

CROTONA TERRACE - BUILDING B

1825 BOSTON ROAD

BLOCK 2984, LOT 46

BRONX, NEW YORK

Remedial Action Work Plan

Restrictive Declaration R-188

CEQR No. 08DCP054X

NYC VCP Number: 15CVCP064X

OER Project Number: 15RHAN071X

Prepared for:

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JANUARY 2015

REMEDIAL ACTION WORK PLAN

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LIST OF ACRONYMS

Acronym	Definition
AOC	Area of Concern
BOA	Brownfield Opportunity Area
bsg	below surface grade
CAMP	Community Air Monitoring Plan
CHASP	Construction Health and Safety Plan
CFR	Code of Federal Regulations
COC	Contaminants of Concern
DCR	Declaration of Covenants and Restrictions
DDD	Dichlorodiphenyldichloroethane
Delta-BHC	Delta-benzenehexachloride
DNAPL	Dense non-aqueous phase liquid
EC	Engineering Control
ELAP	Environmental Laboratory Approval Program
ESA	Environmental Site Assessment
GPS	Global Positioning System
HAZWOPER	Hazardous Waste Operations and Emergency Response
IC	Institutional Control
LNAPL	Light non-aqueous phase liquid
mcg/m ³	Micrograms per cubic meter
NOC	Notice of Completion
NYC DEP	New York City Department of Environmental Protection
NYC DOB	New York City Department of Buildings
NYCRR	New York Codes Rules and Regulations
NYC OER	New York City Office of Environmental Remediation
NYC VCP	New York City Voluntary Cleanup Program
NYGWS	New York State Groundwater Effluent Limits Class GA Standards
NYS DEC	New York State Department of Environmental Conservation

Acronym	Definition
NYS DEC DER	New York State Department of Environmental Conservation Division of Environmental Remediation
NYS DOH	New York State Department of Health
OSHA	Occupational Health and Safety Administration
PCBs	Polychlorinated Biphenyls
PE	Professional Engineer
PID	Photo Ionization Detector
PPE	Personal Protective Equipment
ppm	Parts per million
QA/QC	Quality Assurance/Quality Control
QEP	Qualified Environmental Professional
QHHEA	Qualitative Human Health Exposure Assessment
RA	Remedial Action
RAOs	Remedial Action Objectives
RAR	Remedial Action Report
RAWP	Remedial Action Work Plan or Plan
RCA	Recycled Concrete Aggregate
RCNY	Rules of the City of New York
RI	Remedial Investigation
RIR	Remedial Investigation Report
SCOs	Soil Cleanup Objectives
SCG	Standards, Criteria and Guidance
SMP	Site Management Plan
SMMP	Soil/Material Management Plan
SPDES	State Pollutant Discharge Elimination System
SVOC	Semi-Volatile Organic Compound
TAL	Target Analyte List
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
ug/L	Micrograms per liter

Acronym	Definition
ug/m3	Micrograms per Cubic Meter
USEPA	United States Environmental Protection Agency
UST	Underground storage tank
VOC	Volatile Organic Compound

CERTIFICATION

I, Gene Santana, am a Professional Engineer licensed in the State of New Jersey but I am authorized to practice in the State of New York. My authorization letter is provided in Appendix I. I have primary direct responsibility for implementation of the remedial action for the Crotona Terrace - Building B Site (New York City Voluntary Cleanup Project No. 15CVCP064X).

I, Doug Harm, am a Qualified Environmental Professional as defined in §43-140. I have primary direct responsibility for implementation of the remedial action for the Crotona Terrace -Building B Site (New York City Voluntary Cleanup Project No. 15CVCP064X).

I certify that this Remedial Action Work Plan (RAWP) has a plan for handling, transport and disposal of soil, fill, fluids and other materials removed from the property in accordance with applicable City, State and Federal laws and regulations. Importation of all soil, fill and other material from off-Site will be in accordance with all applicable City, State and Federal laws and requirements. This RAWP has provisions to control nuisances during the remediation and all invasive work, including dust and odor suppression.

GENE SANTANA

Name

N.J. LIC. NO. 246E 37149

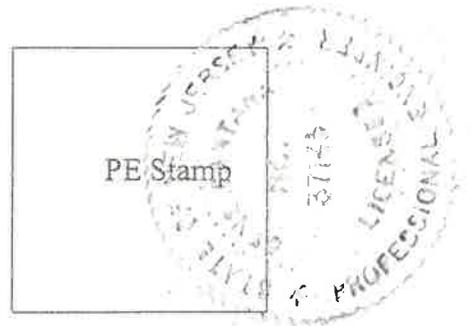
NYS PE License Number

Gene Santana

Signature

1-28-2015

Date



Doug Harm

QEP Name

[Signature]

QEP Signature

1/28/15

Date

EXECUTIVE SUMMARY

Joy Construction Corp. has enrolled in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a 27,579-square foot site located at 1825 Boston Road in Bronx, New York. A remedial investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP). The remedial action described in this document provides for the protection of public health and the environment consistent with the intended property use, complies with applicable environmental standards, criteria and guidance and conforms with applicable laws and regulations.

Site Location and Current Usage

The site is located at 1825 Boston Road in the Crotona Park East section of the Bronx, New York, and is identified as Block 2984, Lot 46 on the New York City Tax Map. Formerly, the site consisted entirely of Block 2984, Lot 46. However, Block 2984, Lot 46 was subdivided as part of redevelopment into two Lots, Lot 67 and Lot 46. Lot 67 is located to the north and Lot 46, “the Site” being developed under this application, is located to the south. Lot 67 is also being redeveloped by Joy Construction Corp. and is identified as “Crotona Terrace - Building A”.

Figure 1 shows the site location. *Figure 2* shows the lot and block and the boundary of the remedial investigation (“the site”). The site is bounded by the Crotona Parkway to the west, East 176th Street and vacant land (currently being redeveloped as Crotona Terrace -Building A “Lot 67”) to the north, Boston Road to the east, and vacant land and East 175th Street to the south. A map of the site boundary is shown in *Figure 3*. Currently, the site is vacant and undeveloped.

Summary of Proposed Redevelopment Plan

The Applicant proposes the development of one building identified as Building B. The redevelopment plan for Building B includes the development of an eight (8)-story low-income residential and commercial use building. All residential units will be affordable housing. Parking, utility rooms, and commercial space are proposed for the first floor and residential apartments are proposed for the second through eighth floors, ranging from zero (0) bedrooms to three (3) bedrooms. When the development is complete, the site will offer the following:

- 108 residential apartments (approximately 119,017 square feet)
- 7,155 square feet of commercial/retail space on the first floor
- 27 at-grade parking spaces (approximately 8,165 square feet)

The anticipated excavation depth for the building is four (4) feet below surface grade (bsg) across the site, and excavation depths for the elevator pit and foundation components range from six (6) to eight (8) feet bsg. Locations of proposed excavation depths are presented on *Figure 4*. No open spaces are proposed for the building other than a common area on the roof over the parking garage. This area will consist of concrete, pavers, and other impermeable materials. Layouts of the proposed site development are presented in *Appendix I*. The current zoning designation is R7-1 with a C2-4 commercial overlay. The proposed use is consistent with existing zoning for the property.

Summary of the Remedial Investigation Environmental Findings

The environmental findings are cumulative of the June 2011 RI results collected by ESI and the results of this 2014 RI. Urban historic fill was identified throughout the property, and analytical data detected the fill to be contaminated with one pesticide and several semi-volatile organic compounds (SVOCs) and metals. Additional geologic and hydrogeologic data collected at the site as part of the RI are as follows:

1. The elevation of the subject property changes significantly from west to east. The approximate elevation on the western edge of the site along Crotona Parkway is 61.77 feet and the approximate elevation on the eastern edge of the site along Boston Road is 69.66 feet;
2. The depth to groundwater varies across the site. The depth to groundwater is approximately 17 feet below grade surface along Boston Road and is approximately 13 feet below grade surface along Crotona Parkway;
3. Groundwater flow is generally toward the southwest beneath the Site, based on topography and groundwater gauging events;

4. The depth to bedrock varies drastically across the site. The depth to bedrock along Boston Road is approximately between 18 and 19 feet below grade surface and is approximately 40 feet below grade surface along Crotona Parkway;
5. The subsurface conditions at the site consist of a layer of urban historic fill, a layer of brown silty sand with varying amounts of gray peat, a layer of glacial till with well-graded sand and gravel with varying amounts of silt, cobbles and boulders, and gneiss bedrock was encountered at the borings terminus. The identified fill layer consisted of brown fine to coarse sand with varying amounts of brick, gravel, asphalt fragments, silt, and wood fragments and extended from grade surface to approximately 13 feet below grade surface;
6. Soil/fill samples collected during the 2011 RI completed by ESI and the 2014 RI completed by Brinkerhoff Environmental Services, Inc. (Brinkerhoff) were compared to New York State Department of Environmental Conservation (NYSDEC) Part 375 Table 375-6.8 Unrestricted Use and Restricted Residential Use Soil Cleanup Objectives (SCOs). No volatile organic compounds (VOCs) or polychlorinated biphenyls (PCBs) were detected in any of the samples above the Unrestricted Use SCOs. The SVOCs benzo(a)anthracene (maximum [max] of 14.1 milligram per kilogram [mg/kg]), benzo(a)pyrene (max 7.92 mg/kg), benzo(b)fluoranthene (max 7.05 mg/kg), benzo(k)fluoranthene (max 7.99 mg/kg), chrysene (max 14.4 mg/kg), dibenzo(a,h)anthracene (1.64 mg/kg), and indeno(1,2,3-cd)pyrene (max 2.66 mg/kg) were detected above Restricted Residential Use SCOs in several shallow (0-2 foot interval) samples collected during the 2011 RI and in one deeper (4 – 6 foot interval) sample collected during the 2014 RI. The pesticide 4,4'-DDD was detected in three shallow samples at concentrations above the Unrestricted Use SCO (max of 0.0543 mg/kg). The metals barium (max 667 mg/kg), copper (max 990 mg/kg), iron (max 381 mg/kg), lead (max 15,400 mg/kg), and zinc (max 2,010 mg/kg) were detected above Restricted Residential Use SCOs in several shallow (0 – 2 foot interval) samples collected during the 2011 RI and in one deeper sample (4 – 6 foot interval) collected during the 2014 RI. The maximum lead concentration was detected in the 4 – 6 foot interval at boring SB02 collected in the 2014 RI and represents a hot spot.

7. Groundwater samples collected during the 2011 RI completed by ESI and the 2014 RI completed by Brinkerhoff were compared to the NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards (GQS) for Class GA (drinking water). No VOCs, SVOCs, or PCBs were detected above GQS. The pesticide delta-BHC was detected slightly above the GQS in two samples collected in the 2014 RI (max 0.0556 micrograms per liter [$\mu\text{g/L}$]). The dissolved metals iron (max 7,650 $\mu\text{g/L}$), magnesium (max 92,00 $\mu\text{g/L}$), and manganese (max 4,360 $\mu\text{g/L}$) were detected above GQS in several of the samples collected in the 2011 and 2014 RIs. The total metals including aluminum (max 161,000 $\mu\text{g/L}$), antimony (max 9.41 $\mu\text{g/L}$), barium (max 1,540 $\mu\text{g/L}$), beryllium (max 5.51 $\mu\text{g/L}$), chromium (max 666 $\mu\text{g/L}$), iron (max 285,000 $\mu\text{g/L}$), lead (max 103 $\mu\text{g/L}$), magnesium (max 94,600 $\mu\text{g/L}$), nickel (max 319 $\mu\text{g/L}$), and thallium (max 4.84 $\mu\text{g/L}$) were detected above GQS in several of the samples collected in the 2011 and 2014 RIs.
8. Soil vapor samples collected during the 2011 RI completed by ESI and the 2014 RI completed by Brinkerhoff were compared to the New York State Department of Health (NYSDOH) Final Guidance on Soil Vapor Intrusion (October 2006) Matrix 1 and Matrix 2 values. Samples indicated petroleum related VOCs and chlorinated VOCs were present at low concentrations. Petroleum-related VOCs (BTEX compounds) were detected at a maximum total concentration of 120.9 micrograms per cubic meter ($\mu\text{g/m}^3$). Overall the highest reported concentrations were for acetone (max 930 $\mu\text{g/m}^3$), propylene (max 430 $\mu\text{g/m}^3$), n-hexane (max 300 $\mu\text{g/m}^3$) and methyl ethyl ketone (max 93 $\mu\text{g/m}^3$). The chlorinated solvent 1,1,1-trichloroethane was not detected in any of the samples. The chlorinated solvent carbon tetrachloride was detected at concentrations ranging from 1.32 $\mu\text{g/m}^3$ to 0.76 $\mu\text{g/m}^3$ and the chlorinated solvent tetrachloroethylene was detected at concentrations ranging from 3.1 to 15 $\mu\text{g/m}^3$. Both compounds were well below the monitoring level ranges established within the NYSDOH Final Guidance on Soil Vapor Intrusion. The chlorinated solvent trichloroethylene was detected in one sample at a concentration of 50 $\mu\text{g/m}^3$, which is above the monitoring level ranges established within the NYSDOH Final Guidance on Soil Vapor Intrusion.

Summary of the Remedy

The proposed remedial action achieves protection of public health and the environment for the intended use of the property. The proposed remedial action achieves all of the remedial action objectives established for the project and addresses applicable standards, criterion, and guidance. It is effective in both the short-term and long-term, reduces mobility, toxicity and volume of contaminants, is cost effective and implementable, and uses standards methods that are well established in the industry.

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan;
2. Performance of a Community Air Monitoring Plan (CAMP) for particulates and VOCs;
3. Establishment of Site Specific (Track 4) Soil Cleanup Objectives (SCOs);
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs, and marking & staking excavation areas;
5. Completion of a Waste Characterization Investigation prior to excavation activities. Waste characterization soil samples will be collected at a frequency dictated by the selected disposal facility(s) acceptance criteria.
6. Excavation and removal of soil/fill exceeding SCOs. For development purposes, average excavation depth is anticipated to be four (4) feet bsg and excavation depths for foundation components and the elevator pit will range from six (6) to eight (8) feet bsg. Approximately, 5,500 tons of soil will be excavated and removed from this development;
7. Excavation and removal of a Hazardous Lead hotspot area within the vicinity of soil boring SB02 to the approximate depth of seven (7) feet below grade. Post-excavation soil sampling will be conducted to determine the removal of all hazardous material;
8. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a photoionization detector (PID) and appropriate segregation of excavated media on-site;

9. Management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types to prevent co-mingling of contaminated material and non-contaminated materials.
10. Removal of USTs (if encountered) and closure of petroleum spills (if evidence of a spill/leak is encountered during Site excavation) in compliance with applicable local, State, and Federal laws and regulations;
11. Transportation and off-site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and with this plan; sampling and analysis of excavated media as required by disposal facilities; appropriate segregation of excavated media on Site;
12. Collection and analysis of soil and soil vapor end point samples to determine the performance of the remedy with respect to attainment of SCOs;
13. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations;
14. Demarcation of residual soil/fill in the landscaped areas;
15. Installation of a vapor barrier below the concrete slab underneath the building. The vapor barrier will consist of Raven Industries' VaporBlock 20 Plus, which is a seven-layer co-extruded barrier made from polyethylene and EVOH resins;
16. Construction and maintenance of an engineered composite cover consisting of four (4)- to six (6)-inch concrete building slabs across the building footprint and the parking area to prevent human exposure to residual soil/fill remaining under the Site;
17. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations. Since groundwater ranges in depth between 13 and 17 feet bsg, dewatering is not anticipated;
18. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations;

19. Submission of a Remedial Action Report (RAR) that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, lists any changes from this RAWP, and describes all ECs and ICs to be implemented at the Site;
20. Submission of an approved SMP in the RAR for long-term management of residual contamination, including plans for maintenance and inspection of ECs and ICs and reporting at a specified frequency; and,
21. The property will continue to be registered with a Restrictive Declaration at the NYC DOB. ECs and ICs in this RAWP will be established, with a requirement that management of these controls must be in compliance with an approved SMP. ICs will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and, (4) higher level of land usage without OER approval.

COMMUNITY PROTECTION STATEMENT

The Office of Environmental Remediation created the New York City Voluntary Cleanup Program (NYC VCP) to provide governmental oversight for the cleanup of contaminated property in NYC. This Remedial Action Work Plan (“cleanup plan”) describes the findings of prior environmental studies that show the location of contamination at the site and describes the plans to clean up the site to protect public health and the environment.

This cleanup plan provides a very high level of protection for neighboring communities and also includes many other elements that address common community concerns, such as community air monitoring, odor, dust and noise controls, hours of operation, good housekeeping and cleanliness, truck management and routing, and opportunities for community participation. The purpose of this Community Protection Statement is to explain these community protection measures in non-technical language to simplify community review.

Remedial Investigation and Cleanup Plan. Under the NYC VCP, a thorough cleanup study of this property (called a remedial investigation) has been performed to identify past property usage, to sample and test soils, groundwater, and soil vapor, and to identify contaminant sources present on the property. The cleanup plan has been designed to address all contaminant sources that have been identified during the study of this property.

Identification of Sensitive Land Uses. Prior to selecting a cleanup, the neighborhood was evaluated to identify sensitive land uses nearby, such as schools, day care facilities, hospitals, and residential areas. The cleanup program was then tailored to address the special conditions of this community.

Qualitative Human Health Exposure Assessment. An important part of the cleanup planning for the Site is the performance of a study to find all of the ways that people might come in contact with contaminants at the Site now or in the future. This study is called a Qualitative Human Health Exposure Assessment (QHHEA). A QHHEA was performed for this project. This assessment has considered all known contamination at the Site and evaluated the potential for people to come in contact with this contamination. All identified public exposures will be addressed under this cleanup plan.

Health and Safety Plan. This cleanup plan includes a Construction Health and Safety Plan (CHASP) that is designed to protect community residents and on-Site workers. The elements of this plan are in compliance with safety requirements of the United States Occupational Safety and Health Administration (OSHA). This plan includes many protective elements including those discussed below.

Site Safety Coordinator. This project has a designated Site Safety Coordinator to implement the Health and Safety Plan. The safety coordinator maintains an emergency contact sheet and protocol for management of emergencies. The Site Safety Coordinator is Jovana Villanueva and can be reached at (917) 312-9383.

Worker Training. Workers participating in cleanup of contaminated material on this project are required to be trained in a 40-hour hazardous waste operators training course and to take annual refresher training. This pertains to workers performing specific tasks including removing contaminated material and installing cleanup systems in contaminated areas.

Community Air Monitoring Plan. Community air monitoring will be performed during this cleanup project to ensure that the community is properly protected from contaminants, dust, and odors. Air samples will be tested in accordance with a detailed plan called the Community Air Monitoring Plan or CAMP. Results will be regularly reported to the NYC Office of Environmental Remediation. This cleanup plan also has a plan to address any unforeseen problems that might occur during the cleanup (called a ‘Contingency Plan’).

Odor, Dust and Noise Control. This cleanup plan includes actions for odor and dust control. These actions are designed to prevent off-site odor and dust nuisances and include steps to be taken if nuisances are detected. Generally, dust is managed by the application of physical covers and by water sprays. Odors are controlled by limiting the area of open excavations, physical covers, spray foams, and by a series of other actions (called operational measures). The project is also required to comply with NYC noise control standards. If you observe problems in these areas, please contact the on-Site Project Manager Jovana Villanueva at (917) 312-9383 or the NYC Office of Environmental Remediation Project Manager Shana Holberton at (212) 788-3220.

Quality Assurance. This cleanup plan requires that evidence be provided to illustrate that all cleanup work required under the plan has been completed properly. This evidence will be summarized in the final report, called the Remedial Action Report. This report will be submitted to the NYC Office of Environmental Remediation and will be thoroughly reviewed.

Storm-Water Management. To limit the potential for soil erosion and discharge, this cleanup plan has provisions for storm-water management. The main elements of the storm water management include physical barriers, such as tarp covers and erosion fencing, and a program for frequent inspection.

Hours of Operation. The hours for operation of cleanup will comply with the NYC Department of Buildings construction code requirements or according to specific variances issued by that agency. For this cleanup project, the hours of operation are 7:00 AM to 4:00 PM, Monday through Friday.

Signage. While the cleanup is in progress, a placard will be prominently posted at the main entrance of the property with a laminated project Fact Sheet that states that the project is in the NYC Voluntary Cleanup Program and provides project contact names and numbers and locations where project documents can be viewed.

Complaint Management. The contractor performing this cleanup is required to address all complaints. If you have any complaints, you can call the facility Project Manager Jovana Villanueva at (917) 312-9383, the NYC Office of Environmental Remediation Project Manager Shana Holberton at (212)788-3220, or call 311 and mention that the Site is in the NYC Voluntary Cleanup Program.

Utility Mark-Outs. To promote safety during excavation in this cleanup, the contractor is required to first identify all utilities and must perform all excavation and construction work in compliance with NYC Department of Buildings regulations.

Soil and Liquid Disposal. All soil and liquid material removed from the Site as part of the cleanup will be transported and disposed of in accordance with all applicable City, State and Federal regulations and required permits will be obtained.

Soil Chemical Testing and Screening. All excavations will be supervised by a trained and properly qualified environmental professional. In addition to extensive sampling and chemical testing of soils on the Site, excavated soil will be screened continuously using hand-held instruments, by sight, and by smell to ensure proper material handling and management, and community protection.

