC AP                         01231363
         DS    CL1           FILLER FOR FUNC AP                         01231463
P2PXAPID DS    CL9           ADDRESS POINT ID                           01231667
         DS    CL8           Internal Use - LGCs                        01231764
P2PXRC   DS    CL1           REASON CODE                                01231866
P2PXRCQ  DS    CL1           REASON CODE QUALIFIER                      01231966
P2PXWC   DS    CL2           WARNING CODE FILLER                        01232066
P2PXGRC  DS    CL2           GEOSUPPORT RETURN CODE                     01232166
         DS    CL108         FILLER                                     01232264
P2PX#ADR DS    CL4           TOTAL ADDRESSES FOR LOT                    01232966
P2PXLIST DS   0CL116         LIST OF ADDRESSES, MAXIMUM OF 21           01233066
P2PXLOW# DS    CL16          LOW HOUSE NUMBER-DISPLAY FORM              01233166
P2PXHI#  DS    CL16          HIGH HOUSE NUMBER-DISPLAY FORM             01233266
P2PXBCDE DS    CL1           BOROUGH CODE                               01233366
P2PXCODE DS    CL5           STREET CODE                                01233466
P2PXPLGC DS    CL2           PREFERRED LGC                              01233566
P2PXLBIN DS    CL7           BIN                                        01233666
P2PXLSOS DS    CL1           SIDE OF STREET INDICATOR                   01233766
P2PXATP  DS    CL1           ADDRESS TYPE FLAG                          01233866
         DS    CL1           FILLER FOR FUNC AP                         01233963
P2PXSTN  DS    CL32          STREET NAME                                01234066
         DS    CL34          FILLER                                     01234164
*  STORAGE IS RESERVED FOR THE REMAINING 20 ADDRESS STRUCTURES.         01234263
*  EACH STRUCTURE IS IDENTICAL TO THE ONE DEFINED ABOVE.                01234363
         DS    CL1060        REMAINING ADDRESSES                        01234463
P2PXSEND EQU   *                                                        01234566
P2PXSLEN EQU   P2APSEND-P2BALAP   LENGTH OF P2AP EXTEND WORKAREA 2      01234666
```

P2BALAP COPY File

```
*                                                                        01234764
         ORG   ,                                                         01269362
************************************************************************ 01269516
```

PL/1 COPY Files (COW)

P1PL1 COPY File

```
/*********************************************************************/ 00000100
/** ADDED 'UNIT' FIELDS TO WA1                   YNL 10/16  V16.4 ***/ 00000227
/***  THIS IS THE PL/1 STRUCTURE FOR GEOSUPPORT SYSTEM PLATFORM  ***/ 00000300
/***  INDEPENDENT WORK AREA 1.                                   ***/ 00000400
/***  COPY FILE - P1PL1.                                         ***/ 00000500
/***                                                04/07/98     ***/ 00000600
/**                     LAST UPDATED OCTOBER  2016                **/ 00000729
/*********************************************************************/ 00000825
 DCL PP1 POINTER;                                                       00000925
 DCL                                                                    00001025
   1 P1PL1,                                                             00001125
     /************************************************/                 00001225
     /*****           INPUT  FIELDS             *****/                  00001325
     /************************************************/                 00001425
     2 PIWA1_IN_FUNCTION_CODE,                                          00001525
       3 PIWA1_IN_FUNCTION_1             CHAR(1),                       00001625
       3 PIWA1_IN_FUNCTION_2             CHAR(1),                       00001725
     2 PIWA1_IN_HOUSENUM_DISPLAY         CHAR(16),                      00001825
     2 PIWA1_IN_HOUSENUM_SORT            CHAR(11),                      00001925
     2 PIWA1_IN_LOW_HOUSENUM_DISPLAY     CHAR(16),                      00002025
     2 PIWA1_IN_LOW_HOUSENUM_SORT        CHAR(11),                      00002125
     2 PIWA1_IN_BORO_1                   CHAR(1),                       00002225
     2 PIWA1_IN_10SC_1                   CHAR(10),                      00002325
     2 PIWA1_IN_STREET_1                 CHAR(32),                      00002425
     2 PIWA1_IN_BORO_2                   CHAR(1),                       00002525
     2 PIWA1_IN_10SC_2                   CHAR(10),                      00002625
     2 PIWA1_IN_STREET_2                 CHAR(32),                      00002725
     2 PIWA1_IN_BORO_3                   CHAR(1),                       00002825
     2 PIWA1_IN_10SC_3                   CHAR(10),                      00002925
     2 PIWA1_IN_STREET_3                 CHAR(32),                      00003025
     2 PIWA1_IN_BBL,                                                    00003125
       3 PIWA1_IN_BBL_BORO               CHAR(1),                       00003225
       3 PIWA1_IN_BLOCK                  CHAR(5),                       00003325
       3 PIWA1_IN_LOT                    CHAR(4),                       00003425
       3 PIWA1_IN_LOT_VER                CHAR(1),                       00003525
     2 PIWA1_IN_BIN                      CHAR(7),                       00003625
     2 PIWA1_IN_COMPASS                  CHAR(1),                       00003725
     2 PIWA1_IN_COMPASS2                 CHAR(1),                       00003825
     2 PIWA1_IN_NODE                     CHAR(7),  /*NODE INPUT FN 2*/00003923
     2 PIWA1_IN_PLATFORM_INDICATOR       CHAR(1),                       00004009
     2 PIWA1_IN_ZIPIN                    CHAR(5),                       00004112
     2 PIWA1_IN_UNIT                     CHAR(14),                      00004227
     2 FILLER_200                        CHAR(82),                      00004327
 /** 2 FILLER_200  *** V16.4 ***         CHAR(96)   ****/               00004427
     2 PIWA1_IN_LONG_WORKAREA2_FLAG      CHAR(1), /*L=LONG */           00004527
     2 PIWA1_IN_HSE_NBR_JUSTIFY          CHAR(1),                       00004627
     2 PIWA1_IN_HNL                      CHAR(2), /* NI */              00004727
     2 PIWA1_IN_HSE_OVER_FLAG            CHAR(1),                       00004827
     2 PIWA1_IN_SNL                      CHAR(2),                       00004927
     2 PIWA1_IN_SN_NORM_FORMAT           CHAR(1), /*C=COMPACT */        00005027
                                                  /*S OR ' '=SORT*/     00005127
     2 PIWA1_IN_EXPANDED_FORMAT          CHAR(1),                       00005227
     2 PIWA1_IN_ROADBED_REQ_SWITCH       CHAR(1),                       00005327
     2 PIWA1_IN_INTERNAL_USE_LEGACY      CHAR(1),                       00005427
     2 PIWA1_IN_SEGAUX_SWITCH            CHAR(1),                       00005527
     2 PIWA1_IN_BROWSE_FLAG              CHAR(1),                       00005627
     2 PIWA1_IN_REAL_STREET_ONLY         CHAR(1),  /* FN 3S */          00005727
     2 PIWA1_IN_TPAD_SWITCH              CHAR(1),  /*FN 1A-BL-BN*/      00005827
     2 PIWA1_IN_MODE_SWITCH              CHAR(1),  /*FN 1-1E-1A-*/      00005927
                                                   /*FN BL-BN-3-3C*/    00006027
                                                   /*X=EXTENDED */      00006127
```

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        2 PIWA1_IN_WTO_SWITCH              CHAR(1),  /*N=NO WTO*/       00006227
        2 FILLER_400                       CHAR(29),                    00006327
        /*********************************************/                 00006427
        /*****            OUTPUT  FIELDS          *****/                 00006527
        /*********************************************/                 00006627
        2 PIWA1_OUT_BORONAME               CHAR(9),                     00006727
        2 PIWA1_OUT_HOUSENUM_DISPLAY       CHAR(16),                    00006827
        2 PIWA1_OUT_HOUSENUM_SORT          CHAR(11),                    00006927
        2 PIWA1_OUT_B10SC_1                CHAR(11),                    00007027
        2 PIWA1_OUT_STREET_1               CHAR(32),                    00007127
        2 PIWA1_OUT_B10SC_2                CHAR(11),                    00007227
        2 PIWA1_OUT_STREET_2               CHAR(32),                    00007327
        2 PIWA1_OUT_B10SC_3                CHAR(11),                    00007427
        2 PIWA1_OUT_STREET_3               CHAR(32),                    00007527
        2 PIWA1_OUT_BBL,                                                00007627
          3 PIWA1_OUT_BBL_BORO             CHAR(1),                     00007727
          3 PIWA1_OUT_BLOCK                CHAR(5),                     00007827
          3 PIWA1_OUT_LOT                  CHAR(4),                     00007927
        2 PIWA1_OUT_LOT_VER                CHAR(1),                     00008027
        2 PIWA1_OUT_LO_HOUSENUM_DISPLAY    CHAR(16),                    00008127
        2 PIWA1_OUT_LO_HOUSENUM_SORT       CHAR(11),                    00008227
        2 PIWA1_OUT_BIN                    CHAR(7),                     00008327
        2 PIWA1_OUT_STREET_ATTR(3)         CHAR(1),                     00008427
        2 PIWA1_OUT_REASON_CODE_2          CHAR(1),                     00008527
        2 PIWA1_OUT_REASON_CODE_QUAL_2     CHAR(1), /*TPAD 2ND REASON*/ 00008627
                                                    /*CODE QUALIFIER */ 00008727
        2 PIWA1_OUT_WARNING_CODE_2         CHAR(2),                     00008827
        2 PIWA1_OUT_RETURN_CODE_2          CHAR(2),                     00008927
        2 PIWA1_OUT_ERROR_MESSAGE_2        CHAR(80),                    00009027
        2 PIWA1_OUT_NODE                   CHAR(7),  /*NODE NORMALIZED*/00009127
        2 PIWA1_OUT_UNIT_SORT,                                          00009227
          3 PIWA1_OUT_UNIT_TYPE            CHAR(4),                     00009327
          3 PIWA1_OUT_UNIT_ID              CHAR(10),                    00009427
        2 PIWA1_OUT_UNIT_DISP              CHAR(14),                    00009527
        2 FILLER_550                       CHAR(17),                    00009728
    /** 2 FILLER_550   *** V16.4  ***      CHAR(39)   ***/              00009827
    /** 2 FILLER_555                       CHAR(6),   ***/              00009928
        2 PIWA1_OUT_SND_ATTR               CHAR(1),                     00010027
        2 PIWA1_OUT_REASON_CODE            CHAR(1),                     00010127
        2 PIWA1_OUT_REASON_CODE_QUAL       CHAR(1), /*TPAD REASON   */  00010227
                                                    /*CODE QUALIFIER*/  00010327
        2 PIWA1_OUT_WARNING_CODE           CHAR(2),                     00010427
        2 PIWA1_OUT_RETURN_CODE            CHAR(2),                     00010527
        2 PIWA1_OUT_ERROR_MESSAGE          CHAR(80),                    00010627
        2 PIWA1_OUT_NUM_SIMILAR_STRS       CHAR(2),                     00010727
        2 PIWA1_OUT_SIMILAR_B7SC(10)       CHAR(8),                     00010827
        2 PIWA1_OUT_SIMILAR_NAMES(10)      CHAR(32);                    00010927
                                                                        00011027
    DCL PIWA1_IN_FUNC_CODE                 CHAR(2)                      00011127
                   BASED(ADDR(PIWA1_IN_FUNCTION_CODE));                 00011227
                                                                        00011327
    DCL WORK1PL1   BASED(PP1)              CHAR(1200);                  00012027
    PP1=ADDR(P1PL1);                                                    00020018
```

P2PL1 COPY File

```
 /*********************************************************************/
 /***                      P2PL1                                   ***/
 /***           LAST MODIFIED DECEMBER 2016                        ***/
 /*  ADD NEW 2 BYTE BIKE TRAFFIC DIRECTION          YNL 12/16 V17,1*/
 /*  ADD NEW 2 BYTE BIKE LANE AND MAX STR WIDTH      YNL 10/16 V16.4*/
 /*                                                                */
 /***  THIS IS THE PL/1 STRUCTURE FOR GEOSUPPORT SYSTEM PLATFORM  ***/
 /***  INDEPENDENT WORK AREA 2 FOR FUNCTIONS: 1, 1E, 2, 2C, 3,    ***/
 /***   AND 5.                                                    ***/
 /***  ADDED 3 EXTENDED AND 3C EXTENDED          MEB   6/11       ***/
 /***  ADDED 2 WIDE                              MEB   3/14       ***/
 /***                                                             ***/
 /***  COPY FILE - P2PL1.                                         ***/
 /***  PLEASE NOTE THAT FUNCTIONS 1 AND 1E SHARE A SINGLE         ***/
 /***  WORK AREA 2 LAYOUT, AND FUNCTIONS 2 AND 2C ALSO            ***/
 /***  SHARE A SINGLE WORK AREA 2 LAYOUT.            12/30/97     ***/
 /*********************************************************************/
DCL PP2 POINTER;
DCL P2PL1             CHAR(10000) INIT(' ');


 /*********************************************************************/
 /*******     FOR: FUNCTIONS 1 & 1E     ******************************/
DCL
  1 PIWA2_FUNCTION1   BASED(PP2),
    2 PIWA2_FN1_ACCESS_KEY              CHAR(21),
    2 PIWA2_FN1_CONT_PARITY             CHAR(1),/*(OR DUP ADDR IND)*/
    2 PIWA2_FN1_LOW_HOUSENUM            CHAR(11),/* SORT FORMAT */
    2 PIWA2_FN1_HI_HOUSENUM             CHAR(11),/* SORT FORMAT */
    2 PIWA2_FN1_PREF_LGC                CHAR(2),
    2 PIWA2_FN1_NUM_X_ST_LOW_END        CHAR(1),
    2 PIWA2_FN1_LOW_B5SC(5)             CHAR(6),
    2 PIWA2_FN1_NUM_X_ST_HI_END         CHAR(1),
    2 PIWA2_FN1_HI_B5SC(5)              CHAR(6),
    2 PIWA2_FN1_LIONKEY,
      3 PIWA2_FN1_LION_BORO             CHAR(1),
      3 PIWA2_FN1_LION_FACECODE         CHAR(4),
      3 PIWA2_FN1_LION_SEQ              CHAR(5),
    2 PIWA2_FN1_SPECIAL_ADDR_FLAG       CHAR(1),
    2 PIWA2_FN1_SIDE_OF_STR             CHAR(1),
    2 PIWA2_FN1_SEG_LEN                 CHAR(5),
    2 PIWA2_FN1_XCOORD                  CHAR(7),
    2 PIWA2_FN1_YCOORD                  CHAR(7),
    2 FILLER_100                        CHAR(7), /* FOR ZCOORD */
    2 FILLER_200                        CHAR(1), /* FOR GSS USE*/
    2 PIWA2_FN1_MARBLE_RIKERS_FLAG      CHAR(1),
    2 PIWA2_FN1_DOT_SLA                 CHAR(1),
    2 PIWA2_FN1_COM_DIST,
      3 PIWA2_FN1_COM_DIST_BORO         CHAR(1),
      3 PIWA2_FN1_COM_DIST_NUM          CHAR(2),
    2 PIWA2_FN1_ZIP                     CHAR(5),

    2 PIWA2_FN1E_ELECT_DIST             CHAR(3), /****************/
    2 PIWA2_FN1E_ASSEM_DIST             CHAR(2), /* THE FNIE      */
    2 PIWA2_FN1E_SPLIT_ED_FLAG          CHAR(1), /* FIELDS ARE    */
    2 PIWA2_FN1E_CONG_DIST              CHAR(2), /* VALID ONLY FOR*/
    2 PIWA2_FN1E_SENATE_DIST            CHAR(2), /* FUNCTION 1E,  */
    2 PIWA2_FN1E_COURT_DIST             CHAR(2), /* NOT FUNC 1.   */
    2 PIWA2_FN1E_COUNCIL_DIST           CHAR(2), /****************/

    2 PIWA2_FN1_HEALTH_CENTER_DIST      CHAR(2), /* HEALTH CENTR*/
```

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     2 PIWA2_FN1_HEALTH_AREA              CHAR(4), /* HEALTH AREA*/     00580099
     2 PIWA2_FN1_SANI_DIST,                                             00590099
       3 PIWA2_FN1_SANI_DIST_BORO         CHAR(1),                      00600099
       3 PIWA2_FN1_SANI_DIST_NUM          CHAR(2),                      00610099
     2 PIWA2_FN1_SANI_SUBSEC              CHAR(2),                      00620099
     2 PIWA2_FN1_SANI_REG                 CHAR(5),                      00630099
     2 PIWA2_FN1_SANI_REC                 CHAR(3),                      00640099
     2 PIWA2_FN1_POLICE_DIST,                                           00650099
       3  PIWA2_FN1_POL_PAT_BORO_CMD       CHAR(1),                      00660099
       3  PIWA2_FN1_POL_PRECINCT          CHAR(3),                      00670099
     2 PIWA2_FN1_FIRE_DIV                 CHAR(2),                      00680099
     2 PIWA2_FN1_FIRE_BAT                 CHAR(2),                      00690099
     2 PIWA2_FN1_FIRE_CO,                                               00700099
       3 PIWA2_FN1_FIRE_CO_TYPE           CHAR(1),                      00710099
       3 PIWA2_FN1_FIRE_CO_NUM            CHAR(3),                      00720099
     2 PIWA2_FN1_FILL_DIST_SPLIT_FLAG     CHAR(1),  /*WAS SPLIT SC*/    00730099
     2 PIWA2_FN1_SCHL_DIST                CHAR(2),                      00740099
     2 PIWA2_FN1_DYN_BLK                  CHAR(3),  /*ATOMIC POLYGON*/  00750099
     2 PIWA2_FN1_POLICE_PAT_BORO          CHAR(2),                      00760099
     2 PIWA2_FN1_FEATURE_TYPE             CHAR(1),                      00770099
     2 PIWA2_FN1_SEGMENT_TYPE             CHAR(1),                      00780099
     2 PIWA2_FN1_ALX                      CHAR(1),                      00790099
     2 PIWA2_FN1_COINCIDENT_SEG_CTR       CHAR(1),                      00800099
     2 FILLER_290                         CHAR(2),                      00810099
     2 PIWA2_FN1_CENS_TRCT_BORO           CHAR(1), /*USED FOR GRIDGEN*/ 00820099
     2 PIWA2_FN1_1990_CENS_TRCT           CHAR(6),                      00830099
     2 PIWA2_FN1_2010_CENSUS_TRACT        CHAR(6),                      00840099
     2 PIWA2_FN1_2010_CENSUS_BLOCK        CHAR(4),                      00850099
     2 PIWA2_FN1_2010_CENSUS_BLK_SF       CHAR(1), /*NOT IMPLEMENTED*/  00860099
     2 PIWA2_FN1_2000_CENS_TRACT          CHAR(6),                      00870099
     2 PIWA2_FN1_2000_CENS_BLOCK          CHAR(4),                      00880099
     2 PIWA2_FN1_2000_CENS_BLOCK_SUF      CHAR(1),                      00890099
     2 PIWA2_FN1_NTA                      CHAR(4), /*NEIGHBORHOOD    */ 00900099
                                                   /*TABULATION AREA */ 00910099
     2 PIWA2_FN1_SANIT_SNOW_PRIORITY      CHAR(1), /*SANITATION STRT */ 00920099
                                                   /*SNOW PRIORITY   */ 00930099
     2 PIWA2_FN1_SANIT_ORGANICS           CHAR(5), /*SANITATION      */ 00940099
                                                   /*ORGANIC PICKUP  */ 00950099
     2 PIWA2_FN1_SANIT_BULK_PICK_UP       CHAR(5), /*SANITATION BULK */ 00960099
 /** 2 PIWA2_FN1_SANIT_RESERVED *V16.4*   CHAR(5), /*SANITATION RESRV*/ 00961099
     2 PIWA2_FN1_HURRICANE_ZONE           CHAR(2), /*OEM HURRICANE   */ 00970099
                                                   /*EVACUATION ZONE */ 00980099
     2 FILLER_300                         CHAR(11),                     00990099
     2 PIWA2_FN1_UHNS                     CHAR(11),                     01000099
     2 PIWA2_FN1_REAL_B7SC                CHAR(8),                      01010099
     2 PIWA2_FN1_SEGMENT_ID               CHAR(7),                      01020099
     2 PIWA2_FN1_CURVE_FLAG               CHAR(1);                      01030099
                                                                        01040099
 DCL   PIWA2_FN1_COMDIST                  CHAR(3)                       01050099
         BASED(ADDR(PIWA2_FN1_COM_DIST));                               01060099
 DCL   PIWA2_FN1_SANIDIST                 CHAR(3)                       01070099
         BASED(ADDR(PIWA2_FN1_SANI_DIST));                              01080099
 DCL   PIWA2_FN1_POLDIST                  CHAR(4)                       01090099
         BASED(ADDR(PIWA2_FN1_POLICE_DIST));                            01100099
                                                                        01110099
                                                                        01120099
  /*****************************************************************/ 01130099
  /*******      FOR: FUNCTIONS 2 & 2C     *****************************/ 01140099
 DCL                                                                    01150099
   1 PIWA2_FUNCTION2   BASED(PP2),                                      01160099
     2 PIWA2_FN2_ACCESS_KEY               CHAR(21),                     01170099
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     2 PIWA2_FN2_DUP_INTERSECT_FLAG       CHAR(1),
     2 PIWA2_FN2_PREF_LGC1                CHAR(2),
     2 PIWA2_FN2_PREF_LGC2                CHAR(2),
     2 PIWA2_FN2_NUM_OF_INTERSECTS        CHAR(1),
     2 PIWA2_FN2_INTERSECT_B5SC(5)        CHAR(6),
     2 PIWA2_FN2_COMPDIR                  CHAR(1),
     2 PIWA2_FN2_ATOMIC_POLYGON           CHAR(3),
     2 FILLER_350                         CHAR(2),
     2 PIWA2_FN2_LIONNODENUM              CHAR(7),
     2 PIWA2_FN2_XCOORD                   CHAR(7),
     2 PIWA2_FN2_YCOORD                   CHAR(7),
     2 FILLER_400                         CHAR(7), /* FOR ZCOORD */
     2 PIWA2_FN2_SANBORN1,
       3 PIWA2_FN2_SANBORN1_BORO          CHAR(1),
       3 PIWA2_FN2_SANBORN1_VOL           CHAR(3),
       3 PIWA2_FN2_SANBORN1_PAGE          CHAR(4),
     2 PIWA2_FN2_SANBORN2,
       3 PIWA2_FN2_SANBORN2_BORO          CHAR(1),
       3 PIWA2_FN2_SANBORN2_VOL           CHAR(3),
       3 PIWA2_FN2_SANBORN2_PAGE          CHAR(4),
     2 PIWA2_FN2_MARBLE_RIKERS_FLAG       CHAR(1),
     2 PIWA2_FN2_DOT_SLA                  CHAR(1),
     2 PIWA2_FN2_COM_DIST,
       3 PIWA2_FN2_COM_DIST_BORO          CHAR(1),
       3 PIWA2_FN2_COM_DIST_NUM           CHAR(2),
     2 PIWA2_FN2_ZIP                      CHAR(5),
     2 PIWA2_FN2_HEALTH_AREA              CHAR(4),  /*HEALTH AREA*/
     2 PIWA2_FN2_POLICE_DIST,
       3  PIWA2_FN2_POL_PAT_BORO_CMD      CHAR(1),
       3  PIWA2_FN2_POL_PRECINCT          CHAR(3),
     2 PIWA2_FN2_FIRE_DIV                 CHAR(2),
     2 PIWA2_FN2_FIRE_BAT                 CHAR(2),
     2 PIWA2_FN2_FIRE_CO,
       3 PIWA2_FN2_FIRE_CO_TYPE           CHAR(1),
       3 PIWA2_FN2_FIRE_CO_NUM            CHAR(3),
     2 PIWA2_FN2_SCHL_DIST                CHAR(2),
     2 PIWA2_FN2_2010_CENSUS_TRACT        CHAR(6),
     2 PIWA2_FN2_1990_CENS_TRCT           CHAR(6),
     2 PIWA2_FN2_LEVEL_CODES(5,2)         CHAR(1),
     2 PIWA2_FN2_POLICE_PAT_BORO          CHAR(2),
     2 PIWA2_FN2_ASSEM_DIST               CHAR(2),
     2 PIWA2_FN2_CONG_DIST                CHAR(2),
     2 PIWA2_FN2_SENATE_DIST              CHAR(2),
     2 PIWA2_FN2_COURT_DIST               CHAR(2),
     2 PIWA2_FN2_COUNCIL_DIST             CHAR(2),
     2 PIWA2_FN2_CD_ELIGIBLE              CHAR(1),
     2 PIWA2_FN2_DUP_INTERSECT_DIST       CHAR(5),
     2 PIWA2_FN2_2000_CENS_TRACT          CHAR(6),
     2 PIWA2_FN2_HEALTH_CENTER_DIST       CHAR(2), /*HEALTH CENTER*/
     2 PIWA2_FN2_SANITATION_DIST          CHAR(3),
     2 PIWA2_FN2_SANITATION_SUBSEC        CHAR(2),
     2 FILLER_500                         CHAR(12);

 DCL   PIWA2_FN2_COMDIST                  CHAR(3)
         BASED(ADDR(PIWA2_FN2_COM_DIST));
 DCL   PIWA2_FN2_POLDIST                  CHAR(4)
         BASED(ADDR(PIWA2_FN2_POLICE_DIST));
 DCL   PIWA2_FN2_SANBORN1_BVOLPAGE        CHAR(8)
         BASED(ADDR(PIWA2_FN2_SANBORN1)),
       PIWA2_FN2_SANBORN2_BVOLPAGE        CHAR(8)
         BASED(ADDR(PIWA2_FN2_SANBORN2));
```

```
 /*******************************************************************/
 /*******     FOR: FUNCTIONS 2W         ****************************/
DCL
  1 PIWA2_FUNCTION2W  BASED(PP2),
    2 PIWA2_FN2W_ACCESS_KEY              CHAR(21),
    2 PIWA2_FN2W_DUP_INTERSECT_FLAG      CHAR(1),
    2 PIWA2_FN2W_PREF_LGC1               CHAR(2),
    2 PIWA2_FN2W_PREF_LGC2               CHAR(2),
    2 PIWA2_FN2W_NUM_OF_INTERSECTS       CHAR(1),
    2 PIWA2_FN2W_INTERSECT_B5SC(5)       CHAR(6),
    2 PIWA2_FN2W_COMPDIR                 CHAR(1),
    2 PIWA2_FN2W_ATOMIC_POLYGON          CHAR(3),
    2 PIWA2_FN2W_FILLER_350              CHAR(2),
    2 PIWA2_FN2W_LIONNODENUM             CHAR(7),
    2 PIWA2_FN2W_XCOORD                  CHAR(7),
    2 PIWA2_FN2W_YCOORD                  CHAR(7),
    2 PIWA2_FN2W_FILLER_400              CHAR(7), /* FOR ZCOORD */
    2 PIWA2_FN2W_SANBORN1,
      3 PIWA2_FN2W_SANBORN1_BORO         CHAR(1),
      3 PIWA2_FN2W_SANBORN1_VOL          CHAR(3),
      3 PIWA2_FN2W_SANBORN1_PAGE         CHAR(4),
    2 PIWA2_FN2W_SANBORN2,
      3 PIWA2_FN2W_SANBORN2_BORO         CHAR(1),
      3 PIWA2_FN2W_SANBORN2_VOL          CHAR(3),
      3 PIWA2_FN2W_SANBORN2_PAGE         CHAR(4),
    2 PIWA2_FN2W_MARBLE_RIKERS_FLAG      CHAR(1),
    2 PIWA2_FN2W_DOT_SLA                 CHAR(1),
    2 PIWA2_FN2W_COM_DIST,
      3 PIWA2_FN2W_COM_DIST_BORO         CHAR(1),
      3 PIWA2_FN2W_COM_DIST_NUM          CHAR(2),
    2 PIWA2_FN2W_ZIP                     CHAR(5),
    2 PIWA2_FN2W_HEALTH_AREA             CHAR(4),  /*HEALTH AREA*/
    2 PIWA2_FN2W_POLICE_DIST,
      3  PIWA2_FN2W_POL_PAT_BORO_CMD      CHAR(1),
      3  PIWA2_FN2W_POL_PRECINCT         CHAR(3),
    2 PIWA2_FN2W_FIRE_DIV                CHAR(2),
    2 PIWA2_FN2W_FIRE_BAT                CHAR(2),
    2 PIWA2_FN2W_FIRE_CO,
      3 PIWA2_FN2W_FIRE_CO_TYPE          CHAR(1),
      3 PIWA2_FN2W_FIRE_CO_NUM           CHAR(3),
    2 PIWA2_FN2W_SCHL_DIST               CHAR(2),
    2 PIWA2_FN2W_2010_CENSUS_TRACT       CHAR(6),
    2 PIWA2_FN2W_1990_CENS_TRCT          CHAR(6),
    2 PIWA2_FN2W_LEVEL_CODES(5,2)        CHAR(1),
    2 PIWA2_FN2W_POLICE_PAT_BORO         CHAR(2),
    2 PIWA2_FN2W_ASSEM_DIST              CHAR(2),
    2 PIWA2_FN2W_CONG_DIST               CHAR(2),
    2 PIWA2_FN2W_SENATE_DIST             CHAR(2),
    2 PIWA2_FN2W_COURT_DIST              CHAR(2),
    2 PIWA2_FN2W_COUNCIL_DIST            CHAR(2),
    2 PIWA2_FN2W_CD_ELIGIBLE             CHAR(1),
    2 PIWA2_FN2W_DUP_INTERSECT_DIST      CHAR(5),
    2 PIWA2_FN2W_2000_CENS_TRACT         CHAR(6),
    2 PIWA2_FN2W_HEALTH_CENTER_DIST      CHAR(2),
    2 PIWA2_FN2W_SANITATION_DIST         CHAR(3),
    2 PIWA2_FN2W_SANITATION_SUBSEC       CHAR(2),
    2 PIWA2_FN2W_FILLER_500              CHAR(12),
    2 PIWA2_FN2W_FILLER_GRIDGEN          CHAR(22),
    2 PIWA2_FN2W_LGCS_FIRST_INTERSCT(4),          /*UP TO 4 LGCS FOR */
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      3 PIWA2_FN2W_LGC_FIRST_INTERSCT    CHAR(2), /*1ST INPUT STREET */
                                                  /*IN INTERSECTION  */
    2 PIWA2_FN2W_LGCS_SECOND_INTERSCT(4),         /*UP TO 4 LGCS FOR */
      3 PIWA2_FN2W_LGC_SECOND_INTERSCT   CHAR(2), /*2ND INPUT STREET */
                                                  /*IN INTERSECTION  */
    2 PIWA2_FN2W_TURN_RESTRICTIONS(10),
      3 PIWA2_FN2W_TURN_RESTRICTION      CHAR(1),
    2 PIWA2_FN2W_INTERSECT_B5SC_LGCS(5),
      3 PIWA2_FN2W_INTERSECT_B5SC_LGC    CHAR(2),
    2 PIWA2_FN2W_TRUE_REP_COUNTER        CHAR(2),
    2 PIWA2_FN2W_NODE_LIST(20),
      3 PIWA2_FN2W_NODE_LIST_NODE        CHAR(7),
    2 PIWA2_FN2W_NODE_LIST_B7SCS_LIST(20),
      3 PIWA2_FN2W_NODE_LIST_B7SCS(5),
       4 PIWA2_FN2W_NODE_LIST_B7SC(4)    CHAR(8),
    2 PIWA2_FN2W_REASON_CODE             CHAR(1),
    2 PIWA2_FN2W_REASON_CODE_QUAL        CHAR(1),
    2 PIWA2_FN2W_WARN_CODE               CHAR(2),
    2 PIWA2_FN2W_RETURN_CODE             CHAR(2),
    2 PIWA2_FN2W_LATITUDE                CHAR(9),
    2 PIWA2_FN2W_LONGITUDE               CHAR(11),
    2 PIWA2_FN2W_FILLER6                 CHAR(374);
 /* 2 PIWA2_FN2W_FILLER6    V15.3        CHAR(394)  ***/

DCL   PIWA2_FN2W_COMDIST                 CHAR(3)
        BASED(ADDR(PIWA2_FN2W_COM_DIST));
DCL   PIWA2_FN2W_POLDIST                 CHAR(4)
        BASED(ADDR(PIWA2_FN2W_POLICE_DIST));
DCL   PIWA2_FN2W_SANBORN1_BVOLPAGE       CHAR(8)
        BASED(ADDR(PIWA2_FN2W_SANBORN1)),
      PIWA2_FN2W_SANBORN2_BVOLPAGE       CHAR(8)
        BASED(ADDR(PIWA2_FN2W_SANBORN2));

 /******************************************************************/
 /*******     FOR: FUNCTION 3         *****************************/
DCL
  1 PIWA2_FUNCTION3   BASED(PP2),
    2 PIWA2_FN3_ACCESS_KEY               CHAR(21),
    2 PIWA2_FN3_DUP_KEY_FLAG             CHAR(1),/*(OR CONT PARITY)*/
    2 PIWA2_FN3_LOCATION_STATUS          CHAR(1),
    2 PIWA2_FN3_COUNTY_BOUNDARY          CHAR(1),
    2 PIWA2_FN3_PREF_LGC1                CHAR(2),
    2 PIWA2_FN3_PREF_LGC2                CHAR(2),
    2 PIWA2_FN3_PREF_LGC3                CHAR(2),
    2 PIWA2_FN3_NUM_X_ST_LOW_END         CHAR(1),
    2 PIWA2_FN3_LOW_B5SC(5)              CHAR(6),
    2 PIWA2_FN3_NUM_X_ST_HI_END          CHAR(1),
    2 PIWA2_FN3_HI_B5SC(5)               CHAR(6),
    2 PIWA2_FN3_REVERSAL_FLAG            CHAR(1),
    2 PIWA2_FN3_LIONKEY,
      3 PIWA2_FN3_LION_BORO              CHAR(1),
      3 PIWA2_FN3_LION_FACECODE          CHAR(4),
      3 PIWA2_FN3_LION_SEQ               CHAR(5),
    2 PIWA2_FN3_GENREC_FLAG              CHAR(1),
    2 PIWA2_FN3_SEG_LEN                  CHAR(5),
    2 PIWA2_FN3_SEG_SLOPE                CHAR(3),
    2 PIWA2_FN3_SEG_ORIENT               CHAR(1),
    2 PIWA2_FN3_MARBLE_RIKERS_FLAG       CHAR(1),
    2 PIWA2_FN3_FROM_TO_NODES,
      3 PIWA2_FN3_FROM_NODE              CHAR(7),
      3 PIWA2_FN3_TO_NODE                CHAR(7),
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    2 PIWA2_FN3_SANIT_SNOW_PRIORITY      CHAR(1), /*SANITATION STRT */ 03010099
                                                  /*SNOW PRIORITY   */ 03020099
    2 FILLER_600                         CHAR(4),                      03030099
    2 PIWA2_FN3_SEGMENT_ID               CHAR(7),                      03040099
    2 PIWA2_FN3_DOT_SLA                  CHAR(1),                      03050099
    2 PIWA2_FN3_CURVE_FLAG               CHAR(1),                      03060099
    2 PIWA2_FN3_DOG_LEG                  CHAR(1),                      03070099
    2 PIWA2_FN3_FEATURE_TYPE             CHAR(1),                      03080099
    2 PIWA2_FN3_SEGMENT_TYPE             CHAR(1),                      03090099
    2 PIWA2_FN3_COINCIDENT_SEG_CTR       CHAR(1),                      03100099
    2 FILLER_700                         CHAR(4),                      03110099
    2 PIWA2_FN3_LEFT_SIDE_OF_STR,                                      03120099
      3 PIWA2_FN3_L_COM_DIST,                                          03130099
        4 PIWA2_FN3_L_COM_DIST_BORO      CHAR(1),                      03140099
        4 PIWA2_FN3_L_COM_DIST_NUM       CHAR(2),                      03150099
      3 PIWA2_FN3_L_LOW_HOUSENUM         CHAR(16),/*DISPLAY FORMAT*/   03160099
      3 PIWA2_FN3_L_HI_HOUSENUM          CHAR(16),/*DISPLAY FORMAT*/   03170099
      3 FILLER_800                       CHAR(33),/* FOR GSS USE*/     03180099
      3 PIWA2_FN3_L_ZIP                  CHAR(5),                      03190099
      3 PIWA2_FN3_L_HEALTH_AREA          CHAR(4), /*HEALTH AREA*/      03200099
      3 PIWA2_FN3_L_POLICE_DIST,                                       03210099
        4  PIWA2_FN3_L_POL_PAT_BORO_CMD  CHAR(1),                      03220099
        4  PIWA2_FN3_L_POL_PRECINCT      CHAR(3),                      03230099
      3 PIWA2_FN3_L_FIRE_DIV             CHAR(2),                      03240099
      3 PIWA2_FN3_L_FIRE_BAT             CHAR(2),                      03250099
      3 PIWA2_FN3_L_FIRE_CO,                                           03260099
        4 PIWA2_FN3_L_FIRE_CO_TYPE       CHAR(1),                      03270099
        4 PIWA2_FN3_L_FIRE_CO_NUM        CHAR(3),                      03280099
      3 PIWA2_FN3_L_SCHL_DIST            CHAR(2),                      03290099
      3 PIWA2_FN3_L_DYN_BLK              CHAR(3), /*ATOMIC POLYGON*/   03300099
      3 PIWA2_FN3_L_ED                   CHAR(3),                      03310099
      3 PIWA2_FN3_L_AD                   CHAR(2),                      03320099
      3 PIWA2_FN3_L_POLICE_PAT_BORO      CHAR(2),                      03330099
      3 FILLER_880                       CHAR(1),                      03340099
      3 PIWA2_FN3_L_BORO                 CHAR(1),                      03350099
      3 PIWA2_FN3_L_1990_CENS_TRCT       CHAR(6),                      03360099
      3 PIWA2_FN3_L_2010_CENSUS_TRACT    CHAR(6),                      03370099
      3 PIWA2_FN3_L_2010_CENSUS_BLOCK    CHAR(4),                      03380099
      3 PIWA2_FN3_L_2010_CENSUS_BLK_SF   CHAR(1), /*NOT IMPLEMENTED*/  03390099
      3 PIWA2_FN3_L_2000_CENSUS_TRACT    CHAR(6),                      03400099
      3 PIWA2_FN3_L_2000_CENSUS_BLOCK    CHAR(4),                      03410099
      3 PIWA2_FN3_L_2000_CENSUS_BLK_SF   CHAR(1),                      03420099
      3 FILLER_890                       CHAR(7),                      03430099
 /**  3 PIWA2_FN3_L_BLOCKFACE_ID *V16.1* CHAR(7)   **/                 03440099
      3 PIWA2_FN3_L_NTA                  CHAR(4), /*NEIGHBORHOOD    */ 03450099
                                                  /*TABULATION AREA */ 03460099
      3 FILLER_900                       CHAR(8),                      03470099
    2 PIWA2_FN3_RIGHT_SIDE_OF_STR,                                     03480099
      3 PIWA2_FN3_R_COM_DIST,                                          03490099
        4 PIWA2_FN3_R_COM_DIST_BORO      CHAR(1),                      03500099
        4 PIWA2_FN3_R_COM_DIST_NUM       CHAR(2),                      03510099
      3 PIWA2_FN3_R_LOW_HOUSENUM         CHAR(16),/*DISPLAY FORMAT*/   03520099
      3 PIWA2_FN3_R_HI_HOUSENUM          CHAR(16),/*DISPLAY FORMAT*/   03530099
      3 FILLER_1000                      CHAR(33),/*FOR GSS USE */     03540099
      3 PIWA2_FN3_R_ZIP                  CHAR(5),                      03550099
      3 PIWA2_FN3_R_HEALTH_AREA          CHAR(4), /*HEALTH AREA*/      03560099
      3 PIWA2_FN3_R_POLICE_DIST,                                       03570099
        4  PIWA2_FN3_R_POL_PAT_BORO_CMD  CHAR(1),                      03580099
        4  PIWA2_FN3_R_POL_PRECINCT      CHAR(3),                      03590099
      3 PIWA2_FN3_R_FIRE_DIV             CHAR(2),                      03600099
      3 PIWA2_FN3_R_FIRE_BAT             CHAR(2),                      03610099
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      3 PIWA2_FN3_R_FIRE_CO,
        4 PIWA2_FN3_R_FIRE_CO_TYPE       CHAR(1),
        4 PIWA2_FN3_R_FIRE_CO_NUM        CHAR(3),
      3 PIWA2_FN3_R_SCHL_DIST            CHAR(2),
      3 PIWA2_FN3_R_DYN_BLK              CHAR(3), /*ATOMIC POLYGON*/
      3 PIWA2_FN3_R_ED                   CHAR(3),
      3 PIWA2_FN3_R_AD                   CHAR(2),
      3 PIWA2_FN3_R_POLICE_PAT_BORO      CHAR(2),
      3 FILLER_1080                      CHAR(1),
      3 PIWA2_FN3_R_BORO                 CHAR(1),
      3 PIWA2_FN3_R_1990_CENS_TRCT       CHAR(6),
      3 PIWA2_FN3_R_2010_CENSUS_TRACT    CHAR(6),
      3 PIWA2_FN3_R_2010_CENSUS_BLOCK    CHAR(4),
      3 PIWA2_FN3_R_2010_CENSUS_BLK_SF   CHAR(1), /*NOT IMPLEMENTED*/
      3 PIWA2_FN3_R_2000_CENS_TRACT      CHAR(6),
      3 PIWA2_FN3_R_2000_CENS_BLOCK      CHAR(4),
      3 PIWA2_FN3_R_2000_CENS_BLK_SUF    CHAR(1),
      3 FILLER_1090                      CHAR(7),
 /**  3 PIWA2_FN3_R_BLOCKFACE_ID *V16.1* CHAR(7)  **/
      3 PIWA2_FN3_R_NTA                  CHAR(4), /*NEIGHBORHOOD    */
                                                  /*TABULATION AREA */
      3 FILLER_1100                      CHAR(8),
    2 PIWA2_FN3_SEGAUX,
      3 PIWA2_FN3_SEGAUX_FILL            CHAR(6),
      3 PIWA2_FN3_SEGAUX_CTR             CHAR(4),
      3 PIWA2_FN3_SEGAUX_SEGS(70)        CHAR(7);

DCL   PIWA2_FN3_L_COMDIST                CHAR(3)
        BASED(ADDR(PIWA2_FN3_L_COM_DIST));
DCL   PIWA2_FN3_L_POLDIST                CHAR(4)
        BASED(ADDR(PIWA2_FN3_L_POLICE_DIST));
DCL   PIWA2_FN3_R_COMDIST                CHAR(3)
        BASED(ADDR(PIWA2_FN3_R_COM_DIST));
DCL   PIWA2_FN3_R_POLDIST                CHAR(4)
        BASED(ADDR(PIWA2_FN3_R_POLICE_DIST));