Stockpile Management. Soil stockpiles will be kept covered with tarps to prevent dust, odors and erosion. Stockpiles will be frequently inspected. Damaged tarp covers will be promptly replaced. Stockpiles will be protected with silt fences. Hay bales will be used, as needed to protect storm water catch basins and other discharge points.

Trucks and Covers. Loaded trucks leaving the Site will be covered in compliance with applicable laws and regulations to prevent dust and odor. Trucks will be properly recorded in logs and records and placarded in compliance with applicable City, State and Federal laws, including those of the New York State Department of Transportation. If loads contain wet material that can leak, truck liners will be used. All transport of materials will be performed by licensed truckers and in compliance with all laws and regulations.

Imported Material. All fill materials proposed to be brought onto the Site will comply with rules outlined in this cleanup plan and will be inspected and approved by a qualified worker located on-Site. Waste materials will not be brought onto the Site. Trucks entering the Site with imported clean materials will be covered in compliance with applicable laws and regulations.

Equipment Decontamination. All equipment used for cleanup work will be inspected and washed, if needed, before it leaves the Site. Trucks will be cleaned at a truck inspection station on the property before leaving the Site.

Housekeeping. Locations where trucks enter or leave the Site will be inspected every day and cleaned regularly to ensure that they are free of dirt and other materials from the Site.

Truck Routing. Truck routes have been selected to: (a) limit transport through residential areas and past sensitive nearby properties; (b) maximize use of city-mapped truck routes; (c) limit total distance to major highways; (d) promote safety in entry to highways; (e) promote overall safety in trucking; and (f) minimize off-Site line-ups (queuing) of trucks entering the

property. Operators of loaded trucks leaving the Site will be instructed not to stop or idle in the local neighborhood.

Final Report. The results of all cleanup work will be fully documented in a final report (called a Remedial Action Report) that will be available for you to review in the public document repositories West Farms Library located at 2085 Honeywell Avenue, Bronx, NY 10460.

Long-Term Site Management. To provide long-term protection after the cleanup is complete, the property owner will be required to comply with an ongoing Site Management Plan that calls for continued inspection of protective controls, such as Site covers. The Site Management Plan is evaluated and approved by the NYC Office of Environmental Remediation. Requirements that the property owner must comply with are established through a city environmental designation. A certification of continued protectiveness of the cleanup will be required from time to time to show that the approved cleanup is still effective.

REMEDIAL ACTION WORK PLAN

1.0 SITE BACKGROUND

Joy Construction Corporation has enrolled in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a property located at 1825 Boston Road in the Crotona Park East section of Bronx, New York (the “Site”). A Remedial Investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP) in a manner that will render the Site protective of public health and the environment consistent with the contemplated end use. This RAWP establishes remedial action objectives, provides remedial alternatives analysis that includes consideration of a permanent cleanup, and provides a description of the selected remedial action. The remedial action described in this document provides for the protection of public health and the environment, complies with applicable environmental standards, criteria and guidance and applicable laws and regulations.

1.1 SITE LOCATION AND CURRENT USAGE

The site is located at 1825 Boston Road in the Crotona Park East section of the Bronx, New York, and is identified as Block 2984, Lot 46 on the New York City Tax Map. Formerly, the site consisted entirely of Block 2984, Lot 46. However, Block 2984, Lot 46 was subdivided as part of redevelopment into two Lots, Lot 67 and Lot 46. Lot 67 is located to the north and Lot 46, “the Site” being developed under this application, is located to the south. *Figure 1* shows the site location. *Figure 2* shows the lot and block and the boundary of the remedial investigation (“the site”). The site is approximately 27,579 square feet and is bounded by the Crotona Parkway to the west, East 176th Street and vacant land (currently being redeveloped as Crotona Terrace - Building A “Lot 67”) to the north, Boston Road to the east, and vacant land and East 175th Street to the south. A map of the site boundary is shown in *Figure 3*. Currently, the site is vacant and undeveloped.

1.2 PROPOSED REDEVELOPMENT PLAN

The Applicant proposes the development of one building identified as Building B. The redevelopment plan for Building B includes the development of an eight (8)-story low-income residential and commercial use building. Parking, utility rooms, and commercial space are proposed for the first floor and residential apartments are proposed for the second through eighth floors, ranging from zero (0) bedrooms to three (3) bedrooms. When the development is complete, the site will offer the following:

- 108 low-income residential apartments (approximately 119,017 square feet)
- 7,155 square feet of commercial/retail space on the first floor
- 27 at-grade parking spaces (approximately 8,165 square feet)

The anticipated excavation depth for the building is four (4) feet below surface grade (bsg) across the site, and excavation depths for the elevator pit and foundation components range from six (6) to eight (8) feet bsg. Locations of proposed excavation depths are presented on *Figure 4*. No open spaces are proposed for the building other than a common area on the roof over the parking garage. This area will consist of concrete, pavers, and other impermeable materials. Layouts of the proposed site development are presented in *Appendix I*. The current zoning designation is R7-1 with a C2-4 commercial overlay. The proposed use is consistent with existing zoning for the property.

1.3 DESCRIPTION OF SURROUNDING PROPERTY

Current uses, zonings, and general character of adjoining properties are as follows:

North: Block 2984, Lot 67, exists immediately north of the site (currently being redeveloped as Crotona Terrace Building A) followed by East 176th Street and the Cross Bronx Expressway. Farther north are residential buildings and parking facilities with zoning designation R7-1.

South: East 175th Street and industrial and manufacturing structures with zoning designation C8-3 are located across East 175th Street.

East: Multi-family walk-up buildings with zoning designation C4-2 and vacant land with zoning designation C8-3 and C4-2 are located to the east of the site, across Boston Road.

West: A park is located to the west of the site across Crotona Parkway. Farther west are commercial and office buildings with zoning designation R7-1.

Sensitive environmental receptors within an approximate 500-foot radius of the site include residential buildings and mixed commercial and residential buildings in all directions, a church to the north, and industrial structures to the south of the site. According to the NYC OER's (New York City Office of Environmental Remediation's) online *SPEED* application, there are no schools, hospitals, or day care facilities within a 500-foot radius of the site. *Figure 3* shows the surrounding land usage.

1.4 REMEDIAL INVESTIGATION

A remedial investigation was performed by Brinkerhoff Environmental Services, Inc. (Brinkerhoff), and the results are documented in a companion document called *Remedial Investigation Report (RIR)*, dated November, 2014.

A Phase I Environmental Site Assessment (ESA) was performed by AKRF, Inc. in 2005 for Block 2984, Lots 46 and 67, and identified that the Lots were developed sometime between 1886 and 1901 and operated as a transit rail car and bus maintenance and repair facility until approximately 1989.

The areas of concern (AOCs) identified for Lots 46 and 67 include:

- A 10,000-gallon fuel oil underground storage tank (UST) and two 5,000-gallon diesel USTs were identified at the site in the early 1990s. Free product was discovered at the site and was reduced to non-detectable levels according to remedial investigations conducted from 1996 to 1998. Later, a geophysical investigation and a test pit program suggested that tanks were removed. However, no documentation related to the geophysical investigation is available for review.
- Petroleum products and solvents were historically used at the site, which have the potential to have affected the site.

- There is the possible existence of historic fill.
- Debris and trash were observed throughout the site.
- Historic usage of adjacent properties has the potential to adversely affect the groundwater quality at the site. However, a Phase II investigation by AKRF in 2003 at the south adjacent property which included the collection of groundwater samples along East 175th Street, up gradient of the site, revealed that petroleum product in groundwater was below the most stringent regulatory standards. The related documentation was not available for review.

The following scope of work was performed as part of the RI:

1. As part of Ecosystems Strategies, Inc.’s investigation in 2011:
 - a. Conducted a site inspection to identify AOCs and physical obstructions (i.e., structures, buildings, etc.);
 - b. Advanced nine (9) soil borings, two (2) groundwater monitoring wells, one (1) temporary well point, and four (4) soil vapor probes at the site; and,
 - c. Collected 17 soil samples, two (2) groundwater samples, and four (4) soil vapor samples for laboratory analysis.
2. As part of Brinkerhoff’s investigation in 2014:
 - a. Conducted a site inspection to identify AOCs and physical obstructions (i.e., structures, buildings, etc.);
 - b. Advanced six (6) soil borings and collected 12 soil samples from the soil borings for chemical analysis to evaluate soil quality;
 - c. Advanced five (5) delineation soil borings within the vicinity of soil boring SB02 to horizontally and vertically delineate the high lead concentrations detected in the original sample collected at SB02 from the four (4) to six (6) feet bsg depth interval;
 - d. Installed three (3) temporary well points and collected three (3) groundwater samples for chemical analysis to evaluate groundwater quality; and,
 - e. Installed three (3) soil vapor probes and collected three (3) samples for chemical analysis to evaluate soil vapor quality.

The findings of the RI identified historic urban fill on the property. This urban fill is contaminated with semi-volatile organic compounds (SVOCs) and metals. Additional geologic and hydrogeologic data collected at the site as part of the RI are as follows:

1. The elevation of the subject property changes significantly from east to west. The approximate elevation on the western edge of the site along Crotona Parkway is 61.77 feet and the approximate elevation on the eastern edge of the site along Boston Road is 69.66 feet;
2. The depth to groundwater varies across the site. The depth to groundwater is approximately 17 feet bsg along Boston Road and is approximately 13 feet bsg along Crotona Parkway. Groundwater flow is generally toward the southwest beneath the Site, based on topography and groundwater gauging events;
3. The depth to bedrock varies drastically across the site. The depth to bedrock along Boston Road is approximately between 18 and 19 feet bgs and is approximately 40 feet bgs along Crotona Parkway;
4. The subsurface conditions at the site consist of a layer of urban historic fill, a layer of brown silty sand with varying amounts of gray peat, a layer of glacial till with well-graded sand and gravel with varying amounts of silt, cobbles and boulders, and gneiss bedrock was encountered at the borings terminus. The identified fill layer consisted of brown fine to coarse sand with varying amounts of brick, gravel, asphalt fragments, silt, and wood fragments and extended from grade surface to approximately 13 feet below grade surface;
5. Soil/fill samples collected during the 2011 RI completed by ESI and the 2014 RI completed by Brinkerhoff were compared to New York State Department of Environmental Conservation (NYSDEC) Part 375 Table 375-6.8 Unrestricted Use and Restricted Residential Use Soil Cleanup Objectives (SCOs). No volatile organic compounds (VOCs) or polychlorinated biphenyls (PCBs) were detected in any of the samples above the Unrestricted Use SCOs. The SVOCs benzo(a)anthracene (maximum [max] of 14.1 milligram per kilogram [mg/kg]), benzo(a)pyrene (max 7.92 mg/kg), benzo(b)fluoranthene (max 7.05 mg/kg), benzo(k)fluoranthene (max 7.99 mg/kg), chrysene (max 14.4 mg/kg), dibenzo(a,h)anthracene (1.64 mg/kg), and indeno(1,2,3-cd)pyrene (max 2.66 mg/kg) were detected above Restricted Residential Use SCOs in several shallow (0-2 foot interval) samples collected during the 2011 RI and in one

deeper (4 – 6 foot interval) sample collected during the 2014 RI. The pesticide 4,4'-DDD was detected in three shallow samples at concentrations above the Unrestricted Use SCO (max of 0.0543 mg/kg). The metals barium (max 667 mg/kg), copper (max 990 mg/kg), iron (max 381 mg/kg), lead (max 15,400 mg/kg), and zinc (max 2,010 mg/kg) were detected above Restricted Residential Use SCOs in several shallow (0 – 2 foot interval) samples collected during the 2011 RI and in one deeper sample (4 – 6 foot interval) collected during the 2014 RI. The maximum lead concentration was detected in the 4 – 6 foot interval at boring SB02 collected in the 2014 RI and represents a hot spot.

6. Groundwater samples collected during the 2011 RI completed by ESI and the 2014 RI completed by Brinkerhoff were compared to the NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards (GQS) for Class GA (drinking water). No VOCs, SVOCs, or PCBs were detected above GQS. The pesticide delta-BHC was detected slightly above the GQS in two samples collected in the 2014 RI (max 0.0556 micrograms per liter [$\mu\text{g/L}$]). The dissolved metals iron (max 7,650 $\mu\text{g/L}$), magnesium (max 92,00 $\mu\text{g/L}$), and manganese (max 4,360 $\mu\text{g/L}$) were detected above GQS in several of the samples collected in the 2011 and 2014 RIs. The total metals including aluminum (max 161,000 $\mu\text{g/L}$), antimony (max 9.41 $\mu\text{g/L}$), barium (max 1,540 $\mu\text{g/L}$), beryllium (max 5.51 $\mu\text{g/L}$), chromium (max 666 $\mu\text{g/L}$), iron (max 285,000 $\mu\text{g/L}$), lead (max 103 $\mu\text{g/L}$), magnesium (max 94,600 $\mu\text{g/L}$), nickel (max 319 $\mu\text{g/L}$), and thallium (max 4.84 $\mu\text{g/L}$) were detected above GQS in several of the samples collected in the 2011 and 2014 RIs.
7. Soil vapor samples collected during the 2011 RI completed by ESI and the 2014 RI completed by Brinkerhoff were compared to the New York State Department of Health (NYSDOH) Final Guidance on Soil Vapor Intrusion (October 2006) Matrix 1 and Matrix 2 values. Samples indicated petroleum related VOCs and chlorinated VOCs were present at low concentrations. Petroleum-related VOCs (BTEX) were detected at a maximum total concentration of 120.9 micrograms per cubic meter ($\mu\text{g/m}^3$). Overall the highest reported concentrations were for acetone (max 930 $\mu\text{g/m}^3$), propylene (max 430 $\mu\text{g/m}^3$), n-hexane (max 300 $\mu\text{g/m}^3$) and methyl ethyl ketone (max 93 $\mu\text{g/m}^3$). The chlorinated solvent 1,1,1-trichloroethane was not detected in any of the samples. The chlorinated solvent carbon tetrachloride was detected at concentrations ranging from 1.32 $\mu\text{g/m}^3$ to

0.76 $\mu\text{g}/\text{m}^3$ and the chlorinated solvent tetrachloroethylene was detected at concentrations ranging from 3.1 to 15 $\mu\text{g}/\text{m}^3$. Both compounds were well below the monitoring level ranges established within the NYSDOH Final Guidance on Soil Vapor Intrusion. The chlorinated solvent trichloroethylene was detected in one sample at a concentration of 50 $\mu\text{g}/\text{m}^3$, which is above the monitoring level ranges established within the NYSDOH Final Guidance on Soil Vapor Intrusion.

For more detailed discussion of the remedial investigation, consult the January 2015 RIR, prepared by Brinkerhoff. Based on an evaluation of the data and information from the RIR and this RAWP, disposal of approximately 60 tons of hazardous lead is anticipated at this site.

2.0 REMEDIAL ACTION OBJECTIVES

Based on the results of the RI, the following Remedial Action Objectives (RAOs) have been identified for this Site:

Groundwater

- Prevent direct exposure to contaminated groundwater.
- Prevent exposure to contaminants volatilizing from groundwater.

Soil

- Prevent direct contact with contaminated soil.
- Prevent exposure to contaminants volatilizing from contaminated soil.
- Prevent migration of contaminants that would result in groundwater contamination.

Soil Vapor

- Prevent exposure to contaminants in soil vapor.
- Prevent migration of soil vapor into dwelling and other occupied structures.

3.0 REMEDIAL ALTERNATIVES ANALYSIS

The goal of the remedy selection process is to select a remedy that is protective of human health and the environment, taking into consideration the current, intended and reasonably anticipated future use of the property. The remedy selection process begins by establishing RAOs for media in which chemical constituents were found in exceedance of applicable standards, criteria and guidance (SCG) values. A remedy is then developed based on the following ten criteria:

1. Protection of human health and the environment;
2. Compliance with SCG;
3. Short-term effectiveness and impacts;
4. Long-term effectiveness and permanence;
5. Reduction of toxicity, mobility, or volume of contaminated material;
6. Implementability;
7. Cost effectiveness;
8. Community acceptance;
9. Land use; and,
10. Sustainability.

The following is a detailed description of the alternatives analysis and remedy selection to address impacted media at the Site. As required, a minimum of two remedial alternatives (including a Track 1 scenario) are evaluated, as follows:

Alternative 1 involves:

- Selection of 6NYCRR Part 375 Section 6.8(a) Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs);
- Removal of all soil/fill exceeding Unrestricted Use SCOs throughout the Site and confirmation that Track 1 Unrestricted Use SCOs have been achieved with post-excavation end point sampling. Based on the results of the remedial investigation, it is expected that this alternative would require excavation to a depth of at least 8 feet across the entire site to remove all historic fill. If soil/fill containing analytes at concentrations

above Track 1 Unrestricted Use SCOs are still present at the base of the excavation after removal of soil is complete, additional excavation would be performed to ensure complete removal of soil that does not meet Track 1 Unrestricted Use SCOs;

- No Engineering Controls (ECs) or Institutional Controls (ICs) are required for a Track 1 cleanup, but a vapor barrier would be installed beneath the foundation slab and on the exterior of the foundation walls as part of construction to prevent any potential future exposures from off-site soil vapor.
- As part of new development, construction of a four (4) to six (6)-inch reinforced concrete building slab across the site footprint and the parking area.

Alternative 2 involves:

- Establishment of Track 4 Site-Specific SCOs;
- Removal of all soil/fill exceeding Track 4 Site-Specific SCOs and confirmation that Track 4 has been achieved with post-excavation end point sampling. Excavation for development purposes is anticipated to be approximately four (4) feet bsg across the site and six (6) to eight (8) feet bsg for foundation components and the elevator pit. If soil/fill containing pesticides, SVOCs, or metals at concentrations exceeding Track 4 Site-Specific SCOs are still present at the base of the excavation after removal of all soil required for construction is complete, additional excavation would be performed to ensure complete removal of soil that does not meet Track 4 Site-Specific SCOs;
- Placement of a final composite cover over the entire Site to prevent exposure to remaining soil/fill;
- Placement of a soil vapor barrier beneath the building slab to prevent any potential future exposures from off-Site soil vapor;
- Construction of an at-grade ventilated parking garage per New York City Department of Buildings (NYC DOB) codes;
- Establishment of use restrictions including prohibitions on the use of groundwater from the Site, prohibitions of sensitive Site uses such as farming or vegetable gardening to prevent future exposure pathways, and prohibition of a higher level of land use without OER approval;

- Establishment of an approved Site Management Plan (SMP) to ensure long-term management of these ECs and ICs, including the performance of periodic inspections and certification that the controls are performing as they were intended; and,
- Continued registration as a Restrictive-Declaration-designated property to memorialize the remedial action and the ECs/ICs required by this RAWP.

3.1 THRESHOLD CRITERIA

Protection of Public Health and the Environment

This criterion is an evaluation of the remedy's ability to protect public health and the environment and an assessment of how risks posed through each existing or potential pathway of exposure are eliminated, reduced, or controlled through removal, treatment, and implementation of ECs/ICs. Protection of public health and the environment must be achieved for all approved remedial actions.

Alternative 1 would be protective of human health and the environment by removing contaminated soil/fill exceeding Track 1 SCOs and groundwater protection standards, thus eliminating potential for direct contact with contaminated soil/fill once construction is complete and eliminating the risk of contamination leaching into groundwater. Potential future migration of soil vapors from off site into the new building would be prevented by installation of a vapor barrier as well as by construction of an at-grade ventilated parking garage.

Alternative 2 would achieve comparable protection of human health and the environment by removing the historic urban fill at the Site and by ensuring that remaining on-Site soil/fill does not exceed Track 4 Site-Specific SCOs by placement of ECs/ICs, including a composite cover system. The composite cover system would prevent direct contact with any remaining on-Site soil/fill. Implementing ICs, including a SMP, would ensure that the composite cover system remains intact and protective. Establishment of Track 4 Site-Specific SCOs would minimize the risk of contamination leaching into groundwater. Potential future migration of off-site soil vapors into the new building would be prevented by installation of a vapor barrier system in accordance with the NYC Mechanical Code.

For both alternatives, potential exposure to contaminated soils or groundwater during

construction would be minimized by implementing a Construction Health and Safety Plan (CHASP), an approved Soil/Material Management Plan (SMMP), and a Community Air Monitoring Plan (CAMP). Potential contact with contaminated groundwater would be prevented as its use is prohibited by city laws and regulations and groundwater is not anticipated to be encountered due to the shallow depths of excavation. Potential future migration of off-Site soil vapors into the new building would be prevented by installing a vapor barrier underneath the building slab and along the foundation sidewalls.

3.2 BALANCING CRITERIA

Compliance with Standards, Criteria and Guidance (SCGs)

This evaluation criterion assesses the ability of the alternative to achieve applicable standards, criteria and guidance.

Alternative 1 would achieve compliance with the remedial goals, chemical specific SCGs, and RAOs for soil through removal to Track 1 Unrestricted Use SCOs and Groundwater Protection Standards. All soil/fill excavated from the Site would be managed and disposed of in accordance with all applicable regulations. Compliance with SCGs for soil vapor would be achieved by installing a vapor barrier underneath the building slab and along the foundation sidewalls and by the construction of an at-grade ventilated parking garage as part of new construction.