 /*****************************************************************/
 /*******      FOR: FUNCTION 3 EXTENDED  *****************************/
DCL
  1 PIWA2_FUNCTION3X  BASED(PP2),
    2 PIWA2_3X_ACCESS_KEY                CHAR(21),
    2 PIWA2_3X_DUP_KEY_FLAG              CHAR(1),/*(OR CONT PARITY)*/
    2 PIWA2_3X_LOCATION_STATUS           CHAR(1),
    2 PIWA2_3X_COUNTY_BOUNDARY           CHAR(1),
    2 PIWA2_3X_PREF_LGC1                 CHAR(2),
    2 PIWA2_3X_PREF_LGC2                 CHAR(2),
    2 PIWA2_3X_PREF_LGC3                 CHAR(2),
    2 PIWA2_3X_NUM_X_ST_LOW_END          CHAR(1),
    2 PIWA2_3X_LOW_B5SC(5)               CHAR(6),
    2 PIWA2_3X_NUM_X_ST_HI_END           CHAR(1),
    2 PIWA2_3X_HI_B5SC(5)                CHAR(6),
    2 PIWA2_3X_REVERSAL_FLAG             CHAR(1),
    2 PIWA2_3X_LIONKEY,
      3 PIWA2_3X_LION_BORO               CHAR(1),
      3 PIWA2_3X_LION_FACECODE           CHAR(4),
      3 PIWA2_3X_LION_SEQ                CHAR(5),
    2 PIWA2_3X_GENREC_FLAG               CHAR(1),
    2 PIWA2_3X_SEG_LEN                   CHAR(5),
    2 PIWA2_3X_SEG_SLOPE                 CHAR(3),
    2 PIWA2_3X_SEG_ORIENT                CHAR(1),
    2 PIWA2_3X_MARBLE_RIKERS_FLAG        CHAR(1),
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     2 PIWA2_3X_FROM_TO_NODES,                                               04230099
       3 PIWA2_3X_FROM_NODE             CHAR(7),                             04240099
       3 PIWA2_3X_TO_NODE               CHAR(7),                             04250099
     2 PIWA2_3X_SANIT_SNOW_PRIORITY     CHAR(1), /*SANITATION STRT */        04260099
                                                 /*SNOW PRIORITY   */        04270099
     2 FILLER3X_600                     CHAR(4),                             04280099
     2 PIWA2_3X_SEGMENT_ID              CHAR(7),                             04290099
     2 PIWA2_3X_DOT_SLA                 CHAR(1),                             04300099
     2 PIWA2_3X_CURVE_FLAG              CHAR(1),                             04310099
     2 PIWA2_3X_DOG_LEG                 CHAR(1),                             04320099
     2 PIWA2_3X_FEATURE_TYPE            CHAR(1),                             04330099
     2 PIWA2_3X_SEGMENT_TYPE            CHAR(1),                             04340099
     2 PIWA2_3X_COINCIDENT_SEG_CTR      CHAR(1),                             04350099
     2 FILLER3X_700                     CHAR(4),                             04360099
     2 PIWA2_3X_LEFT_SIDE_OF_STR,                                            04370099
       3 PIWA2_3X_L_COM_DIST,                                                04380099
         4 PIWA2_3X_L_COM_DIST_BORO     CHAR(1),                             04390099
         4 PIWA2_3X_L_COM_DIST_NUM      CHAR(2),                             04400099
       3 PIWA2_3X_L_LOW_HOUSENUM        CHAR(16),/*DISPLAY FORMAT*/          04410099
       3 PIWA2_3X_L_HI_HOUSENUM         CHAR(16),/*DISPLAY FORMAT*/          04420099
       3 FILLER3X_800                   CHAR(33),/* FOR GSS USE*/            04430099
       3 PIWA2_3X_L_ZIP                 CHAR(5),                             04440099
       3 PIWA2_3X_L_HEALTH_AREA         CHAR(4), /* HEALTH AREA*/            04450099
       3 PIWA2_3X_L_POLICE_DIST,                                             04460099
         4  PIWA2_3X_L_POL_PAT_BORO_CMD CHAR(1),                             04470099
         4  PIWA2_3X_L_POL_PRECINCT     CHAR(3),                             04480099
       3 PIWA2_3X_L_FIRE_DIV            CHAR(2),                             04490099
       3 PIWA2_3X_L_FIRE_BAT            CHAR(2),                             04500099
       3 PIWA2_3X_L_FIRE_CO,                                                 04510099
         4 PIWA2_3X_L_FIRE_CO_TYPE      CHAR(1),                             04520099
         4 PIWA2_3X_L_FIRE_CO_NUM       CHAR(3),                             04530099
       3 PIWA2_3X_L_SCHL_DIST           CHAR(2),                             04540099
       3 PIWA2_3X_L_DYN_BLK             CHAR(3), /*ATOMIC POLYGON*/          04550099
       3 PIWA2_3X_L_ED                  CHAR(3),                             04560099
       3 PIWA2_3X_L_AD                  CHAR(2),                             04570099
       3 PIWA2_3X_L_POLICE_PAT_BORO     CHAR(2),                             04580099
       3 FILLER3X_880                   CHAR(1),                             04590099
       3 PIWA2_3X_L_BORO                CHAR(1),                             04600099
       3 PIWA2_3X_L_1990_CENS_TRCT      CHAR(6),                             04610099
       3 PIWA2_3X_L_2010_CENSUS_TRACT   CHAR(6),                             04620099
       3 PIWA2_3X_L_2010_CENSUS_BLOCK   CHAR(4),                             04630099
       3 PIWA2_3X_L_2010_CENSUS_BLK_SF  CHAR(1), /*NOT IMPLEMENTED*/         04640099
       3 PIWA2_3X_L_2000_CENS_TRACT     CHAR(6),                             04650099
       3 PIWA2_3X_L_2000_CENS_BLOCK     CHAR(4),                             04660099
       3 PIWA2_3X_L_2000_CENS_BLK_SF    CHAR(1),                             04670099
       3 FILLER_3X_L_890                CHAR(7),                             04680099
   /** 3 PIWA2_3X_L_BLOCKFACE_ID *V16.1*  CHAR(7)  **/                       04690099
       3 PIWA2_3X_L_NTA                 CHAR(4), /*NEIGHBORHOOD    */        04700099
                                                 /*TABULATION AREA */        04710099
       3 FILLER_3X_L_900                CHAR(8),                             04720099
     2 PIWA2_3X_RIGHT_SIDE_OF_STR,                                           04730099
       3 PIWA2_3X_R_COM_DIST,                                                04740099
         4 PIWA2_3X_R_COM_DIST_BORO     CHAR(1),                             04750099
         4 PIWA2_3X_R_COM_DIST_NUM      CHAR(2),                             04760099
       3 PIWA2_3X_R_LOW_HOUSENUM        CHAR(16),/*DISPLAY FORMAT*/          04770099
       3 PIWA2_3X_R_HI_HOUSENUM         CHAR(16),/*DISPLAY FORMAT*/          04780099
       3 FILLER3X_R_1000                CHAR(33),/*FOR GSS USE */            04790099
       3 PIWA2_3X_R_ZIP                 CHAR(5),                             04800099
       3 PIWA2_3X_R_HEALTH_AREA         CHAR(4), /*HEALTH AREA*/             04810099
       3 PIWA2_3X_R_POLICE_DIST,                                             04820099
         4  PIWA2_3X_R_POL_PAT_BORO_CMD   CHAR(1),                           04830099
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            4  PIWA2_3X_R_POL_PRECINCT       CHAR(3),                        04840099
          3 PIWA2_3X_R_FIRE_DIV              CHAR(2),                        04850099
          3 PIWA2_3X_R_FIRE_BAT              CHAR(2),                        04860099
          3 PIWA2_3X_R_FIRE_CO,                                              04870099
            4 PIWA2_3X_R_FIRE_CO_TYPE        CHAR(1),                        04880099
            4 PIWA2_3X_R_FIRE_CO_NUM         CHAR(3),                        04890099
          3 PIWA2_3X_R_SCHL_DIST             CHAR(2),                        04900099
          3 PIWA2_3X_R_DYN_BLK               CHAR(3), /*ATOMIC POLYGON*/     04910099
          3 PIWA2_3X_R_ED                    CHAR(3),                        04920099
          3 PIWA2_3X_R_AD                    CHAR(2),                        04930099
          3 PIWA2_3X_R_POLICE_PAT_BORO       CHAR(2),                        04940099
          3 FILLER3X_R_1080                  CHAR(1),                        04950099
          3 PIWA2_3X_R_BORO                  CHAR(1),                        04960099
          3 PIWA2_3X_R_1990_CENS_TRCT        CHAR(6),                        04970099
          3 PIWA2_3X_R_2010_CENSUS_TRACT     CHAR(6),                        04980099
          3 PIWA2_3X_R_2010_CENSUS_BLOCK     CHAR(4),                        04990099
          3 PIWA2_3X_R_2010_CENSUS_BLK_SF    CHAR(1), /*NOT IMPLEMENTED*/    05000099
          3 PIWA2_3X_R_2000_CENS_TRACT       CHAR(6),                        05010099
          3 PIWA2_3X_R_2000_CENS_BLOCK       CHAR(4),                        05020099
          3 PIWA2_3X_R_2000_CENS_BLK_SF      CHAR(1),                        05030099
          3 FILLER3X_R_1090                  CHAR(7),                        05040099
      /** 3 PIWA2_3X_R_BLOCKFACE_ID *V16.1*  CHAR(7)  **/                    05050099
          3 PIWA2_3X_R_NTA                   CHAR(4), /*NEIGHBORHOOD    */   05060099
                                                      /*TABULATION AREA */   05070099
          3 FILLER_3X_R_1100                 CHAR(8),                        05080099
        2   PIWA2_3X_LGCS                    CHAR(8),                        05090099
        2   PIWA2_3X_LGCS_FROM               CHAR(8),                        05100099
        2   PIWA2_3X_LGCS_TO                 CHAR(8),                        05110099
        2   PIWA2_3X_L_HEALTH_CTR_DIST       CHAR(2), /*HEALTH CENTER*/      05120099
        2   PIWA2_3X_R_HEALTH_CTR_DIST       CHAR(2), /*HEALTH CENTER*/      05130099
        2   PIWA2_3X_FILL1                   CHAR(1),                        05140099
        2   PIWA2_3X_TRAFFIC_DIR             CHAR(1),                        05150099
        2   PIWA2_3X_ROADWAY_TYPE            CHAR(2),                        05160099
        2   PIWA2_3X_PHYSICAL_ID             CHAR(7),                        05170099
        2   PIWA2_3X_GENERIC_ID              CHAR(7),                        05180099
        2   PIWA2_3X_INTP_ID                 CHAR(7),  /*INTERNAL USE*/      05190099
        2   PIWA2_3X_INTF_ID                 CHAR(7),  /*INTERNAL USE*/      05200099
        2   PIWA2_3X_STR_STATUS              CHAR(1),                        05210099
        2   PIWA2_3X_STR_WIDTH               CHAR(3),                        05220099
        2   PIWA2_3X_STR_WIDTH_IRREG         CHAR(1),                        05230099
        2   PIWA2_3X_BIKE_LANE               CHAR(1),                        05240099
        2   PIWA2_3X_FED_CLASS_CODE          CHAR(2),                        05250099
        2   PIWA2_3X_ROW_TYPE                CHAR(1),                        05260099
        2   PIWA2_3X_LGC_LIST                CHAR(10),                       05270099
        2   PIWA2_3X_LEGACY_ID               CHAR(7),                        05280099
        2   PIWA2_3X_L_NTA_NAME              CHAR(75),                       05290099
        2   PIWA2_3X_R_NTA_NAME              CHAR(75),                       05300099
        2   PIWA2_3X_FROM_XCOORD             CHAR(7),                        05310099
        2   PIWA2_3X_FROM_YCOORD             CHAR(7),                        05320099
        2   PIWA2_3X_TO_XCOORD               CHAR(7),                        05330099
        2   PIWA2_3X_TO_YCOORD               CHAR(7),                        05340099
        2   PIWA2_3X_FROM_LATITUDE           CHAR(9),                        05350099
        2   PIWA2_3X_FROM_LONGITUDE          CHAR(11),                       05360099
        2   PIWA2_3X_TO_LATITUDE             CHAR(9),                        05370099
        2   PIWA2_3X_TO_LONGITUDE            CHAR(11),                       05380099
        2   PIWA2_3X_L_BLOCKFACE_ID          CHAR(10),                       05390099
        2   PIWA2_3X_R_BLOCKFACE_ID          CHAR(10),                       05400099
        2   PIWA2_3X_NBR_TRAVEL_LANES        CHAR(2),                        05410099
        2   PIWA2_3X_NBR_PARK_LANES          CHAR(2),                        05420099
        2   PIWA2_3X_NBR_TOTAL_LANES         CHAR(2),                        05430099
        2   PIWA2_3X_BIKE_LANE_2             CHAR(2),                        05431099
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    2   PIWA2_3X_STR_WIDTH_MAX          CHAR(3),                        05432099
    2   PIWA2_3X_BIKE_TRAFFIC_DIR       CHAR(2),                        05433099
    2   PIWA2_3X_FILL2                  CHAR(213),                      05440099
 /* 2   PIWA2_3X_FILL2 ** V17.1   ***   CHAR(215), **/                  05441099
 /* 2   PIWA2_3X_FILL2 ** V16.4   ***   CHAR(220), **/                  05442099
 /* 2   PIWA2_3X_FILL2 ** V16.1   ***   CHAR(246)  **/                  05450099
 /* 2   PIWA2_3X_FILL2 ** V15.3   ***   CHAR(286)  **/                  05460099
    2 PIWA2_3X_SEGAUX,                                                  05470099
      3 PIWA2_3X_SEGAUX_FILL            CHAR(6),                        05480099
      3 PIWA2_3X_SEGAUX_CTR             CHAR(4),                        05490099
      3 PIWA2_3X_SEGAUX_SEGS(70)        CHAR(7);                        05500099
                                                                        05510099
 /*******************************************************************/ 05520099
 /*******     FOR: FUNCTION 3C         ****************************/ 05530099
DCL                                                                     05540099
  1 PIWA2_FUNCTION3C  BASED(PP2),                                       05550099
    2 PIWA2_FN3C_ACCESS_KEY             CHAR(21),                       05560099
    2 PIWA2_FN3C_DUP_KEY_FLAG           CHAR(1),/*(OR CONT PARITY)*/    05570099
    2 PIWA2_FN3C_LOCATION_STATUS        CHAR(1),                        05580099
    2 PIWA2_FN3C_COUNTY_BOUNDARY        CHAR(1),                        05590099
    2 PIWA2_FN3C_PREF_LGC1              CHAR(2),                        05600099
    2 PIWA2_FN3C_PREF_LGC2              CHAR(2),                        05610099
    2 PIWA2_FN3C_PREF_LGC3              CHAR(2),                        05620099
    2 PIWA2_FN3C_NUM_X_ST_LOW_END       CHAR(1),                        05630099
    2 PIWA2_FN3C_LOW_B5SC(5)            CHAR(6),                        05640099
    2 PIWA2_FN3C_NUM_X_ST_HI_END        CHAR(1),                        05650099
    2 PIWA2_FN3C_HI_B5SC(5)             CHAR(6),                        05660099
    2 PIWA2_FN3C_REVERSAL_FLAG          CHAR(1),                        05670099
    2 PIWA2_FN3C_LIONKEY,                                               05680099
      3 PIWA2_FN3C_LION_BORO            CHAR(1),                        05690099
      3 PIWA2_FN3C_LION_FACECODE        CHAR(4),                        05700099
      3 PIWA2_FN3C_LION_SEQ             CHAR(5),                        05710099
    2 PIWA2_FN3C_GENREC_FLAG            CHAR(1),                        05720099
    2 PIWA2_FN3C_SEG_LEN                CHAR(5),                        05730099
    2 PIWA2_FN3C_SEG_SLOPE              CHAR(3),                        05740099
    2 PIWA2_FN3C_SEG_ORIENT             CHAR(1),                        05750099
    2 PIWA2_FN3C_MARBLE_RIKERS_FLAG     CHAR(1),                        05760099
    2 PIWA2_FN3C_FROM_TO_NODES,                                         05770099
      3 PIWA2_FN3C_FROM_NODE            CHAR(7),                        05780099
      3 PIWA2_FN3C_TO_NODE              CHAR(7),                        05790099
    2 PIWA2_FN3C_SANIT_SNOW_PRIORITY    CHAR(1), /*SANITATION STRT */   05800099
                                                 /*SNOW PRIORITY   */   05810099
    2 FILLER_1200                       CHAR(4),                        05820099
    2 PIWA2_FN3C_SEGMENT_ID             CHAR(7),                        05830099
    2 PIWA2_FN3C_DOT_SLA                CHAR(1),                        05840099
    2 PIWA2_FN3C_SIDE_OF_STR            CHAR(1),                        05850099
    2 PIWA2_FN3C_CURVE_FLAG             CHAR(1),                        05860099
    2 PIWA2_FN3C_FEATURE_TYPE           CHAR(1),                        05870099
    2 PIWA2_FN3C_SEGMENT_TYPE           CHAR(1),                        05880099
    2 PIWA2_FN3C_COINCIDENT_SEG_CTR     CHAR(1),                        05890099
    2 FILLER_1300                       CHAR(4),                        05900099
    2 PIWA2_FN3C_BLOCKFACE_INFO,                                        05910099
      3 PIWA2_FN3C_COM_DIST,                                            05920099
        4 PIWA2_FN3C_COM_DIST_BORO      CHAR(1),                        05930099
        4 PIWA2_FN3C_COM_DIST_NUM       CHAR(2),                        05940099
      3 PIWA2_FN3C_LOW_HOUSENUM         CHAR(16),/*DISPLAY FORMAT*/     05950099
      3 PIWA2_FN3C_HI_HOUSENUM          CHAR(16),/*DISPLAY FORMAT*/     05960099
      3 PIWA2_FN3C_LOW_HOUSENUM2        CHAR(16),/*DISPLAY FORMAT*/     05970099
      3 PIWA2_FN3C_HI_HOUSENUM2         CHAR(16),/*DISPLAY FORMAT*/     05980099
      3 FILLER_1400                     CHAR(1), /* FOR GSS USE */      05990099
      3 PIWA2_FN3C_ZIP                  CHAR(5),                        06000099
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      3 PIWA2_FN3C_HEALTH_AREA          CHAR(4), /*HEALTH AREA*/
      3 PIWA2_FN3C_POLICE_DIST,
        4 PIWA2_FN3C_POL_PAT_BORO_CMD   CHAR(1),
        4 PIWA2_FN3C_POL_PRECINCT       CHAR(3),
      3 PIWA2_FN3C_FIRE_DIV             CHAR(2),
      3 PIWA2_FN3C_FIRE_BAT             CHAR(2),
      3 PIWA2_FN3C_FIRE_CO,
        4 PIWA2_FN3C_FIRE_CO_TYPE       CHAR(1),
        4 PIWA2_FN3C_FIRE_CO_NUM        CHAR(3),
      3 PIWA2_FN3C_SCHL_DIST            CHAR(2),
      3 PIWA2_FN3C_DYN_BLK              CHAR(3), /*ATOMIC POLYGON*/
      3 PIWA2_FN3C_ED                   CHAR(3),
      3 PIWA2_FN3C_AD                   CHAR(2),
      3 PIWA2_FN3C_POLICE_PAT_BORO      CHAR(2),
      3 FILLER_1480                     CHAR(1),
      3 PIWA2_FN3C_BORO                 CHAR(1),
      3 PIWA2_FN3C_1990_CENS_TRCT       CHAR(6),
      3 PIWA2_FN3C_2010_CENSUS_TRACT    CHAR(6),
      3 PIWA2_FN3C_2010_CENSUS_BLOCK    CHAR(4),
      3 PIWA2_FN3C_2010_CENSUS_BLK_SF   CHAR(1), /*NOT IMPLEMENTED*/
      3 PIWA2_FN3C_2000_CENS_TRACT      CHAR(6),
      3 PIWA2_FN3C_2000_CENS_BLOCK      CHAR(4),
      3 PIWA2_FN3C_2000_CENS_BLK_SUF    CHAR(1),
      3 FILLER_1490                     CHAR(7),
 /**  3 PIWA2_FN3C_BLOCKFACE_ID *V16.1*  CHAR(7)  **/
      3 PIWA2_FN3C_NTA                  CHAR(4), /*NEIGHBORHOOD    */
                                                 /*TABULATION AREA */
      3 FILLER_1500                     CHAR(8),
    2 PIWA2_FN3C_SEGAUX,
      3 PIWA2_FN3C_SEGAUX_FILL          CHAR(6),
      3 PIWA2_FN3C_SEGAUX_CTR           CHAR(4),
      3 PIWA2_FN3C_SEGAUX_SEGS(70)      CHAR(7);

DCL   PIWA2_FN3C_COMDIST                CHAR(3)
        BASED(ADDR(PIWA2_FN3C_COM_DIST));
DCL   PIWA2_FN3C_POLDIST                CHAR(4)
        BASED(ADDR(PIWA2_FN3C_POLICE_DIST));

 /*******************************************************************/
 /*******     FOR: FUNCTION 3CX (EXTENDED) *************************/
DCL
  1 PIWA2_FUNCTION3CX BASED(PP2),
    2 PIWA2_3CX_ACCESS_KEY              CHAR(21),
    2 PIWA2_3CX_DUP_KEY_FLAG            CHAR(1),/*(OR CONT PARITY)*/
    2 PIWA2_3CX_LOCATION_STATUS         CHAR(1),
    2 PIWA2_3CX_COUNTY_BOUNDARY         CHAR(1),
    2 PIWA2_3CX_PREF_LGC1               CHAR(2),
    2 PIWA2_3CX_PREF_LGC2               CHAR(2),
    2 PIWA2_3CX_PREF_LGC3               CHAR(2),
    2 PIWA2_3CX_NUM_X_ST_LOW_END        CHAR(1),
    2 PIWA2_3CX_LOW_B5SC(5)             CHAR(6),
    2 PIWA2_3CX_NUM_X_ST_HI_END         CHAR(1),
    2 PIWA2_3CX_HI_B5SC(5)              CHAR(6),
    2 PIWA2_3CX_REVERSAL_FLAG           CHAR(1),
    2 PIWA2_3CX_LIONKEY,
      3 PIWA2_3CX_LION_BORO             CHAR(1),
      3 PIWA2_3CX_LION_FACECODE         CHAR(4),
      3 PIWA2_3CX_LION_SEQ              CHAR(5),
    2 PIWA2_3CX_GENREC_FLAG             CHAR(1),
    2 PIWA2_3CX_SEG_LEN                 CHAR(5),
    2 PIWA2_3CX_SEG_SLOPE               CHAR(3),
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   2 PIWA2_3CX_SEG_ORIENT               CHAR(1),                     06620099
   2 PIWA2_3CX_MARBLE_RIKERS_FLAG       CHAR(1),                     06630099
   2 PIWA2_3CX_FROM_TO_NODES,                                        06640099
     3 PIWA2_3CX_FROM_NODE              CHAR(7),                     06650099
     3 PIWA2_3CX_TO_NODE                CHAR(7),                     06660099
   2 PIWA2_3CX_SANIT_SNOW_PRIORITY      CHAR(1), /*SANITATION STRT */ 06670099
                                                 /*SNOW PRIORITY   */ 06680099
   2 FILLER3CX_1200                     CHAR(4),                     06690099
   2 PIWA2_3CX_SEGMENT_ID               CHAR(7),                     06700099
   2 PIWA2_3CX_DOT_SLA                  CHAR(1),                     06710099
   2 PIWA2_3CX_SIDE_OF_STR              CHAR(1),                     06720099
   2 PIWA2_3CX_CURVE_FLAG               CHAR(1),                     06730099
   2 PIWA2_3CX_FEATURE_TYPE             CHAR(1),                     06740099
   2 PIWA2_3CX_SEGMENT_TYPE             CHAR(1),                     06750099
   2 PIWA2_3CX_COINCIDENT_SEG_CTR       CHAR(1),                     06760099
   2 FILLER3CX_1300                     CHAR(4),                     06770099
   2 PIWA2_3CX_BLOCKFACE_INFO,                                       06780099
     3 PIWA2_3CX_COM_DIST,                                           06790099
       4 PIWA2_3CX_COM_DIST_BORO        CHAR(1),                     06800099
       4 PIWA2_3CX_COM_DIST_NUM         CHAR(2),                     06810099
     3 PIWA2_3CX_LOW_HOUSENUM           CHAR(16),/*DISPLAY FORMAT*/  06820099
     3 PIWA2_3CX_HI_HOUSENUM            CHAR(16),/*DISPLAY FORMAT*/  06830099
     3 PIWA2_3CX_LOW_HOUSENUM2          CHAR(16),/*DISPLAY FORMAT*/  06840099
     3 PIWA2_3CX_HI_HOUSENUM2           CHAR(16),/*DISPLAY FORMAT*/  06850099
     3 FILLER3CX_1400                   CHAR(1), /* FOR GSS USE */   06860099
     3 PIWA2_3CX_ZIP                    CHAR(5),                     06870099
     3 PIWA2_3CX_HEALTH_AREA            CHAR(4), /*HEALTH AREA*/     06880099
     3 PIWA2_3CX_POLICE_DIST,                                        06890099
       4 PIWA2_3CX_POL_PAT_BORO_CMD     CHAR(1),                     06900099
       4 PIWA2_3CX_POL_PRECINCT         CHAR(3),                     06910099
     3 PIWA2_3CX_FIRE_DIV               CHAR(2),                     06920099
     3 PIWA2_3CX_FIRE_BAT               CHAR(2),                     06930099
     3 PIWA2_3CX_FIRE_CO,                                            06940099
       4 PIWA2_3CX_FIRE_CO_TYPE         CHAR(1),                     06950099
       4 PIWA2_3CX_FIRE_CO_NUM          CHAR(3),                     06960099
     3 PIWA2_3CX_SCHL_DIST              CHAR(2),                     06970099
     3 PIWA2_3CX_DYN_BLK                CHAR(3), /*ATOMIC POLYGON*/  06980099
     3 PIWA2_3CX_ED                     CHAR(3),                     06990099
     3 PIWA2_3CX_AD                     CHAR(2),                     07000099
     3 PIWA2_3CX_POLICE_PAT_BORO        CHAR(2),                     07010099
     3 FILLER3CX_1480                   CHAR(1),                     07020099
     3 PIWA2_3CX_BORO                   CHAR(1),                     07030099
     3 PIWA2_3CX_1990_CENS_TRCT         CHAR(6),                     07040099
     3 PIWA2_3CX_2010_CENSUS_TRACT      CHAR(6),                     07050099
     3 PIWA2_3CX_2010_CENSUS_BLOCK      CHAR(4),                     07060099
     3 PIWA2_3CX_2010_CENSUS_BLK_SF     CHAR(1), /*NOT IMPLEMENTED*/ 07070099
     3 PIWA2_3CX_2000_CENS_TRACT        CHAR(6),                     07080099
     3 PIWA2_3CX_2000_CENS_BLOCK        CHAR(4),                     07090099
     3 PIWA2_3CX_2000_CENS_BLK_S        CHAR(1),                     07100099
     3 FILLER3CX_1490                   CHAR(7),                     07110099
/**  3 PIWA2_3CX_BLOCKFACE_ID *V16.1*   CHAR(7)   **/                07120099
     3 PIWA2_3CX_NTA                    CHAR(4), /*NEIGHBORHOOD    */ 07130099
                                                 /*TABULATION AREA */ 07140099
     3 FILLER3CX_1500                   CHAR(8),                     07150099
                                                                     07160099
   2   PIWA2_3CX_LGCS                   CHAR(8),                     07170099
   2   PIWA2_3CX_LGCS_FROM              CHAR(8),                     07180099
   2   PIWA2_3CX_LGCS_TO                CHAR(8),                     07190099
   2   PIWA2_3CX_L_HEALTH_CTR_DIST      CHAR(2), /*HEALTH CENTER*/   07200099
   2   PIWA2_3CX_R_HEALTH_CTR_DIST      CHAR(2), /*HEALTH CENTER*/   07210099
   2   PIWA2_3CX_FILL1550               CHAR(1),                     07220099
```

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    2   PIWA2_3CX_TRAFFIC_DIRECTN         CHAR(1),                           07230099
    2   PIWA2_3CX_ROADWAY_TYPE            CHAR(2),                           07240099
    2   PIWA2_3CX_PHYSICAL_ID             CHAR(7),                           07250099
    2   PIWA2_3CX_GENERIC_ID              CHAR(7),                           07260099
    2   PIWA2_3CX_INTP_ID                 CHAR(7),  /*INTERNAL USE*/         07270099
    2   PIWA2_3CX_INTF_ID                 CHAR(7),  /*INTERNAL USE*/         07280099
    2   PIWA2_3CX_STREET_STATUS           CHAR(1),                           07290099
    2   PIWA2_3CX_STREET_WIDTH            CHAR(3),                           07300099
    2   PIWA2_3CX_STREET_WIDTH_IRREG      CHAR(1),                           07310099
    2   PIWA2_3CX_BIKE_LANE               CHAR(1),                           07320099
    2   PIWA2_3CX_FED_CLASS_CODE          CHAR(2),                           07330099
    2   PIWA2_3CX_ROW_TYPE                CHAR(1),                           07340099
    2   PIWA2_3CX_LGC_LIST                CHAR(10),                          07350099
    2   PIWA2_3CX_LEGACY_ID               CHAR(7),                           07360099
    2   PIWA2_3CX_NTA_NAME                CHAR(75),                          07370099
    2   PIWA2_3CX_FROM_XCOORD             CHAR(7),                           07380099
    2   PIWA2_3CX_FROM_YCOORD             CHAR(7),                           07390099
    2   PIWA2_3CX_TO_XCOORD               CHAR(7),                           07400099
    2   PIWA2_3CX_TO_YCOORD               CHAR(7),                           07410099
    2   PIWA2_3CX_FROM_LATITUDE           CHAR(9),                           07420099
    2   PIWA2_3CX_FROM_LONGITUDE          CHAR(11),                          07430099
    2   PIWA2_3CX_TO_LATITUDE             CHAR(9),                           07440099
    2   PIWA2_3CX_TO_LONGITUDE            CHAR(11),                          07450099
    2   PIWA2_3CX_BLOCKFACE_ID            CHAR(10),                          07460099
    2   PIWA2_3CX_NBR_TRAVEL_LANES        CHAR(2),                           07470099
    2   PIWA2_3CX_NBR_PARK_LANES          CHAR(2),                           07480099
    2   PIWA2_3CX_NBR_TOTAL_LANES         CHAR(2),                           07490099
    2   PIWA2_3CX_BIKE_LANE_2             CHAR(2),                           07491099
    2   PIWA2_3CX_STREET_WIDTH_MAX        CHAR(3),                           07492099
    2   PIWA2_3CX_BIKE_TRAFFIC_DIR        CHAR(2),                           07493099
    2   PIWA2_3CX_FILL1560                CHAR(298),                         07500099
 /* 2   PIWA2_3CX_FILL1560 ** V17.1 **    CHAR(300), **/                     07501099
 /* 2   PIWA2_3CX_FILL1560 ** V16.4 **    CHAR(305), **/                     07502099
 /* 2   PIWA2_3CX_FILL1560 ** V16.1 **    CHAR(321)  **/                     07510099
 /* 2   PIWA2_3CX_FILL1560 ** V15.3 **    CHAR(361)  **/                     07520099
    2 PIWA2_3CX_SEGAUX,                                                      07530099
      3 PIWA2_3CX_SEGAUX_FILL             CHAR(6),                           07540099
      3 PIWA2_3CX_SEGAUX_CTR              CHAR(4),                           07550099
      3 PIWA2_3CX_SEGAUX_SEGS(70)         CHAR(7);                           07560099
                                                                             07570099
 /*********************************************************************/ 07580099
 /*******     FOR: FUNCTION 5          *****************************/ 07590099
DCL                                                                          07600099
  1 PIWA2_FUNCTION5   BASED(PP2),                                            07610099
    2 PIWA2_FN5_ADDR_MATCHING_KEY       CHAR(33),                            07620099
    2 FILLER_1600                       CHAR(267);                           07630099
                                                                             07640099
PP2=ADDR(P2PL1);                                                             07650099
```

P2PL11A COPY File

```
/*****************************************************************/
/***  THIS IS THE PL/1 STRUCTURE FOR GEOSUPPORT SYSTEM PLATFORM  ***/
/***  INDEPENDENT REGULAR WORK AREA 2 FOR FUNCTIONS: 1A , BL,    ***/
/***  AND BN.                                                    ***/
/***  THESE THREE FUNCTIONS SHARE A SINGLE WORK AREA 2 LAYOUT.   ***/
/***                                                             ***/
/***  COPY FILE - P2PL11A.                          10/10/97     ***/
/*****************************************************************/

DCL
 1 P2PL11A,
   2 PIWA2_1A_ACCESS_KEY              CHAR(21),
   2 PIWA2_1A_CONT_PARITY             CHAR(1), /*(OR DUP ADDR IND)*/
   2 PIWA2_1A_LOW_HOUSENUM            CHAR(11), /* SORT FORMAT */
   2 PIWA2_1A_BBL,
     3 PIWA2_1A_BBL_BORO              CHAR(1),
     3 PIWA2_1A_BLOCK                 CHAR(5),
     3 PIWA2_1A_LOT                   CHAR(4),
   2 PIWA2_1A_LOT_VER                 CHAR(1),
   2 PIWA2_1A_SCC                     CHAR(1),
   2 FILLER_100                       CHAR(1),
   2 PIWA2_1A_GENERAL_LOT_INFO,
     3 PIWA2_1A_RPAD_BLDG_CLASS       CHAR(2),
     3 PIWA2_1A_CORNER_CODE           CHAR(2),
     3 PIWA2_1A_NUM_OF_STRUCTURES     CHAR(4),
     3 PIWA2_1A_NUM_OF_BLOCKFACES     CHAR(2),
     3 PIWA2_1A_INTERIOR_FLAG         CHAR(1),
     3 PIWA2_1A_VACANT_FLAG           CHAR(1),
     3 PIWA2_1A_IRREG_LOT_FLAG        CHAR(1),
   2 PIWA2_1A_MARBLE_RIKERS_FLAG      CHAR(1),
   2 PIWA2_1A_ADDR_LIST_OVFLOW_FLAG   CHAR(1),
   2 PIWA2_1A_STROLL_KEY,
     3 PIWA2_1A_STROLL_BORO           CHAR(1),
     3 PIWA2_1A_STROLL_5SC            CHAR(5),
     3 PIWA2_1A_STROLL_SIDE_OF_STR    CHAR(1),  /* L, R */
     3 PIWA2_1A_STROLL_HI_HOUSENUM    CHAR(11), /* SORT FORMAT */
     3 FILLER_200                     CHAR(1),
   2 FILLER_300                       CHAR(1),  /* FOR GSS USE*/
   2 PIWA2_1A_BIN                     CHAR(7),
   2 PIWA2_1A_CONDO_FLAG              CHAR(1),
   2 FILLER_400                       CHAR(1),
   2 PIWA2_1A_RPAD_CONDO_ID_NUM       CHAR(4),
   2 PIWA2_1A_CONDO_UNIT_ID_NUM       CHAR(7),
   2 PIWA2_1A_CONDO_BILL_BBL          CHAR(10),
   2 PIWA2_1A_CONDO_BILL_BBL_VER      CHAR(1),
   2 PIWA2_1A_CONDO_BILL_BBL_SCC      CHAR(1),
   2 PIWA2_1A_CONDO_LOW_BBL           CHAR(10),
   2 PIWA2_1A_CONDO_LOW_BBL_VER       CHAR(1),
   2 PIWA2_1A_CONDO_HIGH_BBL          CHAR(10),
   2 PIWA2_1A_CONDO_HIGH_BBL_VER      CHAR(1),
   2 FILLER_500                       CHAR(15),
   2 PIWA2_1A_COOP_NUM                CHAR(4),
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P2PL11A COPY File

```
     2 PIWA2_1A_SANBORN,
       3 PIWA2_1A_SANBORN_BORO            CHAR(1),
       3 PIWA2_1A_SANBORN_VOL             CHAR(3),
       3 PIWA2_1A_SANBORN_PAGE            CHAR(4),
     2 PIWA2_1A_COMMERC_DIST              CHAR(5),
     2 PIWA2_1A_DOF_MAP_BORO              CHAR(1),
     2 PIWA2_1A_DOF_MAP_SECVOL            CHAR(4),
     2 PIWA2_1A_DOF_MAP_PAGE              CHAR(4),
     2 RESERVED_DCP                       CHAR(3),
     2 PIWA2_1A_LATITUDE                  CHAR(09),
     2 PIWA2_1A_LONGITUDE                 CHAR(11),
     2 PIWA2_1A_X_COORD                   CHAR(07),
     2 PIWA2_1A_Y_COORD                   CHAR(07),
     2 PIWA2_1A_BID                       CHAR(06),
     2 PIWA2_1A_TPAD_BIN_ST               CHAR(01),  /*CURRENT STATUS*/
     2 PIWA2_1A_TPAD_NEW_BIN              CHAR(07),  /*NEW BIN       */
     2 PIWA2_1A_TPAD_NEW_BIN_ST           CHAR(01),  /*NEW BIN STATUS*/
     2 PIWA2_1A_TPAD_CONFLICT             CHAR(01),  /*CONFLICT FLAG */
     2 FILLER_650                         CHAR(09),
     2 FILLER_700                         CHAR(8),  /* LGC - GSS USE*/
     2 PIWA2_1A_NUM_OF_ADDR               CHAR(4),
     2 PIWA2_1A_ADDR_LIST(21),
       3 PIWA2_1A_LIST_LOW_HOUSENUM       CHAR(16), /*DISPLAY FORMAT*/
       3 PIWA2_1A_LIST_HI_HOUSENUM        CHAR(16), /*DISPLAY FORMAT*/
       3 PIWA2_1A_LIST_BORO               CHAR(1),
       3 PIWA2_1A_LIST_5SC                CHAR(5),
       3 PIWA2_1A_LIST_LGC                CHAR(2),
       3 PIWA2_1A_LIST_BIN                CHAR(7),
       3 PIWA2_1A_LIST_SIDE_OF_STR        CHAR(1),  /* L, R */
       3 PIWA2_1A_ADDR_TYPE               CHAR(1),  /*              */
                                                    /* BLANK = NORMAL*/
       3 PIWA2_1A_TPAD_STATUS             CHAR(1),  /* 0 - 9        */
       3 FILLER_800                       CHAR(3);

  DCL  PIWA2_1A_SANBORN_BVOLPAGE          CHAR(8)
          BASED(ADDR(PIWA2_1A_SANBORN));
  DCL  PIWA2_1A_STROLLKEY                 CHAR(19)
          BASED(ADDR(PIWA2_1A_STROLL_KEY));
```

P2PL11AL COPY File

```
/*********************************************************************/  00000100
/**********************************************************************/00000276
/*                                                                   */00000376
/***                     P2PL11AL                                  ***/00000480
/***           LAST MODIFIED DECEMBER 2016                         ***/00000580
/*  ADD NEW 2 BYTE BIKE TRAFFIC DIRECTION          YNL 12/16  V17.1*/00000680
/*  REPLACED SANIT_RESERVED WITH SANIT_BULK_PICK_UP  YNL 10/16  V16.4*/00000776
/*  ADD NEW 2 BYTE BIKE LANE AND MAX STR WIDTH       YNL 10/16  V16.4*/00000876
/*                                                                   */00000976
/**********************************************************************/00001076
/***  THIS IS THE PL/1 STRUCTURE FOR GEOSUPPORT SYSTEM PLATFORM  ***/  00001100
/***  INDEPENDENT LONG WORK AREA 2 FOR FUNCTIONS: 1A , AND BL.   ***/  00001200
/***  THESE TWO FUNCTIONS SHARE A SINGLE LONG WORK AREA 2 LAYOUT.***/  00001300
/***  THIS IS ALSO THE PL/1 STRUCTURE FOR GEOSUPPORT SYSTEM      ***/  00001415
/***   PLATFORM INDEPENDENT EXTENDED WORK AREA 2 FOR             ***/  00001515
/***   FUNCTIONS 1E AND 1A, AND FOR FUNCTION 1B WHICH IS A       ***/  00001635
/***   COMBINATION OF EXTENDED 1/1E AND EXTENDED 1A)             ***/  00001726
/***                                                             ***/  00001800
/***                          LAST MODIFIED OCTOBER  2016        ***/  00001976
/***  COPY FILE - P2PL11AL.                        10/11/2000  ***/  00002026
/*********************************************************************/  00002126
                                                                       00002226
DCL                                                                    00002326
 1 P2PL11AL,                                                           00002426
   2 PIWA2_1AL_ACCESS_KEY              CHAR(21),                       00002526
   2 PIWA2_1AL_CONT_PARITY             CHAR(1), /*(OR DUP ADDR IND)*/  00002626
   2 PIWA2_1AL_LOW_HOUSENUM            CHAR(11), /* SORT FORMAT */     00002726
   2 PIWA2_1AL_BBL,                                                    00002826
     3 PIWA2_1AL_BBL_BORO              CHAR(1),                        00002926
     3 PIWA2_1AL_BLOCK                 CHAR(5),                        00003026
     3 PIWA2_1AL_LOT                   CHAR(4),                        00003126
   2 PIWA2_1AL_LOT_VER                 CHAR(1),                        00003226
   2 PIWA2_1AL_SCC                     CHAR(1),                        00003326
   2 FILLER_100                        CHAR(1),                        00003426
   2 PIWA2_1AL_GENERAL_LOT_INFO,                                       00003526
     3 PIWA2_1AL_RPAD_BLDG_CLASS       CHAR(2),                        00003626
     3 PIWA2_1AL_CORNER_CODE           CHAR(2),                        00003726
     3 PIWA2_1AL_NUM_OF_STRUCTURES     CHAR(4),                        00003826
     3 PIWA2_1AL_NUM_OF_BLOCKFACES     CHAR(2),                        00003926
     3 PIWA2_1AL_INTERIOR_FLAG         CHAR(1),                        00004026
     3 PIWA2_1AL_VACANT_FLAG           CHAR(1),                        00004126
     3 PIWA2_1AL_IRREG_LOT_FLAG        CHAR(1),                        00004226
   2 PIWA2_1AL_MARBLE_RIKERS_FLAG      CHAR(1),                        00004326
   2 PIWA2_1AL_ADDR_LIST_OVFLOW_FLAG   CHAR(1),                        00004426
   2 PIWA2_1AL_STROLL_KEY,                                             00004526
     3 PIWA2_1AL_STROLL_BORO           CHAR(1),                        00004626
     3 PIWA2_1AL_STROLL_5SC            CHAR(5),                        00004726
     3 PIWA2_1AL_STROLL_SIDE_OF_STR    CHAR(1),  /* L, R */            00004826
     3 PIWA2_1AL_STROLL_HI_HOUSENUM    CHAR(11), /* SORT FORMAT */     00004926
     3 FILLER_200                      CHAR(1),                        00005026
   2 FILLER_300                        CHAR(1),  /* FOR GSS USE*/      00005126
   2 PIWA2_1AL_BIN                     CHAR(7),                        00005226
   2 PIWA2_1AL_CONDO_FLAG              CHAR(1),                        00005326
   2 FILLER_400                        CHAR(1),                        00005426
   2 PIWA2_1AL_RPAD_CONDO_ID_NUM       CHAR(4),                        00005526
   2 PIWA2_1AL_CONDO_UNIT_ID_NUM       CHAR(7),                        00005626
   2 PIWA2_1AL_CONDO_BILL_BBL          CHAR(10),                       00005726
   2 PIWA2_1AL_CONDO_BILL_BBL_VER      CHAR(1),                        00005826
   2 PIWA2_1AL_CONDO_BILL_BBL_SCC      CHAR(1),                        00005926
   2 PIWA2_1AL_CONDO_LOW_BBL           CHAR(10),                       00006026
   2 PIWA2_1AL_CONDO_LOW_BBL_VER       CHAR(1),                        00006126
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   2 PIWA2_1AL_CONDO_HIGH_BBL          CHAR(10),
   2 PIWA2_1AL_CONDO_HIGH_BBL_VER      CHAR(1),
   2 FILLER_500                        CHAR(15),
   2 PIWA2_1AL_COOP_NUM                CHAR(4),
   2 PIWA2_1AL_SANBORN,
     3 PIWA2_1AL_SANBORN_BORO          CHAR(1),
     3 PIWA2_1AL_SANBORN_VOL           CHAR(3),
     3 PIWA2_1AL_SANBORN_PAGE          CHAR(4),
   2 PIWA2_1AL_COMMERC_DIST            CHAR(5),
   2 PIWA2_1AL_DOF_MAP_BORO            CHAR(1),
   2 PIWA2_1AL_DOF_MAP_SECVOL          CHAR(4),
   2 PIWA2_1AL_DOF_MAP_PAGE            CHAR(4),
   2 FILLER_600                        CHAR(3),
   2 PIWA2_1AL_LATITUDE                CHAR(9),
   2 PIWA2_1AL_LONGITUDE               CHAR(11),
   2 PIWA2_1AL_X_COORD                 CHAR(07),
   2 PIWA2_1AL_Y_COORD                 CHAR(07),
   2 PIWA2_1AL_BID                     CHAR(06),
   2 PIWA2_1AL_TPAD_BIN_ST             CHAR(01), /*CURRENT STATUS*/
   2 PIWA2_1AL_TPAD_NEW_BIN            CHAR(07), /*NEW BIN       */
   2 PIWA2_1AL_TPAD_NEW_BIN_ST         CHAR(01), /*NEW BIN STATUS*/
   2 PIWA2_1AL_TPAD_CONFLICT           CHAR(01), /*CONFLICT FLAG */
   2 FILLER_650                        CHAR(09),
   2 FILLER_700                        CHAR(8),  /*LGC -GSS USE*/
   2 PIWA2_1AL_NUM_OF_BINS             CHAR(4),
   2 PIWA2_1AL_BINS(2500)              CHAR(7);

DCL 1 PIWA2_1AL_TPAD_BINLIST BASED(ADDR(PIWA2_1AL_BINS)),
      2 PIWA2_1AL_TPAD_BINS(2187),
        3 PIWA2_1AL_TPAD_BINS_BIN   CHAR (7),
        3 PIWA2_1AL_TPAD_BINS_STAT  CHAR (1),
      2 PIWA2_1AL_TPAD_FILL         CHAR (4);

DCL  PIWA2_1AL_SANBORN_BVOLPAGE        CHAR(8)
        BASED(ADDR(PIWA2_1AL_SANBORN));
DCL  PIWA2_1AL_STROLLKEY               CHAR(19)
        BASED(ADDR(PIWA2_1AL_STROLL_KEY));