Alternative 2 would achieve compliance with the remedial goals, chemical specific SCGs and RAOs for soil through removal of soil to meet Track 4 Site-Specific SCOs. Compliance with SCGs for soil vapor would be achieved by the installation of a vapor barrier and by construction of an at-grade ventilated parking garage. A SMP would ensure that these controls remained protective for long-term use.

Health and safety measures contained in the CHASP and CAMP that comply with the applicable SCGs shall be implemented during Site redevelopment under this RAWP. For both alternatives, focused attention on means and methods employed during the remedial action would ensure that handling and management of contaminated material would be in compliance

with applicable SCGs. These measures would protect on-site workers and the surrounding community from exposure to site-related contaminants.

Short-term effectiveness and impacts

This evaluation criterion assesses the effects of the alternative during the construction and implementation phase until remedial action objectives are met. Under this criterion, alternatives are evaluated with respect to their effects on public health and the environment during implementation of the remedial action, including protection of the community, environmental impacts, time until remedial response objectives are achieved, and protection of workers during remedial actions.

Both alternatives have similar short-term effectiveness during their respective implementations, as each requires excavation of urban historic fill. Both alternatives would result in short-term dust generation impacts associated with excavation, handling, load out of materials, and truck traffic. Short term impacts would likely be higher for Alternative 1 if excavation of greater amounts of soil/fill exceeding Track 1 SCOs is encountered below the excavation depth of the proposed building. However, focused attention to means and methods during the remedial action during a Track 1 removal action, including community air monitoring and appropriate truck routing, would minimize or negate the overall impact of these activities and any differences between these alternatives.

An additional short-term adverse impact and risk to the community associated with both remedial alternatives is increased truck traffic. Truck traffic will be routed on the most direct course using major thoroughfares where possible, and flaggers will be used to protect pedestrians at site entrances and exits.

Both alternatives would employ appropriate measures to prevent short-term impacts, including a CHASP, a CAMP, and a SMMP, during all on-site soil disturbance activities and would minimize the release of contaminants into the environment. Both alternatives provide short-term effectiveness in protecting the surrounding community by decreasing the risk of contact with on-Site contaminants. Construction workers operating under appropriate management procedures and a CHASP will be protected from on-site contaminants; personal protective equipment (PPE) would be worn consistent with the documented risks within the

respective work zones.

Long-term effectiveness and permanence

This evaluation criterion addresses the results of a remedial action in terms of its permanence and quantity/nature of waste or residual contamination remaining at the Site after response objectives have been met, such as permanence of the remedial alternative, magnitude of remaining contamination, adequacy of controls including the adequacy and suitability of ECs/ICs that may be used to manage contaminant residuals that remain at the Site and assessment of containment systems and ICs that are designed to eliminate exposures to contaminants, and long-term reliability of ECs.

Alternative 1 would achieve long-term effectiveness and permanence related to on-site contamination by permanently removing all impacted soil/fill exceeding Track 1 Unrestricted Use SCOs and enabling unrestricted usage of the property.

Alternative 2 would provide long-term effectiveness by removing most on-Site contamination and attaining Track 4 Site-Specific SCOs, establishing ECs, including a composite cover system, across the Site, and establishing ICs to ensure long-term management, including use restrictions, a SMP, and continued registration as an E-designated property to memorialize these controls for the long term. The SMP would ensure long-term effectiveness of all ECs and ICs by requiring periodic inspection and certification that these controls and restrictions continue to be in place and are functioning as they were intended, assuring that protections designed into the remedy will provide a continued high level of protection in perpetuity.

Both alternatives would result in removal of soil contamination exceeding the SCOs, providing a high level, effective, and permanent remedy over the long-term with respect to a remedy for contaminated soil, which will eliminate any migration to groundwater. Potential sources of soil vapor and groundwater contamination will also be eliminated as part of the remedy.

Reduction of toxicity, mobility, or volume of contaminated material

This evaluation criterion assesses the remedial alternative's use of remedial technologies that permanently and significantly reduce toxicity, mobility, or volume of contaminants as their principal element. The following is the hierarchy of source removal and control measures that are to be used to remediate a Site, ranked from most preferable to least preferable: removal and/or treatment; containment; elimination of exposure; and, treatment of source at the point of exposure. It is preferred to use treatment or removal to eliminate contaminants at a Site, reduce the total mass of toxic contaminants, cause irreversible reduction in contaminants mobility, or reduce the total volume of contaminated media.

Alternative 1 would permanently eliminate the toxicity, mobility, and volume of contaminants from on-Site soil by removing all soil in excess of unrestricted use SCOs.

Alternative 2 would remove the majority of the impacted soil present at the Site, and any remaining soil beneath the new building would meet Track 4 Site-Specific SCOs.

Since no cellar or below grade parking is proposed and limited excavation is anticipated (approximately 4 to 8 feet bsg), both scenarios would result in relatively minor differences between the two alternatives.

Implementability

This evaluation criterion addresses the technical and administrative feasibility of implementing an alternative and the availability of various services and materials required during its implementation, including technical feasibility of construction and operation, reliability of the selected technology, ease of undertaking remedial action, monitoring considerations, administrative feasibility (e.g., obtaining permits for remedial activities), and availability of services and materials.

The techniques, materials and equipment to implement Alternatives 1 and 2 are readily available and have been proven effective in remediating the contaminants associated with the Site. They use standard materials and services that are well established technology. The reliability of each remedy is high. There are no special difficulties associated with any of the activities proposed.

Cost effectiveness

This evaluation criterion addresses the cost of alternatives, including capital costs (such as construction costs, equipment costs, disposal costs, and engineering expenses) and site management costs (costs incurred after remedial construction is complete) necessary to ensure the continued effectiveness of a remedial action.

Since the new building requires excavation of the Site to depths ranging from four (4) to eight (8) feet bsg, the costs associated with Alternative 1 would be much higher since historic fill at this site extends to thirteen feet below grade. This requires additional excavation to meet Track 1 Unrestricted use standards and requires additional clean soil for backfilling. However, long-term costs for Alternative 2 are likely higher than Alternative 1 based on implementation of a SMP. In both cases, appropriate public health and environmental protections are achieved.

The remedial plan creates an approach that combines the remedial action with the redevelopment of the Site, including the construction of the building foundation and subgrade structures. The remedial plan is also cost effective in that it will take into consideration the selection of the closest and most appropriate disposal facilities to reduce transportation and disposal costs during the excavation of historic fill and other soils during the redevelopment of the Site.

Community Acceptance

This evaluation criterion addresses community opinion and support for the remedial action. Observations here will be supplemented by public comment received on the RAWP.

Based on the overall goals of the remedial program, the intended Site use, and initial permitting associated with the proposed site development, no adverse community opposition is anticipated for either alternative. This RAWP will be subject to public review under the NYC VCP and will provide the opportunity for detailed public input on the remedial alternatives and the selected remedial action. This public comment will be considered by OER prior to approval of this plan. The Citizen Participation Plan for the project is provided in *Appendix II*. Observations here will be supplemented by public comment received on the RAWP.

Land use

This evaluation criterion addresses the proposed use of the property. This evaluation has considered reasonably anticipated future uses of the Site and takes into account: current use and historical and/or recent development patterns; applicable zoning laws and maps; NYS Department of State’s Brownfield Opportunity Areas (BOA) pursuant to section 970-r of the general municipal law; applicable land use plans; proximity to real property currently used for residential use, and to commercial, industrial, agricultural, and/or recreational areas; environmental justice impacts, Federal or State land use designations; population growth patterns and projections; accessibility to existing infrastructure; proximity of the site to important cultural resources and natural resources, potential vulnerability of groundwater to contamination that might emanate from the site, proximity to flood plains, geography and geology; and current ICs applicable to the site.

Both alternatives for remedial action at the Site are comparable with respect to the proposed use and to land uses in the vicinity of the Site. Following remediation, the Site will meet either Track 1 Unrestricted Use SCOs or Track 4 Site-Specific SCOs, both of which are appropriate for the planned commercial and residential use. The proposed redevelopment of the Site is consistent with the existing zoning designation for the property and is consistent with recent development patterns. The Site is surrounded by commercial and residential properties, and both alternatives provide comprehensive protection of public health and the environment for these uses. Improvements in the current environmental condition of the property achieved by both alternatives are also consistent with the City’s goals for cleanup of contaminated land and bringing such properties into productive reuse.

Sustainability of the Remedial Action

This criterion evaluates the overall sustainability of the remedial action alternatives and the degree to which sustainable means are employed to implement the remedial action including those that take into consideration NYC’s sustainability goals defined in *PlaNYC: A Greener, Greater New York*. Sustainability goals may include: maximizing the recycling and reuse of non-virgin materials; reducing the consumption of virgin and non-renewable resources; minimizing energy consumption and greenhouse gas emissions; improving energy efficiency; and, promotion of the use of native vegetation and enhancing biodiversity during landscaping associated with Site development.

The remedial plan would take into consideration the shortest trucking routes during off-site disposal of urban historic fill and other soils, which would reduce greenhouse gas emissions and conserve energy used by fuel trucks. To the extent practicable, energy efficient building materials, appliances, and equipment will be utilized to complete the development. While Alternative 2 would potentially result in lower energy usage based on reducing the volume of material transported off Site, both remedial alternatives are comparable with respect to the opportunity to achieve sustainable remedial action. A complete list of green remedial activities considered as part of the NYC VCP is included in the Sustainability Statement, included as *Appendix III*.

4.0 REMEDIAL ACTION

4.1 SUMMARY OF PREFERRED REMEDIAL ACTION

The preferred remedial action alternative is Alternative 2, the establishment of Track 4 Site-Specific SCOs. The preferred remedial action alternative achieves protection of public health and the environment for the intended use of the property. The preferred remedial action alternative will achieve all of the remedial action objectives established for the project and addresses applicable SCGs. The preferred remedial action alternative is effective in both the short-term and long-term and reduces mobility, toxicity and volume of contaminants. The preferred remedial action alternative is cost effective and implementable and uses standards methods that are well established in the industry.

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan;
2. Performance of a CAMP for particulates and VOCs;
3. Establishment of Site Specific (Track 4) Site-Specific SCOs;
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs, and marking & staking excavation areas;
5. Completion of a Waste Characterization Investigation prior to excavation activities. Waste characterization soil samples will be collected at a frequency dictated by the selected disposal facility(s) acceptance criteria.
6. Excavation and removal of soil/fill exceeding SCOs. For development purposes, average excavation depth is anticipated to be four (4) feet bsg across the site and excavation depths for foundation components and the elevator pit will range from six (6) to eight (8) feet bsg. Approximately 5,500 tons of soil will be excavated and removed from this development;

7. Excavation and removal of a Hazardous Lead hotspot area within the vicinity of soil boring SB02 to the approximate depth of seven (7) feet below grade. Post-excavation soil sampling will be conducted to determine the removal of all hazardous material;
8. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a photoionization detector (PID) and appropriate segregation of excavated media on-site;
9. Management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types to prevent co-mingling of contaminated material and non-contaminated materials.
10. Removal of USTs (if encountered) and closure of petroleum spills (if evidence of a spill/leak is encountered during Site excavation) in compliance with applicable local, State, and Federal laws and regulations;
11. Transportation and off-site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and with this plan; sampling and analysis of excavated media as required by disposal facilities; appropriate segregation of excavated media on Site;
12. Collection and analysis of soil and soil vapor end point samples to determine the performance of the remedy with respect to attainment of SCOs;
13. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations;
14. Demarcation of residual soil/fill in the landscaped areas;
15. Installation of a vapor barrier below the concrete slab underneath the building. The vapor barrier will consist of Raven Industries' VaporBlock 20 Plus, which is a seven-layer co-extruded barrier made from polyethylene and EVOH resins;
16. Construction and maintenance of an engineered composite cover consisting of four (4)- to six (6)-inch concrete building slabs across the building footprint and the parking area to prevent human exposure to residual soil/fill remaining under the Site;
17. Performance of all activities required for the remedial action, including permitting

requirements and pretreatment requirements, in compliance with applicable laws and regulations. Since groundwater ranges in depth between 13 and 17 feet bsg, dewatering is not anticipated;

18. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations;
19. Submission of a Remedial Action Report (RAR) that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, lists any changes from this RAWP, and describes all ECs and ICs to be implemented at the Site;
20. Submission of an approved SMP in the RAR for long-term management of residual contamination, including plans for maintenance and inspection of ECs and ICs and reporting at a specified frequency; and,
21. The property will continue to be registered with a Restrictive Declaration by the NYC DOB. ECs and ICs in this RAWP will be established, with a requirement that management of these controls must be in compliance with an approved SMP. ICs will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and, (4) higher level of land usage without OER approval.

4.2 SOIL CLEANUP OBJECTIVES AND SOIL/FILL MANAGEMENT

Track 4 Site-Specific SCOs are proposed for this project. The SCOs for this Site are listed in the 6 NYCRR Part 375, Table 6.8(b) Track 2 Restricted Residential SCOs as amended by the following Site-Specific Track 4 SCOs:

<u>Contaminant</u>	<u>Track 4 SCOs</u>
Total SVOCs	250 ppm
Lead	1000 ppm
Mercury	1.5 ppm

Barium 750 ppm

On-site and off-site soil and materials management, including excavation, handling, and disposal, will be conducted in accordance with the SMMP in *Appendix IV*. The planned excavation area will be within the building footing.

Discrete contaminant sources (such as hotspots) identified during the remedial action will be identified by Global Positioning System (GPS) or surveyed. This information will be provided in the RAR.

Estimated Soil/Fill Removal Quantities

The estimated quantity of soil/fill that will be removed from the site during development will be approximately 5,500 tons. Disposal facilities will be reported to OER prior to the start of the remedial action.

End Point Sampling

Removal actions for development purposes under this plan will be performed in conjunction with confirmation soil sampling. Eight (8) confirmation soil samples will be collected from the base of the excavation at locations to be determined acceptable by OER. The proposed locations are shown on *Figure 5 – End Point Sample Location Map*. For comparison to Track 1 SCOs, analytes will include pesticides, PCBs, Target Analyte List (TAL) metals and Target Compound List (TCL) VOCs and SVOCs according to analytical methods described below. For comparison to Track 4 SCOs, analytes will only include SVOCs and metals according to analytical methods described below. In addition, one soil vapor sample will be collected from the base of excavation at the area of the soil vapor sample SV01 collected in the 2014 RI in order to verify the TCE concentration that was detected at this location.

Hot-spot removal actions, whether established under this RAWP or identified during the remedial program, will be performed in conjunction with post-remedial end point samples to ensure that hot-spots are fully removed. Analytes for end point sampling will be those parameters that are driving the hot-spot removal action and will be approved by OER. Frequency for hot-spot end point sample collection is as follows:

1. For excavations less than 20 feet in total perimeter: at least one (1) bottom sample and one (1) sidewall sample biased in the direction of surface runoff.
2. For excavations 20 to 300 feet in perimeter:
 - For surface removals, one (1) sample from the top of each sidewall for every 30 linear feet of sidewall and one (1) sample from the excavation bottom for every 900 square feet of bottom area.
 - For subsurface removals, one (1) sample from each sidewall for every 30 linear feet of sidewall and one (1) sample from the excavation bottom for every 900 square feet of bottom area.
3. For sampling of VOCs, bottom samples should be taken within 24 hours of excavation and should be taken from the zero (0) to six (6)-inch interval at the excavation floor. Samples taken after 24 hours should be taken at six (6) to 12 inches.
4. For contaminated soil removal, post-remediation soil samples for laboratory analysis should be taken immediately after contaminated soil removal. If the excavation is enlarged horizontally, additional soil samples will be taken pursuant to Bullets #s 1 through 3 above.

Post-remediation end point sample locations and depth will be biased towards the areas and depths of highest contamination identified during previous sampling episodes unless field indicators, such as field instrument measurements or visual contamination identified during the remedial action, indicate that other locations and depths may be more heavily contaminated. In all cases, post-remediation samples should be biased toward locations and depths of the highest expected contamination.

New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP)-certified laboratories will be used for all confirmation and end point sample analyses. Labs performing confirmation and end point sample analyses will be reported in the RAR. The RAR will provide a tabular and map summary of all confirmation and end point sample results and will include all data including non-detects and applicable standards and/or

guidance values. End point samples and confirmation samples will be analyzed for compounds and elements as described above utilizing the following methodology:

Soil analytical methods will include:

- Volatile organic compounds by EPA Method 8260;
- Semi-volatile organic compounds by EPA Method 8270;
- Target Analyte List metals; and,
- Pesticides/PCBs by EPA Method 8081/8082.

If either light non-aqueous phase liquid (LNAPL) and/or dense non-aqueous phase liquid (DNAPL) is detected, appropriate samples will be collected for characterization and “finger print analysis” and required regulatory reporting (i.e., spills hotline) will be performed.

Quality Assurance/Quality Control (QA/QC)

The fundamental QA objective with respect to accuracy, precision, and sensitivity of analysis for laboratory analytical data is to achieve the QC acceptance of the analytical protocol. The accuracy, precision and completeness requirements will be addressed by the laboratory for all data generated.

Collected samples will be appropriately packaged, placed in coolers, and shipped via overnight courier or delivered directly to the analytical laboratory by field personnel. Samples will be containerized in appropriate laboratory-provided glassware and shipped in plastic coolers. Samples will be preserved through the use of ice or “cold-paks” to maintain a temperature of 4°C.

Dedicated disposable sampling materials will be used for the collection end point samples, eliminating the need to prepare field equipment (rinsate) blanks. However, if non-disposable equipment is used (stainless steel scoop, etc.), field rinsate blanks will be prepared at the rate of one (1) for every eight (8) samples collected. Decontamination of non-dedicated sampling equipment will consist of the following:

- Gently tap or scrape to remove adhered soil;
- Rinse with tap water;
- Wash with Alconox® detergent solution and scrub;

- Rinse with tap water; and,
- Rinse with distilled or deionized water.

Field blanks will be prepared by pouring distilled or deionized water over decontaminated equipment and collecting the water in laboratory provided containers. Trip blanks will be used whenever samples are transported to the laboratory for analysis of VOCs. Trip blanks will not be used for samples to be analyzed for metals, SVOCs, or pesticides. One (1) blind duplicate sample will be prepared and submitted for analysis every 20 samples.

One (1) duplicate and one (1) matrix spike/matrix spike duplicate will be collected for every 20 samples.

Import and Reuse of Soils

Import of soils onto the property and reuse of soils already on Site are not anticipated. If necessary, import of soil and/or reuse of soils already on Site will be performed in compliance with the SMMP in *Appendix IV*.

4.3 ENGINEERING CONTROLS

The excavation required for the proposed Site development will achieve Track 4 Site-Specific SCOs. ECs are required to address residual contamination at the Site. ECs were employed in the remedial action to address residual contamination remaining at the Site. The following elements will be incorporated into the foundation design as part of the development:

- Composite cover system, consisting of concrete building slabs and parking area, and concrete covered sidewalks; and,
- Vapor barrier membrane;

Composite Cover System

Exposure to residual soil/fill will be prevented by an engineered composite cover system to be built on the Site. This composite cover system is comprised of a four (4)- to six (6)-inch reinforced concrete building slab across the building footprint, the parking area, and sidewalks. The typical design for each remedial cover type used on this Site is provided in *Appendix V*.

The composite cover system is a permanent engineering control for the Site. The system will be inspected and reported at specified intervals as required by this RAWP and the SMP. A Soil Management Plan will be included in the Site Management Plan and will outline the procedures to be followed in the event that the composite cover system and underlying residual soil/fill are disturbed after the remedial action is complete. Maintenance of this composite cover system will be described in the SMP in the RAR.

Vapor Barrier

Migration of soil vapor will be mitigated with a combination of the building slab and a vapor barrier. A VaporBlock Plus VBP 20-mil vapor barrier, manufactured by Raven Industries, will be installed beneath the building's concrete slab. The vapor barrier will extend across the entire site. Product specification sheets and installation details (penetrations, joints, etc.) with respect to the proposed building's slab and foundation components are provided in *Appendix VI*.

The project's Professional Engineer (PE), licensed by the State of New York, will have primary direct responsibility for overseeing the implementation of the vapor barrier. The RAR will include photographs (maximum of two [2] photos per page) of the installation process, a copy of the manufacturer's certificate of warranty, and a PE/Registered Architect (RA) certified letter (on company letterhead) from the primary contractor responsible for installation oversight and field inspections.

4.4 INSTITUTIONAL CONTROLS

ICs have been incorporated in this remedial action to manage residual soil/fill and other media and to render the Site protective of public health and the environment. ICs are listed below. Long-term employment of EC/ICs will be implemented under a Site-specific SMP that will be included in the RAR.

ICs for this remedial action are:

- Continued registration of the Restrictive Declaration for the property. This RAWP includes a description of all ECs and ICs and summarizes the requirements of the SMP

which will note that the property owner and property owner's successors and assigns must comply with the approved SMP;

- Submission of a SMP in the RAR for approval by OER that provides procedures for appropriate maintenance, inspection and reporting of ECs. The SMP will require that the property owner and property owner's successors and assigns will submit to OER a periodic written statement that certifies that: (1) controls employed at the Site are unchanged from the previous certification or that any changes to the controls were approved by OER; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. OER retains the right to enter the Site in order to evaluate the continued maintenance of any controls. This certification shall be submitted at a frequency to be determined by OER in the SMP and will comply with RCNY §43-1407(1)(3);
- Vegetable gardens and farming on the Site are prohibited in contact with residual soil materials;
- Use of groundwater underlying the Site is prohibited without treatment rendering it safe for its intended use;
- All future activities on the Site that will disturb residual material must be conducted pursuant to the soil management provisions in an approved SMP;
- The Site will be used for mixed commercial and residential use and will not be used for a higher level of use without prior approval by OER.