DCL 1 PIWA2_1EX BASED(ADDR(P2PL11AL)),

 /*******************************************************************/
 /***              WORK AREA 2 FOR FUNCTION 1/1E EXTENDED        ***/
 /***                                                            ***/
 /*******************************************************************/
 /*******************************************************************/

 /*******************************************************************/
 /***                                                            ***/
 /*** THE FOLLOWING FIELDS ARE FROM FUNCTION 1/1E                ***/
 /*******************************************************************/
    2 PIWA2_1EX_ACCESS_KEY            CHAR(21),
    2 PIWA2_1EX_CONT_PARITY           CHAR(1),/*(OR DUP ADDR IND)*/
    2 PIWA2_1EX_LOW_HOUSENUM          CHAR(11),/* SORT FORMAT */
    2 PIWA2_1EX_HI_HOUSENUM           CHAR(11),/* SORT FORMAT */
    2 PIWA2_1EX_DCP_PREF_LGC          CHAR(2),
    2 PIWA2_1EX_NUM_X_ST_LOW_END      CHAR(1),
    2 PIWA2_1EX_LOW_B5SC(5)           CHAR(6),
    2 PIWA2_1EX_NUM_X_ST_HI_END       CHAR(1),
    2 PIWA2_1EX_HI_B5SC(5)            CHAR(6),
    2 PIWA2_1EX_LIONKEY,
```

```
      3 PIWA2_1EX_LION_BORO           CHAR(1),                          00012338
      3 PIWA2_1EX_LION_FACECODE       CHAR(4),                          00012438
      3 PIWA2_1EX_LION_SEQ            CHAR(5),                          00012538
    2 PIWA2_1EX_SPECIAL_ADDR_FLAG     CHAR(1),                          00012638
    2 PIWA2_1EX_SIDE_OF_STR           CHAR(1),                          00012738
    2 PIWA2_1EX_SEG_LEN               CHAR(5),                          00012838
    2 PIWA2_1EX_XCOORD                CHAR(7),                          00012938
    2 PIWA2_1EX_YCOORD                CHAR(7),                          00013038
    2 FILLER_1EX_100                  CHAR(7), /* FOR ZCOORD */         00013138
    2 FILLER_1EX_200                  CHAR(1), /* FOR GSS USE*/         00013238
    2 PIWA2_1EX_MARBLE_RIKERS_FLAG    CHAR(1),                          00013338
    2 PIWA2_1EX_DOT_SLA               CHAR(1),                          00013438
    2 PIWA2_1EX_COM_DIST,                                               00013538
      3 PIWA2_1EX_COM_DIST_BORO       CHAR(1),                          00013638
      3 PIWA2_1EX_COM_DIST_NUM        CHAR(2),                          00013738
    2 PIWA2_1EX_ZIP                   CHAR(5),                          00013838
                                                                        00013915
    2 PIWA2_1EX_ELECT_DIST            CHAR(3), /*****************/      00014038
    2 PIWA2_1EX_ASSEM_DIST            CHAR(2), /* FUNCTION 1E   */      00014138
    2 PIWA2_1EX_SPLIT_ED_FLAG         CHAR(1), /* FIELDS        */      00014238
    2 PIWA2_1EX_CONG_DIST             CHAR(2), /*               */      00014338
    2 PIWA2_1EX_SENATE_DIST           CHAR(2), /*               */      00014438
    2 PIWA2_1EX_COURT_DIST            CHAR(2), /*               */      00014538
    2 PIWA2_1EX_COUNCIL_DIST          CHAR(2), /*****************/      00014638
                                                                        00014715
    2 PIWA2_1EX_HEALTH_CENTER_DIST    CHAR(2), /*HEALTH CENTER*/        00014854
    2 PIWA2_1EX_HEALTH_AREA           CHAR(4), /*HEALTH AREA*/          00014954
    2 PIWA2_1EX_SANI_DIST,                                              00015038
      3 PIWA2_1EX_SANI_DIST_BORO      CHAR(1),                          00015138
      3 PIWA2_1EX_SANI_DIST_NUM       CHAR(2),                          00015238
    2 PIWA2_1EX_SANI_SUBSEC           CHAR(2),                          00015338
    2 PIWA2_1EX_SANI_REG              CHAR(5),                          00015438
    2 PIWA2_1EX_SANI_REC              CHAR(3),                          00015538
    2 PIWA2_1EX_POLICE_DIST,                                            00015638
      3  PIWA2_1EX_POL_PAT_BORO_CMD   CHAR(1),                          00015738
      3  PIWA2_1EX_POL_PRECINCT       CHAR(3),                          00015838
    2 PIWA2_1EX_FIRE_DIV              CHAR(2),                          00015938
    2 PIWA2_1EX_FIRE_BAT              CHAR(2),                          00016038
    2 PIWA2_1EX_FIRE_CO,                                                00016138
      3 PIWA2_1EX_FIRE_CO_TYPE        CHAR(1),                          00016238
      3 PIWA2_1EX_FIRE_CO_NUM         CHAR(3),                          00016338
    2 PIWA2_1EX_FILL_DIST_SPLT_FLAG   CHAR(1),                          00016438
    2 PIWA2_1EX_SCHL_DIST             CHAR(2),                          00016538
    2 PIWA2_1EX_DYN_BLK               CHAR(3), /*ATOMIC POLYGON*/       00016638
    2 PIWA2_1EX_POLICE_PAT_BORO       CHAR(2),                          00016769
    2 PIWA2_1EX_FEATURE_TYPE          CHAR(1),                          00016838
    2 PIWA2_1EX_SEGMENT_TYPE          CHAR(1),                          00016938
    2 PIWA2_1EX_ALX                   CHAR(1),                          00017038
    2 PIWA2_1EX_COINCIDENT_SEG_CTR    CHAR(1),                          00017138
    2 FILLER_1EX_290                  CHAR(2),                          00017255
    2 PIWA2_1EX_CENS_TRCT_BORO        CHAR(1),  /*USED FOR GRIDGEN*/    00017355
    2 PIWA2_1EX_1990_CENS_TRCT        CHAR(6),                          00017455
    2 PIWA2_1EX_2010_CENSUS_TRACT     CHAR(6),                          00017555
    2 PIWA2_1EX_2010_CENSUS_BLOCK     CHAR(4),                          00017655
    2 PIWA2_1EX_2010_CENSUS_BLK_SF    CHAR(1), /*NOT IMPLEMENTED*/      00017755
    2 PIWA2_1EX_2000_CENS_TRACT       CHAR(6),                          00017855
    2 PIWA2_1EX_2000_CENS_BLOCK       CHAR(4),                          00017955
    2 PIWA2_1EX_2000_CENS_BLK_S       CHAR(1),                          00018055
    2 PIWA2_1EX_NTA                   CHAR(4), /*NEIGHBORHOOD     */    00018155
                                               /*TABULATION AREA  */    00018255
    2 PIWA2_1EX_SANIT_SNOW_PRIORITY   CHAR(1), /*SANITATION STRT  */    00018355
```

```
                                           /*SNOW PRIORITY    */   00018455
     2 PIWA2_1EX_SANIT_ORGANICS       CHAR(5), /*SANITATION       */   00018559
                                           /*ORGANIC PICK UP  */   00018657
     2 PIWA2_1EX_SANIT_BULK_PICK_UP   CHAR(5), /*SANITATION BULK  */   00018776
  /* 2 PIWA2_1EX_SANIT_RESERVED *V16.4*CHAR(5),  *SANITATION RESERVE*/  00018876
     2 PIWA2_1EX_HURRICANE_ZONE       CHAR(2), /*OEM HURRICANE     */  00018976
                                           /*EVACUATION ZONE   */  00019076
     2 FILLER_1EX_400                 CHAR(11),                        00019176
     2 PIWA2_1EX_UHNS                 CHAR(11),                        00019276
     2 PIWA2_1EX_REAL_B7SC            CHAR(8),                         00019376
     2 PIWA2_1EX_SEGMENT_ID           CHAR(7),                         00019476
     2 PIWA2_1EX_CURVE_FLAG           CHAR(1),                         00019576
     2 PIWA2_1EX_LGCS                 CHAR(8),                         00019676
     2 PIWA2_1EX_BOE_PTR              CHAR(1),                         00019776
     2 PIWA2_1EX_AZIMUTH              CHAR(3),                         00019876
     2 PIWA2_1EX_ORIENT               CHAR(1),                         00019976
     2 PIWA2_1EX_X_LOW                CHAR(7),                         00020076
     2 PIWA2_1EX_Y_LOW                CHAR(7),                         00020176
     2 PIWA2_1EX_Z_LOW                CHAR(7), /*NOT IMPLEMENTED*/     00020276
     2 PIWA2_1EX_X_HI                 CHAR(7),                         00020376
     2 PIWA2_1EX_Y_HI                 CHAR(7),                         00020476
     2 PIWA2_1EX_Z_HI                 CHAR(7), /*NOT IMPLEMENTED*/     00020576
     /* SPATIAL COORDINATES OF CENTER OF CURVATURE                */   00020676
     2 PIWA2_1EX_X_CC                 CHAR(7),                         00020776
     2 PIWA2_1EX_Y_CC                 CHAR(7),                         00020876
     2 PIWA2_1EX_Z_CC                 CHAR(7), /*NOT IMPLEMENTED*/     00020976
     2 PIWA2_1EX_RADIUS               CHAR(7),                         00021076
     2 PIWA2_1EX_SECANT               CHAR(1),                         00021176
     2 PIWA2_1EX_ANGLE_FROM           CHAR(5),                         00021276
     2 PIWA2_1EX_ANGLE_TO             CHAR(5),                         00021376
     2 PIWA2_1EX_NODE_FROM            CHAR(7),                         00021476
     2 PIWA2_1EX_NODE_TO              CHAR(7),                         00021576
     2 PIWA2_1EX_VANITY_LION          CHAR(10),                        00021676
     2 PIWA2_1EX_SOS                  CHAR(1),                         00021776
     2 PIWA2_1EX_SPLIT_LOHSN          CHAR(11),                        00021876
     2 PIWA2_1EX_TD                   CHAR(1),                         00021976
     2 PIWA2_1EX_TR                   CHAR(10),                        00022076
     2 PIWA2_1EX_CURVE_FRACTION       CHAR(3),                         00022176
     2 PIWA2_1EX_ROADWAY_TYPE         CHAR(2),                         00022276
     2 PIWA2_1EX_PHYSICAL_ID          CHAR(7),                         00022376
     2 PIWA2_1EX_GENERIC_ID           CHAR(7),                         00022476
     2 PIWA2_1EX_INTP_ID              CHAR(7),  /*INTERNAL USE*/       00022576
     2 PIWA2_1EX_INTF_ID              CHAR(7),  /*INTERNAL USE*/       00022676
     2 PIWA2_1EX_BIKE_LANE_2          CHAR(2),                         00022776
     2 PIWA2_1EX_BIKE_TRAFFIC_DIR     CHAR(2),                         00022879
     2 PIWA2_1EX_FILL450              CHAR(3),                         00022979
  /* 2 PIWA2_1EX_FILL450  * V17.1 *   CHAR(5),  **/                    00023079
  /* 2 PIWA2_1EX_FILL450  * V16.4 *   CHAR(7),  **/                    00023179
  /* 2 PIWA2_1EX_BLOCKFACE_ID * V16.1* CHAR(7),  **/                   00023279
     2 PIWA2_1EX_STREET_STATUS        CHAR(1),                         00023379
     2 PIWA2_1EX_STREET_WIDTH         CHAR(3),                         00023479
     2 PIWA2_1EX_STREET_WIDTH_IRR     CHAR(1),                         00023579
     2 PIWA2_1EX_BIKE_LANE            CHAR(1),                         00023679
     2 PIWA2_1EX_FED_CLASS_CODE       CHAR(2),                         00023779
     2 PIWA2_1EX_ROW_TYPE             CHAR(1),                         00023879
     2 PIWA2_1EX_LGC_LIST_2           CHAR(10),                        00023979
     2 PIWA2_1EX_LEGACY_SEG_ID        CHAR(7),                         00024079
     2 PIWA2_1EX_LGC_LIST_FROM_1      CHAR(10),                        00024179
     2 PIWA2_1EX_LGC_LIST_TO_1        CHAR(10),                        00024279
     2 PIWA2_1EX_LGC_LIST_FROM_2      CHAR(10),                        00024379
     2 PIWA2_1EX_LGC_LIST_TO_2        CHAR(10),                        00024479
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    2 PIWA2_1EX_NOCROSS_FLG          CHAR(1),
    2 PIWA2_1EX_IND_SEG_LEN          CHAR(5),
    2 PIWA2_1EX_NTA_NAME             CHAR(75),
    2 PIWA2_1EX_USPS_CITY_NAME       CHAR(25),
    2 PIWA2_1EX_LATITUDE             CHAR(9),
    2 PIWA2_1EX_LONGITUDE            CHAR(11),
    2 PIWA2_1EX_SEG_FROM_NODE        CHAR(7),
    2 PIWA2_1EX_SEG_TO_NODE          CHAR(7),
    2 PIWA2_1EX_SEG_FROM_XYZ         CHAR(21),
    2 PIWA2_1EX_SEG_TO_XYZ           CHAR(21),
    2 PIWA2_1EX_BLOCKFACE_ID         CHAR(10),
    2 PIWA2_1EX_NBR_TRAVEL_LANES     CHAR(2),
    2 PIWA2_1EX_NBR_PARK_LANES       CHAR(2),
    2 PIWA2_1EX_NBR_TOTAL_LANES      CHAR(2),
    2 PIWA2_1EX_STR_WIDTH_MAX        CHAR(3),
    2 PIWA2_1EX_FILL500              CHAR(252),
 /* 2 PIWA2_1EX_FILL500 ** V16.4 **  CHAR(255) **/
 /* 2 PIWA2_1EX_FILL500 ** V16.1 **  CHAR(271) **/
 /* 2 PIWA2_1EX_FILL500 ** V15.3 **  CHAR(327) **/
 /*******************************************************************/
 /***                                                             ***/
 /*** THE FOLLOWING FIELDS ARE AN ADDITION TO 1E                  ***/
 /*******************************************************************/
    2 PIWA2_1EX_REASON_CODE          CHAR(1),
    2 PIWA2_1EX_REASON_CODE_QUAL     CHAR(1),
    2 PIWA2_1EX_WARN_CODE            CHAR(2),
    2 PIWA2_1EX_RETURN_CODE          CHAR(2),
    2 PIWA2_1EX_NUM_X_STS_LO_END     CHAR(1),
    2 PIWA2_1EX_LO_B7SC(5)           CHAR(8),
    2 PIWA2_1EX_NUM_X_STS_HI_END     CHAR(1),
    2 PIWA2_1EX_HI_B7SC(5)           CHAR(8),
    2 PIWA2_1EX_LO_ST_NAME(5)        CHAR(32),
    2 PIWA2_1EX_HI_ST_NAME(5)        CHAR(32),
    2 PIWA2_1EX_BOE_B7SC             CHAR(8),
    2 PIWA2_1EX_BOE_ST_NAME          CHAR(32),
    2 PIWA2_1EX_FILL600              CHAR(52);



DCL 1 PIWA2_FN1AX BASED(ADDR(P2PL11AL)),
 /*******************************************************************/
 /***             WORK AREA 2 FOR FUNCTION 1A EXTENDED            ***/
 /***                                                             ***/
 /*******************************************************************/


   2 PIWA2_1AX_ACCESS_KEY              CHAR(21),
   2 PIWA2_1AX_CONT_PARITY             CHAR(1), /*(OR DUP ADDR IND)*/
   2 PIWA2_1AX_LOW_HOUSENUM            CHAR(11), /* SORT FORMAT */
   2 PIWA2_1AX_BBL,
     3 PIWA2_1AX_BBL_BORO              CHAR(1),
     3 PIWA2_1AX_BLOCK                 CHAR(5),
     3 PIWA2_1AX_LOT                   CHAR(4),
   2 PIWA2_1AX_LOT_VER                 CHAR(1),
   2 PIWA2_1AX_SCC                     CHAR(1),
   2 FILLER_1AX1                       CHAR(1),
   2 PIWA2_1AX_GENERAL_LOT_INFO,
     3 PIWA2_1AX_RPAD_BLDG_CLASS       CHAR(2),
     3 PIWA2_1AX_CORNER_CODE           CHAR(2),
     3 PIWA2_1AX_NUM_OF_STRUCTURES     CHAR(4),
     3 PIWA2_1AX_NUM_OF_BLOCKFACES     CHAR(2),
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      3 PIWA2_1AX_INTERIOR_FLAG          CHAR(1),                      00030679
      3 PIWA2_1AX_VACANT_FLAG            CHAR(1),                      00030779
      3 PIWA2_1AX_IRREG_LOT_FLAG         CHAR(1),                      00030879
    2 PIWA2_1AX_MARBLE_RIKERS_FLAG       CHAR(1),                      00030979
    2 PIWA2_1AX_ADDR_LIST_OVFLOW_FLAG    CHAR(1),                      00031079
    2 PIWA2_1AX_STROLL_KEY,                                            00031179
      3 PIWA2_1AX_STROLL_BORO            CHAR(1),                      00031279
      3 PIWA2_1AX_STROLL_5SC             CHAR(5),                      00031379
      3 PIWA2_1AX_STROLL_SIDE_OF_STR     CHAR(1),    /* L, R */        00031479
      3 PIWA2_1AX_STROLL_HI_HOUSENUM     CHAR(11), /* SORT FORMAT */   00031579
      3 FILLER_1AX2                      CHAR(1),                      00031679
    2 FILLER_1AX3                        CHAR(1),  /* FOR GSS USE*/    00031779
    2 PIWA2_1AX_BIN                      CHAR(7),                      00031879
    2 PIWA2_1AX_CONDO_FLAG               CHAR(1),                      00031979
    2 FILLER_1AX4                        CHAR(1),                      00032079
    2 PIWA2_1AX_RPAD_CONDO_ID_NUM        CHAR(4),                      00032179
    2 PIWA2_1AX_CONDO_UNIT_ID_NUM        CHAR(7),                      00032279
    2 PIWA2_1AX_CONDO_BILL_BBL           CHAR(10),                     00032379
    2 PIWA2_1AX_CONDO_BILL_BBL_VER       CHAR(1),                      00032479
    2 PIWA2_1AX_CONDO_BILL_BBL_SCC       CHAR(1),                      00032579
    2 PIWA2_1AX_CONDO_LOW_BBL            CHAR(10),                     00032679
    2 PIWA2_1AX_CONDO_LOW_BBL_VER        CHAR(1),                      00032779
    2 PIWA2_1AX_CONDO_HIGH_BBL           CHAR(10),                     00032879
    2 PIWA2_1AX_CONDO_HIGH_BBL_VER       CHAR(1),                      00032979
    2 FILLER_1AX5                        CHAR(15),                     00033079
    2 PIWA2_1AX_COOP_NUM                 CHAR(4),                      00033179
    2 PIWA2_1AX_SANBORN,                                               00033279
      3 PIWA2_1AX_SANBORN_BORO           CHAR(1),                      00033379
      3 PIWA2_1AX_SANBORN_VOL            CHAR(3),                      00033479
      3 PIWA2_1AX_SANBORN_PAGE           CHAR(4),                      00033579
    2 PIWA2_1AX_COMMERC_DIST             CHAR(5),                      00033679
    2 PIWA2_1AX_DOF_MAP_BORO             CHAR(1),                      00033779
    2 PIWA2_1AX_DOF_MAP_SECVOL           CHAR(4),                      00033879
    2 PIWA2_1AX_DOF_MAP_PAGE             CHAR(4),                      00033979
    2 PIWA2_1AX_RESERVED                 CHAR(03),                     00034079
    2 PIWA2_1AX_LATITUDE                 CHAR(09),                     00034179
    2 PIWA2_1AX_LONGITUDE                CHAR(11),                     00034279
    2 PIWA2_1AX_X_COORD                  CHAR(07),                     00034379
    2 PIWA2_1AX_Y_COORD                  CHAR(07),                     00034479
    2 PIWA2_1AX_BID                      CHAR(06),                     00034579
    2 PIWA2_1AX_TPAD_BIN_ST              CHAR(01),  /*CURRENT STATUS*/ 00034679
    2 PIWA2_1AX_TPAD_NEW_BIN             CHAR(07),  /*NEW BIN       */ 00034779
    2 PIWA2_1AX_TPAD_NEW_BIN_ST          CHAR(01),  /*NEW BIN STATUS*/ 00034879
    2 PIWA2_1AX_TPAD_CONFLICT            CHAR(01),  /*CONFLICT FLAG */ 00034979
    2 FILLER_1AX7                        CHAR(09),                     00035079
    2 FILLER_1AX8                        CHAR(8),  /* LGC - GSS USE*/  00035179
    2 PIWA2_1AX_REASON_CODE              CHAR(01),                     00035279
    2 PIWA2_1AX_REASON_CODE_QUAL         CHAR(01),                     00035379
    2 PIWA2_1AX_WARN_CODE                CHAR(02),                     00035479
    2 PIWA2_1AX_RETURN_CODE              CHAR(02),                     00035579
    2 FILLER_1AX9                        CHAR(108),                    00035679
    2 PIWA2_1AX_NUM_OF_ADDR              CHAR(4),                      00035779
    2 PIWA2_1AX_ADDR_LIST(21),                                         00035879
      3 PIWA2_1AX_LIST_LOW_HOUSENUM      CHAR(16), /*DISPLAY FORMAT*/  00035979
      3 PIWA2_1AX_LIST_HI_HOUSENUM       CHAR(16), /*DISPLAY FORMAT*/  00036079
      3 PIWA2_1AX_LIST_BORO              CHAR(1),                      00036179
      3 PIWA2_1AX_LIST_5SC               CHAR(5),                      00036279
      3 PIWA2_1AX_LIST_LGC               CHAR(2),                      00036379
      3 PIWA2_1AX_LIST_BIN               CHAR(7),                      00036479
      3 PIWA2_1AX_LIST_SIDE_OF_STR       CHAR(1),  /* L, R */          00036579
      3 PIWA2_1AX_ADDR_TYPE              CHAR(1),  /*              */  00036679
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                                             /* BLANK = NORMAL*/
     3 PIWA2_1AX_TPAD_STATUS            CHAR(1),
     3 PIWA2_1AX_ST_NAME                CHAR(32),
     3 FILLER_1AX10                     CHAR(34);


 DCL 1 PIWA2_FN1B BASED(ADDR(P2PL11AL)),

  /*****************************************************************/
  /***             WORK AREA 2 FOR FUNCTION 1B                   ***/
  /***                                                           ***/
  /*****************************************************************/
    2 PIWA2_1B_1_ACCESS_KEY              CHAR(21),
    2 PIWA2_1B_1_CONT_PARITY             CHAR(1),  /*(DUP ADDR IND)*/
    2 PIWA2_1B_1_LOW_HOUSENUM            CHAR(11), /* SORT FORMAT */
    2 PIWA2_1B_1_HI_HOUSENUM             CHAR(11), /* SORT FORMAT */
    2 PIWA2_1B_1_PREF_LGC                CHAR(2),
    2 PIWA2_1B_1_NUM_X_ST_LOW_END        CHAR(1),
    2 PIWA2_1B_1_LOW_B5SC(5)             CHAR(6),
    2 PIWA2_1B_1_NUM_X_ST_HI_END         CHAR(1),
    2 PIWA2_1B_1_HI_B5SC(5)              CHAR(6),
    2 PIWA2_1B_1_LIONKEY,
      3 PIWA2_1B_1_LION_BORO             CHAR(1),
      3 PIWA2_1B_1_LION_FACECODE         CHAR(4),
      3 PIWA2_1B_1_LION_SEQ              CHAR(5),
    2 PIWA2_1B_1_SPECIAL_ADDR_FLAG       CHAR(1),
    2 PIWA2_1B_1_SIDE_OF_STR             CHAR(1),
    2 PIWA2_1B_1_SEG_LEN                 CHAR(5),
    2 PIWA2_1B_1_XCOORD                  CHAR(7),
    2 PIWA2_1B_1_YCOORD                  CHAR(7),
    2 FILLER_1B_1_100                    CHAR(7), /* FOR ZCOORD */
    2 FILLER_1B_1_200                    CHAR(1), /* FOR GSS USE*/
    2 PIWA2_1B_1_MARBLE_RIKERS_FLAG      CHAR(1),
    2 PIWA2_1B_1_DOT_SLA                 CHAR(1),
    2 PIWA2_1B_1_COM_DIST,
      3 PIWA2_1B_1_COM_DIST_BORO         CHAR(1),
      3 PIWA2_1B_1_COM_DIST_NUM          CHAR(2),
    2 PIWA2_1B_1_ZIP                     CHAR(5),

    2 PIWA2_1B_1_ELECT_DIST              CHAR(3), /****************/
    2 PIWA2_1B_1_ASSEM_DIST              CHAR(2), /* FUNCTION 1E   */
    2 PIWA2_1B_1_SPLIT_ED_FLAG           CHAR(1), /* FIELDS        */
    2 PIWA2_1B_1_CONG_DIST               CHAR(2), /*               */
    2 PIWA2_1B_1_SENATE_DIST             CHAR(2), /*               */
    2 PIWA2_1B_1_COURT_DIST              CHAR(2), /*               */
    2 PIWA2_1B_1_COUNCIL_DIST            CHAR(2), /****************/

    2 PIWA2_1B_1_HEALTH_CENTER_DIST      CHAR(2),
    2 PIWA2_1B_1_HEALTH_AREA             CHAR(4),
    2 PIWA2_1B_1_SANI_DIST,
      3 PIWA2_1B_1_SANI_DIST_BORO        CHAR(1),
      3 PIWA2_1B_1_SANI_DIST_NUM         CHAR(2),
    2 PIWA2_1B_1_SANI_SUBSEC             CHAR(2),
    2 PIWA2_1B_1_SANI_REG                CHAR(5),
    2 PIWA2_1B_1_SANI_REC                CHAR(3),
    2 PIWA2_1B_1_POLICE_DIST,
      3  PIWA2_1B_1_POL_PAT_BORO_CMD     CHAR(1),
      3  PIWA2_1B_1_POL_PRECINCT         CHAR(3),
    2 PIWA2_1B_1_FIRE_DIV                CHAR(2),
    2 PIWA2_1B_1_FIRE_BAT                CHAR(2),
    2 PIWA2_1B_1_FIRE_CO,
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    3 PIWA2_1B_1_FIRE_CO_TYPE           CHAR(1),                      00042879
    3 PIWA2_1B_1_FIRE_CO_NUM            CHAR(3),                      00042979
  2 PIWA2_1B_1_FILL_DIST_SPLIT_FLAG     CHAR(1),                      00043079
  2 PIWA2_1B_1_SCHL_DIST                CHAR(2),                      00043179
  2 PIWA2_1B_1_DYN_BLK                  CHAR(3), /*ATOMIC POLYGON*/   00043279
  2 PIWA2_1B_1_POLICE_PAT_BORO          CHAR(2),                      00043379
  2 PIWA2_1B_1_FEATURE_TYPE             CHAR(1),                      00043479
  2 PIWA2_1B_1_SEGMENT_TYPE             CHAR(1),                      00043579
  2 PIWA2_1B_1_ALX                      CHAR(1),                      00043679
  2 PIWA2_1B_1_COINCIDENT_SEG_CTR       CHAR(1),                      00043779
  2 FILLER_1B_1_290                     CHAR(2),                      00043879
  2 PIWA2_1B_1_CENS_TRCT_BORO           CHAR(1),                      00043979
  2 PIWA2_1B_1_1990_CENS_TRCT           CHAR(6),                      00044079
  2 PIWA2_1B_1_2010_CENSUS_TRACT        CHAR(6),                      00044179
  2 PIWA2_1B_1_2010_CENSUS_BLOCK        CHAR(4),                      00044279
  2 PIWA2_1B_1_2010_CENSUS_BLK_SF       CHAR(1), /*NOT IMPLELMENTED*/00044379
  2 PIWA2_1B_1_2000_CENS_TRACT          CHAR(6),                      00044479
  2 PIWA2_1B_1_2000_CENS_BLOCK          CHAR(4),                      00044579
  2 PIWA2_1B_1_2000_CENS_BLK_S          CHAR(1),                      00044679
  2 PIWA2_1B_1_NTA                      CHAR(4), /*NEIGHBORHOOD    */00044779
                                                 /*TABULATION AREA */00044879
  2 PIWA2_1B_1_SANIT_SNOW_PRIORITY      CHAR(1), /*SANITATION STRT*/ 00044979
                                                 /*SNOW PRIORITY */  00045079
  2 PIWA2_1B_1_SANIT_ORGANICS           CHAR(5), /*SANITATION */     00045179
                                                 /*ORGANIC PICK UP*/ 00045279
  2 PIWA2_1B_1_SANIT_BULK_PICK_UP       CHAR(5), /*SANIT BULK   */   00045379
/* 2 PIWA2_1B_1_SANIT_RESERVE *V16.4 ** CHAR(5),  *SANIT RESERVE*/   00045479
  2 PIWA2_1B_1_HURRICANE_ZONE           CHAR(2), /*OEM HURRICANE */  00045579
                                                 /*EVACUATION ZONE*/ 00045679
  2 FILLER_1B_1_400                     CHAR(11),                     00045779
  2 PIWA2_1B_1_UHNS                     CHAR(11),                     00045879
  2 PIWA2_1B_1_REAL_B7SC                CHAR(8),                      00045979
  2 PIWA2_1B_1_SEGMENT_ID               CHAR(7),                      00046079
  2 PIWA2_1B_1_CURVE_FLAG               CHAR(1),                      00046179
  2 PIWA2_1B_1_LGCS                     CHAR(8),                      00046279
  2 PIWA2_1B_1_BOE_PTR                  CHAR(1),                      00046379
  2 PIWA2_1B_1_AZIMUTH                  CHAR(3),                      00046479
  2 PIWA2_1B_1_ORIENT                   CHAR(1),                      00046579
  2 PIWA2_1B_1_X_LOW                    CHAR(7),                      00046679
  2 PIWA2_1B_1_Y_LOW                    CHAR(7),                      00047027
  2 PIWA2_1B_1_Z_LOW                    CHAR(7), /*NOT IMPLEMENTED*/ 00048027
  2 PIWA2_1B_1_X_HI                     CHAR(7),                      00049027
  2 PIWA2_1B_1_Y_HI                     CHAR(7),                      00049127
  2 PIWA2_1B_1_Z_HI                     CHAR(7), /*NOT IMPLEMENTED*/ 00049227
  /* SPATIAL COORDINATES OF CENTER OF CURVATURE                */   00049327
  2 PIWA2_1B_1_X_CC                     CHAR(7),                      00049427
  2 PIWA2_1B_1_Y_CC                     CHAR(7),                      00049527
  2 PIWA2_1B_1_Z_CC                     CHAR(7), /*NOT IMPLEMENTED*/ 00049627
  2 PIWA2_1B_1_RADIUS                   CHAR(7),                      00049727
  2 PIWA2_1B_1_SECANT                   CHAR(1),                      00049827
  2 PIWA2_1B_1_ANGLE_FROM               CHAR(5),                      00049927
  2 PIWA2_1B_1_ANGLE_TO                 CHAR(5),                      00050027
  2 PIWA2_1B_1_NODE_FROM                CHAR(7),                      00051027
  2 PIWA2_1B_1_NODE_TO                  CHAR(7),                      00052027
  2 PIWA2_1B_1_VANITY_LION              CHAR(10),                     00053027
  2 PIWA2_1B_1_SOS                      CHAR(1),                      00054027
  2 PIWA2_1B_1_SPLIT_LOHSN              CHAR(11),                     00055027
  2 PIWA2_1B_1_TD                       CHAR(1),                      00056027
  2 PIWA2_1B_1_TR                       CHAR(10),                     00057027
  2 PIWA2_1B_1_CURVE_FRACTION           CHAR(3),                      00058027
  2 PIWA2_1B_1_ROADWAY_TYPE             CHAR(2),                      00058132
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    2 PIWA2_1B_1_PHYSICAL_ID             CHAR(7),                      00058232
    2 PIWA2_1B_1_GENERIC_ID              CHAR(7),                      00058332
    2 PIWA2_1B_1_INTP_ID                 CHAR(7),  /*INTERNAL USE*/    00058436
    2 PIWA2_1B_1_INTF_ID                 CHAR(7),  /*INTERNAL USE*/    00058536
    2 PIWA2_1B_1_BIKE_LANE_2             CHAR(2),                      00058676
    2 PIWA2_1B_1_BIKE_TRAFFIC_DIR        CHAR(2),                      00058781
    2 PIWA2_1B_1_FILL450                 CHAR(3),                      00058879
 /* 2 PIWA2_1B_1_FILL450      ** V17.1 ** CHAR(5),**/                  00058979
 /* 2 PIWA2_1B_1_FILL450      ** V16.4 ** CHAR(7),**/                  00059079
 /* 2 PIWA2_1B_1_BLOCKFACE_ID ** V16.1 ** CHAR(7) **/                  00059179
    2 PIWA2_1B_1_STREET_STATUS           CHAR(1),                      00059279
    2 PIWA2_1B_1_STREET_WIDTH            CHAR(3),                      00059379
    2 PIWA2_1B_1_STREET_WIDTH_IRR        CHAR(1),                      00059479
    2 PIWA2_1B_1_BIKE_LANE               CHAR(1),                      00059579
    2 PIWA2_1B_1_FED_CLASS_CODE          CHAR(2),                      00059679
    2 PIWA2_1B_1_ROW_TYPE                CHAR(1),                      00059779
    2 PIWA2_1B_1_LGC_LIST_2              CHAR(10),                     00059879
    2 PIWA2_1B_1_LEGACY_SEG_ID           CHAR(7),                      00059979
    2 PIWA2_1B_1_LGC_LIST_FROM_1         CHAR(10),                     00060079
    2 PIWA2_1B_1_LGC_LIST_TO_1           CHAR(10),                     00060179
    2 PIWA2_1B_1_LGC_LIST_FROM_2         CHAR(10),                     00060279
    2 PIWA2_1B_1_LGC_LIST_TO_2           CHAR(10),                     00060379
    2 PIWA2_1B_1_NOCROSS_FLG             CHAR(1),                      00060479
    2 PIWA2_1B_1_IND_SEG_LEN             CHAR(5),                      00060579
    2 PIWA2_1B_1_NTA_NAME                CHAR(75),                     00060679
    2 PIWA2_1B_1_USPS_CITY_NAME          CHAR(25),                     00060779
    2 PIWA2_1B_1_LATITUDE                CHAR(9),                      00060879
    2 PIWA2_1B_1_LONGITUDE               CHAR(11),                     00060979
    2 PIWA2_1B_1_SEG_FROM_NODE           CHAR(7),                      00061079
    2 PIWA2_1B_1_SEG_TO_NODE             CHAR(7),                      00061179
    2 PIWA2_1B_1_SEG_FROM_XYZ            CHAR(21),                     00061279
    2 PIWA2_1B_1_SEG_TO_XYZ              CHAR(21),                     00061379
    2 PIWA2_1B_1_BLOCKFACE_ID            CHAR(10),                     00061479
    2 PIWA2_1B_1_NBR_TRAVEL_LANES        CHAR(2),                      00061579
    2 PIWA2_1B_1_NBR_PARK_LANES          CHAR(2),                      00061679
    2 PIWA2_1B_1_NBR_TOTAL_LANES         CHAR(2),                      00061779
    2 PIWA2_1B_1_STREET_WIDTH_MAX        CHAR(3),                      00061879
    2 PIWA2_1B_1_FILL500                 CHAR(252),                    00061979
 /* 2 PIWA2_1B_1_FILL500 ** V16.4 **     CHAR(255) **/                 00062079
 /**2 PIWA2_1B_1_FILL500 ** V16.1  **    CHAR(271) **/                 00062173
 /**2 PIWA2_1B_1_FILL500 ** V15.3  **    CHAR(327) **/                 00062270
 /*****************************************************************/ 00062370
 /***                                                          ***/ 00062470
 /*** THE FOLLOWING FIELDS ARE AN ADDITION TO 1/1E              ***/ 00062570
 /*****************************************************************/ 00062670
    2 PIWA2_1B_1_REASON_CODE             CHAR(1),                      00062770
    2 PIWA2_1B_1_REASON_CODE_QUAL        CHAR(1),                      00062870
    2 PIWA2_1B_1_WARN_CODE               CHAR(2),                      00062970
    2 PIWA2_1B_1_RETURN_CODE             CHAR(2),                      00063070
    2 PIWA2_1B_1_NUM_X_STS_LO_END        CHAR(1),                      00063127
    2 PIWA2_1B_1_LO_B7SC(5)              CHAR(8),                      00063227
    2 PIWA2_1B_1_NUM_X_STS_HI_END        CHAR(1),                      00064027
    2 PIWA2_1B_1_HI_B7SC(5)              CHAR(8),                      00065027
    2 PIWA2_1B_1_LO_ST_NAME(5)           CHAR(32),                     00066027
    2 PIWA2_1B_1_HI_ST_NAME(5)           CHAR(32),                     00067027
    2 PIWA2_1B_1_BOE_B7SC                CHAR(8),                      00068027
    2 PIWA2_1B_1_BOE_ST_NAME             CHAR(32),                     00069027
    2 PIWA2_1B_1_FILL600                 CHAR(52),                     00069127
                                                                       00069227
 /*****************************************************************/ 00069627
 /***   THE FOLLOWING ARE FROM THE 1A WORK AREA 2                ***/ 00069727
```

```
 /***                                                                 ***/ 00069827
 /*************************************************************************/ 00069927
                                                                          00070027
   2 PIWA2_1B_1A_ACCESS_KEY                CHAR(21),                      00072027
   2 PIWA2_1B_1A_CONT_PARITY               CHAR(1), /*(DUP ADDR IND)*/    00073027
   2 PIWA2_1B_1A_LOW_HOUSENUM              CHAR(11), /* SORT FORMAT */    00074027
   2 PIWA2_1B_1A_BBL,                                                     00075027
     3 PIWA2_1B_1A_BBL_BORO                CHAR(1),                       00076027
     3 PIWA2_1B_1A_BLOCK                   CHAR(5),                       00077027
     3 PIWA2_1B_1A_LOT                     CHAR(4),                       00078027
   2 PIWA2_1B_1A_LOT_VER                   CHAR(1),                       00079027
   2 PIWA2_1B_1A_SCC                       CHAR(1),                       00079127
   2 FILLER_1B_1A_1                        CHAR(1),                       00079227
   2 PIWA2_1B_1A_GENERAL_LOT_INFO,                                        00079327
     3 PIWA2_1B_1A_RPAD_BLDG_CLASS         CHAR(2),                       00079427
     3 PIWA2_1B_1A_CORNER_CODE             CHAR(2),                       00079527
     3 PIWA2_1B_1A_NUM_OF_STRUCTURES       CHAR(4),                       00079627
     3 PIWA2_1B_1A_NUM_OF_BLOCKFACES       CHAR(2),                       00079727
     3 PIWA2_1B_1A_INTERIOR_FLAG           CHAR(1),                       00079827
     3 PIWA2_1B_1A_VACANT_FLAG             CHAR(1),                       00079927
     3 PIWA2_1B_1A_IRREG_LOT_FLAG          CHAR(1),                       00080027
   2 PIWA2_1B_1A_MARBLE_RIKERS_FLAG        CHAR(1),                       00081028
   2 PIWA2_1B_1A_OVERFLOW_FLAG             CHAR(1),                       00082072
   2 PIWA2_1B_1A_STROLL_KEY,                                              00083027
     3 PIWA2_1B_1A_STROLL_BORO             CHAR(1),                       00084027
     3 PIWA2_1B_1A_STROLL_5SC              CHAR(5),                       00085027
     3 PIWA2_1B_1A_STROLL_SIDE_OF_STR      CHAR(1),    /* L, R */         00086027
     3 PIWA2_1B_1A_STROLL_HI_HOUSENUM      CHAR(11), /* SORT FORMAT */    00087027
     3 FILLER_1B_1A_2                      CHAR(1),                       00088027
   2 FILLER_1B_1A_3                        CHAR(1),  /* FOR GSS USE*/     00089029
   2 PIWA2_1B_1A_BIN                       CHAR(7),                       00089127
   2 PIWA2_1B_1A_CONDO_FLAG                CHAR(1),                       00089227
   2 FILLER_1B_1A_4                        CHAR(1),                       00089327
   2 PIWA2_1B_1A_RPAD_CONDO_ID_NUM         CHAR(4),                       00089427
   2 PIWA2_1B_1A_CONDO_UNIT_ID_NUM         CHAR(7),                       00089527
   2 PIWA2_1B_1A_CONDO_BILL_BBL            CHAR(10),                      00089627
   2 PIWA2_1B_1A_CONDO_BILL_BBL_VER        CHAR(1),                       00089727
   2 PIWA2_1B_1A_CONDO_BILL_BBL_SCC        CHAR(1),                       00089827
   2 PIWA2_1B_1A_CONDO_LOW_BBL             CHAR(10),                      00089927
   2 PIWA2_1B_1A_CONDO_LOW_BBL_VER         CHAR(1),                       00090027
   2 PIWA2_1B_1A_CONDO_HIGH_BBL            CHAR(10),                      00091027
   2 PIWA2_1B_1A_CONDO_HIGH_BBL_VER        CHAR(1),                       00092027
   2 FILLER_1B_1A_5                        CHAR(15),                      00093027
   2 PIWA2_1B_1A_COOP_NUM                  CHAR(4),                       00094027
   2 PIWA2_1B_1A_SANBORN,                                                 00095027
     3 PIWA2_1B_1A_SANBORN_BORO            CHAR(1),                       00096027
     3 PIWA2_1B_1A_SANBORN_VOL             CHAR(3),                       00097027
     3 PIWA2_1B_1A_SANBORN_PAGE            CHAR(4),                       00098027
   2 PIWA2_1B_1A_COMMERC_DIST              CHAR(5),                       00099027
   2 PIWA2_1B_1A_DOF_MAP_BORO              CHAR(1),                       00099127
   2 PIWA2_1B_1A_DOF_MAP_SECVOL            CHAR(4),                       00099227
   2 PIWA2_1B_1A_DOF_MAP_PAGE              CHAR(4),                       00099327
   2 PIWA2_1B_1A_RESERVED                  CHAR(3),                       00099464
   2 PIWA2_1B_1A_LATITUDE                  CHAR(9),                       00099564
   2 PIWA2_1B_1A_LONGITUDE                 CHAR(11),                      00099664
   2 PIWA2_1B_1A_X_COORD                   CHAR(07),                      00099764
   2 PIWA2_1B_1A_Y_COORD                   CHAR(07),                      00099864
   2 PIWA2_1B_1A_BID                       CHAR(06),                      00099964
   2 PIWA2_1B_1A_TPAD_BIN_ST               CHAR(01), /*CURRENT STATUS*/ 00100064
   2 PIWA2_1B_1A_TPAD_NEW_BIN              CHAR(07), /*NEW BIN       */ 00100164
   2 PIWA2_1B_1A_TPAD_NEW_BIN_ST           CHAR(01), /*NEW BIN STATUS*/ 00100264
```

P2PL11AL COPY File

```
   2 PIWA2_1B_1A_TPAD_CONFLICT              CHAR(01), /*CONFLICT FLAG */ 00101027
   2 FILLER_1B_1A_7                         CHAR(09),                    00102027
   2 FILLER_1B_1A_8                         CHAR(8),  /*LGC M GSS USE*/  00103070
   2 PIWA2_1B_1A_REASON_CODE                CHAR(01),                    00104027
   2 PIWA2_1B_1A_REASON_CODE_QUAL           CHAR(01),                    00105052
   2 PIWA2_1B_1A_WARN_CODE                  CHAR(02),                    00106027
   2 PIWA2_1B_1A_RETURN_CODE                CHAR(02),                    00107027
   2 FILLER_1B_1A_9                         CHAR(108),                   00108027
   2 PIWA2_1B_1A_NUM_OF_ADDR                CHAR(4),                     00109027
   2 PIWA2_1B_1A_ADDR_LIST(21),                                          00109127
     3 PIWA2_1B_1A_LIST_LOW_HOUSENUM        CHAR(16), /*DISPLAY FORMAT*/ 00109227
     3 PIWA2_1B_1A_LIST_HI_HOUSENUM         CHAR(16), /*DISPLAY FORMAT*/ 00109327
     3 PIWA2_1B_1A_LIST_BORO                CHAR(1),                     00109427
     3 PIWA2_1B_1A_LIST_5SC                 CHAR(5),                     00109527
     3 PIWA2_1B_1A_LIST_LGC                 CHAR(2),                     00109627
     3 PIWA2_1B_1A_LIST_BIN                 CHAR(7),                     00109727
     3 PIWA2_1B_1A_LIST_SIDE_OF_STR         CHAR(1),  /* L, R */         00109827
     3 PIWA2_1B_1A_ADDR_TYPE                CHAR(1),  /*             */  00109927
                                                      /*BLANK = NORMAL*/ 00110027
     3 PIWA2_1B_1A_TPAD_STATUS              CHAR(1),                     00111027
     3 PIWA2_1B_1A_ST_NAME                  CHAR(32),                    00112027
     3 FILLER_1B_1A_10                      CHAR(34);                    00113027
                                                                         00120019
```

P2PL13S COPY FIle