4.5 SITE MANAGEMENT PLAN

Site Management is the last phase of remediation and begins with the approval of the RAR and issuance of the Notice of Completion (NOC) for the Remedial Action. The SMP describes appropriate methods and procedures to ensure implementation of all ECs and ICs that are required by this RAWP. The SMP is submitted as part of the RAR but will be written in a manner that allows its use as an independent document. Site Management continues until terminated in writing by OER. The property owner is responsible to ensure that all Site

Management responsibilities defined in the Declaration of Covenants and Restrictions (DCR) and the SMP are implemented.

The SMP will provide a detailed description of the procedures required to manage residual soil/fill left in place following completion of the remedial action in accordance with the Brownfield Cleanup Agreement with OER. This includes a plan for: (1) implementation of ECs and ICs; (2) implementation of monitoring programs; (3) operation and maintenance of ECs; (4) inspection and certification of ECs; and, (5) reporting.

Site management activities, reporting, and EC/IC certification will be scheduled by OER on a periodic basis to be established in the SMP and will be subject to review and modification by OER. The SMP will be based on a calendar year and certification reports will be due for submission to OER by July 31 of the year following the reporting period.

4.6 QUALITATIVE HUMAN HEALTH EXPOSURE ASSESSMENT (QHHEA)

The objective of the qualitative exposure assessment is to identify potential receptors and pathways for human exposure to the contaminants of concern (COCs) that are present at, or migrating from, the Site. The identification of exposure pathways describes the route that the COC takes to travel from the source to the receptor. An identified pathway indicates that the potential for exposure exists; it does not imply that exposures actually occur.

Investigations reported in the RIR are sufficient to complete a QHHEA. As part of the Voluntary Cleanup Program (VCP) process, a QHHEA was performed to determine whether the Site poses an existing or future health hazard to the Site's exposed or potentially exposed population. The sampling data from the RI were evaluated to determine whether there is any health risk by characterizing the exposure setting, identifying exposure pathways, and evaluating contaminant fate and transport. This QHHEA was prepared in accordance with Appendix 3B and Section 3.3 (b) 8 of the NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation.

Known and Potential Sources

Based on the results of the RIR, the contaminants of concern are:

Soil:

- One (1) pesticide, 4,4'-DDD, was detected exceeding the NYSDEC Unrestricted Use SCOs;
- Several metals including arsenic, chromium, mercury, nickel, and selenium were detected exceeding NYSDEC Unrestricted Use SCOs. Lead was detected exceeding USEPA TCLP Standards for Hazardous Waste; and,
- Several SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene) were detected exceeding Restricted-Residential Use SCOs.

Groundwater:

- Several metals (iron, magnesium, manganese, and sodium) were detected in the filtered groundwater samples exceeding their respective NYGWS; and,
- One (1) pesticide, delta-BHC, was detected exceeding NYGWS.

Soil Vapor:

- The chlorinated solvent trichloroethylene was detected at in one sample at a concentration of 50 $\mu\text{g}/\text{m}^3$, which is above the monitoring level ranges established within the NYSDOH Final Guidance on Soil Vapor Intrusion.
- Petroleum VOCs including benzene, ethylbenzene, toluene, and total xylenes were detected at low concentrations.

Nature, Extent, Fate and Transport of Contaminants

One (1) pesticide, several SVOCs, and several metals are present in the urban historic fill throughout the Site. The pesticide was detected in shallow soil samples and is likely a result from the nature of the urban historic fill. Since no pesticides were detected in the groundwater, it is likely for the pesticides to remain immobile within the shallow fill layer. Several petroleum-related SVOCs were found in shallow soil samples throughout the Site and are likely a result from the three (3) historic USTs present at the Site and from the historic Site operations as a

transit rail car and bus maintenance and repair facility. Only (1) one deep sample detected elevated SVOC concentrations; however, the petroleum-impacted soil appears to have not impacted on-Site groundwater since no SVOC exceedances were detected in any of the samples. Since the groundwater table is confined within the native sand layer beneath the urban historic fill layer and the analytical results indicated no related contamination, it is likely for the on-Site petroleum impacts to remain immobile within the shallow fill layer and not have the potential to easily transport off Site. Several metals were found throughout the Site in shallow and deep samples within the urban historic fill. The majority of the metal compounds and concentrations are commonly and typically found in urban historic fill throughout the NYC Metropolitan Area, except for the hazardous lead concentrations detected in samples surrounding SB02 (southeast corner of the Site). The hazardous lead concentrations are likely a result from the historic on-Site operations as a transit rail car and bus maintenance and repair facility. Since the groundwater analytical results indicated no related contamination, it is likely for the lead impacts to remain immobile within the shallow fill layer and not have the potential to easily transport off Site.

One (1) pesticide and several metals were detected above the NYGWS and are most likely a result from the urban historic fill. The several metal exceedances found in the groundwater samples are commonly and typically found in groundwater throughout the NYC Metropolitan Area.

Several chlorinated and petroleum-related VOCs were detected at low concentrations in the soil vapor. The source for the detected chlorinated VOCs is not clear since chlorinated impacts were not identified in the soil or groundwater data; however, the Phase I ESA, completed by AKRF in May 2005, identified the historic use of the Site as a transit rail car and bus maintenance and repair facility. With the exception of trichloroethylene (TCE) in one sample, chlorinated VOCs in soil vapor were not detected or were below guidance issued by the NYS DOH. Low-level concentrations of petroleum-related compounds were detected in the soil vapor samples and are likely a result from the presence of the three (3) historic on-Site USTs and from the historic use of the Site as a transit rail car and bus maintenance and repair facility.

Potential Routes of Exposure

Current Conditions

The Site is currently a vacant lot with dense vegetation enclosed by a locked fence. The potential for exposure to surficial historic fill exists under current conditions but is limited by a secured Site gate and perimeter fencing. Groundwater is marginally contaminated but is not exposed at the Site and, because the Site is served by the public water supply and groundwater use for potable supply is prohibited, groundwater is not used at the Site and there is no potential for exposure. There are no structures on Site where soil vapor could accumulate.

Construction/ Remediation Activities

Once redevelopment activities begin, construction workers will come into direct contact with surface and subsurface soils, as a result of on-Site construction and excavation activities. On-Site construction workers potentially could ingest, inhale, or have dermal contact with any exposed impacted soil and fill. Similarly, off-Site receptors could be exposed to dust and vapors from on-Site activities. During construction, on-Site and off-Site exposures to contaminated dust from on Site will be addressed through the SMMP and dust controls and through the implementation of the CAMP and a CHASP.

Proposed Future Conditions

Under future remediated conditions, the Site will be fully capped, limiting potential direct exposure to soil and groundwater remaining in place, and a vapor barrier will prevent any exposure to potential off-Site soil vapors in the future. The Site will be served by public water supply, and groundwater will not be used at the Site for potable supply. There are no plausible off-Site pathways for oral, inhalation, or dermal exposure to contaminants derived from the Site under future conditions.

Existence of Human Health Exposure

As indicated in the previous section, the existence of human health exposure at present is unlikely since the Site is vacant and the access is limited by a locked entrance gate and perimeter fencing.

Once redevelopment activities begin, there will be a potential exposure pathway from contaminated surface and subsurface soil/fill to construction workers as a result of on-Site construction/excavation activities. On-Site construction workers could potentially ingest, inhale,

or have dermal contact with any exposed impacted fill or soils. Similarly, off-Site receptors could be exposed to dust from on-Site activities. During construction, on-Site and off-Site exposures to dust from on-Site activities will be addressed through dust controls and through the implementation of the CAMP and a CHASP.

Once the remedial actions and redevelopment of the Site have been completed, there will be no potential on-Site or off-Site exposure pathways to adult and child residents, community residents, and construction workers. Any on-Site exposures to residual vapors and vapors from off-Site sources will be eliminated by implementation of the vapor barrier. Direct exposure to residual soils and production of dust that might impact on-Site or off-Site receptors will be prevented by the construction of the composite Site cover.

Long term assurance of these protections will be achieved by Site inspections and periodic certifications under an approved SMP.

Receptor Populations

On-Site Receptors

The Site is currently vacant. On-Site receptors are limited to trespassers, Site representatives, and visitors granted access to the property. During redevelopment of the Site, the on-Site potential receptors will include construction workers, Site representatives, and visitors. Once the Site is redeveloped and the remedial action is complete, the on-Site potential sensitive receptors will include adult and child residents, building workers, and visitors.

Off-Site Receptors

Potential off-Site receptors within a 0.25-mile radius of the Site include adult and child residents, commercial and construction workers, pedestrians, trespassers, and cyclists, based on the following:

1. Commercial Businesses (up to 0.25 mile) – existing and future
2. Residential Buildings (up to 0.25 mile) – existing and future
3. Parks (up to 0.25 mile) – existing and future
4. Pedestrians, Trespassers, Cyclists (up to .25 mile) – existing and future

Overall Human Health Exposure Assessment

There is a potential complete exposure pathway that requires mitigation during

implementation of the remedy. Following completion of the Site development and the remedial action, there is no complete exposure pathway under the future conditions. This assessment takes into consideration the reasonably anticipated use of the Site, which includes a residential and commercial use building, Site-wide impervious surface cover cap, and a vapor barrier system beneath the building's slab. Potential post-construction use of groundwater is not considered an option because groundwater in New York City is not used as a potable water source. There are no surface waters in close proximity to the Site that could be impacted or threatened.

During the remedial action, on-Site exposure pathways will be eliminated by: preventing access to the Site; implementation of soil/materials management, storm water pollution prevention, and dust controls; employment of a community air monitoring plan; and, implementation of a CHASP. After the remedial action is complete, there will be no remaining exposure pathways to on-Site soil/fill as all soil above Track 4 Site-Specific SCOs will have been removed, the composite cover system and use restrictions will prevent contact with residual soil or groundwater, and a vapor barrier system will have been installed. Continued protection after the remedial action will be achieved by the implementation of Site management including periodic inspection and certification of the performance of remedial controls.

5.0 REMEDIAL ACTION MANAGEMENT

5.1 PROJECT ORGANIZATION AND OVERSIGHT

Principal personnel who will participate in the remedial action include the Professional Engineer, Gene Santana, and the Qualified Environmental Professional (QEP) Doug Harm, Registered Professional Geologist.

5.2 SITE SECURITY

Site access will be controlled by a guarded gated entrance and an entirely fenced property.

5.3 WORK HOURS

The hours for operation of remedial construction will be from 7:00 AM to 4:00 PM. These hours conform to the NYC DOB construction code requirements.

5.4 CONSTRUCTION HEALTH AND SAFETY PLAN

The CHASP is provided in *Appendix VII*. The Site Safety Coordinator will be Jovana Villanueva. Remedial work performed under this RAWP will be in compliance with applicable health and safety laws and regulations, including Site and United States Occupational Health and Safety Administration (OSHA) worker safety requirements and Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements. Confined space entry, if any, will comply with OSHA requirements and industry standards and will address potential risks. The parties performing the remedial construction work will ensure that the performance of work is in compliance with the CHASP and applicable laws and regulations. The CHASP pertains to remedial and invasive work performed at the Site until the issuance of the NOC.

All field personnel involved in remedial activities will participate in training required under 29 Code of Federal Regulations (CFR) 1910.120, including 40-hour hazardous waste operator

training and annual 8-hour refresher training. The Site Safety Officer will be responsible for maintaining workers' training records.

Personnel entering any exclusion zone will be trained in the provisions of the CHASP and be required to sign a CHASP acknowledgment. Site-specific training will be provided to field personnel. Additional safety training may be added depending on the tasks performed. Emergency telephone numbers will be posted at the Site location before any remedial work begins. A safety meeting will be conducted before each shift begins. Topics to be discussed include task hazards and protective measures (physical, chemical, environmental); emergency procedures, PPE levels, and other relevant safety topics. Meetings will be documented in a log book or specific form.

An emergency contact sheet with names and phone numbers is included in the CHASP. That document will define the specific project contacts for use in case of emergency.

5.5 COMMUNITY AIR MONITORING PLAN

Real-time air monitoring for VOCs and particulate levels at the perimeter of the exclusion zone or work area will be performed. Continuous monitoring will be performed for all ground intrusive activities and during the handling of contaminated or potentially contaminated media. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pit excavation or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be performed during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. Periodic monitoring during sample collection, for instance, will consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. Depending upon the proximity of potentially exposed individuals, continuous monitoring may be performed during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence. Exceedances of action levels observed during performance of the CAMP will be reported to the OER Project Manager and included in the Daily Report.

VOC Monitoring, Response Levels, and Actions

VOCs will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis during invasive work. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work will be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment will be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 ppm above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown.

All 15-minute readings must be recorded and be available for OER personnel to review. Instantaneous readings, if any, used for decision purposes will also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate

monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed $150 \text{ mcg}/\text{m}^3$ above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than $150 \text{ mcg}/\text{m}^3$ above the upwind level, work will be stopped and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within $150 \text{ mcg}/\text{m}^3$ of the upwind level and in preventing visible dust migration.

All readings will be recorded and will be available for OER personnel to review.

5.6 AGENCY APPROVALS

All permits or government approvals required for remedial construction have been or will be obtained prior to the start of remedial construction. Approval of this RAWP by OER does not constitute satisfaction of these requirements and will not be a substitute for any required permit.

5.7 SITE PREPARATION

Pre-Construction Meeting

OER will be invited to attend the pre-construction meeting at the Site with all parties involved in the remedial process prior to the start of remedial construction activities.

Mobilization

Mobilization will be conducted as necessary for each phase of work at the Site. Mobilization includes field personnel orientation, equipment mobilization (including securing all sampling equipment needed for the field investigation), and marking/staking sampling locations and utility mark-outs. Each field team member will attend an orientation meeting to become familiar with the general operation of the Site, health and safety requirements, and field procedures.

Utility Marker Layouts, Easement Layouts

The presence of utilities and easements on the Site will be fully investigated prior to the performance of invasive work such as excavation or drilling under this plan by using, at a minimum, the One-Call System (811). Underground utilities may pose an electrocution, explosion, or other hazard during excavation or drilling activities. All invasive activities will be performed in compliance with applicable laws and regulations to assure safety. Utility companies and other responsible authorities will be contacted to locate and mark the locations, and a copy of the Markout Ticket will be retained by the contractor prior to the start of drilling, excavation, or other invasive subsurface operations. Overhead utilities may also be present within the anticipated work zones. Electrical hazards associated with drilling in the vicinity of overhead utilities will be prevented by maintaining a safe distance between overhead power lines and drill rig masts.

Proper safety and protective measures pertaining to utilities and easements and compliance with all laws and regulations will be employed during invasive and other work contemplated under this RAWP. The integrity and safety of on-Site and off-Site structures will be maintained during all invasive work, excavation, or other remedial activity performed under the RAWP.

Equipment and Material Staging

Equipment and materials will be stored and staged in a manner that complies with applicable laws and regulations.

Stabilized Construction Entrance

Steps will be taken to ensure that trucks departing the Site will not track soil, fill, or debris off Site. Such actions may include use of cleaned asphalt or concrete roads or use of stone or other aggregate-based egress paths between the truck inspection station and the property exit. Measures will be taken to ensure that adjacent roadways will be kept clean of project-related soils, fill, and debris.

Truck Inspection Station

An outbound-truck inspection station will be set up close to the Site exit. Before exiting the NYC VCP Site, trucks will be required to stop at the truck inspection station and will be examined for evidence of contaminated soil on the undercarriage, body, and wheels. Soil and debris will be removed. Brooms, shovels and potable water will be utilized for the removal of soil from vehicles and equipment, as necessary.

Extreme Storm Preparedness and Response Contingency Plan

Damage from flooding or storm surge can include dislocation of soil and stockpiled materials, dislocation of Site structures and construction materials and equipment, and dislocation of support of excavation structures. Damage from wind during an extreme storm event can create unsafe or unstable structures, damage safety structures, and cause downed power lines creating dangerous Site conditions and loss of power. In the event of emergency conditions caused by an extreme storm event, the enrollee will undertake the following steps for Site preparedness prior to the event and response after the event.

Storm Preparedness

Preparations in advance of an extreme storm event will include the following: containerized hazardous materials and fuels will be removed from the property; loose materials will be secured to prevent dislocation and blowing by wind or water; heavy equipment such as excavators and

generators will be removed from holes, trenches and depressions on the property to high ground or removed from the property; an inventory of the property with photographs will be performed to establish conditions for the Site and equipment prior to the event; stockpile covers for soil and fill will be secured by adding weights such as sandbags for added security and worn or ripped stockpile covers will be replaced with competent covers; stockpiled hazardous wastes will be removed from the property; stormwater management systems will be inspected and fortified, including, as necessary, clean and reposition silt fences and hay bales, clean storm sewer filters and traps, and secure and protect pumps and hosing.

Storm Response

At the conclusion of an extreme storm event, as soon as it is safe to access the property, a complete inspection of the property will be performed. A Site inspection report will be submitted to OER at the completion of Site inspection and after the Site security is assessed. Site conditions will be compared to the inventory of Site conditions and material performed prior to the storm event and significant differences will be noted. Damage from storm conditions that result in acute public safety threats, such as downed power lines or imminent collapse of buildings, structures, or equipment, will be reported to public safety authorities via appropriate means such as calling 911. Petroleum spills will be reported to the NYS DEC within two (2) hours of identification and consistent with State regulations. Emergency and spill conditions will also be reported to OER. Public safety structures, such as construction security fences, will be repaired promptly to eliminate public safety threats. Debris will be collected and removed. Dewatering will be performed in compliance with existing laws and regulations and consistent with emergency notifications, if any, from proper authorities. Eroded areas of soil, including unsafe slopes, will be stabilized and fortified. Dislocated materials will be collected and appropriately managed. Supports of the excavation structure will be inspected and fortified as necessary. Impacted stockpiles will be contained, and damaged stockpile covers will be replaced. Storm-water control systems and structures will be inspected and maintained as necessary. If soil or fill materials are discharged off Site to adjacent properties, property owners and OER will be notified and a corrective measure plan designed to remove and clean dislocated material will be submitted to OER and implemented following approval by OER and granting of Site access by the property owner. Impacted off-site areas may require characterization based on

Site conditions, at the discretion of OER. If on-site petroleum spills are identified, a QEP will determine the nature and extent of the spill and report to the NYS DEC's spill hotline at 800-457-7362. If the source of the spill is ongoing and can be identified, it should be stopped if this can be done safely. Potential hazards will be addressed immediately, consistent with guidance issued by the NYS DEC.

Storm Response Reporting

A Site inspection report will be submitted to OER at the completion of Site inspection. An inspection report established by OER is available on OER's website (www.nyc.gov/oer) and will be used for this purpose. Site conditions will be compared to the inventory of Site conditions and material performed prior to the storm event and significant differences will be noted. The Site inspection report will be sent to the OER Project Manager and will include the Site name, address, tax block and lot, and the Site's primary and alternate contact names and phone numbers. Damage and soil release assessment will include: whether the project had stockpiles; whether stockpiles were damaged; photographs of damage and notice of plan for repair; report of whether soil from the Site was dislocated and whether any of the soil left the Site; estimates of the volume of soil that left the Site, nature of impact, and photographs; description of erosion damage; description of equipment damage; description of damage to the remedial program or the construction program, such as damage to the support of excavation; presence of on-site or off-site exposure pathways caused by the storm; presence of petroleum or other spills and status of spill reporting to NYS DEC; description of corrective actions; and, schedule for corrective actions. This report should be completed and submitted to the OER Project Manager with photographs within 24 hours of the time of safe entry to the property after the storm event.

5.8 TRAFFIC CONTROL

Drivers of trucks leaving the NYC VCP Site with soil/fill will be instructed to proceed without stopping in the vicinity of the Site to prevent neighborhood impacts. The planned route on local roads for trucks leaving the Site is to:

1. Turn right onto Crotona Parkway;
2. Turn left onto E Tremont Avenue;

3. Turn left onto Webster Ave; and,
4. Merge onto I-95 to travel to the New Jersey Turnpike.

5.9 DEMOBILIZATION

Demobilization will include:

- As necessary, restoration of temporary access areas and areas that may have been disturbed to accommodate support areas (e.g., staging areas, decontamination areas, storage areas, temporary water management areas, and access area);
- Removal of sediment from erosion control measures and truck wash and disposal of materials in accordance with applicable laws and regulations;
- Equipment decontamination; and,
- General refuse disposal.

Equipment will be decontaminated and demobilized at the completion of all field activities. Investigation equipment and large equipment (e.g., soil excavators) will be washed at the truck inspection station as necessary. In addition, all investigation and remediation derived waste will be appropriately disposed to permitted facilities.

5.10 REPORTING AND RECORD KEEPING

Daily Reports

Daily reports providing a general summary of activities for each day of *active remedial work* will be emailed to the OER Project Manager by the end of the following day. Those reports will include:

- Project number and statement of the activities and an update of progress made and locations of work performed;
- Quantities of material imported and exported from the Site;
- Status of on-Site soil/fill stockpiles;

- A summary of all citizen complaints, with relevant details (basis of complaint, actions taken, etc.);
- A summary of CAMP excursions, if any; and,
- Photograph of notable Site conditions and activities.

The frequency of the reporting period may be revised in consultation with the OER Project Manager based on planned project tasks. Daily email reports are not intended to be the primary mode of communication for notification to OER of emergencies (accidents, spills), requests for changes to the RAWP, or other sensitive or time critical information. However, such information will be included in the daily reports. Emergency conditions and changes to the RAWP will be communicated directly to the OER Project Manager by personal communication. Daily reports will be included as an Appendix in the Remedial Action Report.

Record Keeping and Photo-Documentation

Job-Site record keeping for all remedial work will be performed. These records will be maintained on Site during the project and will be available for inspection by OER staff. Representative photographs will be taken of the Site prior to any remedial activities and during major remedial activities to illustrate remedial program elements and contaminant source areas. Photographs will be submitted at the completion of the project in the RAR in digital format (i.e., jpeg files).

5.11 COMPLAINT MANAGEMENT

All complaints from citizens will be promptly reported to OER. Complaints will be addressed and outcomes will also be reported to OER in daily reports. Notices to OER will include the nature of the complaint, the party providing the complaint, and the actions taken to resolve any problems.

5.12 DEVIATIONS FROM THE REMEDIAL ACTION WORK PLAN

All changes to the RAWP will be reported to the OER Project Manager and will be documented in daily reports and reported in the RAR. The process to be followed if there are any deviations from the RAWP will include a request for approval for the change from OER noting the following:

- Reasons for deviating from the approved RAWP;
- Effect of the deviations on overall remedy; and,
- Determination that the remedial action with the deviation(s) is protective of public health and the environment.

6.0 REMEDIAL ACTION REPORT

An RAR will be submitted to the OER following implementation of the remedial action defined in this RAWP. The RAR will document that the remedial work required under this RAWP has been completed and has been performed in compliance with this plan. The RAR will include:

- Information required by this RAWP;
- As-built drawings for all constructed remedial elements, required certifications, manifests, and other written and photographic documentation of remedial work performed under this remedy;
- Site Management Plan (if Track 1 is not achieved);
- Description of any changes in the remedial action from the elements provided in this RAWP and associated design documents;
- Tabular summary of all end point sampling results and all material characterization results, QA/QC results for end point sampling, and other sampling and chemical analysis performed as part of the remedial action;

- Test results or other evidence demonstrating that remedial systems are functioning properly;
- Account of the source area locations and characteristics of all contaminated material removed from the Site including a map showing source areas;
- Account of the disposal destination of all contaminated material removed from the Site; documentation associated with disposal of all material will include transportation and disposal records and letters approving receipt of the material;
- Account of the origin and required chemical quality testing for material imported onto the Site;
- Continue registration of the property with a Restrictive Declaration at the NYC Department of Buildings; and
- Reports and supporting material will be submitted in digital form.

Remedial Action Report Certification

The following certification will appear in front of the Executive Summary of the Remedial Action Report. The certification will include the following statements:

I, Gene Santana, am currently a Professional Engineer licensed by the State of New Jersey but I am authorized to practice in the State of New York. My authorization letter is provided in Appendix I. I had primary direct responsibility for implementation of the remedial program for the 1825 Boston Road Site (NYC Voluntary Cleanup Program Site No. 15CVCP064X).

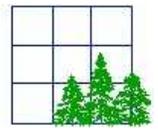
I, Doug Harm, am a qualified Environmental Professional. I had primary direct responsibility for implementation remedial program for the 1825 Boston Road Site (NYC Voluntary Cleanup Program Site No. 15CVCP064X).

I certify that the OER-approved Remedial Action Work Plan dated month day year and Stipulations in a letter dated month day, year; if any were implemented and that all requirements in those documents have been substantively complied with. I certify that contaminated soil, fill, liquids or other material from the property were taken to facilities licensed to accept this material in full compliance with applicable laws and regulations.

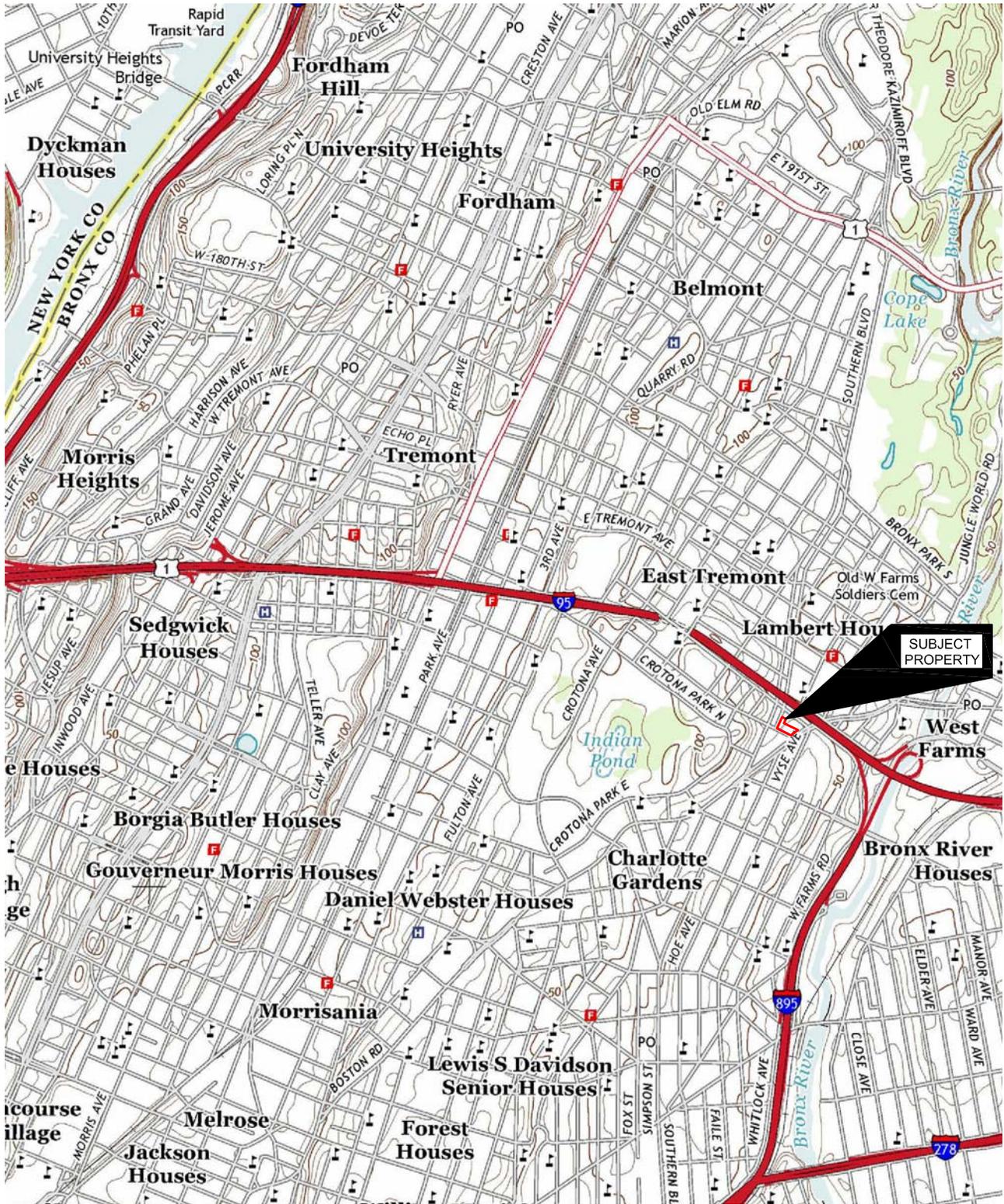
7.0 SCHEDULE

The table below presents a schedule for the proposed remedial action and reporting. If the schedule for remediation and development activities changes, it will be updated and submitted to the OER. Currently, a six (6)-month remediation period is anticipated.

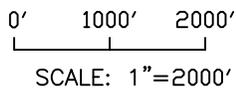
Schedule Milestone	Weeks from Remedial Action Start	Duration (weeks)
OER Approval of RAWP	0	-
Fact Sheet 2 announcing start of remedy	0	-
Mobilization	1	1
Remedial Excavation	2	8
Demobilization	10	1
Submit Remedial Action Report	20	10



Figures



SCALE: 1 : 24,000
 PHOTO REVISED: 2013



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ENVIRONMENTAL SERVICES, INC.

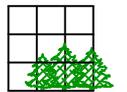


FIGURE 1 - SITE LOCATION MAP
 U.S.G.S. TOPOGRAPHIC CENTRAL PARK, NY QUAD
 1825 BOSTON ROAD - BUILDING B
 BLOCK 2984, LOT 46
 BOROUGH OF BRONX, BRONX COUNTY, NEW YORK

DATE: 11/6/14

JOB NO.: 14BR103

SCALE: 1" = 2000'



0' 100' 200'
 SCALE: 1"=200'

BRINKERHOFF
 ENVIRONMENTAL SERVICES, INC.

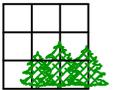


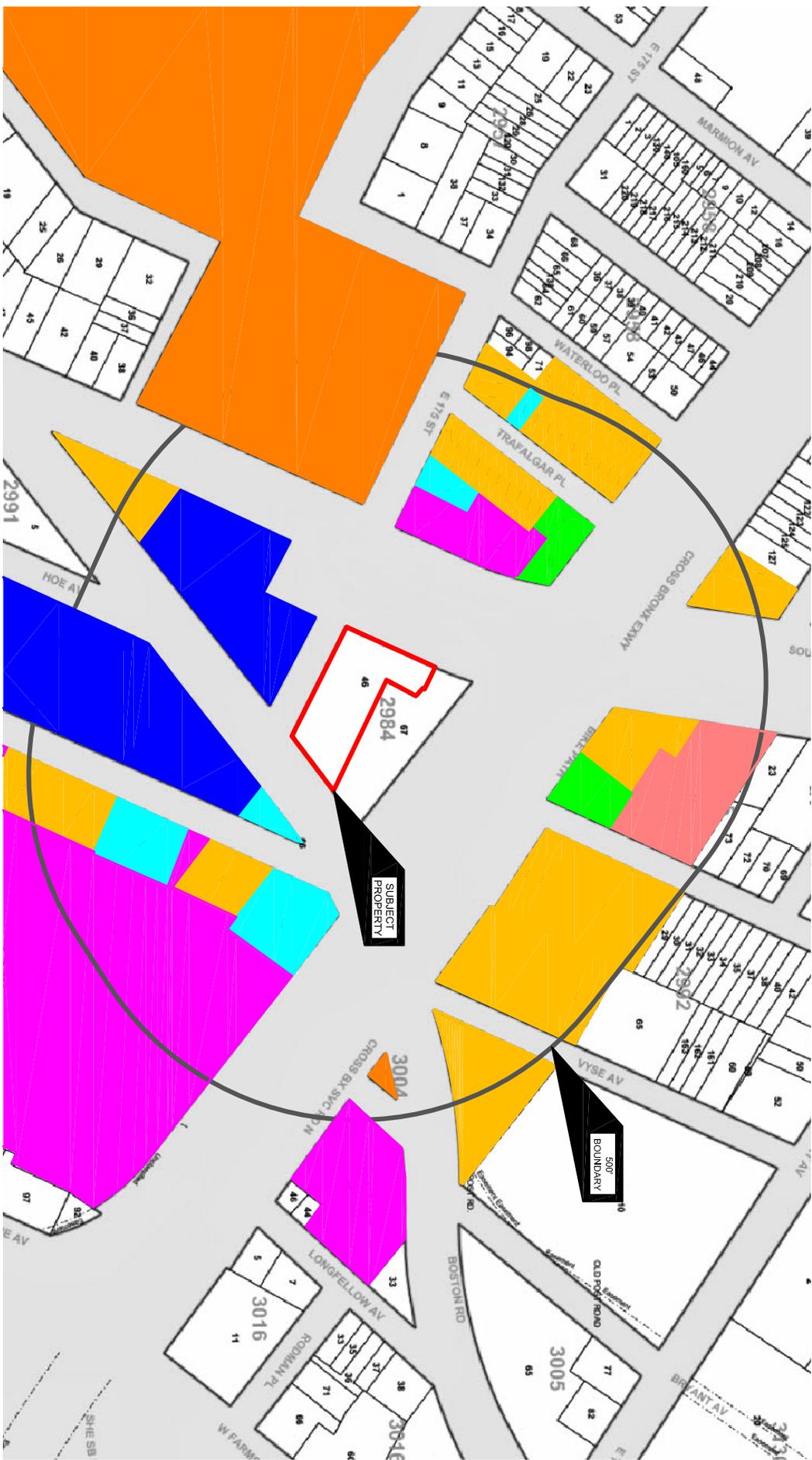
FIGURE 2 - TAX MAP

1825 BOSTON ROAD - BUILDING B
 BLOCK 2984, LOT 46
 BOROUGH OF BRONX, BRONX COUNTY, NEW YORK

DATE: 11/6/14

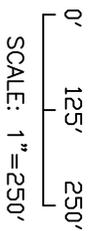
JOB NO.: 14BR103

SCALE: 1" = 200'



LEGEND

- RESIDENTIAL LOCATION
- COMMERCIAL AND OFFICE BUILDING LOCATION
- INDUSTRIAL AND MANUFACTURING BUILDING LOCATION
- VACANT LAND LOCATION
- PARKING FACILITY
- CHURCH LOCATION
- PARK LOCATION

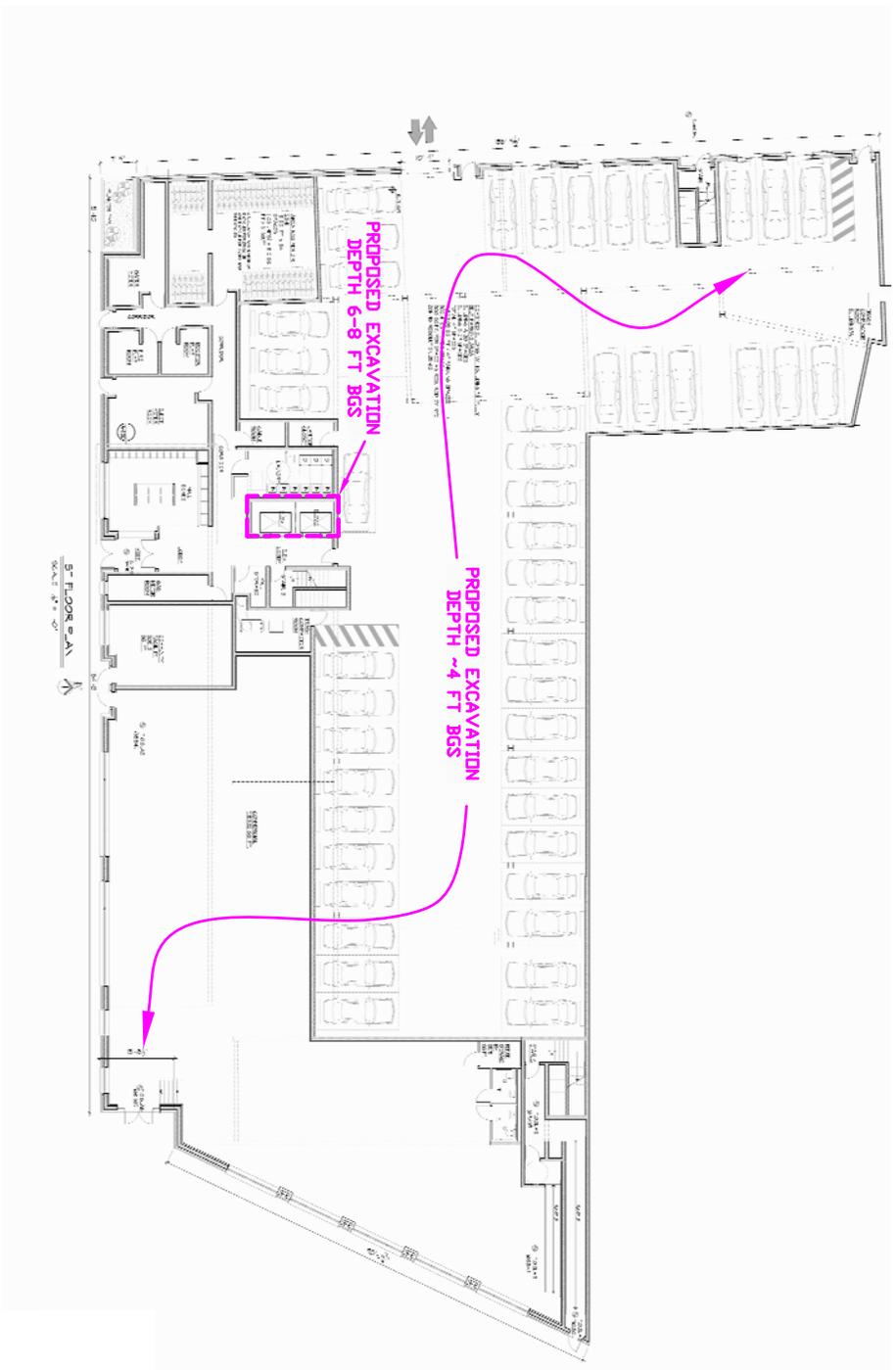


BRINKERHOFF

ENVIRONMENTAL SERVICES, INC.

FIGURE 3 - SITE BOUNDARY AND SURROUNDING USAGE MAP
 1825 BOSTON ROAD - BUILDING B
 PORTION OF BLOCK 2984, LOT 46
 BOROUGH OF BRONX, BRONX COUNTY, NEW YORK

DATE: 11/5/14 JOB NO.: 14BR103 SCALE: 1" = 250'



BRINKERHOFF
 ENVIRONMENTAL SERVICES, INC.

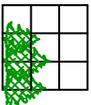
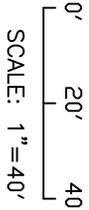


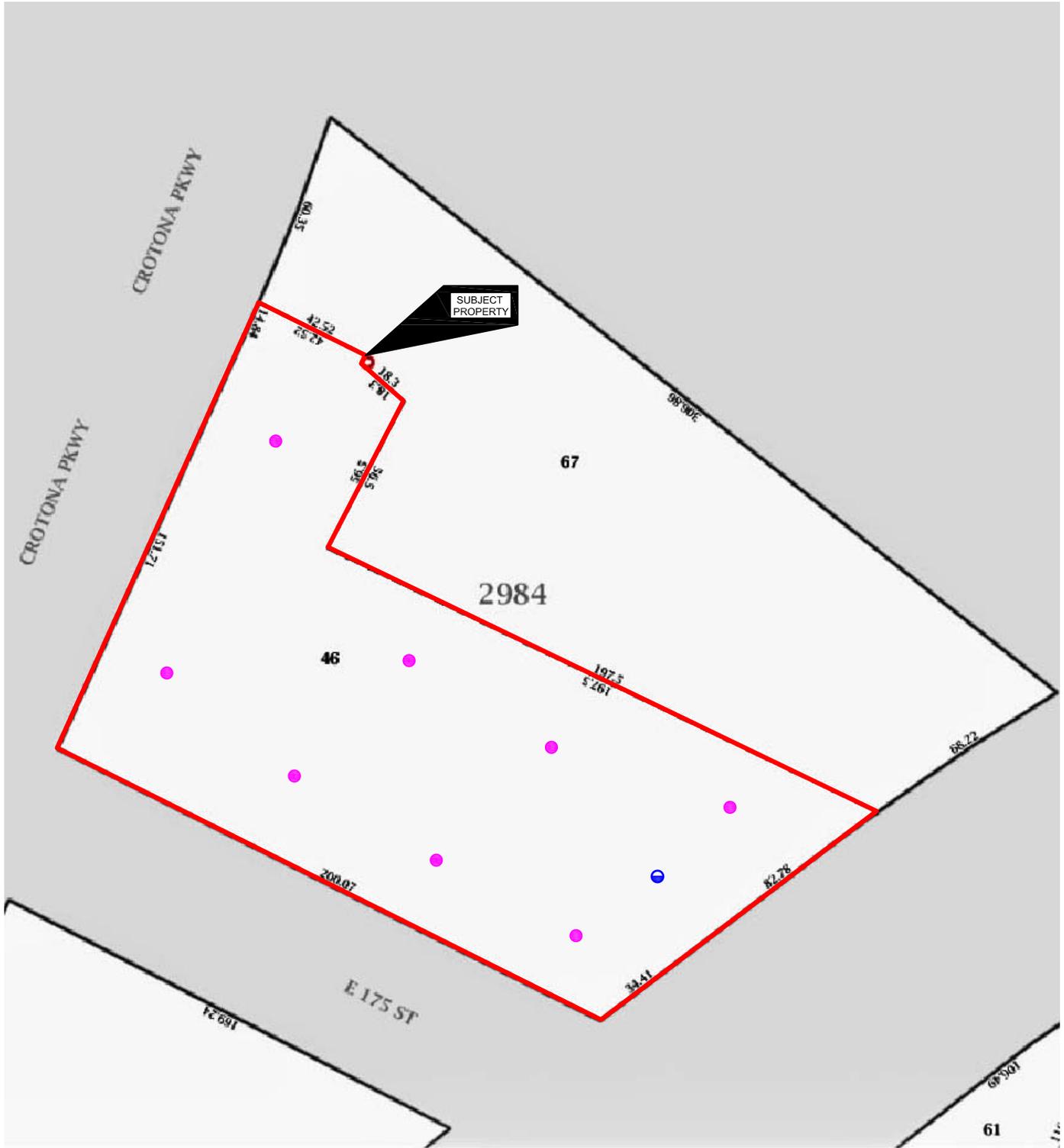
FIGURE 4

PROPOSED EXCAVATION MAP
 1825 BOSTON ROAD - BUILDING B
 BLOCK 2984, LOT 46
 BOROUGH OF BRONX, BRONX COUNTY, NEW YORK

DATE: 1/27/15 JOB NO.: 14BR103 SCALE: 1" = ' 1" = 40'

NOTE:
 FT BGS = FEET BELOW GRADE SURFACE





0' 25' 50'
SCALE: 1"=50'

LEGEND

- - END POINT SAMPLE LOCATION
- - CONFORMATION SOIL VAPOR SAMPLE LOCATION

BRINKERHOFF
ENVIRONMENTAL SERVICES, INC.