```
/*****************************************************************/
/***  THIS IS THE PL/1 STRUCTURE FOR GEOSUPPORT SYSTEM PLATFORM  ***/
/***  INDEPENDENT WORK AREA 2 FOR FUNCTION: 3S.                  ***/
/***                                                             ***/
/**   COPY FILE - P2PL13S.                             09/17/97  ***/
/*****************************************************************/
DCL
 1 P2PL13S,
   2 PIWA2_3S_ACCESS_KEY,
     3 FILLER_GSS                    CHAR(2),
     3 PIWA2_3S_PORS_STNAME_IND      CHAR(1),/* P = PRIMARY */
                                             /* S = SECONDARY */
     3 PIWA2_3S_BORO                 CHAR(1),
     3 PIWA2_3S_5SC                  CHAR(5),
     3 PIWA2_3S_LGC                  CHAR(2),/* BLANK IF P IN */
     3 FILLER                        CHAR(10),/* POSITION 3 */
   2 PIWA2_3S_NUM_OF_INTERSECTS      CHAR(3),
   2 PIWA2_3S_LIST_OF_INTERSECTS(350),
     3 PIWA2_3S_MARBLE_RIKERS_FLAG   CHAR(1),
     3 PIWA2_3S_DISTANCE             CHAR(5),
     3 PIWA2_3S_GAP_FLAG             CHAR(1),
     3 FILLER_100                    CHAR(7),
     3 PIWA2_3S_NUM_OF_STR           CHAR(1),
     3 PIWA2_3S_B7SC(5)              CHAR(8);
```

P2PL1AP COPY File

```
/******************************************************************/
/***  THIS IS THE PL/1 STRUCTURE FOR GEOSUPPORT SYSTEM PLATFORM  ***/
/***  INDEPENDENT      WORK AREA 2 FOR FUNCTIONS: AP , AND APX.  ***/
/***  MARCH 2015 BY YNL V15.2 FOR ADDRESS POINT AND AP EXTENDED. ***/
/***  COPY FILE - P2PL1AP.                                       ***/
/******************************************************************/

DCL 1 PIWA2_FNAPX,
 /******************************************************************/
 /***             WORK AREA 2 FOR FUNCTION AP EXTENDED           ***/
 /***                                                            ***/
 /******************************************************************/


   2 PIWA2_APX_ACCESS_KEY              CHAR(21),
   2 PIWA2_APX_CONT_PARITY             CHAR(1), /*(OR DUP ADDR IND)*/
   2 PIWA2_APX_LOW_HOUSENUM            CHAR(11), /* SORT FORMAT */
   2 PIWA2_APX_BBL,
     3 PIWA2_APX_BBL_BORO              CHAR(1),
     3 PIWA2_APX_BLOCK                 CHAR(5),
     3 PIWA2_APX_LOT                   CHAR(4),
   2 FILLER_APX01                      CHAR(7),
   2 PIWA2_APX_NUM_OF_STRUCTURES       CHAR(4),
   2 FILLER_APX02                      CHAR(26),
   2 FILLER_GSS1                       CHAR(1),  /* FOR GSS USE*/
   2 PIWA2_APX_BIN                     CHAR(7),
   2 PIWA2_APX_CONDO_FLAG              CHAR(1),
   2 FILLER_APX03                      CHAR(1),
   2 PIWA2_APX_RPAD_CONDO_ID_NUM       CHAR(4),
   2 FILLER_APX04                      CHAR(7),
   2 PIWA2_APX_CONDO_BILL_BBL          CHAR(10),
   2 FILLER_APX05                      CHAR(2),
   2 PIWA2_APX_CONDO_LOW_BBL           CHAR(10),
   2 FILLER_APX06                      CHAR(1),
   2 PIWA2_APX_CONDO_HIGH_BBL          CHAR(10),
   2 FILLER_APX07                      CHAR(16),
   2 PIWA2_APX_COOP_NUM                CHAR(4),
   2 FILLER_APX08                      CHAR(22),
   2 PIWA2_APX_RESERVED                CHAR(03),
   2 PIWA2_APX_LATITUDE                CHAR(09),
   2 PIWA2_APX_LONGITUDE               CHAR(11),
   2 PIWA2_APX_X_COORD                 CHAR(07),
   2 PIWA2_APX_Y_COORD                 CHAR(07),
   2 FILLER_APX09                      CHAR(16),
   2 PIWA2_APX_AP_ID                   CHAR(09),
   2 FILLER_GSS2                       CHAR(8),  /* LGC - GSS USE*/
   2 PIWA2_APX_REASON_CODE             CHAR(01),
   2 PIWA2_APX_REASON_CODE_QUAL        CHAR(01),
   2 PIWA2_APX_WARN_CODE               CHAR(02),
   2 PIWA2_APX_RETURN_CODE             CHAR(02),
   2 FILLER_APX10                      CHAR(108),
   2 PIWA2_APX_NUM_OF_ADDR             CHAR(4),
   2 PIWA2_APX_ADDR_LIST(21),
     3 PIWA2_APX_LIST_LOW_HOUSENUM     CHAR(16), /*DISPLAY FORMAT*/
```

```
      3 PIWA2_APX_LIST_HI_HOUSENUM       CHAR(16), /*DISPLAY FORMAT*/   00034470
      3 PIWA2_APX_LIST_BORO              CHAR(1),                       00034570
      3 PIWA2_APX_LIST_5SC               CHAR(5),                       00034670
      3 PIWA2_APX_LIST_LGC               CHAR(2),                       00034770
      3 PIWA2_APX_LIST_BIN               CHAR(7),                       00034870
      3 PIWA2_APX_LIST_SIDE_OF_STR       CHAR(1),  /* L, R */           00034970
      3 PIWA2_APX_ADDR_TYPE              CHAR(1),  /*              */   00035070
                                                   /* BLANK = NORMAL*/  00035165
      3 FILLER_APX11                     CHAR(1),                       00035274
      3 PIWA2_APX_ST_NAME                CHAR(32),                      00035470
      3 FILLER_APX12                     CHAR(34);                      00035572
                                                                        00036065
                                                                        00037071
 DCL 1 PIWA2_FNAP BASED(ADDR(PIWA2_FNAPX)),                             00037171
  /*******************************************************************/ 00039071
  /***              WORK AREA 2 FOR FUNCTION AP                    ***/ 00040071
  /***                                                             ***/ 00050071
  /*******************************************************************/ 00060071
                                                                        00070071
                                                                        00080071
    2 PIWA2_AP_ACCESS_KEY                CHAR(21),                      00090071
    2 PIWA2_AP_CONT_PARITY               CHAR(1), /*(OR DUP ADDR IND)*/ 00100071
    2 PIWA2_AP_LOW_HOUSENUM              CHAR(11), /* SORT FORMAT */    00110071
    2 PIWA2_AP_BBL,                                                     00120071
      3 PIWA2_AP_BBL_BORO                CHAR(1),                       00130071
      3 PIWA2_AP_BLOCK                   CHAR(5),                       00140071
      3 PIWA2_AP_LOT                     CHAR(4),                       00150071
    2 FILLER_AP01                        CHAR(7),                       00160071
    2 PIWA2_AP_NUM_OF_STRUCTURES         CHAR(4),                       00170071
    2 FILLER_AP02                        CHAR(26),                      00180071
    2 FILLER_GSS1                        CHAR(1),  /* FOR GSS USE*/     00190071
    2 PIWA2_AP_BIN                       CHAR(7),                       00200071
    2 PIWA2_AP_CONDO_FLAG                CHAR(1),                       00210071
    2 FILLER_AP03                        CHAR(1),                       00220071
    2 PIWA2_AP_RPAD_CONDO_ID_NUM         CHAR(4),                       00230071
    2 FILLER_AP04                        CHAR(7),                       00240071
    2 PIWA2_AP_CONDO_BILL_BBL            CHAR(10),                      00250071
    2 FILLER_AP05                        CHAR(2),                       00260071
    2 PIWA2_AP_CONDO_LOW_BBL             CHAR(10),                      00270071
    2 FILLER_AP06                        CHAR(1),                       00280071
    2 PIWA2_AP_CONDO_HIGH_BBL            CHAR(10),                      00290071
    2 FILLER_AP07                        CHAR(16),                      00300071
    2 PIWA2_AP_COOP_NUM                  CHAR(4),                       00310071
    2 FILLER_AP08                        CHAR(18),                      00320072
    2 PIWA2_AP_DOF_MAP_PAGE              CHAR(4),                       00330071
    2 PIWA2_AP_RESERVED                  CHAR(03),                      00340071
    2 PIWA2_AP_LATITUDE                  CHAR(09),                      00350071
    2 PIWA2_AP_LONGITUDE                 CHAR(11),                      00360071
    2 PIWA2_AP_X_COORD                   CHAR(07),                      00370071
    2 PIWA2_AP_Y_COORD                   CHAR(07),                      00380071
    2 FILLER_AP09                        CHAR(16),                      00390073
    2 PIWA2_AP_AP_ID                     CHAR(09),                      00400073
    2 FILLER_GSS2                        CHAR(8),  /* LGC - GSS USE*/   00410071
    2 PIWA2_AP_NUM_OF_ADDR               CHAR(4),                       00470071
```

P2PL1AP COPY File

```
     2 PIWA2_AP_ADDR_LIST(21),                                               00480071
       3 PIWA2_AP_LIST_LOW_HOUSENUM       CHAR(16), /*DISPLAY FORMAT*/   00490071
       3 PIWA2_AP_LIST_HI_HOUSENUM        CHAR(16), /*DISPLAY FORMAT*/   00500071
       3 PIWA2_AP_LIST_BORO               CHAR(1),                       00510071
       3 PIWA2_AP_LIST_5SC                CHAR(5),                       00520071
       3 PIWA2_AP_LIST_LGC                CHAR(2),                       00530071
       3 PIWA2_AP_LIST_BIN                CHAR(7),                       00540071
       3 PIWA2_AP_LIST_SIDE_OF_STR        CHAR(1),  /* L, R */           00550071
       3 PIWA2_AP_ADDR_TYPE               CHAR(1),  /*               */  00560071
                                                    /* BLANK = NORMAL*/  00570071
       3 FILLER_AP10                      CHAR(4);                       00600071
                                                                         00610071
```

C COPY File (COW)

PAC COPY File

```
#ifndef GEOSUPPORT
#define GEOSUPPORT
#ifdef __cplusplus
extern "C" {
#endif
 /*********************************************************************/
 /*                                                                   */
 /*  Add new 2 bytes Bike Traffic Direction         TLV 12/2016 V17.1*/
 /*  Replaced sanit_reserved with sanit_bulk_pick_up TLV  9/2016 V16.4*/
 /*  Added 'unit' fields to WA1                     TLV  9/2016 V16.4*/
 /*  Add new 2 bytes Bike Lane and Max Str Width    TLV  9/2016 V16.4*/
 /*                                                                   */
 /*********************************************************************/
 /*                                                                   */
 /*            GeoSupport System C-Language Header File              */
 /*               for Platform-Independent Work Areas                */
 /*                                                                   */
 /*                 Last Updated: February 2016                      */
 /*                                                                   */
 /*********************************************************************/

 /*********************************************************************/
 /*                                                                   */
 /*      Group Items Used in Platform-Independent Work Area 1        */
 /*                                                                   */
 /*********************************************************************/
#define UNIT_SIZE     14               //unit type+identifier v16.4
#define UNITT_SIZE     4               //unit type            v16.4
#define UNITI_SIZE    10               //unit identfier       v16.4

typedef struct { char boro;              // Borough Code
                 char SC10[10];          // 10 Digit Street Code
                 char Street_name[32];   // Street Name
               } STREET;

typedef union { char bbl[10];            /* Borough-Block-Lot        */
                struct { char boro;      /* Borough                  */
                         char block[5];  /* Tax Block                */
                         char lot[4];    /* Tax Lot                  */
                       } cas;
              } BBL;

typedef struct {
  char unitt[UNITT_SIZE];                /* Output unit type  V16.4 */
  char uniti[UNITI_SIZE];                /* Output unit identifier  */
} UNIT, *PUNIT;                          /* Output unit       V16.4 */


typedef struct {
                 char func_code[2];      /* Function Code            */
                 char hse_nbr_disp[16];  /* House nbr in Disp form   */
                 char hse_nbr_hns[11];   /* House nbr in Sort form   */
                 char lohse_nbr_disp[16];/* Lo House nbr in Disp form*/
                 char lohse_nbr_hns[11]; /* Lo House nbr in Sort form*/
                 STREET sti[3];          /* Street Information       */
                 BBL bbli;               /* Borough-Block-Lot        */
                 char filler01;          /* Filler-Tax Lot Version # */
                 char bld_id[7];         /* Building Id Number (BIN) */
                 char comp_direction;    /* Compass Direction        */
                 char comp_direction2;   /* Compass Direction-Fn 3S  */
                 char node[7];           /* Node input for Fn2       */
```

```
                char platform_ind;      /* Must be equal to 'C'     */
                char zipin[5];          /* Input Zip Code           */
                char unit[UNIT_SIZE];   /* Input unit          V16.4*/
                char filler03[82];      /* Future Use               */

                       /* Flags that influence processing */

                char long_WA_flag;      /* Long Work Area 2 Flag     */
                                        /* Next 2 fields not impl    */
                char hse_nbr_justify;   /* Hse Nbr Justification Flg */
                char hnl[2];            /* Hse Nbr Normalization len */
                char hse_nbr_over_flag; /* Reserved for GSS Use      */
                char snl[2];            /* Street Name Norm Length   */
                char st_name_norm;      /* Street Name Normalization */
                                        /*   Format Flag             */
                char expanded_format;   /* Expanded Format Flag      */
                char roadbedrequest;    /* Roadbed Request Switch    */
                char res_01;            /* Reserved for Internal Use */
                char segaux_switch;     /* Request Auxiliary Segment */
                                        /* Information               */
                char browse_flag;       /* Determines if browse      */
                                        /* displays all or some names*/
                char real_street_only;  /* Display real streets only */
                char tpad_switch;       /* TPAD read for PAD process */
                char mode_switch;       /* Mode Flag                 */
                                        /* X = Extended WA2          */
                char wto_switch;        /* WTOs Switch N = No WTOs  */
                                        /*   should be issued       */
                char filler04[29];      /* Future Use                */
               } INWA1;

typedef struct {
                char boro_name[9];      /* Boro Name of First Street*/
                char hse_nbr_disp[16];  /* House nbr in Normalized  */
                                        /* Display form             */
                char hse_nbr_hns[11];   /* House number in Sort Form*/
                STREET sto[3];          /* Street Information       */
                BBL bblo;               /* Boro(len=1), Block(len=5)*/
                                        /* and Lot (len=4)-Normalizd*/
                char filler05;          /* Filler-Tax Lot Version # */
                char lo_hse_nbr_disp[16]; /* low Hse nbr - display  */
                char lo_hse_nbr_hns[11]; /* low Hse nbr - sort form */
                char bin[7];            /* Building Id Number       */
                char attrbytes[3];      /* NAP Identification Number*/
                char reason_code_2;     /* 2nd Reason Code          */
                char reason_code_qual_2;/* 2nd Reason Code Qualifier*/
            //  char filler08_2;        /* Future Use               */
                char warn_code_2[2];    /* 2nd Warning Return Code  */
                char ret_code_2[2];     /* 2nd GeoSupport Return Cod*/
                char msg_2[80];         /* 2nd GeoSupport Message   */
                char node[7];           /* Node output for Fn 2     */
                UNIT units;             /* Output unit Sort    V16.4*/
                char unitd[UNIT_SIZE];  /* Output unit Display V16.4*/
                char filler07[11];      /* Future Use               */
                char nap_id_nbr[6];     /* NAP Id Nbr - Not Impl.   */
                char int_use1;          /* Internal Use Only        */
                char reason_code;       /* Reason Code              */
                char reason_code_qual;  /* Reason Code Qualifier    */
            //  char filler08;          /* Future Use               */
                char warn_code[2];      /* Warning Ret. Code-NotImpl*/
                char ret_code[2];       /* GeoSupport Return Code   */
```

```
                char msg[80];           /* GeoSupport Message       */
                char nbr_names[2];      /* Nbr of Sreet Names       */
                char B_7SC[10][8];      /* 10 Boro+7-digit st codes */
                char st_names[10][32];  /* Up to 10 Street Names    */
              } OUTWA1;

 /*******************************************************************/
 /*                                                                 */
 /*                Platform-Independent Work Area 1                 */
 /*                                                                 */
 /*******************************************************************/

typedef struct { INWA1 input;
                OUTWA1 output;
              } C_WA1;

 /******************************************************************/
 /*                                                                */
 /*     Group Items Used in Platform-Independent Work Area 2's     */
 /*                                                                */
 /******************************************************************/

typedef struct {                        /* LION KEY                 */
                char lion_boro;         /* LION Borough Code        */
                                        /* Differs from GeoSupport  */
                                        /* Borough Codes            */
                char face[4];           /* Face Code                */
                char seq[5];            /* Sequence Number          */
              } LION;

typedef struct {
                char nbr_sts;           /* Number of streets */
                char B5SC[5][6];        /* Boro+5 Street Code*/
              } St_list;

typedef struct {                   /* used for longwa for TPAD */
  char bin[7];                            /* BIN              */
  char status;                            /* Status of BIN    */
} TPAD_LIST;

typedef struct {
  TPAD_LIST   tpadlist[2187];           /* or BINs + Status Byte  */
  char        fill[4];
} TPADLST;

typedef struct { char lo_hse_nbr[16];   /* Low House Nbr-Disply form*/
                char hi_hse_nbr[16];    /* Hi House Nbr-Display form*/
                char B5SC[6];           /* Boro & 5 digit Str Code  */
                char lgc[2];            /* DCP Preferred Street LGC */
                char bld_id[7];         /* BIN of address range     */
                char sos_ind;           /* Side of Street Indicator */
                char adr_type;          /* Address type - P=NAP,    */
                                        /*    B=NAB, Blank=Normal   */
                char TPAD_bin_status;   /* Status of Job            */
                char filler01[3];       /* Future Use               */
              } ADDR_RANGE;

typedef struct {
  char lo_hse_nbr[16];                  /* Low House Nbr-Disply form*/
  char hi_hse_nbr[16];                  /* Hi House Nbr-Display form*/
  char B5SC[6];                         /* Boro & 5 digit Str Code  */
```

```
  char lgc[2];                          /* DCP Preferred Street LGC */
  char bld_id[7];                       /* BIN of address range     */
  char sos_ind;                         /* Side of Street Indicator */
  char adr_type;                        /* Address type             */
                                        /* (Blank = Normal)         */
  char TPAD_bin_status;                 /* Status of BIN from TPAD  */
  char st_name[32];                     /* Street Name              */
  char filler01[34];                    /* Future Use               */
} ADDR_RANGE_1AX;

typedef struct { char lo_hse_nbr[16];   /* Low House Nbr-Disply form*/
                 char hi_hse_nbr[16];   /* Hi House Nbr-Display form*/
                 char B5SC[6];          /* Boro & 5 digit Str Code  */
                 char lgc[2];           /* DCP Preferred Street LGC */
                 char bld_id[7];        /* BIN of address range     */
                 char sos_ind;          /* Side of Street Indicator */
                 char adr_type;         /* Address type - V=VANITY  */
                                        /*   Blank=Normal           */
                 char filler02;         /* filler for func AP       */
                 char filler01[3];      /* Future Use               */
               } ADDR_RANGE_AP;

typedef struct { char lo_hse_nbr[16];   /* Low House Nbr-Disply form*/
                 char hi_hse_nbr[16];   /* Hi House Nbr-Display form*/
                 char B5SC[6];          /* Boro & 5 digit Str Code  */
                 char lgc[2];           /* DCP Preferred Street LGC */
                 char bld_id[7];        /* BIN of address range     */
                 char sos_ind;          /* Side of Street Indicator */
                 char adr_type;         /* Address type - V=VANITY  */
                                        /*    Blank=Normal          */
                 char filler02;         /* filler for func APX      */
                 char st_name[32];      /* Street Name              */
                 char filler01[34];     /* Future Use               */
               } ADDR_RANGE_APX;

typedef struct { char sanborn_boro;     /* Sanborn Borough Code     */
                 char sanborn_vol[3];   /* Sanborn Volume           */
                 char sanborn_page[4];  /* Sanborn Page             */
               } SANBORN;

typedef struct { char com_dist[3];      /* Community District       */
                 char lo_hse_nbr[16];   /* Low House Nbr-Disply form*/
                 char hi_hse_nbr[16];   /* Hi House Nbr-Display form*/
                 char filler01[32];     /* Future Use               */
                 char iaei;             /* Interim Ass'tance Elig   */
                                        /* Indicator                */
                 char zip_code[5];      /* Zip code for Street seg. */
                 char health_area[4];   /* Health Area        */
                 char police_boro_com;  /* Police Patrl Boro Command*/
                 char police_pre[3];    /* Police Precinct          */
                 char fire_divisn[2];   /* Fire Division            */
                 char fire_bat[2];      /* Fire Battalion           */
                 char fire_co_type;     /* Fire Company Type        */
                 char fire_co_nbr[3];   /* Fire Company Number      */
                 char com_schl_dist[2]; /* Community School District*/
                 char dynam_blk[3];     /* Atomic Polygon           */
                                        /* (was Dynamic Block)      */
                 char ED[3];            /* ED                       */
                 char AD[2];            /* AD                       */
                 char police_pat_boro[2];/* Police Patrol Borough   */
           //    char instruc_div[2];   /* Instructional Division   */
```

```
                char filler02;          /* Future Use              */
                char boro;              /* Used for the NTA name   */
                char cen_tract_90[6];   /* 1990 Census Tract       */
                char cen_tract_10[6];   /* 2010 Census Tract       */
                char cen_blk_10[4];     /* 2010 Census Block       */
                char cen_blk_10_sufx;   /* 2010 Census Block Suffix */
                                        /* 2010 Suffix Not Implement*/
                char cen_tract_2000[6]; /* 2000 Census Tract       */
                char cen_blk_2000[4];   /* 2000 Census Block       */
                char cen_blk_2000_sufx; /* 2000 Census Block Suffix */
           //   char blockface_id[7];   /* "Blockface ID" became   */
                char filler03[7];       /* filler   V16.1          */
                char nta[4];            /* Neighborhood Tabulation  */
                                        /* Area                    */
                char filler04[8];       /* Future Use              */
              } SEGSIDE;

typedef struct { char mh_ri_flag;       /* Marble Hill/Rikers Island*/
                                        /* Alternative Boro flag   */
                char len[5];            /* Len in ft from prev node */
                char gap_flag;          /* Gap Flag                */
                char node_nbr[7];       /* Node Number of Intersect */
                char nbr_streets;       /* Nbr streets intersecting */
                char B7SC[5][8];        /* Lowest B7SC at Intersect */
                                        /* is first and 2nd Lowest  */
                                        /* B7SC is next. Remaining  */
                                        /* B7SC's in no particular  */
                                        /* order.                  */
              } CROSS_STRS;

 /*******************************************************************/
 /*                                                                 */
 /*        Platform-Independent Work Area 2 for Function 1          */
 /*                                                                 */
 /*******************************************************************/

typedef struct { char filler01[21];
                char cont_parity_ind;   /* Continuous Parity Ind.   */
                                        /* or Duplicate Address Ind.*/
                char lo_hse_nbr[11];    /* Lo House nbr in Sort form*/
                char hi_hse_nbr[11];    /* Hi House Nbr in Sort form*/
                char lgc[2];            /* DCP or BOE Preferred LGC */
                St_list st[2];          /* 1=Low and 2=High         */
                                        /* Nbr of cross streets at  */
                                        /* low house nbr end of st  */
                                        /* B5SCs of lo end cross st */
                LION key;               /* LION Key - 10 Characters */
                char sagr_flag;         /* Special Address Generated*/
                                        /* Record flag              */
                char sos_ind;           /* Side of Street Indicator */
                char seg_len[5];        /* Segment Length in Feet   */
                char coord[3][7];       /* 1 = X coordinate,        */
                                        /* 2 = Y coordinate,        */
                                        /* 3 = Z coordinate, Not Imp*/
                char iaei;              /* Interim Ass'tance Elig   */
                                        /* Indicator                */
                char mh_ri_flag;        /* Marble Hill/Rikers Island*/
                                        /* Alternative Borough flag */
                char DOT_slca;          /* DOT St Lght Contractr Are*/
                char com_dist[3];       /* Community District       */
                                        /* Position 0 contains the  */
```

```
                              /* CD Boro Code & Pos 1 & 2,*/
                              /* the district number      */
        char zip_code[5];     /* Zip code for st seg      */

  /* Following seven fields used for Function 1E only*/

        char ed[3];           /* Election District        */
        char ad[2];           /* Assembly District        */
        char sped_flag;       /* Split Elect District Flag*/
        char congress_dist[2];  /* Congressional District   */
        char state_sen_dist[2]; /* State Senatorial District*/
        char civil_court[2];    /* Civil Court District     */
        char city_council[2];   /* City Council District    */
        char health_cent[2];    /* Health Center Dictr*/
        char health_area[4];    /* Health Area        */
        char sanit_dist[3];     /* Sanitation District      */
        char sanit_sub_sect[2]; /* Sanit Collect Scheduling */
                                /* Section and Subsection   */
        char sanit_reg_pick_up[5]; /* Regular Pick up       */
        char sanit_recycle[3];  /* Recycle pick up          */
        char police_boro_com;   /* Police Patrol Boro Commnd*/
        char police_pre[3];     /* Police Precinct          */
        char fire_divisn[2];    /* Fire Division            */
        char fire_bat[2];       /* Fire Battalion           */
        char fire_co_type;      /* Fire Company Type        */
        char fire_co_nbr[3];    /* Fire Company Number      */
        char filler_scsd;       /* Was Split Com School     */
                                /* District Flag            */
        char com_schl_dist[2];  /* Community School District*/
        char dynam_blk[3];      /* Atomic Polygon           */
                                /* (was Dynamic Block)      */
        char police_pat_boro[2];/* Police Patrol Borough    */
//      char filler_indv[2];    /*                          */
//      char instruc_div[2];    /* Instructional Division   */
        char feature_type;      /* Feature Type Code        */
        char segmenttypecode;   /* Segment Type Code        */
        char alx;               /* Segment split by Alley(s)*/
                                /* A=Split by Alley(s)      */
                                /* X=Cross Streets Modified */
        char coincident_seg_cnt; /* Coincident Segment      */
                                /*    Counter               */
        char filler02[2];       /* Future Use               */
        char boro_of_cen_tract; /* boro of Census Tract used*/
        char cen_tract_90[6];   /* 1990 Census Tract        */
        char cen_tract_10[6];   /* 2010 Census Tract        */
        char cen_blk_10[4];     /* 2010 Census Block        */
        char cen_blk_10_sufx;   /* 2010 Census Block Suffix */
                                /* 2010 Suffix Not Implement*/
        char cen_tract_2000[6]; /* 2000 Census Tract        */
        char cen_blk_2000[4];   /* 2000 Census Block        */
        char cen_blk_2000_sufx; /* 2000 Census Block Suffix */
        char nta[4];            /* Neighborhood Tabulation  */
                                /* Area                     */
        char sanit_snow_priority;/* Sanitation Street Snow  */
                                /* Priority (P,S,T,V)       */
        char sanit_org_pick_up[5];/* Organics Pick up       */
        char sanit_bulk_pick_up[5]; /* Bulk Pick Up V16.4   */
      //char sanit_reserved[5]; /* Reserved for Possible    */
        char hurricane_zone[2]; /* Hurricane Evacuation Zone*/
        char filler04[11];      /* Future Use               */
        char true_hns[11];      /* Underlying HNS           */
```

```
                char true_b7sc[8];      /* True Boro 7 Street Code  */
                char seg_id[7];         /* Segment Identifier       */
                char curv_flag;         /* Curve Flag               */
              } C_WA2_F1;

 /*******************************************************************/
 /*                                                                 */
 /*      Platform-Independent Work Area 2 for Function 1V/1W        */
 /*                                                                 */
 /*******************************************************************/

typedef struct {
  C_WA2_F1 c_wa2_f1;
  char int_use[8];                      /* valid on street lgcs     */
  char boe_lgc;                         /* BOE LGC Pointer          */
  char seg_azm[3];                      /* Segment Azimuth          */
  char seg_orient;                      /* Segment Orientation      */
  char seg_coord[2][3][7];              /* Spatial Coordinates of   */
                                        /* Segment                  */
  char cc_coord[3][7];                  /* Spatial Coordinates of   */
                                        /* Center of Curvature      */
  char radius[7];                       /* Radius of Circle         */
  char cc_sos;                          /* Center of Curvature Side */
                                        /* of Street Flag           */
  char node_angles[2][5];               /* Angle to FROM & TO Nodes */
  char nodes[2][7];                     /* LION Node Numbers of     */
                                        /* FROM and TO nodes        */
  LION LION_key;                        /* LION Key for Vanity      */
                                        /* Addresses                */
  char LION_sos_ind;                    /* LION SoS Indicator       */
  char split_low_hn[11];                /* Split Low House Number   */
  char traffic_dir;                     /* Traffic Direction        */
  char turn_restricts[10];              /* Turn restrictions        */
  char curve_fraction[3];               /*                          */
  char roadway_type[2];                 /* Roadway Type             */
  char physical_id[7];                  /*                          */
  char generic_id[7];                   /*                          */
  char filler03[7];                     /* DCP internal use         */
  char filler04[7];                     /* DCP internal use         */
//char blockface_id[7];      /** V16.1 **  blockface id 10 bytes long*/
  char bike_lane_2[2];                  /*Bike Lane has 2 bytes     */
                                        /* numeric value moved in   */
                                        /* wa2 of F1EX              */
  char bike_traffic_dir[2];             //V17.1 Bike Traffic Direction
  char filler05[3];                     // V17.1
  char status;                          /*                          */
  char str_width[3];                    /*                          */
  char str_width_irregular;             /* Yes or No                */
  char bike_lane;                       /*                          */
  char fcc[2];                          /* Federal Classification Cd*/
  char row_type;                        /*                          */
  char lgcs_additional[5][2];           /* additional lgcs for on st*/
} C_WA2_F1V;

 /*******************************************************************/
 /*                                                                 */
 /*   Platform-Independent Work Area 2 for Function 1E Extended     */
 /*                                                                 */
 /*******************************************************************/
typedef struct {                        /* Fn 1E with extra bytes   */
  C_WA2_F1V cwa2f1v;
```

```
  char legacy_segid[7];                /*                           */
  char from_preferred_lgcs[5][2];      /*                           */
  char to_preferred_lgcs[5][2];        /*                           */
  char from_additional_lgcs[5][2];     /*                           */
  char to_additional_lgcs[5][2];       /*                           */
  char no_x_st_calc_flg;               /* No Cross Street           */
                                       /* Calculation Flag          */
  char indiv_seg_len[5];               /* Individual Segment Length*/
                                       /* Used with Above Flag      */
  char nta_name[75];                   /* Neighborhood Tabulation   */
                                       /* Area Name                 */
  char USPS_city_name[25];             /* USPS Preferred City Name */
  char latitude[9];                    /* Latitude calc from X-Y    */
  char longitude[11];                  /* Longitude calc from X-Y   */
  char seg_from_node[7];               /* Segment from node         */
  char seg_to_node[7];                 /* Segment to node           */
  char seg_from_xyz[3][7];             /* XYZ coord (segment from) */
  char seg_to_xyz[3][7];               /* XYZ coord (segment to)    */
  char blockface_id[10];               /* NEW location V16.1        */
                                       /* because of length changed*/
  char nbr_travel_lanes[2];            /* nbr of traveling lanes    */
  char nbr_park_lanes[2];              /* nbr of parking lanes      */
  char nbr_total_lanes[2];             /* total nbr of lanes        */
  char str_width_max[3];               /*street width maximum       */
  char filler6[252];                   /* Future Use                */
  char reason_code;                    /* Reason Code               */
  char reason_code_qual;               /* Reason Code Qualifier     */
  char warn_code[2];                   /* Warning Return Code       */
  char ret_code[2];                    /* GeoSupport Return Code    */
  char nbr_names_lo;                   /* Nbr of St Names Low End   */
  char B7SC_lo[5][8];                  /* 5(Boro+7-digit) st codes */
  char nbr_names_hi;                   /* Nbr of St Names High End */
  char B7SC_hi[5][8];                  /* 5 Boro+7-digit st codes   */
  char st_names_lo[5][32];             /* Up to 5 St Names Low End */
  char st_names_hi[5][32];             /* Up to 5 St Names High End*/
  char BOE_B5SC[6];                    /* BOE Preffered B7SC        */
  char BOE_lgc[2];                     /* BOE Preffered B7SC        */
  char BOE_st_name[32];                /* BOE Preffered Street Name*/
  char filler7[52];                    /* Future Use                */
} C_WA2_F1EX;                          /* Fn 1EX with filler        */

 /*******************************************************************/
 /*                                                                 */
 /*   Platform-Independent Work Area 2 for Function 1A Extended     */
 /*                                                                 */
 /*******************************************************************/
typedef struct {                       /* Fn 1A with extra bytes    */
  char filler01[21];
  char cont_parity_ind;                /* Continuous Parity Ind     */
                                       /* or Duplicate Address Ind */
  char lo_hse_nbr[11];                 /* Low House Number-Sort Frm*/

  BBL  bbl;                            /* Borough-Block-Lot         */
  char filler02;                       /* Reserved for Tax Lot Ver#*/
  char RPAD_scc;                       /* RPAD Self_Check Code(SCC)*/
  char filler03;
  char RPAD_lucc[2];                   /* RPAD Land Use Class. Code*/
  char corner[2];                      /* Corner Code               */
  char nbr_blds[4];                    /* Nbr of buildings on lot   */
  char nbr_str[2];                     /* Nbr Street Frontages      */
  char inter_flag;                     /* Interior Lot Flag         */
```

```
  char vacant_flag;                    /* Vacant Lot Flag         */
  char irreg_flag;                     /* Irregularly-Shaped Lot Fl*/
  char mh_ri_flag;                     /* Marble Hill/Rikers Island*/
  char adr_range_overflow;             /* Addr Rnge Lst Ovrflow Flg*/
  char stroll_key[18];                 /* Strolling key Not Implem */
  char filler04;
  char res_internal_use;               /* Reserved for Internal Use*/
  char bld_id[7];                      /* Building Ident. Number   */
                                       /* (BIN) of Input Address of*/
                                       /* Existing Building, If any*/
  char condo_flag;                     /* Condominium Flag         */
  char filler05;                       /* Future Use               */
  char condo_id[4];                    /* RPAD Condo Id Number     */
  char condo_unit_id[7];               /* Condo Unit Id Nbr-Not Imp*/
  BBL  condo_bill_bbl;                 /* Condo Billing BBL        */
  char filler06;                       /* Reserved for Tax Lot Ver */
  char condo_scc;                      /* Self-Check Code          */
  BBL  condo_lo_bbl;                   /* Low BBL of Condo         */
  char filler07;                       /* Reserved for Tax Lot Ver */
  BBL  condo_hi_bbl;                   /* High BBL of Condo        */
  char filler08;                       /* Reserved for Tax Lot Ver */
  char filler09[15];
  char co_op_nbr[4];                   /* Co-op Number             */
  SANBORN San;                         /* Sanborn Information      */
  char business_area[5];               /* Business Area            */
  char tax_map_nbr[5];                 /* Tax Map Nbr-Sect and Vol */
  char filler10[4];                    /* Tax Map Nbr Page Not Impl*/
  char filler11[3];
  char latitude[9];                    /* Latitude calc from X-Y   */
  char longitude[11];                  /* Longitude calc from X-Y  */
  char coord[2][7];                    /* 1 = X coordinate-Annotat */
                                       /* 2 = Y coordinate-Annotat */
  char bid_id[6];                      /* Business Improvement     */
                                       /* District ID (BID)        */

  char TPAD_bin_status;                /* Status of Demolition job */
                                       /* on Existing BIN of Input */
                                       /* Address                  */
  char TPAD_new_bin[7];                /* BIN for New Building     */
  char TPAD_new_bin_status;            /* Status of New Buildng BIN*/
  char TPAD_conflict_flag;             /* From TPAD                */
  char filler12[9];

  char int_use[8];                     /* Internal Use             */
  char reason_code;                    /* Reason Code              */
  char reason_code_qual;               /* Reason Code Qualifier    */
  char warn_code[2];                   /* Warning Return Code      */
  char ret_code[2];                    /* GeoSupport Return Code   */
  char filler14[108];
  char nbr_addr[4];                    /* Nbr of Addr Ranges or Nbr*/
                                       /* of BINs in List          */
  ADDR_RANGE_1AX addr_range_1ax[21];
} C_WA2_F1AX;                          /* Fn 1AX with filler       */
 /*****************************************************************/
 /*                                                               */
 /*      Platform-Independent Work Area 2 for Function 1B         */
 /*                                                               */
 /*****************************************************************/

typedef struct {                       /* Function 1B              */
  C_WA2_F1EX cwa2f1ex;                 /* 1EX Component            */
```

```
  C_WA2_F1AX cwa2f1ax;                    /* 1AX Component            */
} C_WA2_F1B;                              /* Fn 1B                    */

 /*******************************************************************/
 /*                                                                 */
 /*      Platform-Independent Work Area 2 for Function 1A           */
 /*                                                                 */
 /*******************************************************************/

typedef struct {
   char filler01[21];
   char cont_parity_ind;   /* Continuous Parity Ind    */
                           /* or Duplicate Address Ind */
   char lo_hse_nbr[11];    /* Low House Number-Sort Frm*/

   BBL bbl;                /* Borough-Block-Lot        */
   char filler02;          /* Reserved for Tax Lot Ver#*/
   char RPAD_scc;          /* RPAD Self_Check Code(SCC)*/
   char filler03;
   char RPAD_lucc[2];      /* RPAD Land Use Class. Code*/
   char corner[2];         /* Corner Code              */
   char nbr_blds[4];       /* Nbr of buildings on lot  */
   char nbr_str[2];        /* Nbr Street Frontages     */
   char inter_flag;        /* Interior Lot Flag        */
   char vacant_flag;       /* Vacant Lot Flag          */
   char irreg_flag;        /* Irregularly-Shaped Lot Fl*/
   char mh_ri_flag;        /* Marble Hill/Rikers Island*/
   char adr_range_overflow;/* Addr Rnge Lst Ovrflow Flg*/
   char stroll_key[18];    /* Strolling key            */
   char filler04;
   char res_internal_use;  /* Reserved for Internal Use*/
   char bld_id[7];         /* Building Ident. Number   */
                           /* (BIN) of Input Address of*/
                           /* Existing Building, If any*/
   char condo_flag;        /* Condominium Flag         */
   char filler05;          /* Future Use               */
   char condo_id[4];       /* RPAD Condo Id Number     */
   char condo_unit_id[7];  /* Condo Unit Id Nbr-Not Impl*/
   BBL  condo_bill_bbl;    /* Condo Billing BBL        */
   char filler06;          /* Reserved for Tax Lot Ver */
   char condo_scc;         /* Self-Check Code          */
   BBL  condo_lo_bbl;      /* Low BBL of Condo         */
   char filler07;          /* Reserved for Tax Lot Ver */
   BBL  condo_hi_bbl;      /* High BBL of Condo        */
   char filler08;          /* Reserved for Tax Lot Ver */
   char filler09[15];
   char co_op_nbr[4];      /* Co-op Number             */
   SANBORN San;            /* Sanborn Information      */
   char business_area[5];  /* Business Area            */
   char tax_map_nbr[5];    /* Tax Map Nbr-Sect and Vol */
   char filler10[4];       /* Tax Map Nbr Page Not Impl*/
   char filler11[3];
   char latitude[9];       /* Latitude calc from X-Y   */
   char longitude[11];     /* Longitude calc from X-Y  */
   char coord[2][7];       /* 1 = X coordinate-Annotat */
                           /* 2 = Y coordinate-Annotat  */
   char bid_id[6];         /* Business Improvement Dist */
                           /* District ID (BID)         */
   char TPAD_bin_status;   /* Existing BIN of Input Addr*/
   char TPAD_new_bin[7];    /* BIN for New Building job */
   char TPAD_new_bin_status;/* Status of New Buildng BIN*/
```

```
   char TPAD_conflict_flag; /* From TPAD              */
   char filler12[9];
   char int_use[8];        /* Internal Use           */
   char nbr_addr[4];       /* Nbr of Addr Ranges or Nbr*/
                           /* of BINs in List        */
   union {
           ADDR_RANGE addr_range[21]; /* List of Addr  */
           TPADLST   tpad_list;       /*or BINs + Status Byte */
           char bin_list[2500][7];    /* or BINs*/
         } bar;
} C_WA2_F1A;
 /*********************************************************************/
 /*                                                                   */
 /*       Platform-Independent Work Area 2 for Function AP            */
 /*                                                                   */
 /*********************************************************************/

typedef struct {
   char filler01[21];
   char cont_parity_ind;   /* Continuous Parity Ind    */
                           /* or Duplicate Address Ind */
   char lo_hse_nbr[11];    /* Low House Number-Sort Frm*/

   BBL bbl;                /* Borough-Block-Lot        */
   char filler02;          /* Reserved for Tax Lot Ver#*/
   char fil_RPAD_scc;      /* filler for func AP       */
   char filler03;
   char fil_RPAD_lucc[2];  /* fillers for func AP      */
   char fil_corner[2];     /* fillers for func AP      */
   char nbr_blds[4];       /* Nbr of buildings on lot  */
   char fil_nbr_str[2];    /* fillers for func AP      */
   char fil_inter_flag;    /* filler for func AP       */
   char fil_vacant_flag;   /* filler for func AP       */
   char fil_irreg_flag;    /* filler for func AP       */
   char fil_mh_ri_flag;    /* filler for func AP       */
   char fil_adr_range_overflow;/* filler for func AP   */
   char fil_stroll_key[18];/* fillers for func AP      */
   char filler04;
   char res_internal_use;  /* Reserved for Internal Use*/
   char bld_id[7];         /* Building Ident. Number   */
                           /* (BIN) of Input Address of*/
                           /* Existing Building,       */
   char condo_flag;        /* Condominium Flag         */
   char filler05;          /* Future Use               */
   char condo_id[4];       /* RPAD Condo Id Number     */
   char filler_unit_id[7]; /* Condo Unit Id Nbr-Not Impl*/
   BBL  condo_bill_bbl;    /* Condo Billing BBL        */
   char filler06;          /* Reserved for Tax Lot Ver */
   char fil_condo_scc;     /* filler for func AP       */
   BBL  condo_lo_bbl;      /* Low BBL of Condo         */
   char filler07;          /* Reserved for Tax Lot Ver */
   BBL  condo_hi_bbl;      /* High BBL of Condo        */
   char filler08;          /* Reserved for Tax Lot Ver */
   char filler09[15];
   char co_op_nbr[4];      /* Co-op Number             */
   char fil_sanborn[8];    /* fillers for func AP      */
   char fil_business_area[5];  /* fillers for func AP  */
   char fil_tax_map_nbr[5];    /* fillers for func AP  */
   char filler10[4];
   char filler11[3];
   char latitude[9];       /* Latitude calc from X-Y   */
```

```
   char longitude[11];     /* Longitude calc from X-Y  */
   char coord[2][7];       /* 1 = X coordinate from AP */
                           /* 2 = Y coordinate from AP */
   char fil_bid_id[6];          /* fillers for func AP */
   char fil_TPAD_bin_status;    /* fillers for func AP */
   char fil_TPAD_new_bin[7];    /* fillers for func AP */
   char fil_TPAD_new_bin_status;/* filler for func AP  */
   char fil_TPAD_conflict_flag; /* filler for func AP  */
   char ap_id[9];               /* Address Point Id    */
   char int_use[8];             /* Internal Use        */
   char nbr_addr[4];            /* Nbr of Addr = 0001  */

   union {
           ADDR_RANGE_AP addr_range_ap[21]; /* List of Addr  */
           char fil_tpad_list[2191];
           char fil_bin_list[2500][7];
         } bar;
} C_WA2_FAP;

 /*******************************************************************/
 /*                                                                 */
 /*      Platform-Independent Work Area 2 for Function APX          */
 /*                                                                 */
 /*******************************************************************/

typedef struct {
   char filler01[21];      /* Fn AP with extra bytes   */
   char cont_parity_ind;   /* Continuous Parity Ind    */
                           /* or Duplicate Address Ind */
   char lo_hse_nbr[11];    /* Low House Number-Sort Frm*/