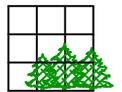
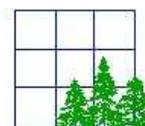


FIGURE 5
END POINT SAMPLE LOCATION MAP
1825 BOSTON ROAD - BUILDING B
BLOCK 2984, LOT 46
BOROUGH OF BRONX, BRONX COUNTY, NEW YORK

DATE: 1/27/15	JOB NO.: 14BR103	SCALE: 1" = 50'
---------------	------------------	-----------------



APPENDIX I

APPENDIX I

**P.E. AUTHORIZATION LETTER & ARCHITECTURAL
DRAWINGS**



THE STATE EDUCATION DEPARTMENT / THE UNIVERSITY OF THE STATE OF NEW YORK / ALBANY, NY
12234

State Board for Engineering and Land Surveying, Education Building, 89 Washington Avenue, 2nd Flr. Mezzanine East-Wing
Tel. (518) 474-3817, Ext. 140 Fax: (518) 473-6282
E-mail: enginbd@mail.nysed.gov
E-mail: lsurvbd@mail.nysed.gov

November 25, 2014

Mr. Gene Santana
240 Grand Central Parkway
Bayville, NJ 08721

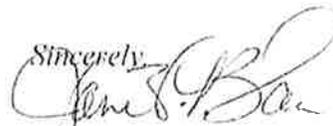
Dear Mr. Santana:

This is to acknowledge receipt of your fee and Form 1, Application for Licensure and First Registration as a Professional Engineer, together with your notification of intent to practice in New York under subdivision (b) of Section 7208 of the Education Law. This letter authorizes you to engage in such practice, using your New Jersey license.

Section 7208(b) exempts from New York State licensure requirements, "Practice as a professional engineer or land surveyor in this state by any person not a resident, or having no established place of practice in this state, or any person resident in this state but who has arrived in this state within six months, provided, however, such a person shall have filed an application for license as a professional engineer or land surveyor, and is legally qualified for such practice in the state or country in which he resides or has his place of practice or in which he had his previous residence or place of practice, such exemption continuing for only such reasonable time as the board requires to grant or deny the application for license, and a person intending to practice under this subdivision shall so state on the application."

This exemption from licensure continues until whichever of the following occurs first: 1) the Department determines that an applicant fails to document satisfactorily any requirement for licensure (except for examination); 2) the applicant fails to receive a passing score on the first licensing examination for which he or she is eligible; or 3) the applicant receives a New York State license.

Further, Section 7208 states "...that no title, sign, card or device shall be used in such manner as to tend to convey the impression that the person rendering such service is a professional engineer or a land surveyor licensed in this state or is practicing engineering or land surveying."

Sincerely,


June W. Blair, PE
Executive Secretary

PROPOSED NEW LOW INCOME DEVELOPMENT FOR: CROTONA PLAZA, BUILDING "B" 1825 BOSTON RD BRONX, NY 10460

DEVELOPER:



ARCHITECT:



49 North Almont Road, Suffern, NY 10901 tel: 845-368-0004 fax: 800-772-8304
www.asaparchitecture.com

STRUCTURAL ENGINEER:

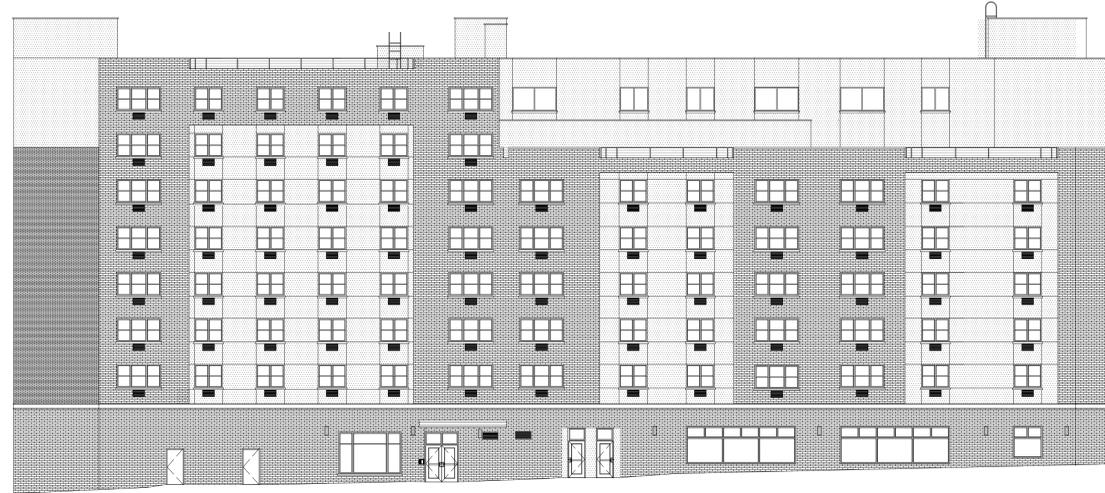


76 LAFAYETTE AVENUE, SUFFERN, NEW YORK 10901
TEL: 845-357-4411 FAX: 845-357-1896

MECHANICAL ENGINEER:



ETTINGER ENGINEERING
ASSOCIATES
CONSULTING ENGINEERS
505 EIGHTH AVE., NEW YORK, NEW YORK 10001
TEL: 212-244-2410 FAX: 212-643-1606



EAST 175th STREET ELEVATION

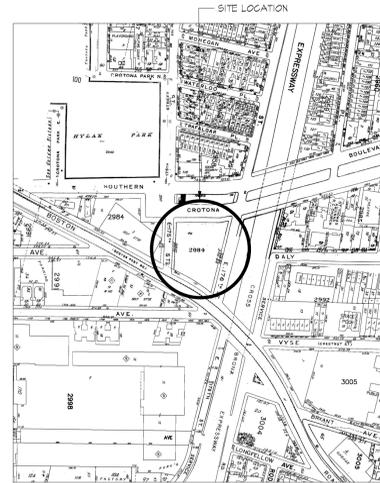
DRAWING SCHEDULE:

- T-001 COVER SHEET
- C-001 SURVEY
- C-002 SCHEMATIC SITE PLAN AND
- Z-001 ZONING ANALYSIS
- Z-002 ZONING ANALYSIS
- EN-001 ENERGY ANALYSIS
- G-001 GENERAL NOTES
- G-002 ACCESSIBILITY DIAGRAMS
- G-003 1ST AND 2ND FLOOR EGRESS PLANS
- G-004 3RD THRU 8TH FLOOR EGRESS PLANS

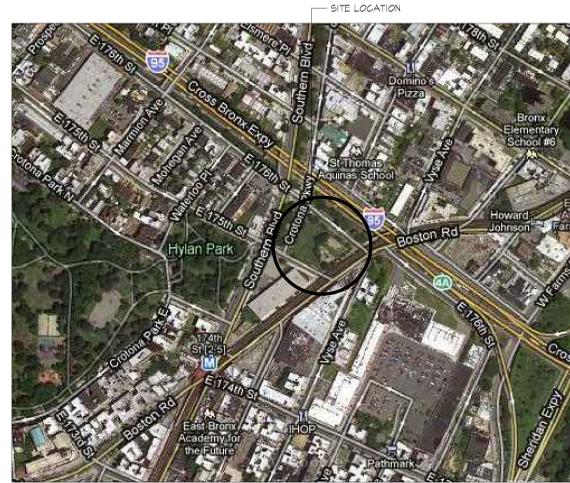
- A-100 1ST FLOOR PLAN
- A-101 2ND FLOOR PLAN
- A-102 3RD TO 6TH FLOOR PLAN
- A-103 7TH AND 8TH FLOOR PLAN
- A-104 ROOF AND BULKHEAD PLANS
- A-200 EXTERIOR ELEVATIONS
- A-201 EXTERIOR ELEVATIONS
- A-202 EXTERIOR ELEVATIONS
- A-203 CROSS SECTION
- A-400 TYPICAL EXTERIOR WALL SECTION
- A-500 ENLARGED APARTMENT LAYOUTS
- A-510 ENLARGED KITCHEN LAYOUT & ELEVATION & DETAILS
- A-511 ENLARGED BATHROOM LAYOUT & ELEVATION & DETAILS
- A-600 DOOR SCHEDULE, FINISH SCHEDULE WINDOW SCHEDULE & MAILBOX PLAN & ELEVATIONS

OBR	APARTMENT DISTRIBUTION				FLOOR	UNIT TYPE	# OF UFAS ACCESSIBLE	# OF UFAS HVI
	OBR	1BR	2BR	TOTAL				
1ST FLOOR					2ND FLOOR	A.1-0BR	1	
2ND FLOOR	2	5	9	16	3rd FLOOR	A. 0BR		1
3rd FLOOR	2	5	9	16	4th FLOOR	C. 2BR	1	
4th FLOOR	2	5	9	16	5th FLOOR	B. 1BR	1	1
5th FLOOR	2	5	9	16	6th FLOOR	C. 2BR	1	1
6th FLOOR	2	5	9	16	7th FLOOR	D. 3BR	1	
7th FLOOR	0	0	7	7	8th FLOOR	C. 2BR	1	
8th FLOOR	0	0	7	7	Total		6	3
Total	10	25	59	108	PERCENT		5%	2%
PERCENT	9%	23%	55%	100%				

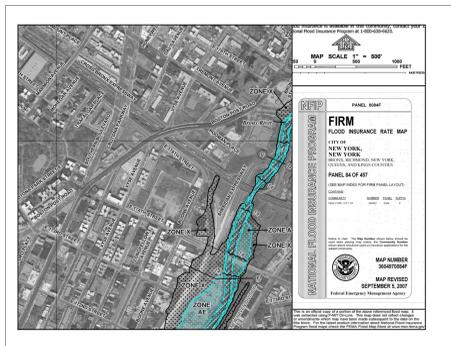
(* SECTION 504 OF THE REHABILITATION ACT - U.F.A.S. ACCESSIBLE APARTMENTS:
5% OF THE TOTAL APARTMENTS EQUIPPED FOR PERSONS WITH MOBILITY IMPAIRMENTS
TOTAL 80 X 5% = 4 UNITS
2% OF THE TOTAL APARTMENTS EQUIPPED FOR PERSONS WITH HEARING AND VISUAL IMPAIRMENTS
TOTAL 80 X 2% = 2 UNITS



TAX MAP
NOT TO SCALE



VICINITY MAP
NOT TO SCALE



THIS SITE DOES NOT FALL UNDER A FLOOD HAZARD AS PER
FLOOD INSURANCE RATE MAP #3604970084 F - BC G105 -

THIS DRAWING IS AN INSTRUMENT OF SERVICE AND SHALL REMAIN THE PROPERTY OF AUFANG + SUBOTOVSKY ARCHITECTURE AND PLANNING PLLC. WHETHER THE PROJECT FOR WHICH IT IS MADE IS EXECUTED OR NOT, THIS DRAWING SHALL NOT BE USED BY THE OWNER OR OTHERS ON OTHER PROJECTS, FOR ADDITIONS TO THIS PROJECT OR FOR COMPLETION OF THIS PROJECT BY OTHERS EXCEPT BY AGREEMENT IN WRITING WITH AUFANG + SUBOTOVSKY ARCHITECTURE AND PLANNING PLLC. SUBMISSION OR DISTRIBUTION TO MEET OFFICIAL REGULATORY REQUIREMENTS OR FOR OTHER PURPOSES IN CONNECTION WITH THE PROJECT IS NOT TO BE CONSIDERED AS PUBLICATION IN DEROGATION OF THE RIGHTS OF AUFANG + SUBOTOVSKY ARCHITECTURE AND PLANNING PLLC. REPRODUCTION OR PUBLICATION BY ANY METHOD IN WHOLE OR IN PART IS PROHIBITED. TITLE TO THIS DRAWING BELONGS TO AUFANG + SUBOTOVSKY ARCHITECTURE AND PLANNING PLLC. WITHOUT PREJUDICE.

DATE	REVISIONS
11-25-14	ISSUED TO OER
11-25-14	ISSUED TO MTA
07-31-14	ISSUED TO DOB FOR REVIEW AND COMMENT
5-15-14	ISSUED TO HPD FOR REVIEW AND COMMENT

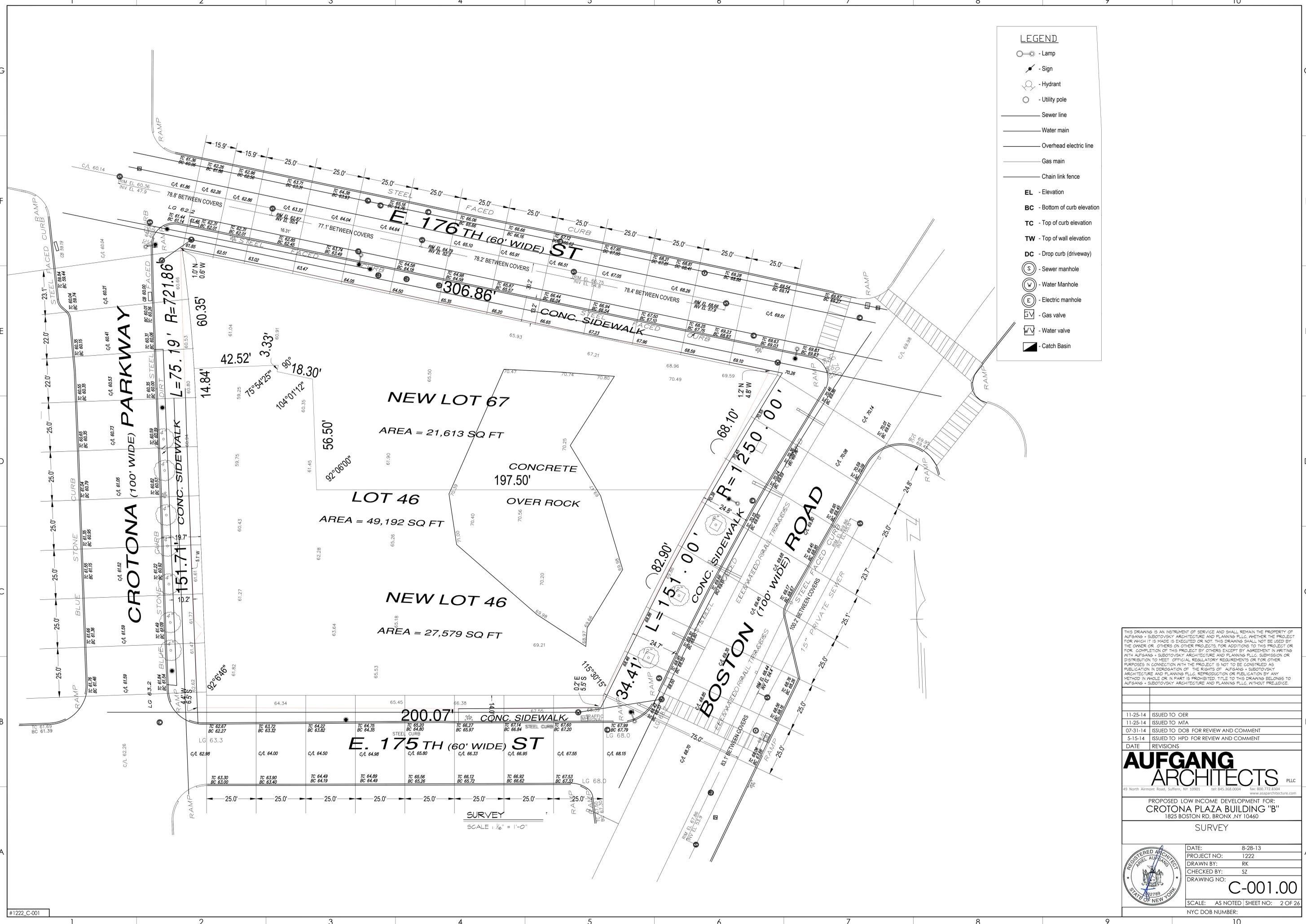
AUFANG ARCHITECTS PLLC
49 North Almont Road, Suffern, NY 10901 tel: 845-368-0004 fax: 800-772-8304
www.asaparchitecture.com

PROPOSED LOW INCOME DEVELOPMENT FOR:
CROTONA PLAZA BUILDING "B"
1825 BOSTON RD, BRONX, NY 10460

COVER SHEET

DATE:	8-28-13
PROJECT NO.:	1222
DRAWN BY:	RK
CHECKED BY:	RK
DRAWING NO.:	T-001.00
SCALE:	AS NOTED SHEET NO: 1 of 26
NYC DOB NUMBER:	





LEGEND

- Lamp
- Sign
- Hydrant
- Utility pole
- Sewer line
- Water main
- Overhead electric line
- Gas main
- Chain link fence

EL - Elevation
BC - Bottom of curb elevation
TC - Top of curb elevation
TW - Top of wall elevation
DC - Drop curb (driveway)

- Sewer manhole
- Water Manhole
- Electric manhole
- Gas valve
- Water valve
- Catch Basin

NEW LOT 67
 AREA = 21,613 SQ FT

LOT 46
 AREA = 49,192 SQ FT

NEW LOT 46
 AREA = 27,579 SQ FT

CONCRETE OVER ROCK
 197.50'

CROTONA (100' WIDE) PARKWAY

BOSTON ROAD (100' WIDE)

E. 176 TH (60' WIDE) ST

CONC. SIDEWALK

E. 175 TH (60' WIDE) ST

CONC. SIDEWALK

SURVEY
 SCALE : 1/8" = 1'-0"

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11-25-14	ISSUED TO OER
11-25-14	ISSUED TO MTA
07-31-14	ISSUED TO DOB FOR REVIEW AND COMMENT
5-15-14	ISSUED TO HPD FOR REVIEW AND COMMENT
DATE	REVISIONS

AUFANG ARCHITECTS PLLC
 49 North Airmont Road, Suffern, NY 10901 | tel: 845.368.0004 | fax: 800.772.8304
 www.aufangarchitecture.com

PROPOSED LOW INCOME DEVELOPMENT FOR:
CROTONA PLAZA BUILDING "B"
 1825 BOSTON RD, BRONX, NY 10460

SURVEY

DATE:	8-28-13
PROJECT NO.:	1222
DRAWN BY:	RK
CHECKED BY:	SZ
DRAWING NO.:	C-001.00

SCALE: AS NOTED | SHEET NO: 2 OF 26
 NYC DOB NUMBER:



GENERAL NOTES

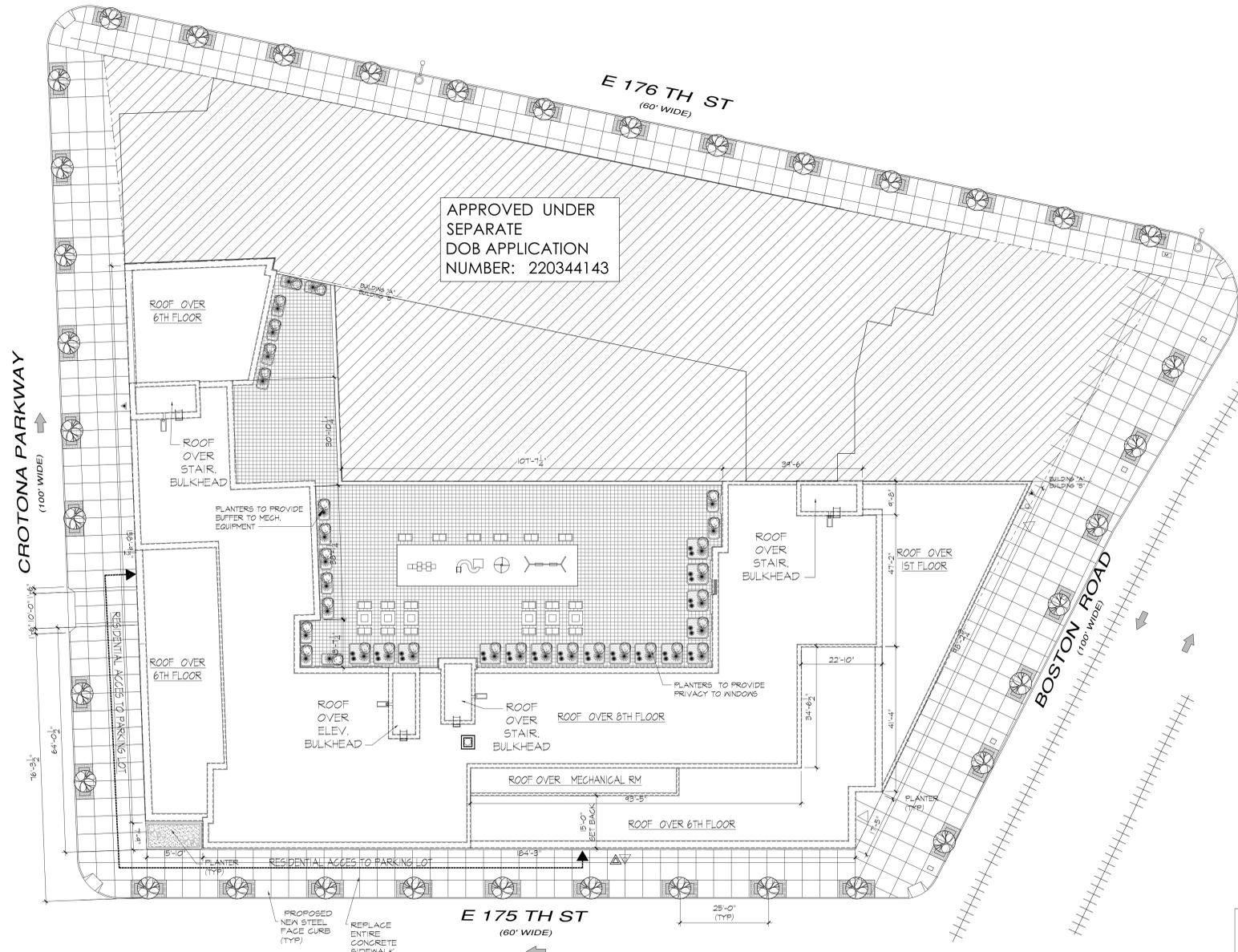
1. ALL FILL USED BELOW SLABS UNDER BUILDINGS AND IN PAVED AREAS SHALL BE QUALITY SANDY MATERIAL AND SHALL BE COMPACTED IN 2" LAYERS TO 95% DENSITY TO PREVENT SETTLEMENT AS PER ASTM D1557, METHOD C.
2. CONTRACTOR MUST ALSO FOLLOW ALL REQUIREMENTS FOR PREPARATION, CLEARING, PROOF ROLLING AND FILL REPLACEMENT RECOMMENDED BY A REPORT ON SOIL AND FOUNDATION INVESTIGATION.
3. ALL FILL SHALL BE COMPACTED WITH SOIL COMPACTION EQUIPMENT RATHER THAN BY HAND TAMPING (EXCEPT AROUND PIPES, ETC.)
4. THE THICKNESS OF FILL LAYERS PLACED SHALL BE COMPATIBLE WITH THE TYPE OF COMPACTION EQUIPMENT USED.
5. THE ATTAINMENT OF SPECIFIED DENSITIES SHALL BE VERIFIED BY FIELD DENSITY TESTS MADE BY AN INDEPENDENT TESTING LABORATORY ON EACH LAYER OF MATERIAL COMPACTED. ONE TEST PER 5,000 SQ. FT. OF SURFACE AREA SHALL BE MADE ON EACH LAYER WITHIN THE BUILDING.
6. USE ENERGY STAR APPLIANCES, LIGHT FIXTURES AND HEATING SYSTEMS.
7. SELECT NATIVE OR NON INVASIVE NEW TREES AND PLANTS THAT ARE APPROPRIATE TO THE SITE SOIL AND MICROCLIMATE.
8. INSTALL WATER CONSERVING FIXTURES THROUGHOUT.
9. USE DAYLIGHT SENSORS OR TIMERS ON OUTDOOR LIGHTING TO MAXIMIZE ENERGY EFFICIENCY.
10. ALL INTERIOR PAINTS, PRIMERS, ADHESIVES AND SEALANTS MUST CONTAIN LOW OR NO VOCs.
11. GREEN LABEL CERTIFIED FLOOR COVERING: DO NOT INSTALL CARPETS IN BELOW GRADE LIVING SPACES, ENTRYWAYS, LAUNDRY ROOMS, BATHROOMS, KITCHENS OR UTILITY ROOMS. IF USING CARPET, USE PRODUCTS THAT MEET THE CARPET AND RUG INSTITUTE IS GREEN LABEL CERTIFIED CARPET, PAD AND CARPET ADHESIVES.
12. EXHAUST FANS - BATHROOM: INSTALL ENERGY STAR-LABELED BATHROOM FANS THAT EXHAUST TO THE OUTDOORS AND OPERATE CONTINUOUSLY.
13. VENTILATION: INSTALL A VENTILATION SYSTEM FOR THE DWELLING UNIT THAT PROVIDES 15 CUBIC FEET PER MINUTE OF FRESH AIR PER OCCUPANT.
14. COLD WATER PIPE INSULATION: INSULATE EXPOSED COLD WATER PIPES.
15. MATERIALS IN KEY AREAS: USE MATERIALS WITH SMOOTH, DURABLE, CLEANABLE SURFACES. DO NOT USE WOOD. PROHIBITATIVE MATERIALS SUCH AS VINYL WALLPAPER AND UNSEALED GROUT.
16. CLOTHES - DRYER EXHAUST: CLOTHES DRYERS MUST BE EXHAUSTED DIRECTLY TO THE OUTDOORS.
17. INTEGRATED PEST MANAGEMENT: SEAL ALL WALL, FLOOR AND JOINT PENETRATIONS TO PREVENT PEST ENTRY. PROVIDE ROZENT AND CORROSION PROOF SCREENS (E.G. COPPER OR STAINLESS STEEL MESH) FOR LARGE OPENINGS.
18. REDUCED HEAT - ISLAND EFFECT: ROOFING AND PAVING: 1) USE ENERGY STAR - COMPLIANT AND HIGH - EMISSIVE ROOFING FOR THE ENTIRE ROOF 2) USE LIGHT - COLORED/HIGH - ALBEDO MATERIALS FOR HARDCAPPED AREAS.
19. ALL DWELLING UNITS ARE HANDICAP ADAPTABLE U.O.N.

EROSION AND SEDIMENT CONTROL PLAN - CONSTRUCTION SEQUENCE

1. ALL EROSION AND SEDIMENT CONTROL MEASURES, EXCLUDING CATCH-BASIN MEASURES, SHALL BE IN PLACE PRIOR TO ANY GRADING OPERATIONS AND INSTALLATION OF PROPOSED STRUCTURES AND UTILITIES.
2. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL REMAIN IN PLACE AND BE MAINTAINED UNTIL CONSTRUCTION IS COMPLETED AND/OR STABILIZED.
3. INSTALL STABILIZED CONSTRUCTION ENTRANCE AS INDICATED ON PLAN.
4. INSTALL SILT FENCE AND/OR HAY BALE BARRIERS DOWN SLOPE OF ALL AREAS TO BE DISTURBED AND DOWN SLOPE OF ALL AREAS DESIGNATED FOR TOPSOIL STOCKPILING.
5. CONSTRUCT BERMS, TEMPORARY SHALES AND PIPES AS NECESSARY TO DIRECT RUNOFF TO TEMPORARY SEDIMENTATION ENTRAPMENT AREAS.
6. CLEAR EXISTING TREES, VEGETATION AND EXISTING STRUCTURES FROM AREAS TO BE FILLED OR EXCAVATED. STRIP AND STOCKPILE TOPSOIL FROM ALL AREAS TO BE DISTURBED. SEED STOCKPILED TOPSOIL WITH TEMPORARY RYE GRASS COVER.
7. PERFORM EXCAVATION AND FILL TO BRING LAND TO DESIRED GRADE. ANY DISTURBED AREAS TO REMAIN BARE SHOULD BE SEEDED WITH TEMPORARY RYE GRASS.
8. INSTALL UNDERGROUND UTILITIES, MANHOLES AND CATCH BASINS. GRATES OF CURB AND FIELD INLETS SHOULD BE LEFT AT ELEVATIONS WHICH PERMIT PROPER COLLECTION OF SURFACE RUNOFF.
9. INSTALL HAY BALE RINGS AROUND ALL CURB AND FIELD INLETS EXCEPT FOR THE BASIN LOCATED AT THE ANTI TRACKING PAD. BASINS AT THE PAD SHALL BE TREATED WITH THE CATCH BASIN-FILTER FABRIC DETAIL.
10. CONSTRUCT CURBS AND INSTALL BASE AND BINDER COURSES OF PAVED AREAS. RAISE GRATES OF CURB AND FIELD INLETS ACCORDINGLY.
11. COMPLETE FINE GRADINGS.
12. RAISE GRATES OF CURB AND FIELD INLETS TO FINAL ELEVATIONS. INSTALL SURFACE COURSE OF PAVEMENT.
13. UPON COMPLETION OF CONSTRUCTION ALL DISTURBED AREAS ARE TO BE SEEDED. REFER TO LANDSCAPING PLAN FOR PERMANENT SEEDING SPECIFICATIONS. ALL TEMPORARY DEVICES SHALL BE REMOVED AND THE AFFECTED AREAS RE-GRADED, PLANTED OR TREATED IN ACCORDANCE WITH THE APPROVED SITE PLANS.

STANDARD EROSION CONTROL NOTES

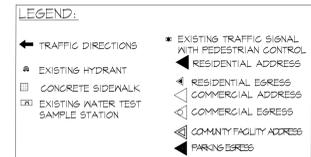
1. ALL CONTROL MEASURES FOR EROSION AND SEDIMENTATION SHALL COMPLY WITH THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP).
 - A) INSPECTIONS OF ALL CONTROL MEASURES PER THE SWPPP.
 - B) WEEKLY INSPECTIONS AND DOCUMENTATION OF EROSION CONTROL PRACTICES.
 - C) INSPECTIONS OF ALL CONTROL MEASURES BEFORE FORECASTED AND AFTER PERIODS OF HEAVY OR PROLONGED RAIN RESULTING IN MORE THAN 0.5-INCHES.
 - D) WEEKLY INSPECTIONS OF ON AND OFF-SITE AREAS DOWNSTREAM FROM CONSTRUCTION ACTIVITIES.
2. THE INSPECTIONS SHALL BE CONDUCTED BY THE APPLICANT AND/OR HIS REPRESENTATIVE, I.E. THE SITE ENGINEER, OR THE CONTRACTOR, TO DETERMINE THE FOLLOWING:
 - A) THE CONDITIONS OF THE CONTROL MEASURES AND THE NEED FOR REPAIR OR REPLACEMENT.
 - B) THE NEED FOR MAINTENANCE, E.G. REMOVAL OF SEDIMENT FROM BARRIERS, TRAPS, AND BASINS.
 - C) THE NEED FOR ADDITIONAL CONTROL MEASURES.
 - D) THE NEED FOR REAPPLICATION OF SEEDING, NETTING AND/OR MULCHING.
 - E) THE OVERALL EFFECTIVENESS OF THE CONTROL PLAN.
3. ALL TEMPORARY AND PERMANENT CONTROL DEVICES MUST BE MAINTAINED AND REPAIRED AS NEEDED TO ASSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION. ALL NECESSARY REPAIRS SHALL BE PERFORMED IMMEDIATELY.
4. THESE PLANS INDICATE THE CONTROL MEASURES TO BE PUT IN PLACE. ADDITIONAL CONTROL MEASURES SHALL BE IMPLEMENTED AS SITE CONDITIONS CHANGE AND UNFORSEEN PROBLEMS OCCUR. IMPLEMENTATION OF THE ADDITIONAL CONTROL MEASURES SHALL BE AT THE DISCRETION OF THE SITE INSPECTOR.
5. AN EROSION CONTROL SYSTEM WILL BE UTILIZED BY THE DEVELOPER TO MINIMIZE THE PRODUCTION OF SEDIMENT FROM THE SITE. METHODS TO BE UTILIZED WILL BE THOSE FOUND MOST EFFECTIVE FOR THE SITE AND SHALL INCLUDE ONE OR MORE OF THE FOLLOWING, AS APPLICABLE:
 - A) TEMPORARY SEDIMENTATION ENTRAPMENT AREAS SHALL BE PROVIDED AT KEY LOCATIONS TO INTERCEPT AND CLARIFY SILT-LADEN RUNOFF FROM THE SITE. THESE MAY BE EXCAVATED OR MAY BE CREATED UTILIZING EARTHEN BERMS, RIP-RAP OR CRUSHED STONE DAMS, HAY BALES, OR OTHER SUITABLE MATERIALS. DIVERSION SHALES, BERMS OR OTHER CANALIZATION SHALL BE CONSTRUCTED TO INSURE THAT ALL SILT-LADEN WATERS ARE DIRECTED INTO THE ENTRAPMENT AREAS, WHICH SHALL NOT BE PERMITTED TO FILL IN, BUT SHALL BE CLEANED PERIODICALLY DURING THE COURSE OF CONSTRUCTION. THE COLLECTED SILT SHALL BE DEPOSITED IN AREAS SAFE FROM FURTHER EROSION.
 - B) ALL DISTURBED AREAS EXCEPT ROADWAYS, WHICH WILL REMAIN UNFINISHED FOR MORE THAN 30 DAYS SHALL BE TEMPORARILY SEEDED WITH 1/2 LB. OF RYE GRASS OR MULCHED WITH 100 LBS. OF STRAW OR HAY PER 1,000 SQUARE FEET. ROADWAYS SHALL BE STABILIZED AS RAPIDLY AS PRACTICABLE BY THE INSTALLATION OF THE BASE COURSE.
 - C) SILT THAT LEAVES THE SITE IN VIOLATION OF THE REQUIRED PRECAUTIONS SHALL BE COLLECTED AND REMOVED AS DIRECTED BY APPROPRIATE MUNICIPAL AUTHORITIES.



SCHEMATIC SITE PLAN

SCALE: 1/8" = 1'-0"

STREET PLANTING CALCULATION:
919.46' / 25.0' = 37 TREES REQUIRED



NOTE:
1. LANDSCAPE SELECT NATIVE OR NON INVASIVE TREES & PLANTS THAT ARE APPROPRIATE TO THE SITE SOIL AND MICROCLIMATE.
2. USE DAY LIGHT SENSORS OR TIMERS ON OUTDOOR LIGHTING TO MAXIMIZE ENERGY EFFICIENCY.
3. CONTRACTOR SHALL COORDINATE ALL SIDEWALK FINISH ELEVATIONS WITH BUILDERS PAVEMENT PLAN.



IMAGE A
NOT TO SCALE



IMAGE B
NOT TO SCALE



IMAGE C
NOT TO SCALE



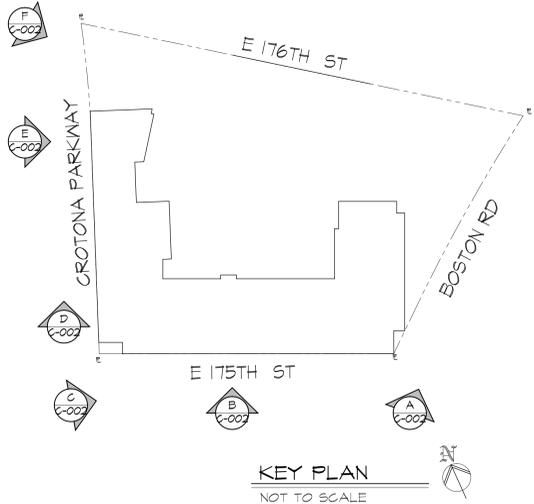
IMAGE D
NOT TO SCALE



IMAGE E
NOT TO SCALE



IMAGE F
NOT TO SCALE



KEY PLAN

NOT TO SCALE

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11-25-14	ISSUED TO OER
11-25-14	ISSUED TO MTA
07-31-14	ISSUED TO DOB FOR REVIEW AND COMMENT
5-15-14	ISSUED TO HPD FOR REVIEW AND COMMENT
DATE	REVISIONS

AUFANG ARCHITECTS PLLC
49 North Almont Road, Suffern, NY 10901 | tel: 845.368.0004 | fax: 800.772.8304
www.auparchitecture.com

PROPOSED LOW INCOME DEVELOPMENT FOR:
CROTONA PLAZA BUILDING "B"
1825 BOSTON RD, BRONX, NY 10460

SCHEMATIC SITE PLAN

DATE:	8-28-13
PROJECT NO.:	1222
DRAWN BY:	RK
CHECKED BY:	SZ
DRAWING NO.:	C-002.00

SCALE: AS NOTED | SHEET NO: 3 OF 26
NYC DOB NUMBER:

GENERAL NOTES

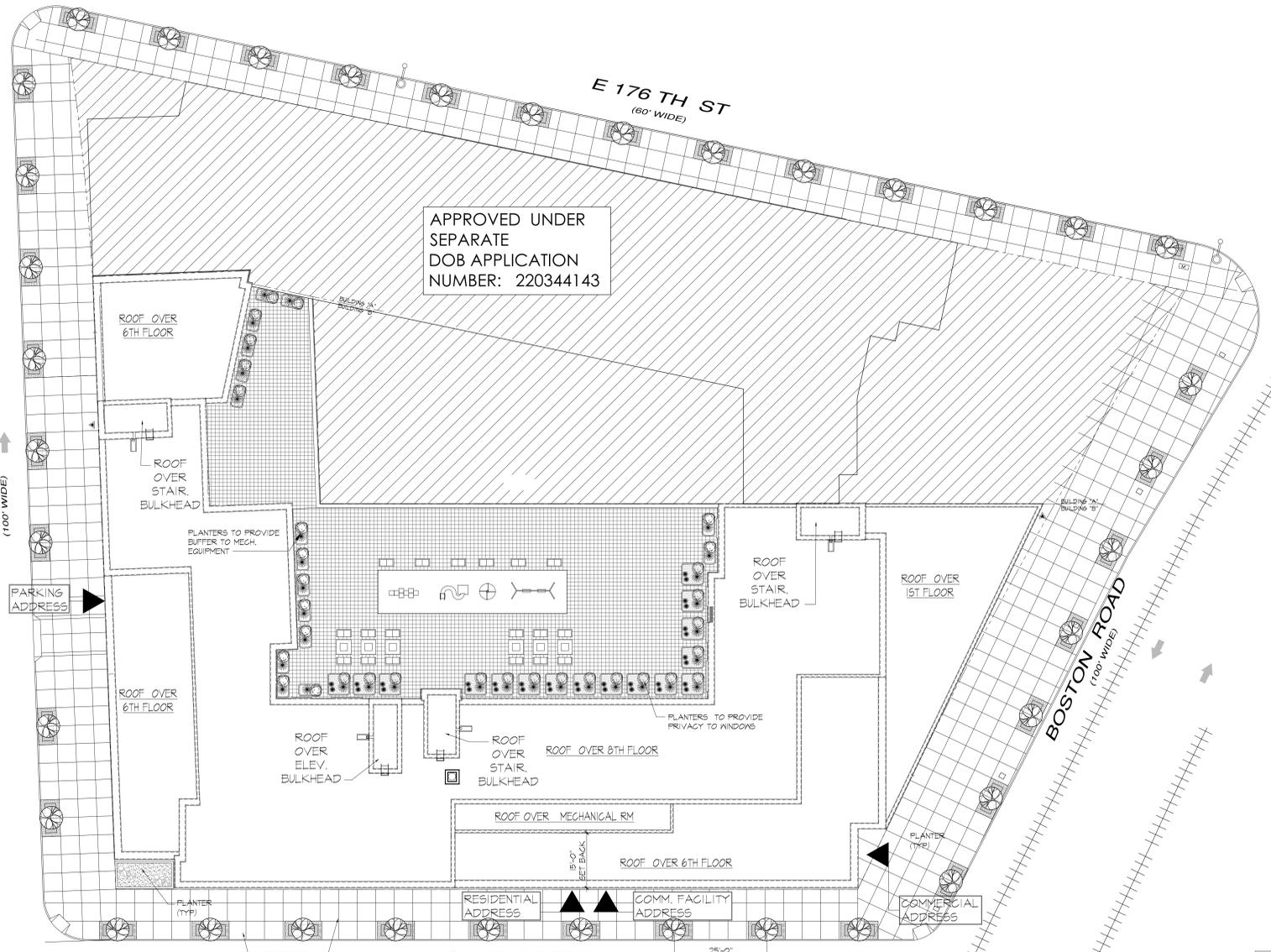
1. ALL FILL USED BELOW SLABS UNDER BUILDINGS AND IN PAVED AREAS SHALL BE QUALITY SANDY MATERIAL AND SHALL BE COMPACTED IN 2" LAYERS TO 95% DENSITY TO PREVENT SETTLEMENT AS PER ASTM D1557, METHOD C.
2. CONTRACTOR MUST ALSO FOLLOW ALL REQUIREMENTS FOR PREPARATION, CLEARING, PROOF ROLLING AND FILL REPLACEMENT RECOMMENDED BY A REPORT ON SOIL AND FOUNDATION INVESTIGATION.
3. ALL FILL SHALL BE COMPACTED WITH SOIL COMPACTION EQUIPMENT RATHER THAN BY HAND TAMPING (EXCEPT AROUND PIPES, ETC.)
4. THE THICKNESS OF FILL LAYERS PLACED SHALL BE COMPATIBLE WITH THE TYPE OF COMPACTION EQUIPMENT USED.
5. THE ATTAINMENT OF SPECIFIED DENSITIES SHALL BE VERIFIED BY FIELD DENSITY TESTS MADE BY AN INDEPENDENT TESTING LABORATORY ON EACH LAYER OF MATERIAL COMPACTED. ONE TEST PER 5,000 SQ. FT. OF SURFACE AREA SHALL BE MADE ON EACH LAYER WITHIN THE BUILDING.
6. USE ENERGY STAR APPLIANCES, LIGHT FIXTURES AND HEATING SYSTEMS.
7. SELECT NATIVE OR NON INVASIVE NEW TREES AND PLANTS THAT ARE APPROPRIATE TO THE SITE SOIL AND MICROCLIMATE.
8. INSTALL WATER CONSERVING FIXTURES THROUGHOUT.
9. USE DAYLIGHT SENSORS OR TIMERS ON OUTDOOR LIGHTING TO MAXIMIZE ENERGY EFFICIENCY.
10. ALL INTERIOR PAINTS, PRIMERS, ADHESIVES AND SEALANTS MUST CONTAIN LOW OR NO VOCs.
11. GREEN LABEL CERTIFIED FLOOR COVERING: DO NOT INSTALL CARPETS IN BELOW GRADE LIVING SPACES, ENTRYWAYS, LAUNDRY ROOMS, BATHROOMS, KITCHENS OR UTILITY ROOMS. IF USING CARPET, USE PRODUCTS THAT MEET THE CARPET AND RUG INSTITUTE'S GREEN LABEL CERTIFIED CARPET, PAD AND CARPET ADHESIVES.
12. EXHAUST FANS - BATHROOM: INSTALL ENERGY STAR-LABELED BATHROOM FANS THAT EXHAUST TO THE OUTDOORS AND OPERATE CONTINUOUSLY.
13. VENTILATION: INSTALL A VENTILATION SYSTEM FOR THE DWELLING UNIT THAT PROVIDES 15 CUBIC FEET PER MINUTE OF FRESH AIR PER OCCUPANT.
14. COLD WATER PIPE INSULATION: INSULATE EXPOSED COLD WATER PIPES.
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5. CONSTRUCT BERMS, TEMPORARY SHALES AND PIPES AS NECESSARY TO DIRECT RUNOFF TO TEMPORARY SEDIMENTATION ENTRAPMENT AREAS.
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STANDARD EROSION CONTROL NOTES