   BBL bbl;                /* Borough-Block-Lot        */
   char filler02;          /* Reserved for Tax Lot Ver#*/
   char fil_RPAD_scc;      /* filler for func AP       */
   char filler03;
   char fil_RPAD_lucc[2];  /* fillers for func AP      */
   char fil_corner[2];     /* fillers for func AP      */
   char nbr_blds[4];       /* Nbr of buildings on lot  */
   char fil_nbr_str[2];    /* fillers for func AP      */
   char fil_inter_flag;    /* filler for func AP       */
   char fil_vacant_flag;   /* filler for func AP       */
   char fil_irreg_flag;    /* filler for func AP       */
   char fil_mh_ri_flag;    /* filler for func AP       */
   char fil_adr_range_overflow;/* filler for func AP   */
   char fil_stroll_key[18];/* fillers for func AP      */
   char filler04;
   char res_internal_use;  /* Reserved for Internal Use*/
   char bld_id[7];         /* Building Ident. Number   */
                           /* (BIN) of Input Address of*/
                           /* Existing Building,       */
   char condo_flag;        /* Condominium Flag         */
   char filler05;          /* Future Use               */
   char condo_id[4];       /* RPAD Condo Id Number     */
   char filler_unit_id[7]; /* Condo Unit Id Nbr-Not Impl*/
   BBL  condo_bill_bbl;    /* Condo Billing BBL        */
   char filler06;          /* Reserved for Tax Lot Ver */
   char fil_condo_scc;     /* filler for func AP       */
   BBL  condo_lo_bbl;      /* Low BBL of Condo         */
   char filler07;          /* Reserved for Tax Lot Ver */
   BBL  condo_hi_bbl;      /* High BBL of Condo        */
   char filler08;          /* Reserved for Tax Lot Ver */
```

```
   char filler09[15];
   char co_op_nbr[4];      /* Co-op Number             */
   char fil_sanborn[8];    /* fillers for func AP      */
   char fil_business_area[5];  /* fillers for func AP  */
   char fil_tax_map_nbr[5];    /* fillers for func AP  */
   char filler10[4];
   char filler11[3];
   char latitude[9];       /* Latitude calc from X-Y   */
   char longitude[11];     /* Longitude calc from X-Y  */
   char coord[2][7];       /* 1 = X coordinate from AP */
                           /* 2 = Y coordinate from AP */
   char fil_bid_id[6];          /* fillers for func AP */
   char fil_TPAD_bin_status;    /* fillers for func AP */
   char fil_TPAD_new_bin[7];    /* fillers for func AP */
   char fil_TPAD_new_bin_status;/* filler for func AP  */
   char fil_TPAD_conflict_flag; /* filler for func AP  */
   char ap_id[9];               /* Address Point Id    */
   char int_use[8];             /* Internal Use        */
   char reason_code;            /* Reason Code              */
   char reason_code_qual;       /* Reason Code Qualifier    */
   char warn_code[2];           /* Warning Return Code      */
   char ret_code[2];            /* GeoSupport Return Code   */
   char filler14[108];
   char nbr_addr[4];            /* Nbr of Addr = 0001  */

   ADDR_RANGE_APX addr_range_apx[21];
} C_WA2_FAPX;

 /*********************************************************************/
 /*                                                                   */
 /*       Platform-Independent Work Area 2 for Function 2             */
 /*                                                                   */
 /*********************************************************************/

typedef struct { char filler01[21];
                 char rep_cnt;           /* Intersection Replication */
                                         /* Counter*/
                 char lgc[2][2];         /* Preferred LGCs           */
                 St_list inter;          /* Number of Intersecting St*/
                                         /* B5SCs of Intersection St */
                 char Dup_comp;          /* Duplicate compass Directn*/
                 char atomic_polygon[3]; /* Atomic Polygon added V131*/
                 char filler02[2];
                 char LION_node_nbr[7];  /* LION Node Number         */
                 char coord[3][7];       /* 1 = X coordinate,        */
                                         /* 2 = Y coordinate,        */
                                         /* 3 = Z coordinate, Not Imp*/
                 SANBORN San[2];         /* Sanborn Information      */
                 char mh_ri_flag;        /* Marble Hill/Rikers Island*/
                 char DOT_slca;          /* DOT St Lght Contractr Are*/
                 char com_dist[3];       /* Community District       */
                 char zip_code[5];       /* Zip code for st segment  */
                 char health_area[4];    /* Health Area        */
                 char police_boro_com;   /* Police Patrol Boro Commnd*/
                 char police_pre[3];     /* Police Precinct          */
                 char fire_sector[2];    /* Fire Sector              */
                 char fire_bat[2];       /* Fire Battalion           */
                 char fire_co_type;      /* Fire Company Type        */
                 char fire_co_nbr[3];    /* Fire Company Number      */
                 char com_schl_dist[2];  /* Community School District*/
                 char cen_tract_10[6];   /* 2010 Census Tract        */
```

```
                 char cen_tract_90[6];   /* 1990 Census Tract       */
                 char level_codes [10];  /* Level codes             */
                 char police_pat_boro[2];/* Police Patrol Borough   */
        //       char filler_indv[2];    /*                         */
        //       char instruc_div [2];   /* Instructional Division  */
                 char ad[2];             /* Assembly District       */
                 char congress_dist[2];  /* Congressional District  */
                 char state_sen_dist[2]; /* State Senatorial District*/
                 char civil_court[2];    /* Civil Court District    */
                 char city_council[2];   /* City Council District   */
                 char cd_eligible;       /* CD Eligibility          */
                 char dup_intersect_distance[5];  /*Distance in Feet */
                                         /*Betwn Duplicate Intersects*/
                                         /* not implemented */
                 char cen_tract_2000[6]; /* 2000 Census Tract       */
                 char health_cen_dist[2];/* Health Cent Distr*/
                 char sanit_dist[3];     /* Sanitation District     */
                 char sanit_sub_sect[2]; /* Sanit Collect Scheduling */
                                         /* Section and Subsection  */
                 char filler03[12];
               } C_WA2_F2;

 /*******************************************************************/
 /*                                                                 */
 /*   Platform-Independent Work Area 2 for Function 2W              */
 /*******************************************************************/
typedef struct {                         /* Fn 2 - 200 Bytes        */
  C_WA2_F2 cwa2f2;                       /* Start with Fn 2 WA2     */
  char filler04[22];                     /* Fields used for Grid gen */
  char lgcs_first_intersct[4][2];        /* Up to 4 LGC's for 1st   */
                                         /* intersecting street;    */
  char lgcs_second_intersct[4][2];       /* Up to 4 LGC's for 2nd   */
                                         /* intersecting street;    */
  char turn_restricts[10];               /* Up to 10 Turn restrictns */
  char pref_lgc_list[5][2];              /* Preferd LGCs for Str list*/
  char true_rep_cnt[2];                  /* True Int Replication Cntr*/
  char dup_node_list[20][7];       /* 140 *Node list for dup str code*/
  char b7sc_list[20][5][4][8];     /* 3200 *B7SC lists for Node list */
  char reason_code;                      /* Reason Code             */
  char reason_code_qual;                 /* future use              */
  char warn_code[2];                     /* Warning Return Code     */
  char ret_code[2];                      /* GeoSupport Return Code  */
  char latitude[9];                      /* Latitude calc from X-Y  */
  char longitude[11];                    /* Longitude calc from X-Y */
  char filler8[374];                     /* Future Use              */
} C_WA2_F2W, *PC_WA2_F2W;                /* Fn 2W with filler       */
 /*******************************************************************/
 /*                                                                 */
 /*        Platform-Independent Work Area 2 for Function 3          */
 /*                                                                 */
 /*******************************************************************/

typedef struct { char filler01[21];
                 char dup_key_flag;      /* Duplicate Key Flag or   */
                                         /* Continuous Parity Flag  */
                 char loc_stat_seg;      /* Locational Status of Seg */
                 char cnty_bnd_ind;      /* County Boundary Indicat */
                 char lgc[3][2];         /* Preferred LGCs          */
                 St_list st[2];          /* 1=Low and 2=High        */
                                         /* Nbr of cross sts at low */
                                         /* house nbr end of street */
```

```
                                 /* B5SCs of lo end X sts    */
                 char x_street_reversal_flag; /* X St Reversal Flag  */
                 LION key;               /* LION Key                 */
                 char genr_flag;         /* Generated Record Flag    */
                 char seg_len[5];        /* Segment Length in Feet   */
                 char seg_azm[3];        /* Segment Azimuth          */
                 char seg_orient;        /* Segment Orientation      */
                 char mh_ri_flag;        /* Marble Hill/Rikers Island*/
                                         /* Alternative Boro flag    */
                 char from_node[7];      /* From node                */
                 char to_node[7];        /* To node                  */
                 char sanit_snow_priority;/* Sanitation Street Snow  */
                                         /* Priority (P,S,T,V)       */
                 char filler02[4];       /* Future use               */
                 char seg_id[7];         /* Segment Identifier       */
                 char DOT_slca;          /* DOT St Lght Contractr Are*/
                 char curve_flag;        /* Curve Flag               */
                 char dog_leg;           /* Dog leg flag             */
                 char feature_type;      /* Feature Type Code        */
                 char segmenttypecode;   /* Segment Type Code        */
                 char coincident_seg_cnt; /* Coincident Segment      */
                                         /*    Counter               */
                 char filler03[4];
                 SEGSIDE side[2];        /* 1 = Left Side of street  */
                                         /* 2 = Right Side of street */
               } C_WA2_F3;

typedef struct { C_WA2_F3 cwa2f3;
                 char filler1[6];        /* Future use              */
                 char seg_cnt[4];        /* Number of Segments      */
                 char segments[70][7];   /* Segment Ids             */
               } C_WA2_F3_AUXSEG;
 /******************************************************************/
 /*                                                                */
 /*      Platform-Independent Work Area 2 for Function 3 EXTENDED  */
 /*                                                                */
 /******************************************************************/

typedef struct {                        /*  Data from CSCL added     */
  C_WA2_F3 cwa2f3;
  char lgc_list[4][2];                   /* List of LGC's            */
  char from_lgcs[4][2];                  /* List of from LGC's       */
  char to_lgcs[4][2];                    /* List of to LGC's         */
  char left_hcd[2];                      /* Left Health Center   */
                                         /* District                 */
  char right_hcd[2];                     /* Right Health Center  */
                                         /* District                 */
  char filler_csd;                       /*                          */
  char traffic_dir;                      /* Traffic Direction        */
  char roadway_type[2];                  /*                          */
  char physical_id[7];                   /*                          */
  char generic_id[7];                    /*                          */
  char filler03[7];                      /* DCP internal use         */
  char filler04[7];                      /* DCP internal use         */
  char street_status;                    /*                          */
  char str_width[3];                     /* Street Width             */
  char str_width_irr;                    /* Irregular Width Y or N   */
  char bike_lane;                        /*                          */
  char fcc[2];                           /* Federal Classification Cd*/
  char row_type;                         /*                          */
  char lgc5[2];                          /*                          */
```

```
  char lgc6[2];                        /*                          */
  char lgc7[2];                        /*                          */
  char lgc8[2];                        /*                          */
  char lgc9[2];                        /*                          */
  char legacy_id[7];                   /*                          */
  char nta_name_left[75];              /* Neighborhood Tabulation  */
                                       /* Area Name (Left)         */
  char nta_name_right[75];             /* Neighborhood Tabulation  */
                                       /* Area Name (Right)        */
  char from_coord[2][7];               /* 1 = X Coordinate         */
                                       /* 2 = Y Coordinate         */
  char to_coord[2][7];                 /* 1 = X Coordinate         */
                                       /* 2 = Y Coordinate         */
  char from_latitude[9];               /*Latitude of from intersct.*/
  char from_longitude[11];             /*Longitude of from intersct*/
  char to_latitude[9];                 /*Latitude of to intersect. */
  char to_longitude[11];               /*Longitude of to intersect.*/
  char left_blockface_id[10];          //NEW location of blockface id
  char right_blockface_id[10];
  char nbr_travel_lanes[2];            /* nbr of traveling lanes   */
  char nbr_park_lanes[2];              /* nbr of parking lanes     */
  char nbr_total_lanes[2];             /* total nbr of lanes       */
  char bike_lane_2[2];                 /*Bike Lane has 2 bytes     */
                                       /* numeric value            */
  char str_width_max[3];               /*Street width maximum      */
  char bike_traffic_dir[2];           //V17.1 Bike Traffic Direction
  char filler05[213];                  // V17.1
} C_WA2_F3X;

typedef struct {                       /* Fn 3 Extended with       */
  C_WA2_F3X cwa2f3x;                   /* Auxilary Segments        */
  char filler1[6];                      /* Future use              */
  char seg_cnt[4];                      /* Number of Segments      */
  char segments[70][7];                 /* Segment Ids             */
} C_WA2_F3X_AUXSEG;                    /* Fn 3X with AUXSEGID      */


 /******************************************************************/
 /*                                                                */
 /*        Platform-Independent Work Area 2 for Function 3C        */
 /*                                                                */
 /******************************************************************/

typedef struct { char filler01[21];
                 char dup_key_flag;    /* Duplicate Key Flag or    */
                                       /* Continuous Parity Flag   */
                 char loc_stat_seg;    /* Locational Status of Seg */
                 char cnty_bnd_ind;    /* County Boundary Indicat  */
                 char lgc[3][2];       /* Preferred LGCs           */
                 St_list st[2];        /* 1=Low and 2=High         */
                                       /* Nbr of cross sts at low  */
                                       /* house nbr end of street  */
                                       /* B5SCs of lo end Cross sts*/
                 char x_street_reversal_flag; /* X St Reversal Flag  */
                 LION key;             /* LION key                 */
                 char genr_flag;       /* Generated Record Flag    */
                 char seg_len[5];      /* Segment Length in Feet   */
                 char seg_azm[3];      /* Segment Azimuth          */
                 char seg_orient;      /* Segment Orientation      */
                 char mh_ri_flag;      /* Marble Hill/Rikers Island*/
                                       /* Alternative Boro flag    */
```

```
                 char from_node[7];      /* From node                 */
                 char to_node[7];        /* To Node                   */
                 char sanit_snow_priority;/* Sanitation Street Snow  */
                                          /* Priority (P,S,T,V)       */
                 char filler02[4];       /* Future use                */
                 char seg_id  [7];       /* Segment Identifier        */
                 char DOT_slca;          /* DOT St Lght Contractr Are*/
                 char sos_ind;           /* Side of Street Indicator */
                 char curve_flag;        /* Curve Flag                */
                 char feature_type;      /* Feature Type Code         */
                 char segmenttypecode;   /* Segment Type Code         */
                 char coincident_seg_cnt; /* Coincident Segment       */
                                          /*    Counter               */
                 char filler03[4];
                 SEGSIDE req;           /* Geographic Information for*/
              } C_WA2_F3C;

typedef struct { C_WA2_F3C cwa2f3c;
                 char filler1[6];        /* Future use               */
                 char seg_cnt[4];        /* Number of Segments       */
                 char segments[70][7];   /* Segment ids              */
               } C_WA2_F3C_AUXSEG;

 /*******************************************************************/
 /*                                                                 */
 /*      Platform-Independent Work Area 2 for Function 3C EXTENDED   */
 /*                                                                 */
 /*******************************************************************/
typedef struct {                         /* Data from CSCL added      */
  C_WA2_F3C cwa2f3c;
  char lgc_list[4][2];                   /* List of LGC's             */
  char from_lgcs[4][2];                  /* List of from LGC's        */
  char to_lgcs[4][2];                    /* List of to LGC's          */
  char left_hcd[2];                      /* Left Health Center Distr */
  char right_hcd[2];                     /* Right Health Center Distr*/
  char fill_csd;                         /* Filler                    */
  char traffic_dir;                      /* Traffic Direction         */
  char roadway_type[2];                  /*                           */
  char physical_id[7];                   /*                           */
  char generic_id[7];                    /*                           */
  char filler03[7];                      /* DCP internal use          */
  char filler04[7];                      /* DCP internal use          */
  char street_status;                    /*                           */
  char str_width[3];                     /* Street Width              */
  char str_width_irr;                    /* Irregular Width Y or N    */
  char bike_lane;                        /*                           */
  char fcc[2];                           /* Federal Classification Cd*/
  char row_type;                         /*                           */
  char lgc5[2];                          /*                           */
  char lgc6[2];                          /*                           */
  char lgc7[2];                          /*                           */
  char lgc8[2];                          /*                           */
  char lgc9[2];                          /*                           */
  char legacy_id[7];                     /*                           */
  char nta_name[75];                     /* Neighborhood Tabulation   */
                                         /* Area Name                 */
  char from_coord[2][7];                 /* 1 = X Coordinate          */
                                         /* 2 = Y Coordinate          */
  char to_coord[2][7];                   /* 1 = X Coordinate          */
                                         /* 2 = Y Coordinate          */
  char from_latitude[9];                /* Latitude of from intersct.*/
```

```
  char from_longitude[11];             /* Longitude of from intersct*/
  char to_latitude[9];                 /* Latitude of to intersct.  */
  char to_longitude[11];               /* Longitude of to intersct. */
  char blockface_id[10];               /* NEW location of this field*/
                                       /* because of length changed */
  char nbr_travel_lanes[2];             /* nbr of traveling lanes   */
  char nbr_park_lanes[2];               /* nbr of parking lanes     */
  char nbr_total_lanes[2];              /* total nbr of lanes       */
  char bike_lane_2[2];                  /*Bike Lane has 2 bytes     */
                                        /* numeric value            */
  char str_width_max[3];                /*street width maximum      */
  char bike_traffic_dir[2];             //V17.1 Bike Traffic Direction
  char filler05[298];                   // V17.1
} C_WA2_F3CX;

typedef struct {                        /* Fn 3C Extended with      */
  C_WA2_F3CX cwa2f3cx;                  /* Auxilary Segments        */
  char filler1[6];                      /* Future use              */
  char seg_cnt[4];                      /* Number of Segments      */
  char segments[70][7];                 /* Segment Ids             */
} C_WA2_F3CX_AUXSEG;                    /* Fn 3CX with AUXSEGID     */

 /*******************************************************************/
 /*                                                                 */
 /*        Platform-Independent Work Area 2 for Function 3S         */
 /*                                                                 */
 /*******************************************************************/

typedef struct { char filler01[21];
                 char nbr_x_str[3];     /* Nbr of Cross sts in list */
                 CROSS_STRS cross_strs[350];/* Cross Street structure*/
               } C_WA2_F3S;

#ifdef __cplusplus
       }
#endif
#endif
```

NATURAL LDAs (COW)

GEOLP1 COPY File

```
*     USER PROGRAMS MUST RESET GEOLP1        BEFORE PRIMING WORKAREA 1
   1 GEOLP1                                         /* LRECL=1200
*     THE FIELD P1NAT IS USED AS A        PARAMETER TO CALL GEOSUPPORT        RT
   2 P1NAT                             A          2
R  2 P1NAT
*  * * * *   INPUT FIELDS    * * * *  *  * * * * * /* WORK AREA 1 FOR
*  *                                                /* ALL FUNCTIONS
   3 PIWA1-IN-FUNCTION-CODE            A          2
R  3 PIWA1-IN-FUNCTION-CODE
   4 PIWA1-IN-FUNCTION-1               A          1
   4 PIWA1-IN-FUNCTION-2               A          1
   2 PIWA1-IN-HOUSENUM-DISPLAY         A         16
   2 PIWA1-IN-HOUSENUM-SORT            A         11
   2 PIWA1-IN-LOW-HOUSENUM-DISPLAY     A         16
   2 PIWA1-IN-LOW-HOUSENUM-SORT        A         11
   2 PIWA1-IN-BORO-1                   A          1
   2 PIWA1-IN-10SC-1                   A         10
   2 PIWA1-IN-STREET-1                 A         32
   2 PIWA1-IN-BORO-2                   A          1
   2 PIWA1-IN-10SC-2                   A         10
   2 PIWA1-IN-STREET-2                 A         32
   2 PIWA1-IN-BORO-3                   A          1
   2 PIWA1-IN-10SC-3                   A         10
   2 PIWA1-IN-STREET-3                 A         32
   2 PIWA1-IN-BBL                      A         10 /* 3 LEVEL 3 ITEMS
R  2 PIWA1-IN-BBL
   3 PIWA1-IN-BBL-BORO                 A          1
   3 PIWA1-IN-BLOCK                    A          5
   3 PIWA1-IN-LOT                      A          4
   2 PIWA1-IN-LOT-VERSION              A          1 /* NA
   2 PIWA1-IN-BIN                      A          7
   2 PIWA1-IN-COMPASS                  A          1
   2 PIWA1-IN-COMPASS2                 A          1
   2 PIWA1-IN-NODE                     A          7
   2 PIWA1-IN-PLATFORM-INDICATOR       A          1
   2 PIWA1-IN-ZIPCODE                  A          5
   2 PIWA1-IN-UNIT                     A         14 /* V16.4 ADDITION
   2 FILLER-200                        A         82 /* V16.4 ALTERATION
*  2 FILLER-200                        A         96
   2 PIWA1-IN-LONG-WORKAREA2-FLAG      A          1 /* L=LONG WA - 1A/BL(1200)
   2 PIWA1-IN-HSE-NBR-JUSTIFY          A          1
   2 PIWA1-IN-HNL                      A          2 /* HN LENGTH
   2 PIWA1-IN-HSE-OVER-FLAG            A          1 /* HN OVERRIDE *,$,' '
   2 PIWA1-IN-SNL                      A          2
   2 PIWA1-IN-SN-NORM-FORMAT           A          1 /* C=COMPACT,S OR ' '=SORTT
   2 PIWA1-IN-EXPANDED-FORMAT          A          1
   2 PIWA1-IN-ROADBED-REQ-SWITCH       A          1
   2 PIWA1-IN-INTERNAL-USE-LEGACY      A          1 /* RESERVED FOR GSS USE
   2 PIWA1-IN-SEGAUX-SWITCH            A          1
   2 PIWA1-IN-BROWSE-FLAG              A          1
   2 PIWA1-IN-REAL-STREET-ONLY         A          1 /* FN 3S
   2 PIWA1-IN-TPAD-SWITCH              A          1 /* FN 1A
   2 PIWA1-IN-MODE-SWITCH              A          1
   2 PIWA1-IN-WTO-SWITCH               A          1
   2 FILLER-400                        A         29
*  * * * *   OUTPUT FIELDS   * * * *  *  * * * * *
   2 PIWA1-OUT-BORONAME                A          9
   2 PIWA1-OUT-HOUSENUM-DISPLAY        A         16
   2 PIWA1-OUT-HOUSENUM-SORT           A         11
   2 PIWA1-OUT-B10SC-1                 A         11
   2 PIWA1-OUT-STREET-1                A         32
   2 PIWA1-OUT-B10SC-2                 A         11
   2 PIWA1-OUT-STREET-2                A         32
   2 PIWA1-OUT-B10SC-3                 A         11
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GEOLP1 COPY File

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    2 PIWA1-OUT-STREET-3                A          32
    2 PIWA1-OUT-BBL                     A          10 /* 3 LEVEL 3 ITEMS
R   2 PIWA1-OUT-BBL
    3 PIWA1-OUT-BBL-BORO                A           1
    3 PIWA1-OUT-BLOCK                   A           5
    3 PIWA1-OUT-LOT                     A           4
    2 PIWA1-OUT-LOT-VERSION             A           1 /* FOR FUTRUE LOT VERSION #
    2 PIWA1-OUT-LOW-HOUSENUM-DISPLAY    A          16
    2 PIWA1-OUT-LOW-HOUSENUM-SORT       A          11
    2 PIWA1-OUT-BIN                     A           7
    2 PIWA1-OUT-STREET-ATTR             A           1 (1:3) /* RES FOR GSS
    2 PIWA1-OUT-REASON-CODE-2           A           1 /* FN 1B
    2 PIWA1-OUT-REASON-CODE-QUAL-2      A           1 /*TPAD 2ND REASON CODE
*   *                                                 /*QUALIFIER
    2 PIWA1-OUT-WARNING-CODE-2          A           2 /* FN 1B
    2 PIWA1-OUT-RETURN-CODE-2           A           2 /* FN 1B
    2 PIWA1-OUT-ERROR-MESSAGE-2         A          80 /* FN 1B
    2 PIWA1-OUT-NODE                    A           7
    2 PIWA1-OUT-UNIT-SORT               A          14 /* V16.4 ADDITION
R   2 PIWA1-OUT-UNIT-SORT
    3 PIWA1-OUT-UNIT-TYPE               A           4 /* V16.4 ADDITION
    3 PIWA1-OUT-UNIT-ID                 A          10 /* V16.4 ADDITION
    2 PIWA1-OUT-UNIT-DISP               A          14 /* V16.4 ADDITION
    2 FILLER-550                        A          11 /* V16.4 ALTERATION
*   2 FILLER-550                        A          39
    2 FILLER-555                        A           6 /* NIN, NYI
    2 PIWA1-OUT-SND-ATTR                A           1 /* RES FOR GSS
    2 PIWA1-OUT-REASON-CODE             A           1
    2 PIWA1-OUT-REASON-CODE-QUAL        A           1 /*TAPAD REASON CODE
*   *                                                 /*QUALIFIER
    2 PIWA1-OUT-WARNING-CODE            A           2
    2 PIWA1-OUT-RETURN-CODE             A           2
    2 PIWA1-OUT-ERROR-MESSAGE           A          80
    2 PIWA1-OUT-NUM-SIMILAR-STRS        A           2
    2 PIWA1-OUT-SIMILAR-B7SC            A           8 (1:10)
    2 PIWA1-OUT-SIMILAR-NAMES           A          32 (1:10)
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GEOLP2 COPY File

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    1 GEOLP2
*     THE FIELD P2NAT IS USED AS A       PARAMETER TO CALL GEOSUPPORT FOR ALLLL
*         FUNCTIONS THAT ARE REDEFINED          ON GEOLP2
*   * MAXIMUM LENGTH 2W - 4000 BYTES
    2 P2NAT                             A         21
R   2 P2NAT
*   *  BEGINNING OF FUNCTION 1 LAYOUT   *       **** *******
    3 PIWA2-FN1-ACCESS-KEY              A         21
    2 PIWA2-FN1-CONT-PARITY             A          1 /* (OR DUP ADDR IND)
    2 PIWA2-FN1-LOW-HOUSENUM            A         11 /* SORT FORMAT
    2 PIWA2-FN1-HI-HOUSENUM             A         11 /* SORT FORMAT
    2 PIWA2-FN1-PREFERRED-LGC           A          2
    2 PIWA2-FN1-NUM-X-ST-LOW-END        A          1
    2 PIWA2-FN1-LOW-B5SC                A          6 (1:5) /* 30-BYTES
    2 PIWA2-FN1-NUM-X-ST-HI-END         A          1
    2 PIWA2-FN1-HI-B5SC                 A          6 (1:5) /* 30-BYTES
    2 PIWA2-FN1-LIONKEY                 A         10
R   2 PIWA2-FN1-LIONKEY
    3 PIWA2-FN1-LION-BORO               A          1
    3 PIWA2-FN1-LION-FACECODE           A          4
    3 PIWA2-FN1-LION-SEQ                A          5
    2 PIWA2-FN1-SPECIAL-ADDR-FLAG       A          1
    2 PIWA2-FN1-SIDE-OF-STR             A          1
    2 PIWA2-FN1-SEG-LEN                 A          5
    2 PIWA2-FN1-X-COORD                 A          7
    2 PIWA2-FN1-Y-COORD                 A          7
    2 FILLER-100                        A          7 /* FOR ZCOORD
    2 FILLER-200                        A          1 /* FOR GSS USE
    2 PIWA2-FN1-MARBLE-RIKERS-FLAG      A          1
    2 PIWA2-FN1-DOT-SLA                 A          1
    2 PIWA2-FN1-COM-DIST                A          3
R   2 PIWA2-FN1-COM-DIST
    3 PIWA2-FN1-COM-DIST-BORO           A          1
    3 PIWA2-FN1-COM-DIST-NUM            A          2
    2 PIWA2-FN1-ZIP                     A          5
*   *                                   *       **** *****
*   *  THE FN1E FIELDS ARE VALID ONLY   *       **** *****
*   *  FOR FUNCTION 1E, NOT FUNC 1.     *       **** *****
    2 PIWA2-FN1E-ELECT-DIST             A          3
    2 PIWA2-FN1E-ASSEM-DIST             A          2
    2 PIWA2-FN1E-SPLIT-ED-FLAG          A          1
    2 PIWA2-FN1E-CONG-DIST              A          2
    2 PIWA2-FN1E-SENATE-DIST            A          2
    2 PIWA2-FN1E-COURT-DIST             A          2
    2 PIWA2-FN1E-COUNCIL-DIST           A          2
*   *                                   *       **** *****
    2 PIWA2-FN1-HEALTH-CENTER-DIST      A          2
    2 PIWA2-FN1-HEALTH-AREA             A          4
    2 PIWA2-FN1-SANI-DIST               A          3
R   2 PIWA2-FN1-SANI-DIST
    3 PIWA2-FN1-SANI-DIST-BORO          A          1
    3 PIWA2-FN1-SANI-DIST-NUM           A          2
    2 PIWA2-FN1-SANI-SUBSEC             A          2
    2 PIWA2-FN1-SANI-REG                A          5
    2 PIWA2-FN1-SANI-REC                A          3
    2 PIWA2-FN1-POLICE-DIST             A          4
R   2 PIWA2-FN1-POLICE-DIST
    3 PIWA2-FN1-POL-PAT-BORO-CMD        A          1
    3 PIWA2-FN1-POL-PRECINCT            A          3
    2 PIWA2-FN1-FIRE-DIV                A          2
    2 PIWA2-FN1-FIRE-BAT                A          2
    2 PIWA2-FN1-FIRE-CO                 A          4
R   2 PIWA2-FN1-FIRE-CO
    3 PIWA2-FN1-FIRE-CO-TYPE            A          1
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    3 PIWA2-FN1-FIRE-CO-NUM             A          3
    2 PIWA2-FN1-SCHL-DIST-SPLIT-FLAG    A          1
    2 PIWA2-FN1-SCHL-DIST               A          2
    2 PIWA2-FN1-DYN-BLK                 A          3
    2 PIWA2-FN1-POLICE-PAT-BORO         A          2
    2 PIWA2-FN1-FEATURE-TYPE            A          1
    2 PIWA2-FN1-SEGMENT-TYPE            A          1
    2 PIWA2-FN1-ALX                     A          1
    2 PIWA2-FN1-COINCIDENT-SEG-CTR      A          1
    2 FILLER-290                        A          3
    2 PIWA2-FN1-1990-CENSUS-TRACT       A          6
    2 PIWA2-FN1-2010-CENSUS-TRACT       A          6
    2 PIWA2-FN1-2010-CENSUS-BLOCK       A          4
    2 PIWA2-FN1-2010-CENSUS-BLOCK-SUF   A          1 /* NA
    2 PIWA2-FN1-2000-CENS-TRACT         A          6
    2 PIWA2-FN1-2000-CENS-BLOCK         A          4
    2 PIWA2-FN1-2000-CENS-BLOCK-SUF     A          1 /* NA
    2 PIWA2-FN1-NTA                     A          4
    2 PIWA2-FN1-SANIT-SNOW-PRIORITY     A          1
    2 PIWA2-FN1-SANIT-ORGANICS          A          5
    2 PIWA2-FN1-SANIT-BULK-PICK-UP      A          5 /* V16.4 ADDITION
*   2 PIWA2-FN1-SANIT-RESERVED          A          5 /*FOR POSSIBLE FUTURE USE
    2 PIWA2-FN1-HURRICANE-ZONE          A          2 /*OEM HURRICANE EVAC ZONE
    2 FILLER-300                        A         11
    2 PIWA2-FN1-UHNS                    A         11 /* UNDERLYING HNS
    2 PIWA2-FN1-REAL-B7SC               A          8
    2 PIWA2-FN1-SEGMENT-ID              A          7
    2 PIWA2-FN1-CURVE-FLAG              A          1
    2 PIWA2-FN1-PSEUDO-FILLER           A       3700 /*MAX RECORD 2W IS 4000
*   *  END OF FUNCTION 1 LAYOUT         *       **** *******
*   - -------------------------------- -       ---- ------------------------------
-
*   *  BEGINNING OF FUNCTION 2
*   *           & FUNCTION 2C LAYOUT    * ********** *******
R   1 GEOLP2
    2 PIWA2-FN2-ACCESS-KEY              A         21 /* FOR FUNCTIONS 2 & 2C
    2 PIWA2-FN2-DUP-INTERSECT-FLAG      A          1
    2 PIWA2-FN2-PREFERRED-LGC1          A          2
    2 PIWA2-FN2-PREFERRED-LGC2          A          2
    2 PIWA2-FN2-NUM-OF-INTERSECTS       A          1
    2 PIWA2-FN2-INTERSECT-B5SC          A          6 (1:5) /* 30-BYTES
    2 PIWA2-FN2-COMP-DIR                A          1
    2 PIWA2-FN2-ATOMIC-POLYGON          A          3
    2 FILLER-350                        A          2
    2 PIWA2-FN2-NODE-NUM                A          7
    2 PIWA2-FN2-X-COORD                 A          7
    2 PIWA2-FN2-Y-COORD                 A          7
    2 FILLER-400                        A          7 /* FOR ZCOORD
    2 PIWA2-FN2-SANBORN1                A          8
R   2 PIWA2-FN2-SANBORN1
    3 PIWA2-FN2-SANBORN1-BORO           A          1
    3 PIWA2-FN2-SANBORN1-VOL            A          3
    3 PIWA2-FN2-SANBORN1-PAGE           A          4
    2 PIWA2-FN2-SANBORN2                A          8
R   2 PIWA2-FN2-SANBORN2
    3 PIWA2-FN2-SANBORN2-BORO           A          1
    3 PIWA2-FN2-SANBORN2-VOL            A          3
    3 PIWA2-FN2-SANBORN2-PAGE           A          4
    2 PIWA2-FN2-MARBLE-RIKERS-FLAG      A          1
    2 PIWA2-FN2-DOT-SLA                 A          1
    2 PIWA2-FN2-COM-DIST                A          3
R   2 PIWA2-FN2-COM-DIST
    3 PIWA2-FN2-COM-DIST-BORO           A          1
    3 PIWA2-FN2-COM-DIST-NUM            A          2
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GEOLP2 COPY File

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    2 PIWA2-FN2-ZIP                     A          5
    2 PIWA2-FN2-HEALTH-AREA             A          4
    2 PIWA2-FN2-POLICE-DIST             A          4
R   2 PIWA2-FN2-POLICE-DIST
    3 PIWA2-FN2-POL-PAT-BORO-CMD        A          1
    3 PIWA2-FN2-POL-PRECINCT            A          3
    2 PIWA2-FN2-FIRE-DIV                A          2
    2 PIWA2-FN2-FIRE-BAT                A          2
    2 PIWA2-FN2-FIRE-CO                 A          4
R   2 PIWA2-FN2-FIRE-CO
    3 PIWA2-FN2-FIRE-CO-TYPE            A          1
    3 PIWA2-FN2-FIRE-CO-NUM             A          3
    2 PIWA2-FN2-SCHL-DIST               A          2
    2 PIWA2-FN2-2010-CENSUS-TRACT       A          6
    2 PIWA2-FN2-1990-CENSUS-TRACT       A          6
    2 PIWA2-FN2-LEVEL-CODE-TBL          A         10
R   2 PIWA2-FN2-LEVEL-CODE-TBL
    3 PIWA2-FN2-LEVEL-CODE              A          1 (5,2) /* 10-BYTES
    2 PIWA2-FN2-POLICE-PAT-BORO         A          2
    2 PIWA2-FN2-ASSEM-DIST              A          2
    2 PIWA2-FN2-CONG-DIST               A          2
    2 PIWA2-FN2-SENATE-DIST             A          2
    2 PIWA2-FN2-COURT-DIST              A          2
    2 PIWA2-FN2-COUNCIL-DIST            A          2
    2 PIWA2-FN2-CD-ELIGIBLE             A          1
    2 PIWA2-FN2-DUP-INTERSECT-DIST      A          5
    2 PIWA2-FN2-2000-CENS-TRACT         A          6
    2 PIWA2-FN2-HEALTH-CENTER-DIST      A          2
    2 PIWA2-FN2-SANITATION-DIST         A          3
    2 PIWA2-FN2-SANITATION-SUBSEC       A          2
    2 FILLER-500                        A         12
*   2 PIWA2-FN2-PSEUDO-FILLER           A       3800
*   *  END OF FUNCTION 2                * ********** ********
*   *       & FUNCTION 2C LAYOUT        * ********** ********
*   * -------------------------------- - ---------- -----------------
*   *  BEGINNING OF FUNCTION 2W         * ********** *******
R   1 GEOLP2
    2 PIWA2-FN2W-ACCESS-KEY             A         21 /* FOR FUNCTION 2W
    2 PIWA2-FN2W-DUP-INTERSECT-FLAG     A          1
    2 PIWA2-FN2W-PREFERRED-LGC1         A          2
    2 PIWA2-FN2W-PREFERRED-LGC2         A          2
    2 PIWA2-FN2W-NUM-OF-INTERSECTS      A          1
    2 PIWA2-FN2W-INTERSECT-B5SC         A          6 (1:5) /* 30-BYTES
    2 PIWA2-FN2W-COMP-DIR               A          1
    2 PIWA2-FN2W-ATOMIC-POLYGON         A          3
    2 FILLER-350W                       A          2
    2 PIWA2-FN2W-NODE-NUM               A          7
    2 PIWA2-FN2W-X-COORD                A          7
    2 PIWA2-FN2W-Y-COORD                A          7
    2 FILLER-400W                       A          7 /* FOR ZCOORD
    2 PIWA2-FN2W-SANBORN1               A          8
R   2 PIWA2-FN2W-SANBORN1
    3 PIWA2-FN2W-SANBORN1-BORO          A          1
    3 PIWA2-FN2W-SANBORN1-VOL           A          3
    3 PIWA2-FN2W-SANBORN1-PAGE          A          4
    2 PIWA2-FN2W-SANBORN2               A          8
R   2 PIWA2-FN2W-SANBORN2
    3 PIWA2-FN2W-SANBORN2-BORO          A          1
    3 PIWA2-FN2W-SANBORN2-VOL           A          3
    3 PIWA2-FN2W-SANBORN2-PAGE          A          4
    2 PIWA2-FN2W-MARBLE-RIKERS-FLAG     A          1
    2 PIWA2-FN2W-DOT-SLA                A          1
    2 PIWA2-FN2W-COM-DIST               A          3
R   2 PIWA2-FN2W-COM-DIST
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GEOLP2 COPY File

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    3 PIWA2-FN2W-COM-DIST-BORO         A          1
    3 PIWA2-FN2W-COM-DIST-NUM          A          2
    2 PIWA2-FN2W-ZIP                   A          5
    2 PIWA2-FN2W-HEALTH-AREA           A          4
    2 PIWA2-FN2W-POLICE-DIST           A          4
R   2 PIWA2-FN2W-POLICE-DIST
    3 PIWA2-FN2W-POL-PAT-BORO-CMD      A          1
    3 PIWA2-FN2W-POL-PRECINCT          A          3
    2 PIWA2-FN2W-FIRE-DIV              A          2
    2 PIWA2-FN2W-FIRE-BAT              A          2
    2 PIWA2-FN2W-FIRE-CO               A          4
R   2 PIWA2-FN2W-FIRE-CO
    3 PIWA2-FN2W-FIRE-CO-TYPE          A          1
    3 PIWA2-FN2W-FIRE-CO-NUM           A          3
    2 PIWA2-FN2W-SCHL-DIST             A          2
    2 PIWA2-FN2W-2010-CENSUS-TRACT     A          6
    2 PIWA2-FN2W-1990-CENSUS-TRACT     A          6
    2 PIWA2-FN2W-LEVEL-CODE-TBL        A         10
R   2 PIWA2-FN2W-LEVEL-CODE-TBL
    3 PIWA2-FN2W-LEVEL-CODE            A          1 (5,2) /* 10-BYTES
    2 PIWA2-FN2W-POLICE-PAT-BORO       A          2
    2 PIWA2-FN2W-ASSEM-DIST            A          2
    2 PIWA2-FN2W-CONG-DIST             A          2
    2 PIWA2-FN2W-SENATE-DIST           A          2
    2 PIWA2-FN2W-COURT-DIST            A          2
    2 PIWA2-FN2W-COUNCIL-DIST          A          2
    2 PIWA2-FN2W-CD-ELIGIBLE           A          1
    2 PIWA2-FN2W-DUP-INTERSECT-DIST    A          5
    2 PIWA2-FN2W-2000-CENS-TRACT       A          6
    2 PIWA2-FN2W-HEALTH-CENTER-DIST    A          2
    2 PIWA2-FN2W-SANITATION-DIST       A          3
    2 PIWA2-FN2W-SANITATION-SUBSEC     A          2
    2 FILLER-500W                      A         12
    2 PIWA2-FN2W-FILLER-GRIDGEN        A         22 /*INTERNAL USE
    2 PIWA2-FN2W-LGCS-FIRST-INTERSCT   A          2 (1:4) /*UP TO 4 LGCS
    2 PIWA2-FN2W-LGCS-SECOND-INTERSCT  A          2 (1:4) /*UP TO 4 LGCS
    2 PIWA2-FN2W-TURN-RESTRICTIONS     A          1 (1:10)
    2 PIWA2-FN2W-INTERSECT-B5SC-LGCS   A          2 (1:5) /*LGCS FOR LIST
*                                                   /*OF INTERSECTING STS
    2 PIWA2-FN2W-REPLICATION-CNTR      A          2
    2 PIWA2-FN2W-NODE-LIST             A          7 (1:20) /*UP TO 20 NODES
    2 PIWA2-FN2W-NODE-LIST-B7SCS-TBLS  A       3200
R   2 PIWA2-FN2W-NODE-LIST-B7SCS-TBLS               /* REDEF. BEGIN : PIWA2-FN2W-
NO
    3 PIWA2-FN2W-NODE-LIST-B7SCS-TBL   A        160 (20)
R   2 PIWA2-FN2W-NODE-LIST-B7SCS-TBLS               /* REDEF. BEGIN : PIWA2-FN2W-
NO
    3 PIWA2-FN2W-NODE-LIST-B7SCS-STS   A         32 (20,5)
R   2 PIWA2-FN2W-NODE-LIST-B7SCS-TBLS               /* REDEF. BEGIN : PIWA2-FN2W-
NO
    3 PIWA2-FN2W-NODE-LIST-B7SCS       A          8 (20,5,4)
    2 PIWA2-FN2W-REASON-CODE           A          1
    2 PIWA2-FN2W-REASON-CODE-QUAL      A          1
    2 PIWA2-FN2W-WARN-CODE             A          2
    2 PIWA2-FN2W-RETURN-CODE           A          2
    2 PIWA2-FN2W-LATITUDE              A          9
    2 PIWA2-FN2W-LONGITUDE             A         11
    2 PIWA2-FN2W-FILLER2W              A        374
*   *  END OF FUNCTION 2W              * ********** ********
*   * -------------------------------- - ---------- -----------------
*   *  BEGINNING OF FUNCTION 3 LAYOUT  * ********** *********
R   1 GEOLP2
    2 PIWA2-FN3-ACCESS-KEY             A         21
    2 PIWA2-FN3-DUP-KEY-FLAG           A          1 /* OR CONTI PARITY
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GEOLP2 COPY File

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    2 PIWA2-FN3-LOCATION-STATUS         A           1
    2 PIWA2-FN3-COUNTY-BOUNDARY         A           1
    2 PIWA2-FN3-PREFERRED-LGC1          A           2
    2 PIWA2-FN3-PREFERRED-LGC2          A           2
    2 PIWA2-FN3-PREFERRED-LGC3          A           2
    2 PIWA2-FN3-NUM-X-ST-LOW-END        A           1
    2 PIWA2-FN3-LOW-B5SC                A           6 (1:5) /* 30-BYTES
    2 PIWA2-FN3-NUM-X-ST-HI-END         A           1
    2 PIWA2-FN3-HI-B5SC                 A           6 (1:5) /* 30-BYTES
    2 PIWA2-FN3-REVERSAL-FLAG           A           1
    2 PIWA2-FN3-LION-KEY                A          10
R   2 PIWA2-FN3-LION-KEY
    3 PIWA2-FN3-LION-BORO               A           1
    3 PIWA2-FN3-LION-FACECODE           A           4
    3 PIWA2-FN3-LION-SEQ                A           5
    2 PIWA2-FN3-GENREC-FLAG             A           1
    2 PIWA2-FN3-SEG-LENGTH              A           5
    2 PIWA2-FN3-SEG-SLOP                A           3
    2 PIWA2-FN3-SEG-ORIENT              A           1
    2 PIWA2-FN3-MARBLE-RIKERS-FLAG      A           1
    2 PIWA2-FN3-FROM-NODE               A           7
    2 PIWA2-FN3-TO-NODE                 A           7
    2 PIWA2-FN3-SANIT-SNOW-PRIORITY     A           1 /*SANITATION STRT
*   *                                                 /*SNOW PRIORITY
    2 FILLER-600                        A           4
    2 PIWA2-FN3-SEGMENT-ID              A           7
    2 PIWA2-FN3-DOT-SLA                 A           1
    2 PIWA2-FN3-CURVE-FLAG              A           1
    2 PIWA2-FN3-DOG-LEG                 A           1
    2 PIWA2-FN3-FEATURE-TYPE            A           1
    2 PIWA2-FN3-SEGMENT-TYPE            A           1
    2 PIWA2-FN3-COINCIDENT-SEG-CTR      A           1
    2 FILLER-700                        A           4
*   * *** LEFT SIDE OF THE STREET **** * ********** ******
    2 PIWA2-FN3-LEFT-SIDE-OF-STR        A         150
R   2 PIWA2-FN3-LEFT-SIDE-OF-STR
    3 PIWA2-FN3-L-COM-DIST              A           3
R   3 PIWA2-FN3-L-COM-DIST
    4 PIWA2-FN3-L-COM-DIST-BORO         A           1
    4 PIWA2-FN3-L-COM-DIST-NUM          A           2
    3 PIWA2-FN3-L-LOW-HOUSENUM          A          16 /* DISPLAY FORMAT
    3 PIWA2-FN3-L-HI-HOUSENUM           A          16 /* DISPLAY FORMAT
    3 FILLER-800                        A          32 /* FOR FUTURE USE
    3 PIWA2-FN3-L-CD-ELIGIBLE           A           1
    3 PIWA2-FN3-L-ZIP                   A           5
    3 PIWA2-FN3-L-HEALTH-AREA           A           4
    3 PIWA2-FN3-L-POLICE-DIST           A           4
R   3 PIWA2-FN3-L-POLICE-DIST
    4 PIWA2-FN3-L-POL-PAT-BORO-CMD      A           1
    4 PIWA2-FN3-L-POL-PRECINCT          A           3
    3 PIWA2-FN3-L-FIRE-DIV              A           2
    3 PIWA2-FN3-L-FIRE-BAT              A           2
    3 PIWA2-FN3-L-FIRE-CO               A           4
R   3 PIWA2-FN3-L-FIRE-CO
    4 PIWA2-FN3-L-FIRE-CO-TYPE          A           1
    4 PIWA2-FN3-L-FIRE-CO-NUM           A           3
    3 PIWA2-FN3-L-SCHL-DIST             A           2
    3 PIWA2-FN3-L-DYN-BLK               A           3
    3 PIWA2-FN3-L-ED                    A           3
    3 PIWA2-FN3-L-AD                    A           2
    3 PIWA2-FN3-L-POLICE-PAT-BORO       A           2
    3 FILLER-880                        A           1
    3 PIWA2-FN3-L-BORO                  A           1
    3 PIWA2-FN3-L-1990-CENSUS-TRACT     A           6
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    3 PIWA2-FN3-L-2010-CENSUS-TRACT    A          6
    3 PIWA2-FN3-L-2010-CENSUS-BLOCK    A          4
    3 PIWA2-FN3-L-2010-CENSUS-BLK-SUF  A          1 /* NA
    3 PIWA2-FN3-L-2000-CENS-TRACT      A          6
    3 PIWA2-FN3-L-2000-CENS-BLOCK      A          4
    3 PIWA2-FN3-L-2000-CENS-BLK-SUF    A          1 /* NA
    3 PIWA2-FN3-L-FILLER-890           A          7 /* V16.1 REPLACEMENT
    3 PIWA2-FN3-L-NTA                  A          4 /*NEIGHBORHOOD
*   *                                               /*TABULATION AREA
    3 FILLER-900                       A          8
*   * *** RIGHT SIDE OF THE STREET *** * ********** ***********
    2 PIWA2-FN3-RIGHT-SIDE-OF-STR      A        150
R   2 PIWA2-FN3-RIGHT-SIDE-OF-STR
    3 PIWA2-FN3-R-COM-DIST             A          3
R   3 PIWA2-FN3-R-COM-DIST
    4 PIWA2-FN3-R-COM-DIST-BORO        A          1
    4 PIWA2-FN3-R-COM-DIST-NUM         A          2
    3 PIWA2-FN3-R-LOW-HOUSENUM         A         16 /* DISPLAY FORMAT
    3 PIWA2-FN3-R-HI-HOUSENUM          A         16 /* DISPLAY FORMAT
    3 FILLER-1000                      A         32 /* FOR FUTURE USE
    3 PIWA2-FN3-R-CD-ELIGIBLE          A          1
    3 PIWA2-FN3-R-ZIP                  A          5
    3 PIWA2-FN3-R-HEALTH-AREA          A          4
    3 PIWA2-FN3-R-POLICE-DIST          A          4
R   3 PIWA2-FN3-R-POLICE-DIST
    4 PIWA2-FN3-R-POL-PAT-BORO-CMD     A          1
    4 PIWA2-FN3-R-POL-PRECINCT         A          3
    3 PIWA2-FN3-R-FIRE-DIV             A          2
    3 PIWA2-FN3-R-FIRE-BAT             A          2
    3 PIWA2-FN3-R-FIRE-CO              A          4
R   3 PIWA2-FN3-R-FIRE-CO
    4 PIWA2-FN3-R-FIRE-CO-TYPE         A          1
    4 PIWA2-FN3-R-FIRE-CO-NUM          A          3
    3 PIWA2-FN3-R-SCHL-DIST            A          2
    3 PIWA2-FN3-R-DYN-BLK              A          3
    3 PIWA2-FN3-R-ED                   A          3
    3 PIWA2-FN3-R-AD                   A          2
    3 PIWA2-FN3-R-POLICE-PAT-BORO      A          2
    3 FILLER-1080                      A          1
    3 PIWA2-FN3-R-BORO                 A          1
    3 PIWA2-FN3-R-1990-CENSUS-TRACT    A          6
    3 PIWA2-FN3-R-2010-CENSUS-TRACT    A          6
    3 PIWA2-FN3-R-2010-CENSUS-BLOCK    A          4
    3 PIWA2-FN3-R-2010-CENSUS-BLK-SUF  A          1 /* NA
    3 PIWA2-FN3-R-2000-CENS-TRACT      A          6
    3 PIWA2-FN3-R-2000-CENS-BLOCK      A          4
    3 PIWA2-FN3-R-2000-CENS-BLK-SUF    A          1 /* NA
    3 PIWA2-FN3-R-FILLER-1090          A          7 /* V16.1 REPLACEMENT
    3 PIWA2-FN3-R-NTA                  A          4 /*NEIGHBORHOOD
*   *                                               /*TABULATION AREA
    3 FILLER-1100                      A          8
*   2 PIWA2-FN3-PSEUDO-FILLER          A       3550
*   * ******************************** * ********** **********
* ** *** END OF FUNCTION 3 LAYOUT**** * ********** **********
R   1 GEOLP2
    2 PIWA2-FN3-SEGAUX                 A        450 /* SAME AS FN3
    2 PIWA2-FN3-FILLER-SEGAUX          A          6 /* FOR FUTURE USE
    2 PIWA2-FN3-SEGAUX-COUNTER         A          4
    2 PIWA2-FN3-SEGAUX-SEGMENTS        A          7 (1:70)
*   2 PIWA2-FN3-SEGAUX-PSEUDO-FILLER   A       3050
*   * ******************************** * ********** FOR AUX SEGS
*   *  END OF FUNCTION 3 AUX LAYOUT    * ********** ********
*   * -------------------------------- - ---------- --------
*   *  START OF FUNCTION 3 EXTENDED      LAYOUT     ********
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R  1 GEOLP2
   2 PIWA2-3X-ACCESS-KEY                A          21
   2 PIWA2-3X-DUP-KEY-FLAG              A           1 /* OR CONTI PARITY
   2 PIWA2-3X-LOCATION-STATUS           A           1
   2 PIWA2-3X-COUNTY-BOUNDARY           A           1
   2 PIWA2-3X-PREFERRED-LGC1            A           2
   2 PIWA2-3X-PREFERRED-LGC2            A           2
   2 PIWA2-3X-PREFERRED-LGC3            A           2
   2 PIWA2-3X-NUM-X-ST-LOW-END          A           1
   2 PIWA2-3X-LOW-B5SC                  A           6 (1:5) /* 30-BYTES
   2 PIWA2-3X-NUM-X-ST-HI-END           A           1
   2 PIWA2-3X-HI-B5SC                   A           6 (1:5) /* 30-BYTES
   2 PIWA2-3X-REVERSAL-FLAG             A           1
   2 PIWA2-3X-LION-KEY                  A          10
R  2 PIWA2-3X-LION-KEY
   3 PIWA2-3X-LION-BORO                 A           1
   3 PIWA2-3X-LION-FACECODE             A           4
   3 PIWA2-3X-LION-SEQ                  A           5
   2 PIWA2-3X-GENREC-FLAG               A           1
   2 PIWA2-3X-SEG-LENGTH                A           5
   2 PIWA2-3X-SEG-SLOP                  A           3
   2 PIWA2-3X-SEG-ORIENT                A           1
   2 PIWA2-3X-MARBLE-RIKERS-FLAG        A           1
   2 PIWA2-3X-FROM-NODE                 A           7
   2 PIWA2-3X-TO-NODE                   A           7
   2 PIWA2-3X-SANIT-SNOW-PRIORITY       A           1 /*SANITATION STRT
*  *                                                  /*SNOW PRIORITY
   2 FILLER-3X-600                      A           4
   2 PIWA2-3X-SEGMENT-ID                A           7
   2 PIWA2-3X-DOT-SLA                   A           1
   2 PIWA2-3X-CURVE-FLAG                A           1
   2 PIWA2-3X-DOG-LEG                   A           1
   2 PIWA2-3X-FEATURE-TYPE              A           1
   2 PIWA2-3X-SEGMENT-TYPE              A           1
   2 PIWA2-3X-COINCIDENT-SEG-CTR        A           1
   2 FILLER-3X-700                      A           4
*  * *** LEFT SIDE OF THE STREET **** * *** ****** ******
   2 PIWA2-3X-LEFT-SIDE-OF-STR          A         150
R  2 PIWA2-3X-LEFT-SIDE-OF-STR
   3 PIWA2-3X-L-COM-DIST                A           3
R  3 PIWA2-3X-L-COM-DIST
   4 PIWA2-3X-L-COM-DIST-BORO           A           1
   4 PIWA2-3X-L-COM-DIST-NUM            A           2
   3 PIWA2-3X-L-LOW-HOUSENUM            A          16 /* DISPLAY FORMAT
   3 PIWA2-3X-L-HI-HOUSENUM             A          16 /* DISPLAY FORMAT
   3 FILLER-3X-800                      A          32 /* FOR FUTURE USE
   3 PIWA2-3X-L-CD-ELIGIBLE             A           1
   3 PIWA2-3X-L-ZIP                     A           5
   3 PIWA2-3X-L-HEALTH-AREA             A           4
   3 PIWA2-3X-L-POLICE-DIST             A           4
R  3 PIWA2-3X-L-POLICE-DIST
   4 PIWA2-3X-L-POL-PAT-BORO-CMD        A           1
   4 PIWA2-3X-L-POL-PRECINCT            A           3
   3 PIWA2-3X-L-FIRE-DIV                A           2
   3 PIWA2-3X-L-FIRE-BAT                A           2
   3 PIWA2-3X-L-FIRE-CO                 A           4
R  3 PIWA2-3X-L-FIRE-CO
   4 PIWA2-3X-L-FIRE-CO-TYPE            A           1
   4 PIWA2-3X-L-FIRE-CO-NUM             A           3
   3 PIWA2-3X-L-SCHL-DIST               A           2
   3 PIWA2-3X-L-DYN-BLK                 A           3
   3 PIWA2-3X-L-ED                      A           3
   3 PIWA2-3X-L-AD                      A           2
   3 PIWA2-3X-L-POLICE-PAT-BORO         A           2
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    3 FILLER-3X-880                     A          1
    3 PIWA2-3X-L-BORO                   A          1
    3 PIWA2-3X-L-1990-CENSUS-TRACT      A          6
    3 PIWA2-3X-L-2010-CENSUS-TRACT      A          6
    3 PIWA2-3X-L-2010-CENSUS-BLOCK      A          4
    3 PIWA2-3X-L-2010-CENSUS-BLK-SUF    A          1 /* NA
    3 PIWA2-3X-L-2000-CENS-TRACT        A          6
    3 PIWA2-3X-L-2000-CENS-BLOCK        A          4
    3 PIWA2-3X-L-2010-CENS-BLK-SUF      A          1 /* NA
    3 PIWA2-3X-L-FILLER-890             A          7 /* V16.1 REPLACEMENT
    3 PIWA2-3X-L-NTA                    A          4 /*NEIGHBORHOOD
*   *                                              /*TABULATION AREA
    3 FILLER-3X-900                     A          8
*   * *** RIGHT SIDE OF THE STREET ***  * ********** ***********
    2 PIWA2-3X-RIGHT-SIDE-OF-STR        A        150
R   2 PIWA2-3X-RIGHT-SIDE-OF-STR
    3 PIWA2-3X-R-COM-DIST               A          3
R   3 PIWA2-3X-R-COM-DIST
    4 PIWA2-3X-R-COM-DIST-BORO          A          1
    4 PIWA2-3X-R-COM-DIST-NUM           A          2
    3 PIWA2-3X-R-LOW-HOUSENUM           A         16 /* DISPLAY FORMAT
    3 PIWA2-3X-R-HI-HOUSENUM            A         16 /* DISPLAY FORMAT
    3 FILLER-3X-1000                    A         32 /* FOR FUTURE USE
    3 PIWA2-3X-R-CD-ELIGIBLE            A          1
    3 PIWA2-3X-R-ZIP                    A          5
    3 PIWA2-3X-R-HEALTH-AREA            A          4
    3 PIWA2-3X-R-POLICE-DIST            A          4
R   3 PIWA2-3X-R-POLICE-DIST
    4 PIWA2-3X-R-POL-PAT-BORO-CMD       A          1
    4 PIWA2-3X-R-POL-PRECINCT           A          3
    3 PIWA2-3X-R-FIRE-DIV               A          2
    3 PIWA2-3X-R-FIRE-BAT               A          2
    3 PIWA2-3X-R-FIRE-CO                A          4
R   3 PIWA2-3X-R-FIRE-CO
    4 PIWA2-3X-R-FIRE-CO-TYPE           A          1
    4 PIWA2-3X-R-FIRE-CO-NUM            A          3
    3 PIWA2-3X-R-SCHL-DIST              A          2
    3 PIWA2-3X-R-DYN-BLK                A          3
    3 PIWA2-3X-R-ED                     A          3
    3 PIWA2-3X-R-AD                     A          2
    3 PIWA2-3X-R-POLICE-PAT-BORO        A          2
    3 FILLER-3X-1080                    A          1
    3 PIWA2-3X-R-BORO                   A          1
    3 PIWA2-3X-R-1990-CENSUS-TRACT      A          6
    3 PIWA2-3X-R-2010-CENSUS-TRACT      A          6
    3 PIWA2-3X-R-2010-CENSUS-BLOCK      A          4
    3 PIWA2-3X-R-2010-CENSUS-BLK-SUF    A          1 /* NA
    3 PIWA2-3X-R-2000-CENS-TRACT        A          6
    3 PIWA2-3X-R-2000-CENS-BLOCK        A          4
    3 PIWA2-3X-R-2000-CENS-BLK-SUF      A          1 /* NA
    3 PIWA2-3X-R-FILLER-1090            A          7 /* V16.1 REPLACEMENT
    3 PIWA2-3X-R-NTA                    A          4 /*NEIGHBORHOOD
*   *                                              /*TABULATION AREA
    3 FILLER-3X-1100                    A          8
    2 PIWA2-3X-LGCS                     A          8
    2 PIWA2-3X-LGCS-FROM                A          8
    2 PIWA2-3X-LGCS-TO                  A          8
    2 PIWA2-3X-L-HEALTH-CTR-DIST        A          2
    2 PIWA2-3X-R-HEALTH-CTR-DIST        A          2
    2 PIWA2-3X-FILL1                    A          1
    2 PIWA2-3X-TRAFFIC-DIR              A          1
    2 PIWA2-3X-ROADWAY-TYPE             A          2
    2 PIWA2-3X-PHYSICAL-ID              A          7
    2 PIWA2-3X-GENERIC-ID               A          7
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    2 PIWA2-3X-INTP-ID                  A          7 /* INTERNAL USE
    2 PIWA2-3X-INTF-ID                  A          7 /* INTERNAL USE
    2 PIWA2-3X-STR-STATUS               A          1
    2 PIWA2-3X-STR-WIDTH                A          3
    2 PIWA2-3X-STR-WIDTH-IRREG          A          1
    2 PIWA2-3X-BIKE-LANE                A          1
    2 PIWA2-3X-FED-CLASS-CODE           A          2
    2 PIWA2-3X-ROW-TYPE                 A          1
    2 PIWA2-3X-LGC-LIST                 A         10
    2 PIWA2-3X-LEGACY-ID                A          7
    2 PIWA2-3X-L-NTA-NAME               A         75
    2 PIWA2-3X-R-NTA-NAME               A         75
    2 PIWA2-3X-FROM-XCOORD              A          7
    2 PIWA2-3X-FROM-YCOORD              A          7
    2 PIWA2-3X-TO-XCOORD                A          7
    2 PIWA2-3X-TO-YCOORD                A          7
    2 PIWA2-3X-FROM-LATITUDE            A          9
    2 PIWA2-3X-FROM-LONGITUDE           A         11
    2 PIWA2-3X-TO-LATITUDE              A          9
    2 PIWA2-3X-TO-LONGITUDE             A         11
    2 PIWA2-3X-L-BLOCKFACE-ID           A         10 /* V16.1 ADD
    2 PIWA2-3X-R-BLOCKFACE-ID           A         10 /* V16.1 ADD
    2 PIWA2-3X-NBR-TRAVEL-LANES         A          2 /* V16.1 ADD
    2 PIWA2-3X-NBR-PARK-LANES           A          2 /* V16.1 ADD
    2 PIWA2-3X-NBR-TOTAL-LANES          A          2 /* V16.1 ADD
    2 PIWA2-3X-BIKE-LANE-2              A          2 /* V16.4 ADDITION
    2 PIWA2-3X-STR-WIDTH-MAX            A          3 /* V16.4 ADDITION
    2 PIWA2-3X-BIKE-TRAFFIC-DIR         A          2 /* V17.1 ADDITION
    2 FILLER-3X-FILL2                   A        213 /* V17.1 ALTERATION
*   2 FILLER-3X-FILL2                   A        215 /* V16.4 ALTERATION
*   2 FILLER-3X-FILL2                   A        220 /* V16.1 MOD
*   2 PIWA2-3X-PSEUDO-FILLER            A       3000
*   * ******************************** * ********** **********
*   * END OF FCT 3 EXTENDED LAYOUT *** * ********** **********
R   1 GEOLP2
    2 PIWA2-3X-SEGAUX                   A       1000 /* SAME AS FN 3X
    2 PIWA2-3X-FILLER-SEGAUX            A          6 /* FOR FUTURE USE
    2 PIWA2-3X-SEGAUX-COUNTER           A          4
    2 PIWA2-3X-SEGAUX-SEGMENTS          A          7 (1:70)
*   * ******************************** * ********** FOR AUX SEGS
*   * END OF FCT 3 EXTENDED AUX LAYOUT * ********** *************
*   * -------------------------------- - ---------- --------
*   *  BEGINNING OF FUNCTION 3C LAYOUT * ********** ********
R   1 GEOLP2
    2 PIWA2-FN3C-ACCESS-KEY             A         21
    2 PIWA2-FN3C-DUP-KEY-FLAG           A          1 /* OR CONTI PARITY
    2 PIWA2-FN3C-LOCATION-STATUS        A          1
    2 PIWA2-FN3C-COUNTY-BOUNDARY        A          1
    2 PIWA2-FN3C-PREFERRED-LGC1         A          2
    2 PIWA2-FN3C-PREFERRED-LGC2         A          2
    2 PIWA2-FN3C-PREFERRED-LGC3         A          2
    2 PIWA2-FN3C-NUM-X-ST-LOW-END       A          1
    2 PIWA2-FN3C-LOW-B5SC               A          6 (1:5) /* 30-BYTES
    2 PIWA2-FN3C-NUM-X-ST-HI-END        A          1
    2 PIWA2-FN3C-HI-B5SC                A          6 (1:5) /* 30-BYTES
    2 PIWA2-FN3C-REVERSAL-FLAG          A          1
    2 PIWA2-FN3C-LIONKEY                A         10
R   2 PIWA2-FN3C-LIONKEY
    3 PIWA2-FN3C-LION-BORO              A          1
    3 PIWA2-FN3C-LION-FACECODE          A          4
    3 PIWA2-FN3C-LION-SEQ               A          5
    2 PIWA2-FN3C-GENREC-FLAG            A          1
    2 PIWA2-FN3C-SEG-LENGTH             A          5
    2 PIWA2-FN3C-SEG-AZIMUTH            A          3
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    2 PIWA2-FN3C-SEG-ORIENT            A          1
    2 PIWA2-FN3C-MARBLE-RIKERS-FLAG    A          1
    2 PIWA2-FN3C-FROM-NODE             A          7
    2 PIWA2-FN3C-TO-NODE               A          7
    2 PIWA2-FN3C-SANIT-SNOW-PRIORITY   A          1 /*SANITATION STRT
*   *                                               /*SNOW PRIORITY
    2 FILLER-1200                      A          4
    2 PIWA2-FN3C-SEGMENT-ID            A          7
    2 PIWA2-FN3C-DOT-SLA               A          1
    2 PIWA2-FN3C-SIDE-OF-STR           A          1
    2 PIWA2-FN3C-CURVE-FLAG            A          1
    2 PIWA2-FN3C-FEATURE-TYPE          A          1
    2 PIWA2-FN3C-SEGMENT-TYPE          A          1
    2 PIWA2-FN3C-COINCIDENT-SEG-CTR    A          1
    2 FILLER-1300                      A          4
*   * *** FCT 3C BLOCKFACE INFORMATION * ********** ******************
    2 PIWA2-FN3C-BLOCKFACE-INFO        A        150
R   2 PIWA2-FN3C-BLOCKFACE-INFO
    3 PIWA2-FN3C-COM-DIST              A          3
R   3 PIWA2-FN3C-COM-DIST
    4 PIWA2-FN3C-COMDIST-BORO          A          1
    4 PIWA2-FN3C-COMDIST-NUM           A          2
    3 PIWA2-FN3C-LOW-HOUSENUM          A         16 /* DISPLAY FORMAT
    3 PIWA2-FN3C-HI-HOUSENUM           A         16 /* DISPLAY FORMAT
    3 PIWA2-FN3C-LOW-HOUSENUM2         A         16 /* DISPLAY FORMAT
    3 PIWA2-FN3C-HI-HOUSENUM2          A         16 /* DISPLAY FORMAT
    3 PIWA2-FN3C-FILLER-1400           A          1 /* FOR GSS USE
    3 PIWA2-FN3C-ZIP                   A          5
    3 PIWA2-FN3C-HEALTH-AREA           A          4
    3 PIWA2-FN3C-POLICE-DIST           A          4
R   3 PIWA2-FN3C-POLICE-DIST
    4 PIWA2-FN3C-POL-PAT-BORO-CMD      A          1
    4 PIWA2-FN3C-POL-PRECINCT          A          3
    3 PIWA2-FN3C-FIRE-DIV              A          2
    3 PIWA2-FN3C-FIRE-BAT              A          2
    3 PIWA2-FN3C-FIRE-CO               A          4
R   3 PIWA2-FN3C-FIRE-CO
    4 PIWA2-FN3C-FIRE-CO-TYPE          A          1
    4 PIWA2-FN3C-FIRE-CO-NUM           A          3
    3 PIWA2-FN3C-SCHL-DIST             A          2
    3 PIWA2-FN3C-DYN-BLK               A          3
    3 PIWA2-FN3C-ED                    A          3
    3 PIWA2-FN3C-AD                    A          2
    3 PIWA2-FN3C-POLICE-PAT-BORO       A          2
    3 FILLER-1480                      A          1
    3 PIWA2-FN3C-BORO                  A          1
    3 PIWA2-FN3C-1900-CENSUS-TRACT     A          6
    3 PIWA2-FN3C-2010-CENSUS-TRACT     A          6
    3 PIWA2-FN3C-2010-CENSUS-BLOCK     A          4
    3 PIWA2-FN3C-2010-CENSUS-BLOCK-SUF A          1 /* NA
    3 PIWA2-FN3C-2000-CENS-TRACT       A          6
    3 PIWA2-FN3C-2000-CENS-BLOCK       A          4
    3 PIWA2-FN3C-2000-CENS-BLK-SUF     A          1 /* NA
    3 PIWA2-FN3C-FILLER-1490           A          7 /* V16.1 REPLACEMENT
    3 PIWA2-FN3C-NTA                   A          4 /*NEIGHBORHOOD
*   *                                               /*TABULATION AREA
*   3 FILLER-1500                      A          8
*   * PIWA2-FN3C-PSEUDO-FILLER         A       3700 /*LEVEL 2 IN DEF
*   * ******************************** * ********** ******
*   *  END OF FCT 3C LAYOUT ********** * ********** ******
R   1 GEOLP2
    2 PIWA2-FN3C-SEGAUX                A        300 /*SAME AS FN3C
    2 PIWA2-FN3C-SEGAUX-FILL           A          6
    2 PIWA2-FN3C-SEGAUX-CTR            A          4
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    2 PIWA2-FN3C-SEGAUX-SEGS          A          7 (1:70)
*   2 PIWA2-FN3C-AUX-PSEUDO-FILLER    A       3200
* ** ******************************** * ********** FN3C AUX SEGS
*   *  END OF FCT 3C AUX LAYOUT ****** * ********** *******
* ** ******************************** * ********** *************
* ** ******************************** * ********** *************
*   *  START OF FUNCTION 3CX LAYOUT    * ********** ********
R   1 GEOLP2
    2 PIWA2-3CX-ACCESS-KEY            A         21
    2 PIWA2-3CX-DUP-KEY-FLAG          A          1 /* OR CONTI PARITY
    2 PIWA2-3CX-LOCATION-STATUS       A          1
    2 PIWA2-3CX-COUNTY-BOUNDARY       A          1
    2 PIWA2-3CX-PREFERRED-LGC1        A          2
    2 PIWA2-3CX-PREFERRED-LGC2        A          2
    2 PIWA2-3CX-PREFERRED-LGC3        A          2
    2 PIWA2-3CX-NUM-X-ST-LOW-END      A          1
    2 PIWA2-3CX-LOW-B5SC              A          6 (1:5) /* 30-BYTES
    2 PIWA2-3CX-NUM-X-ST-HI-END       A          1
    2 PIWA2-3CX-HI-B5SC               A          6 (1:5) /* 30-BYTES
    2 PIWA2-3CX-REVERSAL-FLAG         A          1
    2 PIWA2-3CX-LIONKEY               A         10
R   2 PIWA2-3CX-LIONKEY
    3 PIWA2-3CX-LION-BORO             A          1
    3 PIWA2-3CX-LION-FACECODE         A          4
    3 PIWA2-3CX-LION-SEQ              A          5
    2 PIWA2-3CX-GENREC-FLAG           A          1
    2 PIWA2-3CX-SEG-LENGTH            A          5
    2 PIWA2-3CX-SEG-SLOPE             A          3
    2 PIWA2-3CX-SEG-ORIENT            A          1
    2 PIWA2-3CX-MARBLE-RIKERS-FLAG    A          1
    2 PIWA2-3CX-FROM-NODE             A          7
    2 PIWA2-3CX-TO-NODE               A          7
    2 PIWA2-3CX-SANIT-SNOW-PRIORITY   A          1 /*SANITATION STRT
*   *                                              /*SNOW PRIORITY
    2 FILLER-3CX-1200                 A          4
    2 PIWA2-3CX-SEGMENT-ID            A          7
    2 PIWA2-3CX-DOT-SLA               A          1
    2 PIWA2-3CX-SIDE-OF-STR           A          1
    2 PIWA2-3CX-CURVE-FLAG            A          1
    2 PIWA2-3CX-FEATURE-TYPE          A          1
    2 PIWA2-3CX-SEGMENT-TYPE          A          1
    2 PIWA2-3CX-COINCIDENT-SEG-CTR    A          1
    2 FILLER-3CX-1300                 A          4
*   * ***FCT 3C BLOCKFACE INFORMATION  * ********** *****************
    2 PIWA2-3CX-BLOCKFACE-INFO        A        150
R   2 PIWA2-3CX-BLOCKFACE-INFO
    3 PIWA2-3CX-COM-DIST              A          3
R   3 PIWA2-3CX-COM-DIST
    4 PIWA2-3CX-COMDIST-BORO          A          1
    4 PIWA2-3CX-COMDIST-NUM           A          2
    3 PIWA2-3CX-LOW-HOUSENUM          A         16 /* DISPLAY FORMAT
    3 PIWA2-3CX-HI-HOUSENUM           A         16 /* DISPLAY FORMAT
    3 PIWA2-3CX-LOW-HOUSENUM2         A         16 /* DISPLAY FORMAT
    3 PIWA2-3CX-HI-HOUSENUM2          A         16 /* DISPLAY FORMAT
    3 FIWA2-3CX-CD-ELIGIBLE           A          1
    3 PIWA2-3CX-ZIP                   A          5
    3 PIWA2-3CX-HEALTH-AREA           A          4
    3 PIWA2-3CX-POLICE-DIST           A          4
R   3 PIWA2-3CX-POLICE-DIST
    4 PIWA2-3CX-POL-PAT-BORO-CMD      A          1
    4 PIWA2-3CX-POL-PRECINCT          A          3
    3 PIWA2-3CX-FIRE-DIV              A          2
    3 PIWA2-3CX-FIRE-BAT              A          2
    3 PIWA2-3CX-FIRE-CO               A          4
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R  3 PIWA2-3CX-FIRE-CO
   4 PIWA2-3CX-FIRE-CO-TYPE          A          1
   4 PIWA2-3CX-FIRE-CO-NUM           A          3
   3 PIWA2-3CX-SCHL-DIST             A          2
   3 PIWA2-3CX-DYN-BLK               A          3
   3 PIWA2-3CX-ED                    A          3
   3 PIWA2-3CX-AD                    A          2
   3 PIWA2-3CX-POLICE-PAT-BORO       A          2
   3 FILLER-3CX-1480                 A          1
   3 PIWA2-3CX-BORO                  A          1
   3 PIWA2-3CX-1990-CENSUS-TRACT     A          6
   3 PIWA2-3CX-2010-CENSUS-TRACT     A          6
   3 PIWA2-3CX-2010-CENSUS-BLOCK     A          4
   3 PIWA2-3CX-2010-CENSUS-BLOCK-SUF A          1 /* NA
   3 PIWA2-3CX-2000-CENS-TRACT       A          6
   3 PIWA2-3CX-2000-CENS-BLOCK       A          4
   3 PIWA2-3CX-2000-CENS-BLK-SUF     A          1 /* NA
   3 PIWA2-3CX-FILLER-1490           A          7 /* V16.1 REPLACEMENT
   3 PIWA2-3CX-NTA                   A          4 /*NEIGHBORHOOD
*  *                                              /*TABULATION AREA
   3 FILLER-1500                     A          8
   2 PIWA2-3CX-LGCS                  A          8
   2 PIWA2-3CX-LGCS-FROM             A          8
   2 PIWA2-3CX-LGCS-TO               A          8
   2 PIWA2-3CX-L-HEALTH-CTR-DIST     A          2
   2 PIWA2-3CX-R-HEALTH-CTR-DIST     A          2
   2 PIWA2-3CX-FILL1                 A          1
   2 PIWA2-3CX-TRAFFIC-DIR           A          1
   2 PIWA2-3CX-ROADWAY-TYPE          A          2
   2 PIWA2-3CX-PHYSICAL-ID           A          7
   2 PIWA2-3CX-GENERIC-ID            A          7
   2 PIWA2-3CX-INTP-ID               A          7 /* INTERNAL USE
   2 PIWA2-3CX-INTF-ID               A          7 /* INTERNAL USE
   2 PIWA2-3CX-STREET-STATUS         A          1
   2 PIWA2-3CX-STREET-WIDTH          A          3
   2 PIWA2-3CX-STREET-WIDTH-IRREG    A          1
   2 PIWA2-3CX-BIKE-LANE             A          1
   2 PIWA2-3CX-FED-CLASS-CODE        A          2
   2 PIWA2-3CX-ROW-TYPE              A          1
   2 PIWA2-3CX-LGC-LIST              A         10
   2 PIWA2-3CX-LEGACY-ID             A          7
   2 PIWA2-3CX-NTA-NAME              A         75
   2 PIWA2-3CX-FROM-XCOORD           A          7
   2 PIWA2-3CX-FROM-YCOORD           A          7
   2 PIWA2-3CX-TO-XCOORD             A          7
   2 PIWA2-3CX-TO-YCOORD             A          7
   2 PIWA2-3CX-FROM-LATITUDE         A          9
   2 PIWA2-3CX-FROM-LONGITUDE        A         11
   2 PIWA2-3CX-TO-LATITUDE           A          9
   2 PIWA2-3CX-TO-LONGITUDE          A         11
   2 PIWA2-3CX-BLOCKFACE-ID          A         10 /* V16.1 ADD
   2 PIWA2-3CX-NBR-TRAVEL-LANES      A          2 /* V16.1 ADD
   2 PIWA2-3CX-NBR-PARK-LANES        A          2 /* V16.1 ADD
   2 PIWA2-3CX-NBR-TOTAL-LANES       A          2 /* V16.1 ADD
   2 PIWA2-3CX-BIKE-LANE-2           A          2 /* V16.4 ADDITION
   2 PIWA2-3CX-STR-WIDTH-MAX         A          3 /* V16.4 ADDITION
   2 PIWA2-3CX-BIKE-TRAFFIC-DIR      A          2 /* V17.1 ADDITION
   2 FILLER-3CX-FILL1560             A        298 /* V17.1 ALTERATION
*  2 FILLER-3CX-FILL1560             A        300 /* V16.4 ALTERATION
*  2 FILLER-3CX-FILL1560             A        305 /* V16.1 MOD
*  2 PIWA2-3CX-PSEUDO-FILER          A       3150
*  * ******************************** * ********** ******
*  *  END OF FCT 3CX LAYOUT ********* * ********** ******
R  1 GEOLP2
```

GEOLP2 COPY File

```
    2 PIWA2-3CX-SEGAUX                 A          850 /* SAME AS FN 3CX
    2 PIWA2-3CX-SEGAUX-FILL            A            6
    2 PIWA2-3CX-SEGAUX-CTR             A            4
    2 PIWA2-3CX-SEGAUX-SEGS            A            7 (1:70)
*   2 PIWA2-3CX-AUX-PSEUDO-FILLER      A         2650
* ** ******************************** * ********** FN3C AUX SEGS
*   *  END OF FCT 3CX AUX LAYOUT*****  * ********** *******
* ** ******************************** * ********** *************
* ** ******************************** * ********** *************
*   *  BEGINNING OF FUNCTION 5 LAYOUT  *       **** *******
R   1 GEOLP2
    2 PIWA2-FN5-ADDR-MATCHING-KEY      A           33
    2 FILLER-1600                      A          267
*   *  END OF FUNCTION 5 LAYOUT        *       **** *******
*   - -------------------------------- -       ---- ------------------------------
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GEOLP21A COPY File

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    1 GEOLP21A                                             /*FCT 1A,BL USE SAME WA2 LAY
*   * THE FIELD P2NAT1A IS USED AS A      PARAMETER TO CALL GEOSUPPORT
    2 P2NAT1A                          A          21
R   2 P2NAT1A
    3 PIWA2-1A-ACCESS-KEY              A          21
    2 PIWA2-1A-CONT-PARITY             A           1 /* OR DUP ADDR IND
    2 PIWA2-1A-LOW-HOUSENUM            A          11 /* SORT FORMAT
    2 PIWA2-1A-BBL                     A          10
R   2 PIWA2-1A-BBL
    3 PIWA2-1A-BBL-BORO                A           1
    3 PIWA2-1A-BLOCK                   A           5
    3 PIWA2-1A-LOT                     A           4
    2 PIWA2-1A-LOT-VERSION             A           1 /* NYI */
    2 PIWA2-1A-SCC                     A           1
    2 FILLER-100                       A           1
    2 PIWA2-1A-GENERAL-LOT-INFO
    3 PIWA2-1A-RPAD-BLDG-CLASS         A           2
    3 PIWA2-1A-CORNER-CODE             A           2
    3 PIWA2-1A-NUM-OF-STRUCTURES       A           4
    3 PIWA2-1A-NUM-OF-BLOCKFACES       A           2
    3 PIWA2-1A-INTERIOR-FLAG           A           1
    3 PIWA2-1A-VACANT-FLAG             A           1
    3 PIWA2-1A-IRREG-LOT-FLAG          A           1
    2 PIWA2-1A-MARBLE-RIKERS-FLAG      A           1
    2 PIWA2-1A-ADDR-LIST-OVFLOW-FLAG   A           1
    2 PIWA2-1A-STROLL-KEY              A          19
R   2 PIWA2-1A-STROLL-KEY
    3 PIWA2-1A-STROLL-BORO             A           1
    3 PIWA2-1A-STROLL-5SC              A           5
    3 PIWA2-1A-STROLL-SIDE-OF-STR      A           1 /* L OR R
    3 PIWA2-1A-STROLL-HI-HOUSENUM      A          11 /* SORT FORMAT
    3 FILLER-200                       A           1
    2 FILLER-300                       A           1 /* FOR GSS USE
    2 PIWA2-1A-BIN                     A           7
    2 PIWA2-1A-CONDO-FLAG              A           1
    2 FILLER-400                       A           1
    2 PIWA2-1A-RPAD-CONDO-ID-NUM       A           4
    2 PIWA2-1A-CONDO-UNIT-ID-NUM       A           7
    2 PIWA2-1A-CONDO-BILL-BBL          A          10
    2 PIWA2-1A-CONDO-BILL-BBL-VER      A           1
    2 PIWA2-1A-CONDO-BILL-BBL-SCC      A           1
    2 PIWA2-1A-CONDO-LOW-BBL           A          10
    2 PIWA2-1A-CONDO-LOW-BBL-VER       A           1
    2 PIWA2-1A-CONDO-HIGH-BBL          A          10
    2 PIWA2-1A-CONDO-HIGH-BBL-VER      A           1
    2 FILLER-500                       A          15
    2 PIWA1-1A-COOP-NUM                A           4
    2 PIWA2-1A-SANBORN                 A           8
R   2 PIWA2-1A-SANBORN
    3 PIWA2-1A-SANBORN-BORO            A           1
    3 PIWA2-1A-SANBORN-VOL             A           3
    3 PIWA2-1A-SANBORN-PAGE            A           4
    2 PIWA2-1A-COMMERC-DIST            A           5
```

GEOLP21A COPY File

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   2 PIWA2-1A-DOF-MAP-BORO           A          1
   2 PIWA2-1A-DOF-MAP-SECVOL         A          4
   2 PIWA2-1A-DOF-MAP-PAGE           A          4
   2 FILLER-1A-RESERVED-DCP          A          3
   2 PIWA2-1A-LATITUDE               A          9
   2 PIWA2-1A-LONGITUDE              A         11
   2 PIWA2-1A-X-COORD                A          7
   2 PIWA2-1A-Y-COORD                A          7
   2 PIWA2-1A-BID                    A          6
   2 PIWA2-1A-TPAD-BIN-ST            A          1 /* CURRENT STATUS */
   2 PIWA2-1A-TPAD-NEW-BIN           A          7 /* NEW BIN */
   2 PIWA2-1A-TPAD-NEW-BIN-ST        A          1 /* NEW BIN STATUS */
   2 PIWA2-1A-TPAD-CONFLICT          A          1 /* CONFLICT FLAG */
   2 FILLER-650                      A          9
   2 FILLER-700                      A          8 /* FOR GSS USE
   2 PIWA2-1A-NUM-OF-ADDR            A          4
   2 PIWA2-1A-LIST-OF-ADDR                        (1:21)
   3 PIWA2-1A-LIST-LOW-HOUSENUM      A         16 /* DISPLAY FORMAT
   3 PIWA2-1A-LIST-HI-HOUSENUM       A         16 /* DISPLAY FORMAT
   3 PIWA2-1A-LIST-BORO              A          1
   3 PIWA2-1A-LIST-5SC               A          5
   3 PIWA2-1A-LIST-LGC               A          2
   3 PIWA2-1A-LIST-BIN               A          7
   3 PIWA2-1A-LIST-SIDE-OF-STR       A          1 /* L OR R
   3 PIWA2-1A-LIST-ADDR-TYPE         A          1 /* P=NAP, B=NAB,
MAL
*  *                                              /* BLANK=NORMAL
   3 PIWA2-1A-LIST-TPAD-STATUS       A          1 /* 0 - 9
   3 FILLER-800                      A          3
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GEOLP2AL COPY File

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    1 GEOLP2AL                                        /* FCT 1A, BL LONG WA2    WA2
*   * THE FIELD P2NAT1AL IS USED AS A     PARAMETER TO CALL GEOSUPPORT
    2 P2NAT1AL                         A          21
R   2 P2NAT1AL
    3 PIWA2-1AL-ACCESS-KEY             A          21
*   * BEGINNING OF FUNCTION 1AL LAYOUT * ********** *******************
    2 PIWA2-1AL-CONT-PARITY            A           1 /* OR DUP ADDR IND
    2 PIWA2-1AL-LOW-HOUSENUM           A          11 /* SORT FORMAT
    2 PIWA2-1AL-BBL                    A          10
R   2 PIWA2-1AL-BBL
    3 PIWA2-1AL-BBL-BORO               A           1
    3 PIWA2-1AL-BLOCK                  A           5
    3 PIWA2-1AL-LOT                    A           4
    2 FILLER-1AL-LOT-VERSION           A           1 /* NA
    2 PIWA2-1AL-SCC                    A           1
    2 FILLER-100                       A           1
    2 PIWA2-1AL-GENERAL-LOT-INFO
    3 PIWA2-1AL-RPAD-BLDG-CLASS        A           2
    3 PIWA2-1AL-CORNER-CODE            A           2
    3 PIWA2-1AL-NUM-OF-STRUCTURES      A           4
    3 PIWA2-1AL-NUM-OF-BLOCKFACES      A           2
    3 PIWA2-1AL-INTERIOR-FLAG          A           1
    3 PIWA2-1AL-VACANT-FLAG            A           1
    3 PIWA2-1AL-IRREG-LOT-FLAG         A           1
    2 PIWA2-1AL-MARBLE-RIKERS-FLAG     A           1
    2 PIWA2-1AL-ADDR-LIST-OVFLOW-FLAG  A           1
    2 PIWA2-1AL-STROLL-KEY             A          19
R   2 PIWA2-1AL-STROLL-KEY
    3 PIWA2-1AL-STROLL-KEY-BORO        A           1
    3 PIWA2-1AL-STROLL-KEY-5SC         A           5
    3 PIWA2-1AL-STROLL-SIDE-OF-STR     A           1 /* L OR R
    3 PIWA2-1AL-STROLL-HI-HOUSENUM     A          11 /* SORT FORMAT
    3 FILLER-200                       A           1
    2 FILLER-300                       A           1 /* FOR GSS USE
    2 PIWA2-1AL-BIN                    A           7
    2 PIWA2-1AL-CONDO-FLAG             A           1
    2 FILLER-400                       A           1
    2 PIWA2-1AL-RPAD-CONDO-ID-NUM      A           4
    2 PIWA2-1AL-CONDO-UNIT-ID-NUM      A           7
    2 PIWA2-1AL-CONDO-BILL-BBL         A          10
    2 PIWA2-1AL-CONDO-BILL-BBL-VER     A           1
    2 PIWA2-1AL-CONDO-BILL-BBL-SCC     A           1
    2 PIWA2-1AL-CONDO-LOW-BBL          A          10
    2 PIWA2-1AL-CONDO-LOW-BBL-VER      A           1
    2 PIWA2-1AL-CONDO-HIGH-BBL         A          10
    2 PIWA2-1AL-CONDO-HIGH-BBL-VER     A           1
    2 FILLER-500                       A          15
    2 PIWA2-1AL-COOP-NUM               A           4
    2 PIWA2-1AL-SANBORN                A           8
R   2 PIWA2-1AL-SANBORN
    3 PIWA2-1AL-SANBORN-BORO           A           1
    3 PIWA2-1AL-SANBORN-VOL            A           3
    3 PIWA2-1AL-SANBORN-PAGE           A           4
    2 PIWA2-1AL-COMMERC-DIST           A           5
    2 PIWA2-1AL-DOF-MAP-BORO           A           1
    2 PIWA2-1AL-DOF-MAP-SECVOL         A           4
    2 PIWA2-1AL-DOF-MAP-PAGE           A           4
    2 FILLER-600                       A           3
    2 PIWA2-1AL-LATITUDE               A           9
    2 PIWA2-1AL-LONGITUDE              A          11
    2 PIWA2-1AL-X-COORD                A           7
    2 PIWA2-1AL-Y-COORD                A           7
    2 PIWA2-1AL-BID                    A           6
    2 PIWA2-1AL-TPAD-BIN-ST            A           1 /*CURRENT STATUS
```

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    2 PIWA2-1AL-TPAD-NEW-BIN          A          7 /*NEW BIN
    2 PIWA2-1AL-TPAD-NEW-BIN-ST       A          1 /*NEW BIN STATUS
    2 PIWA2-1AL-TPAD-CONFLICT         A          1 /*CONFLICT FLAG
    2 FILLER-650                      A          9
    2 FILLER-700                      A          8 /* LGC GSS USE
    2 PIWA2-1AL-NUM-OF-BINS           A          4
    2 PIWA2-1AL-TPAD-BINLIST          A      17500
R   2 PIWA2-1AL-TPAD-BINLIST                       /* REDEF. BEGIN : PIWA2-1AL-TPAD
    3 PIWA2-1AL-TPAD-BINS                          (1:2187)
    4 PIWA2-1AL-TPAD-BIN              A          7
    4 PIWA2-1AL-TPAD-BINS-STAT        A          1
    3 PIWA2-1AL-TPAD-FILL             A          4
R   2 PIWA2-1AL-TPAD-BINLIST
    3 PIWA2-1AL-BINS                  A          7 (1:2500)
* ** END OF FUNCTION 1AL LAYOUT ***** * ********** *********************
* -- ------------------------------- - ---------- -------------------------
* ** BEGINNING OF FCT 1/1E EXTENDED * * ********** *********************
R   1 GEOLP2AL
    2 PIWA2-1EX-ACCESS-KEY            A         21
    2 PIWA2-1EX-CONT-PARITY           A          1 /* (OR DUP ADDR IND)
    2 PIWA2-1EX-LOW-HOUSENUM          A         11 /* SORT FORMAT
    2 PIWA2-1EX-HI-HOUSENUM           A         11 /* SORT FORMAT
    2 PIWA2-1EX-PREFERRED-LGC         A          2
    2 PIWA2-1EX-NUM-X-ST-LOW-END      A          1
    2 PIWA2-1EX-LOW-B5SC              A          6 (1:5) /* 30-BYTES
    2 PIWA2-1EX-NUM-X-ST-HI-END       A          1
    2 PIWA2-1EX-HI-B5SC               A          6 (1:5) /* 30-BYTES
    2 PIWA2-1EX-LIONKEY               A         10
R   2 PIWA2-1EX-LIONKEY
    3 PIWA2-1EX-LION-BORO             A          1
    3 PIWA2-1EX-LION-FACECODE         A          4
    3 PIWA2-1EX-LION-SEQ              A          5
    2 PIWA2-1EX-SPECIAL-ADDR-FLAG     A          1
    2 PIWA2-1EX-SIDE-OF-STR           A          1
    2 PIWA2-1EX-SEG-LEN               A          5
    2 PIWA2-1EX-X-COORD               A          7
    2 PIWA2-1EX-Y-COORD               A          7
    2 FILLER-1EX-100                  A          7 /* FOR ZCOORD
    2 FILLER-1EX-200                  A          1 /* FOR GSS USE
    2 PIWA2-1EX-MARBLE-RIKERS-FLAG    A          1
    2 PIWA2-1EX-DOT-SLA               A          1
    2 PIWA2-1EX-COM-DIST              A          3
R   2 PIWA2-1EX-COM-DIST
    3 PIWA2-1EX-COM-DIST-BORO         A          1
    3 PIWA2-1EX-COM-DIST-NUM          A          2
    2 PIWA2-1EX-ZIP                   A          5
*   *                                 *       **** *****
*   *  THE FN1E FIELDS ARE VALID ONLY *       **** *****
*   *  FOR FUNCTION 1E, NOT FUNC 1.   *       **** *****
    2 PIWA2-1EX-ELECT-DIST            A          3
    2 PIWA2-1EX-ASSEM-DIST            A          2
    2 PIWA2-1EX-SPLIT-ED-FLAG         A          1
    2 PIWA2-1EX-CONG-DIST             A          2
    2 PIWA2-1EX-SENATE-DIST           A          2
    2 PIWA2-1EX-COURT-DIST            A          2
    2 PIWA2-1EX-COUNCIL-DIST          A          2
*   *                                 *       **** *****
    2 PIWA2-1EX-HEALTH-CENTER-DIST    A          2
    2 PIWA2-1EX-HEALTH-AREA           A          4
    2 PIWA2-1EX-SANI-DIST             A          3
R   2 PIWA2-1EX-SANI-DIST
    3 PIWA2-1EX-SANI-DIST-BORO        A          1
    3 PIWA2-1EX-SANI-DIST-NUM         A          2
    2 PIWA2-1EX-SANI-SUBSEC           A          2
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GEOLP2AL COPY File

```
    2 PIWA2-1EX-SANI-REG                A          5
    2 PIWA2-1EX-SANI-REC                A          3
    2 PIWA2-1EX-POLICE-DIST             A          4
R   2 PIWA2-1EX-POLICE-DIST
    3 PIWA2-1EX-POL-PAT-BORO-CMD        A          1
    3 PIWA2-1EX-POL-PRECINCT            A          3
    2 PIWA2-1EX-FIRE-DIV                A          2
    2 PIWA2-1EX-FIRE-BAT                A          2
    2 PIWA2-1EX-FIRE-CO                 A          4
R   2 PIWA2-1EX-FIRE-CO
    3 PIWA2-1EX-FIRE-CO-TYPE            A          1
    3 PIWA2-1EX-FIRE-CO-NUM             A          3
    2 PIWA2-1EX-SCHL-DIST-SPLIT-FLAG    A          1
    2 PIWA2-1EX-SCHL-DIST               A          2
    2 PIWA2-1EX-DYN-BLK                 A          3
    2 PIWA2-1EX-POLICE-PAT-BORO         A          2
    2 PIWA2-1EX-FEATURE-TYPE            A          1
    2 PIWA2-1EX-SEGMENT-TYPE            A          1
    2 PIWA2-1EX-ALX                     A          1
    2 PIWA2-1EX-COINCIDENT-SEG-CTR      A          1
    2 FILLER-290                        A          3
    2 PIWA2-1EX-1990-CENSUS-TRACT       A          6
    2 PIWA2-1EX-2010-CENSUS-TRACT       A          6
    2 PIWA2-1EX-2010-CENSUS-BLOCK       A          4
    2 PIWA2-1EX-2010-CENSUS-BLOCK-SUF   A          1
    2 PIWA2-1EX-2000-CENSUS-TRACT       A          6 /* NA
    2 PIWA2-1EX-2000-CENSUS-BLOCK       A          4 /* NA
    2 PIWA2-1EX-2000-CENSUS-BLOCK-SUF   A          1 /* NA
    2 PIWA2-1EX-NTA                     A          4 /*NEIGHBORHOOD
*   *                                              /*TABULATION AREA*/
    2 PIWA2-1EX-SANIT-SNOW-PRIORITY     A          1 /*SANITATION STRT
*   *                                              /*SNOW PRIORITY
    2 PIWA2-1EX-SANIT-ORGANICS          A          5
    2 PIWA2-1EX-SANIT-BULK-PICK-UP      A          5 /* V16.4 ADDITION
*   2 PIWA2-1EX-SANIT-RESERVED          A          5
    2 PIWA2-1EX-HURRICANE-ZONE          A          2 /*OEM HURRICANE EVAC ZONE
    2 FILLER-1EX-300                    A         11
    2 PIWA2-1EX-UHNS                    A         11
    2 PIWA2-1EX-REAL-B7SC               A          8
    2 PIWA2-1EX-SEGMENT-ID              A          7
    2 PIWA2-1EX-CURVE-FLAG              A          1
    2 PIWA2-1EX-LGC                     A          8
    2 PIWA2-1EX-BOE-PTR                 A          1
    2 PIWA2-1EX-AZIMUTH                 A          3
    2 PIWA2-1EX-ORIENT                  A          1
    2 PIWA2-1EX-X-LOW                   A          7
    2 PIWA2-1EX-Y-LOW                   A          7
    2 PIWA2-1EX-Z-LOW                   A          7
    2 PIWA2-1EX-X-HI                    A          7
    2 PIWA2-1EX-Y-HI                    A          7
    2 PIWA2-1EX-Z-HI                    A          7
    2 PIWA2-1EX-X-CC                    A          7
    2 PIWA2-1EX-Y-CC                    A          7
    2 PIWA2-1EX-Z-CC                    A          7
    2 PIWA2-1EX-RADIUS                  A          7
    2 PIWA2-1EX-SECANT                  A          1
    2 PIWA2-1EX-ANGLE-FROM              A          5
    2 PIWA2-1EX-ANGLE-TO                A          5
    2 PIWA2-1EX-NODE-FROM               A          7
    2 PIWA2-1EX-NODE-TO                 A          7
    2 PIWA2-1EX-VANITY-LION             A         10
    2 PIWA2-1EX-SOS                     A          1
    2 PIWA2-1EX-SPLIT-LOHSN             A         11
    2 PIWA2-1EX-TD                      A          1
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GEOLP2AL COPY File

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    2 PIWA2-1EX-TR                      A         10
    2 PIWA2-1EX-CURVE-FRACTION          A          3
    2 PIWA2-1EX-ROADWAY-TYPE            A          2
    2 PIWA2-1EX-PHYSICAL-ID             A          7
    2 PIWA2-1EX-GENERIC-ID              A          7
    2 PIWA2-1EX-INTP-ID                 A          7
    2 PIWA2-1EX-INTF-ID                 A          7
    2 PIWA2-1EX-BIKE-LANE-2             A          2 /* V16.4 ADDITION
    2 PIWA2-1EX-BIKE-TRAFFIC-DIR        A          2 /* V17.1 ADDITION
    2 PIWA2-1EX-FILL450                 A          3 /* V17.1 ALTERATION
*   2 PIWA2-1EX-FILL450                 A          5 /* V16.4 ALTERATION
*   2 PIWA2-1EX-FILL450                 A          7 /* V16.1 REPLACEMENT
    2 PIWA2-1EX-STREET-STATUS           A          1
    2 PIWA2-1EX-STREET-WIDTH            A          3
    2 PIWA2-1EX-STREET-IRR              A          1
    2 PIWA2-1EX-BIKE-LANE               A          1
    2 PIWA2-1EX-FED-CLASS-CODE          A          2
    2 PIWA2-1EX-ROW-TYPE                A          1
    2 PIWA2-1EX-LGC-LIST-2              A         10
    2 PIWA2-1EX-LEGACY-SEG-ID           A          7
    2 PIWA2-1EX-LGC-LIST-FROM-1         A         10
    2 PIWA2-1EX-LGC-LIST-TO-1           A         10
    2 PIWA2-1EX-LGC-LIST-FROM-2         A         10
    2 PIWA2-1EX-LGC-LIST-TO-2           A         10
    2 PIWA2-1EX-NOCROSS-FLG             A          1
    2 PIWA2-1EX-IND-SEG-LEN             A          5
    2 PIWA2-1EX-NTA-NAME                A         75
    2 PIWA2-1EX-USPS-CITY-NAME          A         25 /*USPS PREFERRED CITY NAME
    2 PIWA2-1EX-LATITUDE                A          9
    2 PIWA2-1EX-LONGITUDE               A         11
    2 PIWA2-1EX-SEG-FROM-NODE           A          7
    2 PIWA2-1EX-SEG-TO-NODE             A          7
    2 PIWA2-1EX-SEG-FROM-XYZ            A         21
    2 PIWA2-1EX-SEG-TO-XYZ              A         21
    2 PIWA2-1EX-BLOCKFACE-ID            A         10 /* V16.1 ADD
    2 PIWA2-1EX-NBR-TRAVEL-LANES        A          2 /* V16.1 ADD
    2 PIWA2-1EX-NBR-PARK-LANES          A          2 /* V16.1 ADD
    2 PIWA2-1EX-NBR-TOTAL-LANES         A          2 /* V16.1 ADD
    2 PIWA2-1EX-STR-WIDTH-MAX           A          3 /* V16.4 ADDITION
    2 FILLER-1EX-500                    A        252 /* V16.1 MOD + V16.4 MOD
*   2 FILLER-1EX-500                    A        255 /* V16.1 MOD
* ** ***  THE FOLLOWING FIELDS ARE IN      ADDITION TO 1E *****************
    2 PIWA2-1EX-REASON-CODE             A          1
    2 PIWA2-1EX-REASON-CODE-QUAL        A          1
    2 PIWA2-1EX-WARN-CODE               A          2
    2 PIWA2-1EX-RETURN-CODE             A          2
    2 PIWA2-1EX-NUM-X-STS-LO-END        A          1
    2 PIWA2-1EX-LO-B7SC                 A          8 (1:5)
    2 PIWA2-1EX-NUM-X-STS-HI-END        A          1
    2 PIWA2-1EX-HI-B7SC                 A          8 (1:5)
    2 PIWA2-1EX-LO-ST-NAME              A         32 (1:5)
    2 PIWA2-1EX-HI-ST-NAME              A         32 (1:5)
    2 PIWA2-1EX-BOE-B7SC                A          8
    2 PIWA2-1EX-BOE-ST-NAME             A         32
    2 FILLER-1EX-600                    A         52
*   *  END OF FUNCTION 1/1E LAYOUT      *       **** *******
*   - ------------------------------- -       ---- -------------------------------
*   *  BEGNING OF FCT 1A EXTENDED       * ********** *******
R   1 GEOLP2AL
    2 PIWA2-1AX-ACCESS-KEY              A         21
    2 PIWA2-1AX-CONT-PARITY             A          1 /* OR DUP ADDR IND
    2 PIWA2-1AX-LOW-HOUSENUM            A         11 /* SORT FORMAT
    2 PIWA2-1AX-BBL                     A         10
R   2 PIWA2-1AX-BBL
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    3 PIWA2-1AX-BBL-BORO              A           1
    3 PIWA2-1AX-BLOCK                 A           5
    3 PIWA2-1AX-LOT                   A           4
    2 PIWA2-1AX-LOT-VERSION           A           1 /* NYI */
    2 PIWA2-1AX-SCC                   A           1
    2 FILLER-1AX-100                  A           1
    2 PIWA2-1AX-GENERAL-LOT-INFO
    3 PIWA2-1AX-RPAD-BLDG-CLASS       A           2
    3 PIWA2-1AX-CORNER-CODE           A           2
    3 PIWA2-1AX-NUM-OF-STRUCTURES     A           4
    3 PIWA2-1AX-NUM-OF-BLOCKFACES     A           2
    3 PIWA2-1AX-INTERIOR-FLAG         A           1
    3 PIWA2-1AX-VACANT-FLAG           A           1
    3 PIWA2-1AX-IRREG-LOT-FLAG        A           1
    2 PIWA2-1AX-MARBLE-RIKERS-FLAG    A           1
    2 PIWA2-1AX-ADDR-LIST-OVFLOW-FLAG A           1
    2 PIWA2-1AX-STROLL-KEY            A          19
R   2 PIWA2-1AX-STROLL-KEY
    3 PIWA2-1AX-STROLL-BORO           A           1
    3 PIWA2-1AX-STROLL-5SC            A           5
    3 PIWA2-1AX-STROLL-SIDE-OF-STR    A           1 /* L OR R
    3 PIWA2-1AX-STROLL-HI-HOUSENUM    A          11 /* SORT FORMAT
    3 FILLER-1AX-200                  A           1
    2 FILLER-1AX-300                  A           1 /* FOR GSS USE
    2 PIWA2-1AX-BIN                   A           7
    2 PIWA2-1AX-CONDO-FLAG            A           1
    2 FILLER-1AX-400                  A           1
    2 PIWA2-1AX-RPAD-CONDO-ID-NUM     A           4
    2 PIWA2-1AX-CONDO-UNIT-ID-NUM     A           7
    2 PIWA2-1AX-CONDO-BILL-BBL        A          10
    2 PIWA2-1AX-CONDO-BILL-BBL-VER    A           1
    2 PIWA2-1AX-CONDO-BILL-BBL-SCC    A           1
    2 PIWA2-1AX-CONDO-LOW-BBL         A          10
    2 PIWA2-1AX-CONDO-LOW-BBL-VER     A           1
    2 PIWA2-1AX-CONDO-HIGH-BBL        A          10
    2 PIWA2-1AX-CONDO-HIGH-BBL-VER    A           1
    2 FILLER-1AX-600                  A          15
    2 PIWA1-1AX-COOP-NUM              A           4
    2 PIWA2-1AX-SANBORN               A           8
R   2 PIWA2-1AX-SANBORN
    3 PIWA2-1AX-SANBORN-BORO          A           1
    3 PIWA2-1AX-SANBORN-VOL           A           3
    3 PIWA2-1AX-SANBORN-PAGE          A           4
    2 PIWA2-1AX-COMMERC-DIST          A           5
    2 PIWA2-1AX-DOF-MAP-BORO          A           1
    2 PIWA2-1AX-DOF-MAP-SECVOL        A           4
    2 PIWA2-1AX-DOF-MAP-PAGE          A           4
    2 FILLER-1AX-RESERVED-DCP         A           3
    2 PIWA2-1AX-LATITUDE              A           9
    2 PIWA2-1AX-LONGITUDE             A          11
    2 PIWA2-1AX-X-COORD               A           7
    2 PIWA2-1AX-Y-COORD               A           7
    2 PIWA2-1AX-BID                   A           6
    2 PIWA2-1AX-TPAD-BIN-ST           A           1 /* CURRENT STATUS */
    2 PIWA2-1AX-TPAD-NEW-BIN          A           7 /* NEW BIN */
    2 PIWA2-1AX-TPAD-NEW-BIN-ST       A           1 /* NEW BIN STATUS */
    2 PIWA2-1AX-TPAD-CONFLICT         A           1 /* CONFLICT FLAG */
    2 FILLER-1AX-650                  A           9
    2 FILLER-1AX-700                  A           8 /* FOR GSS USE
    2 PIWA2-1AX-REASON-CODE           A           1
    2 PIWA2-1AX-REASON-CODE-QUAL      A           1
    2 PIWA2-1AX-WARN-CODE             A           2
    2 PIWA2-1AX-RETURN-CODE           A           2
    2 FILLER-1AX-750                  A         108
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    2 PIWA2-1AX-NUM-OF-ADDR          A          4
    2 PIWA2-1AX-LIST-OF-ADDR                      (1:21)
    3 PIWA2-1AX-LIST-LOW-HOUSENUM    A         16 /* DISPLAY FORMAT
    3 PIWA2-1AX-LIST-HI-HOUSENUM     A         16 /* DISPLAY FORMAT
    3 PIWA2-1AX-LIST-BORO            A          1
    3 PIWA2-1AX-LIST-5SC             A          5
    3 PIWA2-1AX-LIST-LGC             A          2
    3 PIWA2-1AX-LIST-BIN             A          7
    3 PIWA2-1AX-LIST-SIDE-OF-STR     A          1 /* L OR R
    3 PIWA2-1AX-ADDR-TYPE            A          1 /* P=NAP, B=NAB,          MAL
R   3 PIWA2-1AX-ADDR-TYPE                         /* REDEF. BEGIN : PIWA2-1AX-ADDR
    4 PIWA2-1AX-LIST-ADDR-TYPE       A          1 /* BLANK=NORMAL
*   *                                             /* BLANK=NORMAL
    3 PIWA2-1AX-TPAD-STATUS          A          1 /* 0 - 9
R   3 PIWA2-1AX-TPAD-STATUS                       /* REDEF. BEGIN : PIWA2-1AX-TPAD
    4 PIWA2-1AX-LIST-TPAD-STATUS     A          1
    3 PIWA2-1AX-ST-NAME              A         32 /* 0 - 9
R   3 PIWA2-1AX-ST-NAME                           /* REDEF. BEGIN : PIWA2-1AX-ST-N
    4 PIWA2-1AX-LIST-ST-NAME         A         32
    3 FILLER-800                     A         34
* ** END OF FUNCTION 1A EXTENDED **** * ********** **********************
* -- ------------------------------- - ---------- -------------------------
* ** BEGINNING OF FUNCTION 1B ******* * ********** **********************
R   1 GEOLP2AL
    2 PIWA2-1B-1-ACCESS-KEY          A         21
    2 PIWA2-1B-1-CONT-PARITY         A          1 /* (OR DUP ADDR IND)
    2 PIWA2-1B-1-LOW-HOUSENUM        A         11 /* SORT FORMAT
    2 PIWA2-1B-1-HI-HOUSENUM         A         11 /* SORT FORMAT
    2 PIWA2-1B-1-PREFERRED-LGC       A          2
    2 PIWA2-1B-1-NUM-X-ST-LOW-END    A          1
    2 PIWA2-1B-1-LOW-B5SC            A          6 (1:5) /* 30-BYTES
    2 PIWA2-1B-1-NUM-X-ST-HI-END     A          1
    2 PIWA2-1B-1-HI-B5SC             A          6 (1:5) /* 30-BYTES
    2 PIWA2-1B-1-LIONKEY             A         10
R   2 PIWA2-1B-1-LIONKEY
    3 PIWA2-1B-1-LION-BORO           A          1
    3 PIWA2-1B-1-LION-FACECODE       A          4
    3 PIWA2-1B-1-LION-SEQ            A          5
    2 PIWA2-1B-1-SPECIAL-ADDR-FLAG   A          1
    2 PIWA2-1B-1-SIDE-OF-STR         A          1
    2 PIWA2-1B-1-SEG-LEN             A          5
    2 PIWA2-1B-1-X-COORD             A          7
    2 PIWA2-1B-1-Y-COORD             A          7
    2 FILLER-1B-1-100                A          7 /* FOR ZCOORD
    2 PIWA2-1B-1-CD-ELIGIBLE         A          1
    2 PIWA2-1B-1-MARBLE-RIKERS-FLAG  A          1
    2 PIWA2-1B-1-DOT-SLA             A          1
    2 PIWA2-1B-1-COM-DIST            A          3
R   2 PIWA2-1B-1-COM-DIST
    3 PIWA2-1B-1-COM-DIST-BORO       A          1
    3 PIWA2-1B-1-COM-DIST-NUM        A          2
    2 PIWA2-1B-1-ZIP                 A          5
*   *                                *       **** *****
*   *  THE FN1E FIELDS ARE VALID ONLY *      **** *****
*   *  FOR FUNCTION 1E, NOT FUNC 1.  *       **** *****
    2 PIWA2-1B-1-ELECT-DIST          A          3
    2 PIWA2-1B-1-ASSEM-DIST          A          2
    2 PIWA2-1B-1-SPLIT-ED-FLAG       A          1
    2 PIWA2-1B-1-CONG-DIST           A          2
    2 PIWA2-1B-1-SENATE-DIST         A          2
    2 PIWA2-1B-1-COURT-DIST          A          2
    2 PIWA2-1B-1-COUNCIL-DIST        A          2
*   *                                *       **** *****
    2 PIWA2-1B-1-HEALTH-CENTER-DIST  A          2
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    2 PIWA2-1B-1-HEALTH-AREA          A            4
    2 PIWA2-1B-1-SANI-DIST            A            3
R   2 PIWA2-1B-1-SANI-DIST
    3 PIWA2-1B-1-SANI-DIST-BORO       A            1
    3 PIWA2-1B-1-SANI-DIST-NUM        A            2
    2 PIWA2-1B-1-SANI-SUBSEC          A            2
    2 PIWA2-1B-1-SANI-REG             A            5
    2 PIWA2-1B-1-SANI-REC             A            3
    2 PIWA2-1B-1-POLICE-DIST          A            4
R   2 PIWA2-1B-1-POLICE-DIST
    3 PIWA2-1B-1-POL-PAT-BORO-CMD     A            1
    3 PIWA2-1B-1-POL-PRECINCT         A            3
    2 PIWA2-1B-1-FIRE-DIV             A            2
    2 PIWA2-1B-1-FIRE-BAT             A            2
    2 PIWA2-1B-1-FIRE-CO              A            4
R   2 PIWA2-1B-1-FIRE-CO
    3 PIWA2-1B-1-FIRE-CO-TYPE         A            1
    3 PIWA2-1B-1-FIRE-CO-NUM          A            3
    2 FILLER-1B-1-250                 A            1 /* WAS SPLIT COM SCHL
    2 PIWA2-1B-1-SCHL-DIST            A            2
    2 PIWA2-1B-1-DYN-BLK              A            3
    2 PIWA2-1B-1-POLICE-PAT-BORO      A            2
    2 PIWA2-1B-1-FEATURE-TYPE         A            1
    2 PIWA2-1B-1-SEGMENT-TYPE         A            1
    2 PIWA2-1B-1-ALX                  A            1
    2 PIWA2-1B-1-COINCIDENT-SEG-CTR   A            1
    2 FILLER-1B-1-290                 A            3
    2 PIWA2-1B-1-1990-CENSUS-TRACT    A            6
    2 PIWA2-1B-1-2010-CENSUS-TRACT    A            6
    2 PIWA2-1B-1-2010-CENSUS-BLOCK    A            4
    2 PIWA2-1B-1-2010-CENSUS-BLOCK-SUF A           1
    2 PIWA2-1B-1-2000-CENSUS-TRACT    A            6 /* NA
    2 PIWA2-1B-1-2000-CENSUS-BLOCK    A            4 /* NA
    2 PIWA2-1B-1-2000-CENSUS-BLOCK-SUF A           1 /* NA
    2 PIWA2-1B-1-NTA                  A            4 /*NEIGHBORHOOD
*   *                                                /*TABULATION AREA
    2 PIWA2-1B-1-SANIT-SNOW-PRIORITY  A            1 /*SANITATION STRT
*   *                                                /*SNOW PRIORITY
    2 PIWA2-1B-1-SANIT-ORGANICS       A            5
    2 PIWA2-1B-1-SANIT-BULK-PICK-UP   A            5 /* V16.4 ADDITION
*   2 PIWA2-1B-1-SANIT-RESERVED       A            5
    2 PIWA2-1B-1-HURRICANE-ZONE       A            2 /*OEM HURRICANE EVAC ZONE
    2 FILLER-1B-1-300                 A           11
    2 PIWA2-1B-1-UHNS                 A           11 /* UNDERLYING HNS
    2 PIWA2-1B-1-REAL-B7SC            A            8
    2 PIWA2-1B-1-SEGMENT-ID           A            7
    2 PIWA2-1B-1-CURVE-FLAG           A            1
    2 PIWA2-1B-1-LGCS                 A            8
    2 PIWA2-1B-1-BOE-PTR              A            1
    2 PIWA2-1B-1-AZIMUTH              A            3
    2 PIWA2-1B-1-ORIENT               A            1
    2 PIWA2-1B-1-X-LOW                A            7
    2 PIWA2-1B-1-Y-LOW                A            7
    2 PIWA2-1B-1-Z-LOW                A            7
    2 PIWA2-1B-1-X-HI                 A            7
    2 PIWA2-1B-1-Y-HI                 A            7
    2 PIWA2-1B-1-Z-HI                 A            7
    2 PIWA2-1B-1-X-CC                 A            7
    2 PIWA2-1B-1-Y-CC                 A            7
    2 PIWA2-1B-1-Z-CC                 A            7
    2 PIWA2-1B-1-RADIUS               A            7
    2 PIWA2-1B-1-SECANT               A            1
    2 PIWA2-1B-1-ANGLE-FROM           A            5
    2 PIWA2-1B-1-ANGLE-TO             A            5
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    2 PIWA2-1B-1-NODE-FROM              A          7
    2 PIWA2-1B-1-NODE-TO                A          7
    2 PIWA2-1B-1-VANITY-LION            A         10
    2 PIWA2-1B-1-SOS                    A          1
    2 PIWA2-1B-1-SPLIT-LOHSN            A         11
    2 PIWA2-1B-1-TD                     A          1
    2 PIWA2-1B-1-TR                     A         10
    2 PIWA2-1B-1-CURVE-FRACTION         A          3
    2 PIWA2-1B-1-ROADWAY-TYPE           A          2
    2 PIWA2-1B-1-PHYSICAL-ID            A          7
    2 PIWA2-1B-1-GENERIC-ID             A          7
    2 PIWA2-1B-1-INTP-ID                A          7
    2 PIWA2-1B-1-INTF-ID                A          7
    2 PIWA2-1B-1-BIKE-LANE-2            A          2
    2 PIWA2-1B-1-BIKE-TRAFFIC-DIR       A          2 /* V17.1 ADDITION
    2 PIWA2-1B-1-FILL450                A          3 /* V17.1 ALTERATION
*   2 PIWA2-1B-1-FILL450                A          5 /* V16.4 ALTERATION
*   2 PIWA2-1B-1-FILL450                A          7 /* V16.1 REPLACEMENT
    2 PIWA2-1B-1-STREET-STATUS          A          1
    2 PIWA2-1B-1-STREET-WIDTH           A          3
    2 PIWA2-1B-1-STREET-WIDTH-IRR       A          1
    2 PIWA2-1B-1-BIKE-LANE              A          1
    2 PIWA2-1B-1-FED-CLASS-CODE         A          2
    2 PIWA2-1B-1-ROW-TYPE               A          1
    2 PIWA2-1B-1-LGC-LIST-2             A         10
    2 PIWA2-1B-1-LEGACY-SEG-ID          A          7
    2 PIWA2-1B-1-LGC-LIST-FROM-1        A         10
    2 PIWA2-1B-1-LGC-LIST-TO-1          A         10
    2 PIWA2-1B-1-LGC-LIST-FROM-2        A         10
    2 PIWA2-1B-1-LGC-LIST-TO-2          A         10
    2 PIWA2-1B-1-NOCROSS-FLG            A          1
    2 PIWA2-1B-1-IND-SEG-LEN            A          5
    2 PIWA2-1B-1-NTA-NAME               A         75
    2 PIWA2-1B-1-USPS-CITY-NAME         A         25 /*USPS PREFERRED CITY NAME
    2 PIWA2-1B-1-LATITUDE               A          9
    2 PIWA2-1B-1-LONGITUDE              A         11
    2 PIWA2-1B-1-SEG-FROM-NODE          A          7
    2 PIWA2-1B-1-SEG-TO-NODE            A          7
    2 PIWA2-1B-1-SEG-FROM-XYZ           A         21
    2 PIWA2-1B-1-SEG-TO-XYZ             A         21
    2 PIWA2-1B-1-BLOCKFACE-ID           A         10 /* V16.1 ADD
    2 PIWA2-1B-1-NBR-TRAVEL-LANES       A          2 /* V16.1 ADD
    2 PIWA2-1B-1-NBR-PARK-LANES         A          2 /* V16.1 ADD
    2 PIWA2-1B-1-NBR-TOTAL-LANES        A          2 /* V16.1 ADD
    2 PIWA2-1B-1-STR-WIDTH-MAX          A          3 /* V16.4 ADDITION
    2 FILLER-1B-1-500                   A        252 /* V16.4 MOD
*   2 FILLER-1B-1-500                   A        255 /* V16.1 MOD
* ** **** THE FOLLOWING FIELDS ARE IN     ADDITION    TO 1/1E****************
    2 PIWA2-1B-1-REASON-CODE            A          1
    2 PIWA2-1B-1-REASON-CODE-QUAL       A          1
    2 PIWA2-1B-1-WARN-CODE              A          2
    2 PIWA2-1B-1-RETURN-CODE            A          2
    2 PIWA2-1B-1-NUM-X-STS-LO-END       A          1
    2 PIWA2-1B-1-LO-B7SC                A          8 (1:5)
    2 PIWA2-1B-1-NUM-X-STS-HI-END       A          1
    2 PIWA2-1B-1-HI-B7SC                A          8 (1:5)
    2 PIWA2-1B-1-LO-ST-NAME             A         32 (1:5)
    2 PIWA2-1B-1-HI-ST-NAME             A         32 (1:5)
    2 PIWA2-1B-1-BOE-B7SC               A          8
    2 PIWA2-1B-1-BOE-ST-NAME            A         32
    2 FILLER-1B-1-600                   A         52
*   * ******************************** * ********** ******************
*   * THE FOLLOWING FIELDS ARE          * ********** ********
*   *     PROPERTY LEVEL FIELDS         * ********** ********
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    2 PIWA2-1B-1A-ACCESS-KEY           A          21 /*CHG FROM LEVEL 3 TO 2???
    2 PIWA2-1B-1A-CONT-PARITY          A           1 /* OR DUP ADDR IND
    2 PIWA2-1B-1A-LOW-HOUSENUM         A          11 /* SORT FORMAT
    2 PIWA2-1B-1A-BBL                  A          10
R   2 PIWA2-1B-1A-BBL
    3 PIWA2-1B-1A-BBL-BORO             A           1
    3 PIWA2-1B-1A-BLOCK                A           5
    3 PIWA2-1B-1A-LOT                  A           4
    2 PIWA2-1B-1A-LOT-VERSION          A           1 /* NYI */
    2 PIWA2-1B-1A-SCC                  A           1
    2 FILLER-1B-1A-100                 A           1
    2 PIWA2-1B-1A-GENERAL-LOT-INFO
    3 PIWA2-1B-1A-RPAD-BLDG-CLASS      A           2
    3 PIWA2-1B-1A-CORNER-CODE          A           2
    3 PIWA2-1B-1A-NUM-OF-STRUCTURES    A           4
    3 PIWA2-1B-1A-NUM-OF-BLOCKFACES    A           2
    3 PIWA2-1B-1A-INTERIOR-FLAG        A           1
    3 PIWA2-1B-1A-VACANT-FLAG          A           1
    3 PIWA2-1B-1A-IRREG-LOT-FLAG       A           1
    2 PIWA2-1B-1A-MARBLE-RIKERS-FLAG   A           1
    2 PIWA2-1B-1A-ADDR-LIST-OVFLOW-FLG A           1 /*FLAG,FLG?????????
    2 PIWA2-1B-1A-STROLL-KEY           A          19
R   2 PIWA2-1B-1A-STROLL-KEY
    3 PIWA2-1B-1A-STROLL-BORO          A           1
    3 PIWA2-1B-1A-STROLL-5SC           A           5
    3 PIWA2-1B-1A-STROLL-SIDE-OF-STR   A           1 /* L OR R
    3 PIWA2-1B-1A-STROLL-HI-HOUSENUM   A          11 /* SORT FORMAT
    3 FILLER-1B-1A-200                 A           1
    2 FILLER-1B-1A-300                 A           1 /* FOR GSS USE
    2 PIWA2-1B-1A-BIN                  A           7
    2 PIWA2-1B-1A-CONDO-FLAG           A           1
    2 FILLER-1B-1A-400                 A           1
    2 PIWA2-1B-1A-RPAD-CONDO-ID-NUM    A           4
    2 PIWA2-1B-1A-CONDO-UNIT-ID-NUM    A           7
    2 PIWA2-1B-1A-CONDO-BILL-BBL       A          10
    2 PIWA2-1B-1A-CONDO-BILL-BBL-VER   A           1
    2 PIWA2-1B-1A-CONDO-BILL-BBL-SCC   A           1
    2 PIWA2-1B-1A-CONDO-LOW-BBL        A          10
    2 PIWA2-1B-1A-CONDO-LOW-BBL-VER    A           1
    2 PIWA2-1B-1A-CONDO-HIGH-BBL       A          10
    2 PIWA2-1B-1A-CONDO-HIGH-BBL-VER   A           1
    2 FILLER-1B-1A-500                 A          15
    2 PIWA1-1B-1A-COOP-NUM             A           4
    2 PIWA2-1B-1A-SANBORN              A           8
R   2 PIWA2-1B-1A-SANBORN
    3 PIWA2-1B-1A-SANBORN-BORO         A           1
    3 PIWA2-1B-1A-SANBORN-VOL          A           3
    3 PIWA2-1B-1A-SANBORN-PAGE         A           4
    2 PIWA2-1B-1A-COMMERC-DIST         A           5
    2 PIWA2-1B-1A-DOF-MAP-BORO         A           1
    2 PIWA2-1B-1A-DOF-MAP-SECVOL       A           4
    2 PIWA2-1B-1A-DOF-MAP-PAGE         A           4
    2 FILLER-1B-1A-RESERVED-DCP        A           3
    2 PIWA2-1B-1A-LATITUDE             A           9
    2 PIWA2-1B-1A-LONGITUDE            A          11
    2 PIWA2-1B-1A-X-COORD              A           7
    2 PIWA2-1B-1A-Y-COORD              A           7
    2 PIWA2-1B-1A-BID                  A           6
    2 PIWA2-1B-1A-TPAD-BIN-ST          A           1 /* CURRENT STATUS */
    2 PIWA2-1B-1A-TPAD-NEW-BIN         A           7 /* NEW BIN */
    2 PIWA2-1B-1A-TPAD-NEW-BIN-ST      A           1 /* NEW BIN STATUS */
    2 PIWA2-1B-1A-TPAD-CONFLICT        A           1 /* CONFLICT FLAG */
    2 FILLER-1B-1A-650                 A           9
    2 FILLER-1B-1A-700                 A           8 /* FOR GSS USE
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    2 PIWA2-1B-1A-REASON-CODE          A          1
    2 PIWA2-1B-1A-REASON-CODE-FILL     A          1
    2 PIWA2-1B-1A-WARN-CODE            A          2
    2 PIWA2-1B-1A-RETURN-CODE          A          2
    2 FILLER-1B-1A-750                 A        108
    2 PIWA2-1B-1A-NUM-OF-ADDR          A          4
    2 PIWA2-1B-1A-LIST-OF-ADDR                      (1:21)
    3 PIWA2-1B-1A-LIST-LOW-HOUSENUM    A         16 /* DISPLAY FORMAT
    3 PIWA2-1B-1A-LIST-HI-HOUSENUM     A         16 /* DISPLAY FORMAT
    3 PIWA2-1B-1A-LIST-BORO            A          1
    3 PIWA2-1B-1A-LIST-5SC             A          5
    3 PIWA2-1B-1A-LIST-LGC             A          2
    3 PIWA2-1B-1A-LIST-BIN             A          7
    3 PIWA2-1B-1A-LIST-SIDE-OF-STR     A          1 /* L OR R
    3 PIWA2-1B-1A-ADDR-TYPE            A          1 /* P=NAP, B=NAB,          MAL
R   3 PIWA2-1B-1A-ADDR-TYPE                         /* REDEF. BEGIN : PIWA2-1B-1A-AD
    4 PIWA2-1B-1A-LIST-ADDR-TYPE       A          1 /* BLANK=NORMAL
    3 PIWA2-1B-1A-TPAD-STATUS          A          1 /* 0 - 9
R   3 PIWA2-1B-1A-TPAD-STATUS                       /* REDEF. BEGIN : PIWA2-1B-1A-TP
    4 PIWA2-1B-1A-LIST-TPAD-STATUS     A          1
    3 PIWA2-1B-1A-ST-NAME              A         32
R   3 PIWA2-1B-1A-ST-NAME                           /* REDEF. BEGIN : PIWA2-1B-1A-ST
    4 PIWA2-1B-1A-LIST-ST-NAME         A         32
    3 FILLER-1B-1A-800                 A         34
* ** END OF FUNCTION 1B ************* * ********** **************************
```

GEOLP23S COPY File

```
    1 GEOLP23S
*   * THE FIELD P2NAT3S IS USED AS A      PARAMETER TO CALL GEOSUPPORT
    2 P2NAT3S                          A          21
R   2 P2NAT3S
    3 PIWA2-3S-ACCESS-KEY              A          21
R   3 PIWA2-3S-ACCESS-KEY
    4 FILLER-GSS                       A           2
    4 PIWA2-3S-PORS-STNAME-IND         A           1
    4 PIWA2-3S-BORO                    A           1 /* P=PRIMARY
*   *                                                /* B=SECONDARY
    4 PIWA2-3S-5SC                     A           5
    4 PIWA2-3S-LGC                     A           2 /* BLANK IF P IN
    4 FILLER                           A          10 /* POSITION 3
    2 PIWA2-3S-NUM-OF-INTERSECTS       A           3
    2 PIWA2-3S-LIST-OF-INTERSECTS                    (1:350)
    3 PIWA2-3S-MARBLE-RIKERS-FLAG      A           1
    3 PIWA2-3S-DISTANCE                A           5
    3 PIWA2-3S-GAP-FLAG                A           1
    3 FILLER-100                       A           7
    3 PIWA2-3S-NUM-OF-STR              A           1
    3 PIWA2-3S-B7SC                    A           8 (1:5)
```

GEOL2AP COPY File

```
    1 GEOL2AP
    2 P2NATAP                         A         21
 R  2 P2NATAP
    3 PIWA2-AP-ACCESS-KEY             A         21
    2 PIWA2-AP-CONT-PARITY            A          1
    2 PIWA2-AP-LOW-HOUSENUM           A         11
    2 PIWA2-AP-BBL                    A         10
 R  2 PIWA2-AP-BBL
    3 PIWA2-AP-BBL-BORO               A          1
    3 PIWA2-AP-BBL-BLOCK              A          5
    3 PIWA2-AP-BBL-LOT                A          4
    2 FILLER-AP01                     A          7
    2 PIWA2-AP-NUM-OF-STRUCTURES      A          4
    2 FILLER-AP02                     A         26
    2 FILLER-AP-GSS1                  A          1
    2 PIWA2-AP-BIN                    A          7
    2 PIWA2-AP-CONDO-FLAG             A          1
    2 FILLER-AP03                     A          1
    2 PIWA2-AP-RPAD-CONDO-ID-NUM      A          4
    2 FILLER-AP04                     A          7
    2 PIWA2-AP-CONDO-BILL-BBL         A         10
    2 FILLER-AP05                     A          2
    2 PIWA2-AP-CONDO-LOW-BBL          A         10
    2 FILLER-AP06                     A          1
    2 PIWA2-AP-CONDO-HIGH-BBL         A         10
    2 FILLER-AP07                     A         16
    2 PIWA2-AP-COOP-NUM               A          4
    2 FILLER-AP08                     A         22
    2 PIWA2-AP-RESERVED               A          3
    2 PIWA2-AP-LATITUDE               A          9
    2 PIWA2-AP-LONGITUDE              A         11
    2 PIWA2-AP-X-COORD                A          7
    2 PIWA2-AP-Y-COORD                A          7
    2 FILLER-AP09                     A         16
    2 PIWA2-AP-AP-ID                  A          9
    2 FILLER-AP-GSS2                  A          8
    2 PIWA2-AP-NUM-OF-ADDR            A          4
    2 PIWA2-AP-ADDR-LIST                            (1:21)
    3 PIWA2-AP-LIST-LOW-HOUSENUM      A         16
    3 PIWA2-AP-LIST-HI-HOUSENUM       A         16
    3 PIWA2-AP-LIST-BORO              A          1
    3 PIWA2-AP-LIST-5SC               A          5
    3 PIWA2-AP-LIST-LGC               A          2
    3 PIWA2-AP-LIST-BIN               A          7
    3 PIWA2-AP-LIST-SIDE-OF-STR       A          1
    3 PIWA2-AP-ADDR-TYPE              A          1
 R  3 PIWA2-AP-ADDR-TYPE
    4 PIWA2-AP-LIST-ADDR-TYPE         A          1
    3 FILLER-AP10                     A          4
```

GEOL2APX COPY File

```
    1 GEOL2APX
    2 P2NATAPX                          A         21
R   2 P2NATAPX
    3 PIWA2-APX-ACCESS-KEY              A         21
    2 PIWA2-APX-CONT-PARITY             A          1
    2 PIWA2-APX-LOW-HOUSENUM            A         11
    2 PIWA2-APX-BBL                     A         10
R   2 PIWA2-APX-BBL
    3 PIWA2-APX-BBL-BORO                A          1
    3 PIWA2-APX-BBL-BLOCK               A          5
    3 PIWA2-APX-BBL-LOT                 A          4
    2 FILLER-APX01                      A          7
    2 PIWA2-APX-NUM-OF-STRUCTURES       A          4
    2 FILLER-APX02                      A         26
    2 FILLER-APX-GSS1                   A          1
    2 PIWA2-APX-BIN                     A          7
    2 PIWA2-APX-CONDO-FLAG              A          1
    2 FILLER-APX03                      A          1
    2 PIWA2-APX-RPAD-CONDO-ID-NUM       A          4
    2 FILLER-APX04                      A          7
    2 PIWA2-APX-CONDO-BILL-BBL          A         10
    2 FILLER-APX05                      A          2
    2 PIWA2-APX-CONDO-LOW-BBL           A         10
    2 FILLER-APX06                      A          1
    2 PIWA2-APX-CONDO-HIGH-BBL          A         10
    2 FILLER-APX07                      A         16
    2 PIWA2-APX-COOP-NUM                A          4
    2 FILLER-APX08                      A         22
    2 PIWA2-APX-RESERVED                A          3
    2 PIWA2-APX-LATITUDE                A          9
    2 PIWA2-APX-LONGITUDE               A         11
    2 PIWA2-APX-X-COORD                 A          7
    2 PIWA2-APX-Y-COORD                 A          7
    2 FILLER-APX09                      A         16
    2 PIWA2-APX-AP-ID                   A          9
    2 FILLER-APX-GSS2                   A          8
    2 PIWA2-APX-REASON-CODE             A          1
    2 PIWA2-APX-REASON-CODE-QUAL        A          1
    2 PIWA2-APX-WARN-CODE               A          2
    2 PIWA2-APX-RETURN-CODE             A          2
    2 FILLER-APX10                      A        108
    2 PIWA2-APX-NUM-OF-ADDR             A          4
    2 PIWA2-APX-ADDR-LIST                             (1:21)
    3 PIWA2-APX-LIST-LOW-HOUSENUM       A         16
    3 PIWA2-APX-LIST-HI-HOUSENUM        A         16
    3 PIWA2-APX-LIST-BORO               A          1
    3 PIWA2-APX-LIST-5SC                A          5
    3 PIWA2-APX-LIST-LGC                A          2
    3 PIWA2-APX-LIST-BIN                A          7
    3 PIWA2-APX-LIST-SIDE-OF-STR        A          1
    3 PIWA2-APX-ADDR-TYPE               A          1
R   3 PIWA2-APX-ADDR-TYPE
    4 PIWA2-APX-LIST-ADDR-TYPE          A          1
    3 FILLER-APX11                      A          1
```

GEOL2APX COPY File

```
    3 PIWA2-APX-ST-NAME                A          32
R   3 PIWA2-APX-ST-NAME
    4 PIWA2-APX-LIST-ST-NAME           A          32
    3 FILLER-APX12                     A          34
```

APPENDIX 15: 2010 CENSUS GEOGRAPHY – Functions 1, 1E, 2, 3, and 3C

This appendix is based on the Geosupport System Technical Bulletin 11-01 for Geosupport Version 11.0. If you need a copy of the Bulletin, please be in touch with the GSS Manager of Geographic Research. Contact information is available in Appendix 6: Geosupport Feedback Procedures.

As of Geosupport Software Version 11.0 / Release 11A, Geosupport returns the new 2010 Census geography (e.g. census tract and census block). As of Software Version 11.4 / Release 12B, health areas are based on 2010 Census geography. Note that other tract based district information (e.g. community development eligibility) will still be based on the 2000 Census geography until further notice.

User Programming Considerations for 2010 Census Geography

- New 2010 Census data **replaces** 2000 Census data
- Census 2000 data has been **moved** to a new location and **renamed**
- There is no need to do any modifications to get **2010 Census** information from GBAT or programs that use offsets, since the 2010 Census information replaces the 2000 information.
- Modification is needed to get **2000 Census** information from GBAT or programs that use offsets, since the 2000 information has been moved to a new location.
    - See the tables of Census Data Offsets below.
- At some point, users must modify and recompile programs that access Census information, accessing the new 2010 or 2000 Census field names
    - See the new field names in the appropriate copy files
- If users do not recompile and Census data is processed, they will get the 2010 data. Note: If you do not recompile and you are accessing Census information via the field names in the copy books, the next time you try to recompile you will get a compile error since the existing Census field names no longer exist. You will have to indicate at that point whether you want Census 2010 or Census 2000 by modifying the field names in the programs
- **MSW Users: For Function 1/1E**, the 2000 Census information has been moved to Long Work Area 2, as there was no room for it in the regular Work Area 2. Census 2010 information is in the regular Work Area 2.

Every 10 years, in conjunction with the decennial census of the population, the U.S. Census Bureau defines a new set of census geography (census tract and census block boundary lines and identifiers) throughout the nation. The Geosupport System has been providing 1990 census tract and 2000 census tract, census block and census block suffix fields. This data will continue to be included in the output information returned from Functions 1, 1B, 1E, 2, 3 and 3C.

DCP/GSS received the 2010 census geography from the Census Bureau and now includes this information since File Release 11A, Geosupport Software Version 11.0. The 1990 census information will continue to be returned in the same work area fields that have been used in previous releases.

However, as of Release 11A, Version 11.0, the 2010 Census information for both COW and MSW outputs is now returned in the same positions that previously held the 2000 Census information, and the 2000 Census information has been moved to positions previously defined as filler. Also, the field names (in the Copy Books) of the 2000 Census information fields have been changed

This was done so that users who want the most current Census information will not have to immediately recompile their programs and change their GBAT jobs to get the 2010 Census information. However, **whenever users recompile their programs, they will have to update the field names for the 2010 Census information, and, if they want the 2000 Census information, they will have to update the field names for that as well**. The name changes were done purposely in order to force users who recompile programs that use the copylibs and look at Census information to change their programs and make decisions whether they want to continue receiving Census 2000 data and/or update their programs to receive Census 2010 data

CENSUS DATA OFFSETS – Table 1 (COW) and Table 2 (MSW)

TABLE 1 - Offsets for the 2010 and 2000 Census data for COW Work Area 2

Functions (COW)	Data Item	WA2 Position Prior to Release 11A	WA2 Position as of 11A
COW Fns 1, 1E and 1B	2010 Census Tract	Not Provided	224-229
	2010 Census Block	Not Provided	230-233
	2010 Census Filler	Not Provided	234
	2000 Census Tract	224-229	235-240
	2000 Census Block	230-233	241-244
	2000 Census Block Suffix	234	245
COW Fn 2	2010 Census Tract	Not Provided	136-141
	2000 Census Tract	136-141	176-181
COW Fn 3	2010 Left Census Tract	Not Provided	260-265
	2010 Left Census Block	Not Provided	266-269
	2010 Left Census Filler	Not Provided	270-270
	2010 Right Census Tract	Not Provided	410-415
	2010 Right Census Block	Not Provided	416-419
	2010 Right Census Filler	Not Provided	420
	2000 Left Census Tract	260-265	271-276
	2000 Left Census Block	266-269	277-280
	2000 Left Census Block Suffix	270-270	281-281
	2000 Right Census Tract	410-415	421-426
	2000 Right Census Block	416-419	427-430
	2000 Right Census Block Suffix	420-420	431-431
COW Fn 3C	2010 Census Tract	Not Provided	260-265
	2010 Census Block	Not Provided	266-269

Functions (COW)	Data Item	WA2 Position Prior to Release 11A	WA2 Position as of 11A
	2010 Census Filler	Not Provided	270-270
	2000 Census Tract	260-265	271-276
	2000 Census Block	266-269	277-280
	2000 Census Block Suffix	270	281

TABLE 2 - Offsets for the 2010 and 2000 Census data for MSW Work Area 2

Functions (MSW)	Data Item	WA2 Position Prior to Release 11A	WA2 Position as of Release 11A
MSW Fns 1 and 1E	2010 Census Tract	Not Provided	91-96
	2010 Census Block	Not Provided	97-100
	2010 Census Filler	Not Provided	101-101
	2000 Census Tract	91-96	222-227 Available only with Long Work Area 2
	2000 Census Block	97-100	228-231 Available only with Long Work Area 2
	2000 Census Block Suffix	101-101	232 -232 Available only with Long Work Area 2
MSW Fn 2	2010 Census Tract	Not Provided	87-92
	2000 Census Tract	87-92	168-173
MSW Fn 3	2010 Left Census Tract	Not Provided	243-248 Available only with Long Work Area 2
	2010 Left Census Block	Not Provided	249-252 Available only with Long Work Area 2
	2010 Left Census Filler	Not Provided	253 -253 Available only with Long Work Area 2
	2010 Right Census Tract	Not Provided	254-259 Available only with Long Work Area 2
	2010 Right Census Block	Not Provided	260-263 Available only with Long Work Area 2
	2010 Right Census Filler	Not Provided	264-264 Available only with Long Work Area 2
	2000 Left Census Tract	243-248 Available only with	279-284 Available only with Long

Functions (MSW)	**Data Item**	**WA2 Position Prior to Release 11A**	**WA2 Position as of Release 11A**
		Long Work Area 2	Work Area 2
	2000 Left Census Block	249-252 Available only with Long Work Area 2	285-288 Available only with Long Work Area 2
	2000 Left Census Block Suffix	253-253 Available only with Long Work Area 2	289-289 Available only with Long Work Area 2
	2000 Right Census Tract	254-259 Available only with Long Work Area 2	290-295 Available only with Long Work Area 2
	2000 Right Census Block	260-263 Available only with Long Work Area 2	296-299 Available only with Long Work Area 2
	2000 Right Census Block Suffix	264-264 Available only with Long Work Area 2	300-300 Available only with Long Work Area2

APPENDIX 16: NEIGHBORHOOD TABULATION AREAS (NTAS)

Originally created as Neighborhood Projection Areas for use in population projections, these aggregations of census tracts have been updated using 2010 census tracts and renamed Neighborhood Tabulation Areas (NTAs). The origin of Neighborhood Projection Areas as subsets of 55 Public Use Microdata Areas (PUMAs) is explained below.

The Neighborhood Tabulation Areas (NTAs) have been adopted by the Population Division of DCP as a method of presenting the U.S. Census Bureau's American Community Survey (ACS) release of census tract data for 5-year estimates. To mitigate the small sample size and accompanying large margins of error, ACS data are aggregated to NTA geography and made available in the ACS section of the DCP Population website. Because NTAs are subsets of PUMAs, they are important to anyone requiring ACS data for subareas of Community Districts. Regarding the 2010 census, these geographic areas offer a good compromise between the very detailed data for census tracts (2,168) and the broad strokes provided by community districts (59).

Neighborhood Projection Areas were created to project populations at a small area level, from 2000 to 2030. First and foremost, these aggregations were driven by population size in 2000 – neighborhood projection areas had to have a minimum population of 15,000, because this reduces the error associated with the projected population. This criterion resulted in combinations of neighborhoods that probably would not occur if one were solely designating boundaries of historical neighborhoods. Moreover, the neighborhood names associated with the neighborhood projections areas are not intended to be definitive.

Neighborhood projection areas were created using whole census tracts that were exact subdivisions of New York City's 55 Public Use Microdata Areas (PUMAs). (PUMAs were developed for use with the Census Bureau's Public Use Microdata Samples (PUMS) and are approximations of Community Districts.) Neighborhood projection areas were not permitted to cross PUMA boundaries.

Users need to be cognizant of the reason why these neighborhood projection areas were created, and the demographic and geographic constraints inherent in how they were configured.

APPENDIX 17: TPAD - ADDITIONAL INFORMATION

Geosupport Warnings, TPAD Conflict Flag, Reason Code Qualifier and Error Message

The TPAD Option allows users to get up-to-date property-level information. The TPAD Option is available for Function 1A, BL, BN, and 1B calls (PAD calls). When users turn the TPAD Switch 'on' in their applications, Geosupport reads the Transitional PAD file (TPAD) for intra-cycle PAD data and if any is found, Geosupport returns the TPAD data to the calling application. See Section VI.11 for a more detailed description of the TPAD option and the information it returns.

This appendix describes the special return code and error message handling with respect to TPAD. **If your applications make function 1A, BL, BN or 1B calls with the TPAD Option 'on', then you must read this description.**

Geosupport is designed to return information about *both* a normal warning (e.g. Hyphen Deleted) *and* a TPAD Conflict situation (e.g. …No Existing PAD BBL) with only one Function 1A, BL, BN or 1B call (with TPAD Switch 'on') to Geosupport. The value in the Geosupport Reason Code will be the value that a user would expect when a Geosupport function call has completed with a warning. The TPAD Conflict Flag will be in Work Area 2 (WA2) for all PAD calls with the TPAD Option 'on'. The '*' Reason Code (which indicates a TPAD Warning) will appear in only one exceptional case. In the situation where there was no regular Warning Message for the regular PAD call and there was TPAD data found that *conflicts* with the PAD data, then the GRC will contain '01' (indicating a warning) and the Reason Code will contain '*' (indicating that there is only a TPAD Conflict Flag warning and no regular Geosupport warning).

In addition, if TPAD data is found and there *is* a conflict with the PAD data, the value in the WA2 Conflict Flag field will also be placed into a new field called the Geosupport Reason Code Qualifier field which immediately follows the Geosupport Reason Code field in Work Area 1 (WA1). When this new field is populated with the TPAD Conflict Flag, the TPAD Conflict Message will be put in the Geosupport Error Message field instead of the Geosupport Warning Message that would normally appear. Note, therefore, that if there was a Geosupport Warning involving the regular PAD portion of this call, the Reason Code field will indicate the nature of the warning as with all other Geosupport calls (but the Error Message field for this warning will be overridden by the TPAD Conflict message if a conflict exists).

Values of '0' or '1' in the TPAD Conflict Flag (in WA2) are considered 'normal results'.

'0' signifies TPAD data was found and does not conflict with PAD data;

'1' signifies that no TPAD data was found.

When there are 'normal results', the WA2 TPAD Conflict Flag will *not* be placed into the new Geosupport Reason Qualifier field in WA1.

The following table shows the possible results for Function 1A, BL, BN an 1B calls with the TPAD Switch ‘on’.

	Regular Geosupport Warning for PAD Call			
	Yes		***No***	
	TPAD Data Found		**TPAD Data Found**	
Work Area 1 Fields	***Yes***	***No***	***Yes***	***No***
Geosupport Return Code (GRC)	01	01	01	00
Reason Code	Warning Reason Code	Warning Reason Code	*	blank
Reason Code Qualifier	TPAD Conflict Flag†	blank	TPAD Conflict Flag†	blank
Error Message	TPAD Conflict Message†	Warning Message	TPAD Conflict Message†	blank
WA2 Conflict Flag	TPAD Conflict Flag	TPAD Conflict Flag	TPAD Conflict Flag	TPAD Conflict Flag

† Note: *The TPAD Conflict Flag appears in the Reason Code Qualifier only if its value is greater than ‘1’. Similarly, the TPAD Conflict Message will appear in the Error Message field, only if the TPAD Conflict field is greater than ‘1’.*
The TPAD Conflict Flag ‘1’ (no TPAD data was found) and the TPAD Conflict Flag ‘0’ (TPAD data found and it does not conflict with PAD data) will not appear in the Reason Code Qualifier field in WA1. The Error Message field will have a TPAD Conflict Message only when TPAD data was found and it conflicts with the PAD data in some way (and as a result, the Reason Code Qualifier will be non-blank). Note that if there is no Regular Geosupport Warning, and there is TPAD data which does not conflict with the PAD data (Conflict Flag ‘0’), the GRC will be ‘00’ the Reason Code, Reason Code Qualifier, and Error Message will all be blank.

See examples on the following pages.

Examples: PAD Data Found with Regular Warnings

PAD Data (with regular Geosupport warning) and No TPAD Data Found		
Input: 12-34 Sample Street		
WA1 Fields	**Value**	
GRC	*01*	
Reason Code	*3*	*[indicates input address number altered – hyphen deleted]*
Reason Code Qualifier	*blank*	
Error Message	*ADDR NUMBER ALTERED: HYPHEN DELETED*	
WA2 Conflict Flag	*1*	

PAD Data (with regular Geosupport warning) and TPAD Data (with no conflicts)		
Input: 12-34 Sample Street		
WA1 Fields	**Value**	
GRC	*01*	
Reason Code	*3*	*[indicates input address number altered – hyphen deleted]*
Reason Code Qualifier	*blank*	
Error Message	*ADDR NUMBER ALTERED: HYPHEN DELETED*	
WA2 Conflict Flag	*0*	

PAD Data (with regular Geosupport warning) and TPAD Data (with conflicts)		
Input: 12-34 Sample Street		
WA1 Fields	**Value**	
GRC	*01*	
Reason Code	*3*	*[indicates input address number altered – hyphen deleted]*
Reason Code Qualifier	*D*	*[indicates address in TPAD but not PAD (PAD data from BL call)]*
Error Message	*ADDRESS FOUND IN TPAD, NOT FOUND IN PAD……..*	
WA2 Conflict Flag	*D*	

Examples: PAD Data Found with No Regular Geosupport Warning

PAD Data (with no regular Geosupport warning) and No TPAD Data Found	
Input: 1234 Sample Street	
WA1 Fields	**Value**
GRC	*00*
Reason Code	*Blank*
Reason Code Qualifier	*blank*
Error Message	*blank*
WA2 Conflict Flag	*1*

PAD Data (with no regular Geosupport warning) and TPAD Data (with no conflicts)	
Input: 1234 Sample Street	
WA1 Fields	**Value**
GRC	*00*
Reason Code	*Blank*
Reason Code Qualifier	*blank*
Error Message	*blank*
WA2 Conflict Flag	*0*

PAD Data (with no regular Geosupport warning) and TPAD Data (with conflicts)	
Input: 1234 Sample Street	
WA1 Fields	**Value**
GRC	*01*
Reason Code	** [indicates TPAD Conflict only; no regular warning]*
Reason Code Qualifier	*D [indicates address in TPAD but not PAD (PAD data from BL call)]*
Error Message	*ADDRESS FOUND IN TPAD, NOT FOUND IN PAD……..*
WA2 Conflict Flag	*D*

The Reason Code Qualifier is used to define a specific TPAD warning. When there is a true conflict between TPAD data and PAD data, the Reason Code Qualifier contains the same information as the TPAD Conflict Flag.

The following table indicates where in Work Area 1 the one-byte Reason Code Qualifier field(s) may be found.

		(1 byte) Position	
Field Name	**Function(s)**	**COW**	**MSW**
Reason Code Qualifier	1A, BL, BN	714	n/a
Reason Code Qualifier 2	1B	575	n/a

For Functions 1A, BL, and BN the Reason Code Qualifier is a one-byte field, in column 714 of COW Work Area 1.
For Function 1B, the Reason Code Qualifier 2 is a one-byte field, in column 575 of COW Work Area 1.

The following table contains the field name in the COPY libraries for the Reason Code Qualifiers.

Reason Code Qualifier(s) Field Names in COPY Libraries			
Language	**COPY Library (COW Only)**	**Function(s) (COW Only)**	**Field Name**
BAL	P1BAL	1A, BL, BN 1B	P1ORCQ P1ORCQ2
C	PAC	1A, BL, BN 1B	reason_code_qual reason_code_qual_2
COBOL	P1COB	1A, BL, BN 1B	GEO-WA1-OUT-REASON-CODE-QUAL GEO-WA1-OUT-REASON-CODE-QUAL2
Natural	GEOLP1	1A, BL, BN 1B	PIWA1-OUT-REASON-CODE-QUAL PIWA1-OUT-REASON-CODE-QUAL-2
PL/1	P1PL1	1A, BL, BN 1B	PIWA1_OUT_REASON_CODE_QUAL PIWA1_OUT_REASON_CODE_QUAL_2

GLOSSARY OF TERMS AND ACRONYMS

Citations in brackets are references to sections of the UPG where the given term is defined or is principally discussed. Phrases in **bold typeface** have entries in this glossary.

ADDRESSABLE PLACE NAME [Section III.6]: A **place name** that can be combined with a house number to form an address. (Contrast with **non-addressable place names**.) Geosupport's **address-processing functions** accept addressable place names as input data for the specification of an address. Some Manhattan examples are PENN PLAZA, WASHINGTON SQUARE VILLAGE and NEW YORK PLAZA.

ADDRESS / INTERSECTION TO MAP ZONES (AIMZ) [Section I.1]: A Geosupport CICS utility transaction that allows the user to enter an address, **place name**, intersection, tax lot identifier, or **Building Identification Number** and receive back a screen display of a set of map identifiers corresponding to the input location. The use of AIMZ requires no programming skills and AIMZ is not documented in detail in this **UPG**.

ADDRESS-PROCESSING FUNCTION [Chapter V]: Any of the Geosupport **function**s that accept the input of addresses. Currently, these are Functions 1, 1A, 1B, 1E and AP. Except for Function AP, address-processing functions also accept **non-addressable place names** as input data (typically with no input house numbers specified). The address-processing functions are a subset of the **location-processing functions**.

ALIAS [Section IV.2]: Two street names (or names of non-street geographic features) are aliases of each other if they are alternative names for the same street (or non-street feature) or any portion(s) thereof, or are spelling variants of the same street (or non-street feature) name. **Partial street names** are considered spelling variants, and therefore aliases, of the corresponding full street names. The alias relationship is embodied in the assignment of Geosupport **street codes**: two street names are aliases of each other if and only if they have the same borough-and-five-digit **street code**. Some examples of aliases in Manhattan: 6 AVENUE, SIXTH AVENUE, and AVENUE OF THE AMERICAS are all aliases of each other. SEVENTH AVENUE, 7 AVENUE, FASHION AVENUE and ADAM C POWELL JR BOULEVARD are all aliases of each other, even though some of these names are valid for differing portions of the street.

ALIASES (in GBAT) [Section IX.6]: User-defined street name aliases may be used in GBAT applications to supplement the set of street names that Geosupport recognizes. GBAT aliases are typically used to handle a consistent misspelling of a street name. The GBAT aliases are different from the **Alias**es described in Section IV.2.

AIMZ - see **Address / Intersection to Map Zones**

AP - AP is the name of Function AP and the acronym of Address Point (AP). It is also the acronym for Addressable Place Name (AP) and Atomic Polygon (AP). The acronym's meaning should be clear by its usage. It is spelled out as needed.

API - see **Geosupport Application Programming Interface**

BACKGROUND COMPONENT [Section I.5]: The component of the Geosupport System in which **GSS** updates and validates geographic base files from which new releases of the **foreground component** files are periodically generated. The background component software and files are not directly accessed by users.

BBL ('Borough/Block/Lot') [Section VI.2]: A unique identifier for a parcel of real property, or tax lot, in New York City. The BBL is a 10-byte item formed by concatenating the one-byte borough code, five-byte tax block number and four-bye tax lot number. The New York City Department of Finance assigns tax block and tax lot numbers.

BEND [Section III.6]: A **pseudo-street name** that Geosupport accepts as street name input to specify a bending point of a street. Geosupport treats a point along a street as a bending point if the angle of the street at that point is not within the range 160-200 degrees, that is, if it is not within 20 degrees of a straight line.

BILLING BBL [Section VI.4]: A special **BBL** assigned by the Department of Finance to each condominium, to enable identification of the condominium in its entirety as distinct from the condominium's individual units.

BIN - see **Building Identification Number**

BLOCK FACE (a.k.a. BLOCKFACE) [Section VII.3]: A continuous frontage of a physical city block along one street, encompassing any bending points of the street within that frontage.

BUILDING IDENTIFICATION NUMBER (BIN) [Section VI.3]: A unique, immutable identifier for each building in New York City. BINs are not to be confused with addresses. BINs are assigned by the Geographic Systems Section (**GSS**) at the Department of City Planning.

CHARACTER-ONLY WORK AREA (COW) [Appendix 12, Appendix 13 and Appendix 14]: The Geosupport work areas that have long been in use are called the Mainframe-Specific Work Areas (MSWs). Most of the MSWs contain one or more packed decimal fields, a data encoding schema unique to IBM mainframes. An alternative set of Geosupport work areas was introduced in 2002. It is called the Character-Only Work Areas (COWs) which, as the name implies, contain character fields only. The COW is an essential part of a long-term effort to port the Geosupport System to other platforms. From now on, all new applications should be designed to use the COWs only. We also recommend that all existing applications be converted to use the COWs. See also Glossary entry for **Work Areas**.

CCO - See **Corporation Council Opinion**

CITY LIMIT [Section III.6]: A **pseudo-street name** that Geosupport accepts as street name input to refer to locations on the Bronx-Westchester County border, the Queens-Nassau County border, the New York-New Jersey border, and the Staten Island-New Jersey border.

CITYWIDE STREET CENTERLINE GEODATABASE - see **CSCL**

COMPACT FORMAT [Section III.3]: A Geosupport format for **normalize**d geographic feature names. The compact format is suitable for display but not for sorting. Contrast with the **sort format**, which is suitable for sorting but not for display.

COMPLEX [Section III.6]: A group of related buildings and/or other geographic features. The name of a complex is a **NAP** (Non-Addressable Place Name). Examples of complexes include housing projects, university and hospital campuses, cultural complexes (such as Lincoln Center) and airports. Compare to **simplex** and **constituent entity of a complex**.

CONSTITUENT ENTITY OF A COMPLEX [Section III.6]: An individual building or other geographically identifiable feature that is part of a **complex**. Examples are the buildings in Lincoln Center and in Stuyvesant Town.

COPY LIBRARY, COPY FILES [Section VIII.4]: Many programming languages have a facility for accessing external files of source code called COPY files during application program compilation. COPY files reside in a partitioned data set (PDS) called a COPY library. The Geosupport System has COPY libraries containing source code layouts of the **work areas** in Assembler, PL/1, COBOL, C and NATURAL. The use of the Geosupport COPY libraries by application developers is optional but is strongly recommended.

CORPORATION COUNCIL OPINION (CCO) [Appendix A3]: A Corporation Council Opinion (CCO) is a geographic feature type. A CCO is an opinion by the City's Law Department that a street area, not owned by the City, (e.g. a portion of a private street) has been dedicated for public use, consistent with the requirements of General City Law, Section 36(2). That allows the City to use public funds for various improvements and services, including paving of the roadway and installing sewers. The request usually relates to planned work by the City's Department of Transportation, Department of Design and Construction, and Department of Environmental Protection.

COW - See **Character-Only Work Area**

CSC - see **Computer Service Center**

CSCL ('NYC Citywide Street Centerline File'): An object-oriented database describing the features (streets, and non-street features) in NYC.

DAPS - see **Duplicate Address Pseudo-Street Name**

DEAD END [Section III.6]: A **pseudo-street name** that Geosupport accepts as street name input to refer to a termination point of a street at which there are no cross streets.

DEPARTMENT OF INFORMATION TECHNOLOGY AND TELECOMMUNICATIONS (DoITT): An agency of the City of New York responsible for city government-wide information technology infrastructure support. DoITT operates the **Computer Service Center**.

DISPLAY FUNCTION [Sections IV.6 and V.2]: Any of the Geosupport **function**s that provide data items that can be used to display geographic locations on application screens, reports, mailing labels etc. Specifically, the display **function**s provide street names corresponding to input **street code**s, and provide house numbers in **HND** format corresponding to input house numbers in **HNI** (MSW) or **HNS** (COW) format. Note that the display **function**s do not actually display anything themselves; they merely provide data items that are suitable for an application to display. Currently, the display **function**s are Functions D, DG and DN.

DoITT - see **Department of Information Technology and Telecommunications**

DRIVER, GEOSUPPORT [Section II.1]: A Geosupport load module that serves as an interface enabling application programs to access Geosupport via **API** calls. There are two different drivers, one for batch applications and one for CICS applications. Application developers must link-edit the appropriate driver into the application program.

DSNY – The City of New York Department of Sanitation

DUPLICATE ADDRESS PSEUDO-STREET NAME (DAPS) [Section V.6]: A **pseudo-street name** accepted as street name input by Geosupport in duplicate address situations. DAPSs enable applications to specify which instance of a duplicated address the application wishes to process. As an example, Hillside Avenue exists in both the Bellerose section and the Douglaston section of Queens. To allow the user to refer to Hillside Avenue in a duplicate address situation two pseudo-street names are accepted by Geosupport, namely HILLSIDE AVENUE BELLEROSE and HILLSIDE AVENUE DOUGLASTON. As an alternative to a DAPS, for Functions 1, 1A, 1B, and 1E, the user may enter the conventional street name and the ZIP code which identifies the section of the borough, e.g. .ZIP Code 11426 for Bellerose and 11363 for Douglaston.

FOREGROUND COMPONENT [Section I.5]: The component of the Geosupport System that is directly accessed by a user application via the **API**. The foreground component includes both software and files.

FREE-FORM ADDRESS [Section V.3]: An address expressed with the house number and street name stored together in a single field. (Compare with **parsed-form address**.) Geosupport can process free-form addresses in which the house number and street name are passed together in the **WA1** input street name field (and no value is passed in the separate **WA1** input house number field).

FRONT-TRUNCATED STREET NAME [Section III.5(E)]: In the borough of Bronx or Manhattan only, a front-truncated street name is one that can be transformed to a valid street name by adding the word EAST or WEST to the front of the street name, for example 14 STREET is a front-truncated street name for EAST 14 STREET and WEST 14 STREET. Additional criteria are described in Section III.5(E).

FUNCTION [Sections I.2, I.4]: The Geosupport System is organized into more than a dozen distinct functions that can be accessed by the user. Each function is identified by a one- or two-character function code.

GBAT - see **Geosupport Batch Address Translator**

GEOCODE [Section I.2]: The process of associating higher-level geographic information, such as the police precinct, ZIP code or census tract, with a specific geographic location, such as an address or street intersection. Geocoding is one of the Geosupport System's most important services.

GEOGRAPHIC ONLINE ADDRESS TRANSLATOR (GOAT) [Section I.1]: The Geosupport System's principal CICS utility transaction. GOAT is an inquiry transaction that allows the user to request any Geosupport **function**, enter input data and receive back a formatted screen display of the corresponding output information provided by that **function**. The use of GOAT requires no programming skills and it is not documented in detail in this **UPG**. (The GOAT utility was previously known as the Geosupport Online Address Translator (GOAT)).

GEOGRAPHIC RETRIEVAL CONSISTENCY [Section I.3]: Retrieval of information by geographic location in a manner that is independent of how the location is specified. The ability of an application to retrieve data consistently by geographic location from the application's own files is a critical design issue for many applications. One important means of implementing geographic retrieval consistency in an application is to use B5SCs (see the entry for **alias**) instead of street names in the retrieval key.

GEOSUPPORT APPLICATION PROGRAMMING INTERFACE (API) [Section II.1]: The Geosupport facility that enables user-written application programs to interact with Geosupport via standardized program calls. The API involves the use of a Geosupport **driver** module and Geosupport **work areas**.

GEOSUPPORT BATCH ADDRESS TRANSLATOR (GBAT) [Section IX.1]: The Geosupport System's batch utility program.

GEOSUPPORT ONLINE ADDRESS TRANSLATOR (GOAT)- see **Geographic Online Address Translator(GOAT)**.

GEOSUPPORT RETURN CODE (GRC) [Section II.2]: A two-byte code that is returned in **WA1** upon completion of every **API** call to Geosupport, indicating to the calling application the outcome of the call. (Not to be confused with operating system return codes or condition codes.) A GRC value of '00' signifies an unconditionally successful call. A GRC value of '01' signifies a **warning**. A GRC value of other than '00' or '01' signifies a **reject**. See also the Glossary entries for **Reason Code** and **Message**. See Appendix 4 for a comprehensive list of **GRC**s, **Reason Codes** and **Messages**.

GEOSUPPORT SYSTEM ADMINISTRATOR [Section I.1]: A designated staff member (generally a systems programmer) of a computer center where Geosupport is installed on a mainframe, responsible for installing new Geosupport file releases and software versions, and for trouble-shooting system-related Geosupport problems. Note: the Geosupport System Administrator is not necessarily responsible for providing application-related support to users.

GOAT - see **Geographic Online Address Translator**

GRC - see **Geosupport Return Code**

GSS [Section I.1]: The Geographic Systems Section of the City of New York Department of City

Planning's Information Technology Division. **GSS** is the developer and custodian of the Geosupport System.

HND - see **House Number in Display Format**

HNI - see **House Number in Internal Format**

HNS - see **House Number in Sort Format**

HOUSE NUMBER IN DISPLAY FORMAT (HND) [Section V.2]: One of Geosupport's three output **normalize**d house number formats. The HND is a format suitable for applications to use for display on screens, reports and mailing labels.

HOUSE NUMBER IN INTERNAL FORMAT (HNI) [Section V.2]: One of Geosupport's three output **normalize**d house number formats. The HNI is not suitable for display, because it is partly in packed decimal form, and it contains a code representing the house number suffix (if any) rather than the suffix itself. The HNI is used internally in the Geosupport System, and it is not of direct significance to most applications. HNI is valid in MSW only.

HOUSE NUMBER IN SORT FORMAT (HNS) [Section V.2]: One of Geosupport's three output **normalize**d house number formats. The HNS is not suitable for display, because it has an internal format and contains a code representing the house number suffix (if any) rather than the suffix itself. The HNS is used internally in the Geosupport System, and it is not of direct significance to most applications. HNS is valid in COW only.

HPD - Department of Housing Preservation and Development

ID-PROCESSING FUNCTION [Section I.4]: Any **location-processing function** that processes identification codes. Currently, the ID-processing functions are Function BL, which processes tax lots specified by an input **BBL**; Function BN, which processes buildings specified by an input **BIN**; and COW Function 2 which can process an intersection specified by a **Node ID**.

INPUT FIELD (IN A WORK AREA) [Section II.3]: A field into which the user application inserts a value to be passed to Geosupport. See also **output field**, **WA1** and **WA2**. **WA1** has both input and output fields. **WA2** has output fields only.

LDF- see **LION Differences File**

LGC - see **Local Group Code**

LION DIFFERENCES FILE (LDF): The LION Differences File (LDF) is a sequential file containing records documenting certain types of changes that have occurred between a particular release of LION and the immediately previous LION release. A new LDF 'edition' is 'published' in conjunction with each new production release of LION. The changes documented in the LDF relate to node changes and segment changes.

LION FILE [Section VII.1]: A predecessor to CSCL, LION is a **background component** file that is a digital map of New York City. LION contains a single-line representation of the city's streets and city limits. Geosupport's **street configuration** processing is based on that representation.

LOCAL GROUP CODE (LGC) [Section IV.5]: The LGC consists of the sixth and seventh digits of the ten-digit **street code**. The LGC corresponds to a set of **locally valid street names** for the given street.

LOCALLY VALID STREET NAME [Section IV.5]: A name of a street that is valid for a particular portion (possibly all) of the street. The set of street names that are valid for the same portion of a street constitute a 'local group' and share the same **LGC** value.

LOCATION-PROCESSING FUNCTION: Any of the Geosupport **function**s that accept the input of a geographic location. These can be sub-classified into the **address-processing functions** (Functions 1, 1A and 1E); the **street-configuration-processing functions** (Functions 2, 3, 3C and 3S); and the **ID-processing functions** (Functions 2, BL and BN).

MAINFRAME-SPECIFIC WORK AREA (MSW (a.k.a. MFS)) - see **Character-Only Work Area**

MESSAGE [Section II.2]: A **WA1** output item returned for all **warnings** and **rejects**, consisting of an appropriate explanatory text message. See Appendix 4 for a comprehensive list of **GRC**s, **Reason Codes** and **Messages**.

MFS - see **MSW**

MSW - see **Mainframe-Specific Work Area**

NAP - see **Non-addressable Place Name**

NAUB - see **Non-addressable Un-named Building**

NODE [Section VII.2]: Either a conventional intersection of a street with another street, or a **pseudo-intersection** of a street with a **pseudo-street or where there is a change in a significant geocode such as zip code or a Police Beat.**.

NODE ID [Section VII.2]: A unique identifier associated with each node in the Geosupport sytem. The Node ID is sometimes referred to as the Node Number.

NON-ADDRESSABLE PLACE NAME (NAP) [Section III.6]: A place name that is typically not combined with a house number to form an address. Examples: CITY HALL, EMPIRE STATE BUILDING, PLAZA HOTEL, LINCOLN CENTER, LA GUARDIA AIRPORT. A NAP can either be the name of a **simplex**, a **complex**, or a **constituent entity of a complex**. Geosupport's **address-processing functions** accept many NAPs as input data.

NON-ADDRESSABLE UN-NAMED BUILDING (NAUB) [Section VI.3]: A building that has neither addresses nor **NAP**s, and can only be identified by its **BIN**. Typical example is a storage shed on the grounds of an industrial property.

NORMALIZE [Section III.2 for street names, Section V.2 for house numbers]: To produce a version of a data item in a standardized format. Geosupport normalizes every input geographic feature name into one of two formats selected by the user application, called the **compact format** and the **sort format**. Geosupport also normalizes every input house number. Geosupport returns output normalized names and house numbers to the calling application in **WA1**.

OUT-OF-SEQUENCE ADDRESS [Section V.10]: An address such that the house number is out of sequence relative to nearby house numbers along the given street. For an input out-of-sequence address, the output information that Functions 1 and 1E return is based on the street segment where the out-of-sequence address is actually located, including the cross streets and geographic district identifiers. The Spatial Coordinates returned are those of a point calculated under the assumption that the building entrance is located at the midpoint of the blockface. A warning is issued for any address on a blockface containing an out-of-sequence address.

OUTPUT FIELD (IN A WORK AREA) [Section II.3]: A field into which Geosupport inserts a value to be returned to the calling user application. See also **input field**, **WA1** and **WA2**. **WA1** has both input and output fields. **WA2** has output fields only.

PARSED-FORM ADDRESS [Section V.3]: An address that is expressed with the house number and street (name or code) stored in separate fields. (Compare to **free-form address**.)

PARTIAL STREET NAME [Section III.4]: A street name formed from a full normalized street name by deleting one or more entire words from the end of the full street name. For example, in Manhattan, READE is a partial street name for READE STREET. Geosupport accepts a partial street name as an input street name when the partial street name unambiguously represents a unique full street name in the specified input borough. Additional criteria are described in Section III.4.

PLACE NAME [Section III.6]: A name of a geographic feature other than a street name or a **pseudo-street name**. Examples of place names are the names of building complexes (such as university campuses, housing projects, hospital campuses etc.), individual named buildings (such as CITY HALL, EMPIRE STATE BUILDING, museums, hotels, theaters, stadiums etc.), parks, islands, airports etc. Geosupport recognizes some New York City place names, and more are being added over time. There are several types of place names; see Glossary entries for **Addressable Place Name, Non-Addressable Place Name, Simplex, Complex and Constituent Entity of a Complex.**

PREFERRED STREET NAME [Section IV.5]: If more than one local group of street names is valid at a particular location along a street, **GSS** designates one of them as the 'preferred' local group for that location. The preferred street name is the **principal street name** of the preferred local group.

PRIMARY STREET NAME [Section IV.3]: For every street in NYC, that is, for every valid B5SC value, **GSS** designates one spelling of one name of the street as the primary street name. Function D can be used to obtain the primary street name for a given B5SC value.

PRIMING WA1 [Section II.3]: The part of the API procedure in which the calling application program inserts values into **WA1 input fields** in preparation for issuing a call to the **driver**. Priming WA1 is how an application requests the **function** to be performed, passes the input geographic data (such as an address) to be processed, and specifies processing options.

PRINCIPAL STREET NAME OF LOCAL GROUP [Section IV.5]: The street name that **GSS** has designated as the 'best' representative from among all the names in a local group. Function DG can be used to obtain the principal street name for a given B7SC value. **PSEUDO-ADDRESS [Section VI.5]:** An address unofficially assigned by **GSS** to a street frontage of a tax lot that has no 'real' building addresses, such as a driveway. Function 1A accepts pseudo-addresses as input.

PSEUDO-INTERSECTION [Section VII.2]: A point along a street specified in terms of a **pseudo-street name**, i.e., a bend, a dead end or a city limit point.

PSEUDO-STREET NAME [Section III.6]: An 'unofficial' street name that Geosupport accepts as street name input for certain geographic situations. **DAPS**s are pseudo-street names that the **address-processing functions** accept as input only for the city's very few cases of duplicate addresses (see Section V.6). DEAD END, CITY LIMIT, BEND and their **aliases** are pseudo-street names accepted as input by the **functions** that process **street configurations** (see Chapter VII).

REASON CODE [Section II.2]: A one-byte output **WA1** item that qualifies the reason for a **warning** or **rejection** with greater specificity than does the **GRC** alone. Non-blank reason codes are returned for all **warnings** and for selected **rejects**. See Appendix 4 for a comprehensive list of **GRC**s, **Reason Codes** and **Messages**.

REJECT, REJECTION [Section II.2]: An unsuccessful outcome of an **API** call to Geosupport, indicated by a **GRC** value other than '00' or '01', accompanied by an appropriate **Message**, and for selected rejects, by a **Reason Code**.

RELEASE (OF GEOSUPPORT FOREGROUND FILES) [Section I.5]: Geosupport's **foreground component** files are read-only files, and are periodically replaced by updated files. Every foreground file is identified as belonging to a specific Geosupport release.

RESYNCHRONIZATION OF STREET CODES [Section IV.4]: The updating of Geosupport **street codes** stored in a user application file to reflect street code assignment changes made in a Geosupport **release**.

ROADBED [Section V.5]: A roadbed is a street segment that is bounded on both sides by a physical separator such as a sidewalk, median barrier or median strip. Street segments that have painted medians separating travel direction do not form multiple roadbeds. Well-known examples of streets with multiple roadbeds include Park Avenue in Manhattan, Queens Blvd in Queens and Ocean Parkway in Brooklyn.

SIMILAR NAME [Section III.5]: When an input street name is rejected, Geosupport returns a list of up to ten 'similar names' in **WA1**, as an aid to the application in handling the **reject**. A 'similar name' is a valid full street name from the specified input borough that Geosupport, in accordance with certain criteria, deems to be similar to the rejected input street name.

SIMPLEX [Section III.6]: A 'stand-alone' named geographic feature, that is, a feature that has a **NAP** and that is not a **complex** or a **constituent entity of a complex**. Examples: Empire State Building, Plaza

Hotel, Gramercy Park.

SNC - see **Street Name Code**

SNL - see **Street Name Normalization Length Limit**

SORT FORMAT [Section III.3]: A Geosupport format for **normalize**d geographic feature names. The sort format is suitable for sorting but not for display. Contrast with the **compact format**, which is suitable for display but not for sorting.

STREET CODE [Chapter IV]: In the Geosupport System, a set of numeric street codes is assigned to represent the city's street names and other geographic feature names. A borough code combined with a ten-digit street code, or B10SC, corresponds to a specific spelling of a specific street name in the given borough. Portions of the B10SC also have special significance. In particular, the first six bytes of the B10SC, the borough-and-five-digit street code (B5SC), encodes the **alias** relationship between street names.

STREET CONFIGURATION [Section VII.1]: A geographic location specified in terms of a combination of two or three streets. Street configurations include intersections, street segments, **blockfaces** and street stretches.

STREET-CONFIGURATION-PROCESSING FUNCTION [Chapter VII]: Any of the Geosupport **location-processing functions** that process **street configurations**. Currently, these are Function 2, which processes street intersections; Function 3, which processes street segments; Function 3C, which processes **blockfaces**; and Function 3S, which processes street stretches.

STREET NAME CODE (SNC): The final three digits of the B10SC (Borough and Ten-digit **Street Code**) are called the Street Name Code (SNC). Thus, the B10SC consists of the concatenation of the borough code, 5SC, **LGC** and SNC. The SNC serves simply to serialize the street names within a local group, so that the full B10SC is unique to a specific spelling of a specific street name.

STREET NAME NORMALIZATION LENGTH LIMIT (SNL) [Section III.2]: A user-specifiable parameter that sets the maximum length in bytes within which Geosupport **normalizes** input street names. The default value is 32.

UPG - see **User Programming Guide**

USER PROGRAMMING GUIDE (UPG) [Section I.6]: This document.

VANITY ADDRESS [Sections V.9]: An address such that the street name refers to a different street than the one on which the referenced building entrance is actually located. For an input vanity address, the output information that Functions 1 and 1E return is based on the street segment where the vanity address is actually located, including the cross streets, geographic district identifiers and spatial coordinates. The source for the Spatial Coordinates (a.k.a. X-Y coordinates) returned for Vanity Addresses (and NAPs) is the **Citywide Street Centerline file (CSCL)**. The CSCL information guarantees that the X-Y coordinates fall within the actual location (e.g. building footprint) of the Vanity Address. A warning is issued accordingly.

The output information that Function 1A returns is based on the building associated with the vanity address. No warning is issued for Function 1A.

VERSION (OF GEOSUPPORT FOREGROUND SOFTWARE) [Section I.5]: Self-explanatory. Contrast use of the term 'version' for Geosupport software and '**release**' for Geosupport data files.

VESTIGIAL FEATURE [Section I.5]: An element of the Geosupport System, such as a **function**, a **work area,** a data item or a JCL statement, that is obsolete and has been superseded by an enhancement. Vestigial features may continue to be operational but should not be used in new applications, and should be eliminated from existing ones.

WARNING [Section II.2]: A conditionally successful completion of an **API** call to Geosupport. A warning is signified by a GRC value of '01' and an accompanying **Reason Code** and **Message**. In most cases, it is appropriate for applications to treat warnings in the same way as successful completions. It is sound practice, however, to examine the Reason Codes and Messages.

WA1, WA2 - see **Work Areas**

WORK AREAS [Section II.1]: Standard-layout blocks of data in memory that are shared between Geosupport and an application. The Geosupport work areas are an essential component of the Geosupport **API**, and constitute the sole means by which information passes between the application and Geosupport. Different Geosupport **functions** use different work area layouts. **API** calls can involve the passing of either one work area, called **Work Area 1 (WA1)**, or two work areas, **WA1** and **Work Area 2 (WA2)**.