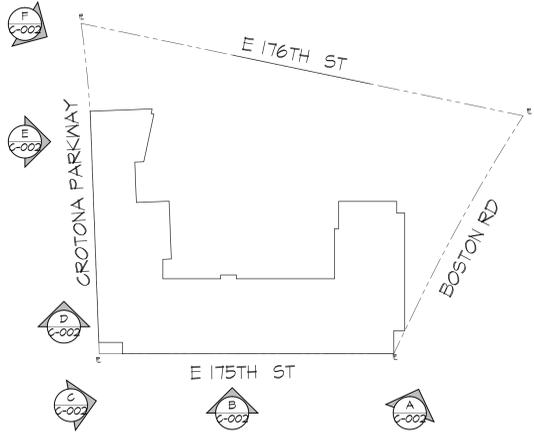
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SCHMATIC SITE PLAN
SCALE: 1/16" = 1'-0"

STREET PLANTING CALCULATION:
919.46 / 25.0' = 37 TREES REQUIRED

NOTE:
1. LANDSCAPE SELECT NATIVE OR NON INVASIVE TREES & PLANTS THAT ARE APPROPRIATE TO THE SITE SOIL AND MICROCLIMATE
2. USE DAY LIGHT SENSORS OR TIMERS ON OUTDOOR LIGHTING TO MAXIMIZE ENERGY EFFICIENCY.
3. CONTRACTOR SHALL COORDINATE ALL SIDEWALK FINISH ELEVATIONS WITH BUILDERS PAVEMENT PLAN



KEY PLAN
NOT TO SCALE

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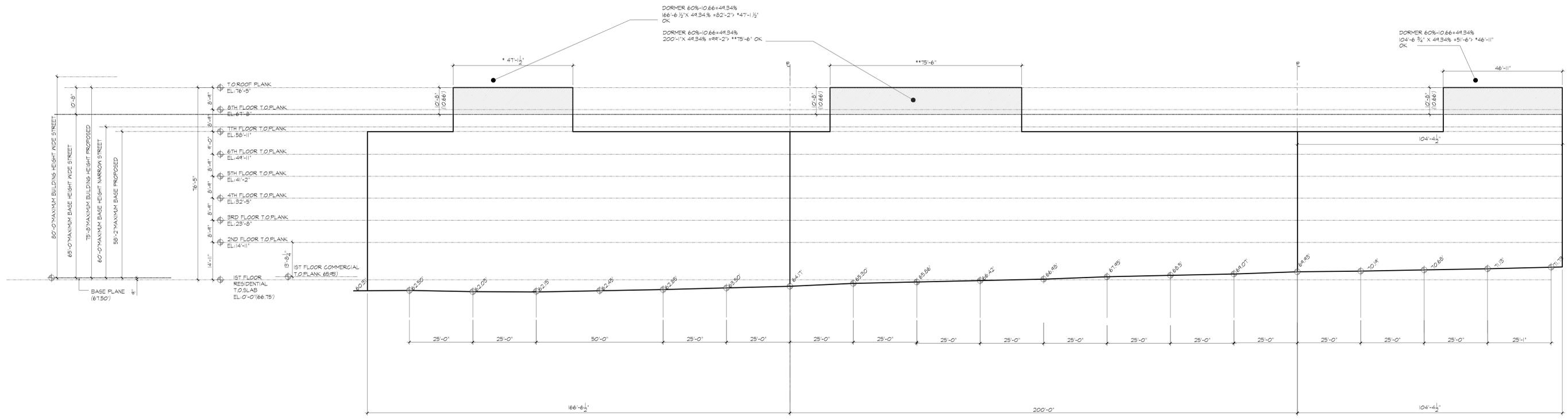
PROPOSED LOW INCOME DEVELOPMENT FOR:
CROTONA PLAZA BUILDING "B"
1825 BOSTON RD, BRONX, NY 10460

SCHMATIC SITE PLAN

DATE:	8-28-13
PROJECT NO.:	1222
DRAWN BY:	RK
CHECKED BY:	SZ
DRAWING NO.:	C-003.00

SCALE: AS NOTED | SHEET NO:
NYC DOB NUMBER:





HEIGHT DIAGRAM (WIDE STREET)
CROTONA PARKWAY

SCALE: 1/8" = 1'-0"

HEIGHT DIAGRAM
E 175 ST NARROW ST

SCALE: 1/8" = 1'-0"

HEIGHT DIAGRAM
BOSTON RD

SCALE: 1/8" = 1'-0"

QUALITY HOUSING PROGRAM NOTES					
PERMITTED/REQUIRED		PROPOSED		REMARKS	
1 TREE PER 25'-0" OF FRONTAGE	37 TREES	37 TREES	OK	RES. 28-12	Will be adjusted by Builders Pavement Plan
SIZE OF DWELLING UNITS	400 SQ. FT. MIN.	478 SQ. FT.	OK	RES. 28-21	
WINDOWS	DOUBLE GLAZED	1" LOWE INSULATED DOUBLE GLAZED PROVIDED	OK	RES. 28-22	
REFUSE STORAGE AND DISPOSAL	12 SQ. FT. MIN.	46.38 SQ. FT.	OK	RES. 28-23	
LAUNDRY FACILITIES	1 WASHER PER 20 D.U. 1 DRYER PER 40 D.U.	5 WASHERS 3 DRYER (DOUBLE LOAD)	OK	RES. 28-24	(...) at least one washing machine per 20 dwelling units or rooming units and at least one dryer per 40 dwelling units or rooming units (...)
DAYLIGHT IN CORRIDORS	20 SQ. FT.	23 SQ. FT.	OK	RES. 28-25	(...) provided that such window shall be directly visible from 50% of the corridor or from the vertical circulation core, and is located at least 20' from a wall or a side or rear lot line measured in a horizontal plane and perpendicular to the rough wind
RECREATION SPACE (OUTDOOR)	3571.29 3.3% MIN.	3669.51 SQ. FT.	OK	RES. 28-31	The amount of recreation space required is expressed as percentage of the total residential floor area or the development and may be aggregated in one type, indoor or outdoor.
STANDARDS FOR RECREATION SPACE (OUTDOOR)	15 FT. MIN. 3.571.3 3.3% MIN	44'-0" FT. 3669.51 SQ. FT.	OK OUTDOOR	RES. 28-32	(...) The minimum dimension of any recreation space shall be 15' Outdoor recreation space shall be open to the sky except that building projections, not to exceed 7' in depth, may cover up to 10% of the outdoor recreation space, provided that the lowest The area of the zoning lot between the street line and the street wall of the building shall be planted, except at the entrances to and exits from the building, or adjacent to commercial uses fronting on the street.
PLANTING AREAS	REQUIRED B/W BLDB. & ST. LINE	NA	N/A	RES. 28-33	
DENSITY PER CORRIDOR	D.U. IN R7 IN ORDER TO	D.U. ONLY QUALIFY	OK	RES. 28-41	If the number of dwelling units served by a vertical circulation core and corridor on each story does not exceed the number set forth

AVERAGE GRADE / BASE PLANE CALCULATION CROTONA BUILDING B					
EL.	EL.	AVG. EL.	DIST.		
62.50 + 62.03	= 124.53 / 2	= 62.27 X 22.00	= 1,369.83		
62.03 + 62.15	= 124.18 / 2	= 62.09 X 25.00	= 1,552.25		
62.15 + 62.45	= 124.60 / 3	= 62.30 X 25.00	= 1,557.50		
62.45 + 62.85	= 125.30 / 4	= 62.65 X 50.00	= 3,132.50		
62.85 + 63.50	= 126.35 / 5	= 63.18 X 25.00	= 1,579.38		
63.50 + 64.17	= 127.67 / 2	= 63.84 X 25.00	= 1,595.88		
64.17 + 65.30	= 129.47 / 2	= 64.74 X 25.00	= 1,618.38		
65.30 + 65.86	= 131.16 / 2	= 65.58 X 25.00	= 1,639.50		
65.86 + 66.42	= 132.28 / 2	= 66.14 X 25.00	= 1,653.50		
66.42 + 66.98	= 133.40 / 2	= 66.70 X 25.00	= 1,667.50		
66.98 + 67.95	= 134.93 / 2	= 67.47 X 25.00	= 1,686.63		
67.95 + 68.50	= 136.45 / 2	= 68.23 X 25.00	= 1,705.63		
68.50 + 69.07	= 137.57 / 2	= 68.79 X 25.00	= 1,719.63		
69.07 + 69.93	= 139.00 / 2	= 69.50 X 25.00	= 1,737.50		
69.93 + 70.19	= 137.38 / 2	= 68.69 X 25.00	= 1,717.25		
70.19 + 70.68	= 138.25 / 2	= 69.13 X 25.00	= 1,728.13		
70.68 + 71.13	= 138.96 / 2	= 69.48 X 25.00	= 1,745.51		
71.13 + 71.73	= 139.90 / 2	= 69.95 X 25.00	= 1,748.75		
TOTAL:				472.08	31,867.22
BASE PLANE ELEV. = 31867.22 / 472.08 = 67.5					

FLOOR	RESIDENTIAL & COMMERCIAL GROSS AREA	COMMUNITY FACILITY	PARKING AREA	AREA PUBLIC CORR.	% OF CORR.	CORRIDOR DEDUCTION	MECHANICAL & PARKING DEDUCTIONS	
1ST FLOOR	4,779.57				0.00			
2nd FLOOR	17,752.04			1,600.81	50.00	800.41	997.83	3,781.74
3rd FLOOR	17,752.04			1,600.81	50.00	800.41		16,951.64
4th FLOOR	17,752.04			1,600.81	50.00	800.41		16,951.64
5th FLOOR	17,752.04			1,600.81	50.00	800.41		16,951.64
6th FLOOR	17,752.04			1,600.81	50.00	800.41		16,951.64
7th FLOOR	11,368.44			1,528.94	100.00	1,528.94		9,840.50
8th FLOOR	11,368.44			1,528.94	100.00	1,528.94		9,840.50
TOTALS	123,434.17	123,942.32	138,236.20	11,061.93		7,059.91		108,220.92
TOTAL NET								

ZONING CALCULATION CROTONA TERRACE BUILDING "A" & "B"								
Mixed Use	PERMITTED/REQUIRED	PROPOSED	REMARKS	RES.				
Lot area	WIDE STREET NARROW STREET TOTAL LOT AREA	41136.9 8065.3 49202.3	Sq. Ft. Sq. Ft. Sq. Ft.	OK	Map 3d Map 3d 23-32			
Lot Coverage	Corner Lot : 80% of 39939.62 Interior Lot 65% of 9,256.56	31957.17 Sq. Ft. Max 6016.8 Sq. Ft. Max	BUILDING A 7,994.13 4,031.83	BUILDING B 16,856.02 806.08	TOTAL 24,750.15 4,927.91	OK OK	23-145 23-145	
F.A.R. Floor Area Ratio			BUILDING A BUILDING B TOTAL					
Residential	Lot Area on R7 Wide Street Lot Area on R7 Narrow Street Adjusted	4.0 Maximum 3.44 Maximum 3.91 Maximum	1.55	2.20	3.75	OK	23-145	
Commercial		2.00	0.31	0.15	0.46	OK	33-121	
Community Facility		4.80 Maximum	-	0.13	0.13	OK	33-121	
Mix. Dev. Total		4.80 Maximum	1.87	2.36	4.22	OK	33-121	
Gross Floor Area			BUILDING A(Sq Ft) BUILDING B(Sq Ft) TOTAL (Sq Ft.)					
Residential	Area on R7 WIDE Area on R7 NARROW TOTAL	164,547.72 27,744.70 192,292.42	Maximum Sq. Ft. (Max.)	76,477.38	108,220.92	184,698.30	OK	23-145
Commercial	Max	98404.50 Sq. Ft.	15,292.09	7,155.53	22,568.61	OK	33-121	
Community Facility		236,170.80 Sq. Ft.		508.15	508.15	OK	33-121	
Mix. Dev. Total		236,170.80 Sq. Ft.	91,769.47	115,884.60	207,775.06	OK	33-121	
No. of Apartments		283 Units (Max.)	BUILDING A(Sq Ft) BUILDING B(Sq Ft) TOTAL (Sq Ft.)	80.00 108.00 188		OK	23-22	
Heights (feet)	Within 100' wide street not within 100' wide street	PERMITTED/REQUIRED Within 100' wide street not within 100' wide street	PROPOSED Within 100' wide street not within 100' wide street					
Min. Base Height	40'-0"	40'-0"	40'-0"	40'-0"	40'-0"	40'-0"	OK	23-633
Max. Base Height	65'-0"	60'-0"	57'-5 1/2"	57'-5 1/2"	7'-5 1/2"	57'-5 1/2"	OK	23-633
Max Building Height	80'-0"	75'-0"	75'-0"	74'-11 1/4"	75'-0"	74'-11 1/4"	OK	23-633
Yard Regulations	Front Side Rear	Not req'd Not req'd Not req'd	N/A N/A N/A				OK	23-45 23-462 23-47
Initial Set Back	Wide Street Narrow Street	10'-0" 15'-0"	10'-0" 15'-0"	10'-0" 15'-0"			OK	23-633 23-633
Parking	PERMITTED/REQUIRED	PROPOSED	REMARKS	RES.				
RESIDENTIAL	25% "A" + "B" = 47 U	47		25-25				

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11-25-14 ISSUED TO OER
11-25-14 ISSUED TO MTA
07-31-14 ISSUED TO DOB FOR REVIEW AND COMMENT
5-15-14 ISSUED TO HPD FOR REVIEW AND COMMENT

DATE REVISIONS
AUFANGANG ARCHITECTS PLLC
49 North Armont Road, Suffern, NY 10901 tel: 845.368.0004 fax: 800.772.8304 www.asarchitecture.com

PROPOSED LOW INCOME DEVELOPMENT FOR:
CROTONA PLAZA BUILDING "B"
1825 BOSTON RD, BRONX, NY 10460

ZONING CALCULATIONS
DATE: 8-21-13
PROJECT NO: 1222
DRAWN BY: SZ
CHECKED BY: RK
DRAWING NO: **Z-001-00**
SCALE: AS NOTED | SHEET NO: 4 of 26
NYC DOB NUMBER:



Generated by COMcheck-Web Software
Envelope Compliance Certificate

2010 New York Energy Conservation Construction Code

Section 1: Project Information

Project Type: **New Construction**
Project Title: 1825 Boston Rd Building B
Construction Site: 1825 Boston Rd, Bronx, New York
Owner/Agent: Designer/Contractor:

Section 2: General Information

Building Location (for weather data): **Bronx, New York**
Climate Zone: **4a**
Building Space Conditioning Type(s): **Nonresidential, Residential**
Vertical Glazing / Wall Area Pct.: **17%**

Activity Type(s): **Multi-family**
Floor Area: **106220**

Section 3: Requirements Checklist

Envelope **PASSES** Design 1%, better than code

Climate-Specific Requirements:

Component Name/Description	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Proposed U-Factor	Budget U-Factor(s)
Roof: Insulation Entirely Above Deck, Residential	17752	---	34.1	0.029	0.048
Wall south: Concrete Block, Bin., Partially Grouded, Cells Empty, Normal Density, Furring: Metal, Residential	13077	11.4	15.0	0.045	0.090
Window: Metal Frame, Thermal Break, Perf. Type: Energy code default, Double Pane, Clear, SHGC 0.70, Residential	3118	---	---	0.850	0.550
Wall south: Concrete Block, Bin., Partially Grouded, Cells Empty, Normal Density, Furring: Metal, Residential	11216	11.4	15.0	0.045	0.090
Window: Metal Frame, Thermal Break, Perf. Type: Energy code default, Double Pane, Clear, SHGC 0.70, Residential	3184	---	---	0.850	0.550
Wall west: Concrete Block, Bin., Partially Grouded, Cells Empty, Normal Density, Furring: Metal, Residential	12157	11.4	15.0	0.045	0.090
Window: Metal Frame, Thermal Break, Perf. Type: Energy code default, Double Pane, Clear, SHGC 0.70, Residential	2678	---	---	0.850	0.550
Wall north: Concrete Block, Bin., Partially Grouded, Cells Empty, Normal Density, Furring: Metal, Residential	14962	11.4	15.0	0.045	0.090
commercial Floor: Unheated Slab-On-Grade, Horizontal with vertical >= 4 ft., Residential	734	---	0.0	---	---
Floor: Concrete Floor (over unconditioned space), Residential	456	---	0.0	0.322	0.074

(a) Budget U-factors are used for software baseline calculations ONLY, and are not code requirements.

Air Leakage, Component Certification, and Vapor Retarder Requirements:

- 1. All joints and penetrations are caulked, gasketed or covered with a moisture vapor-permeable wrapping material installed in accordance with the manufacturer's installation instructions.
- 2. Windows, doors, and skylights certified as meeting leakage requirements.

Project Title: 1825 Boston Rd Building B Report date: 07/23/14
Data filename: Page 1 of 8

- 3. Component R-values & U-factors labeled as certified.
- 4. No roof insulation is installed on a suspended ceiling with removable ceiling panels.
- 5. Other components have supporting documentation for proposed U-factors.
- 6. Insulation installed according to manufacturer's instructions, in substantial contact with the surface being insulated, and in a manner that achieves the rated R-value without compressing the insulation.
- 7. Stair, elevator shaft vents, and other outdoor air intake and exhaust openings in the building envelope are equipped with motorized dampers.
- 8. Cargo doors and loading dock doors are weather sealed.
- 9. Recessed lighting fixtures installed in the building envelope are Type IC rated as meeting ASTM E283, are sealed with gasket or caulk.
- 10. Building entrance doors have a vestibule equipped with self-closing devices.
 - Exceptions:
 - Building entrances with revolving doors.
 - Doors not intended to be used as a building entrance.
 - Doors that open directly from a space less than 3000 sq. ft. in area.
 - Doors used primarily to facilitate vehicular movement or materials handling and adjacent personnel doors.
 - Doors opening directly from a sleeping/dwelling unit.

Section 4: Compliance Statement

Compliance Statement: The proposed envelope design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed envelope system has been designed to meet the 2010 New York Energy Conservation Construction Code requirements in COMcheck-Web and to comply with the mandatory requirements in the Requirements Checklist.

When a Registered Design Professional has stamped and signed this page, they are attesting that to the best of his/her knowledge, belief, and professional judgment, such plans or specifications are in compliance with this Code.

ARIEL AUFANGS 7-31-14

Name - Title Signature Date

Project Title: 1825 Boston Rd Building B Report date: 07/23/14
Data filename: Page 2 of 8

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PROPOSED LOW INCOME DEVELOPMENT FOR:
CROTONA PLAZA BUILDING "B"
1825 BOSTON RD, BRONX, NY 10460

ENERGY ANALYSIS

DATE:	8-28-13
PROJECT NO.:	1222
DRAWN BY:	SZ
CHECKED BY:	RK
DRAWING NO.:	EN-001.00

SCALE: AS NOTED SHEET NO: 6 of 26
NYC DOB NUMBER:



ABBREVIATIONS

Table of abbreviations for construction terms, including AND, ANCHOR BOLT, AIR CONDITIONING, etc.

GENERAL NOTES

- 1. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE 2008 NEW YORK CITY BUILDING CODE...
2. BEFORE COMMENCING WORK, THE CONTRACTOR SHALL FILE ALL REQUIRED CERTIFICATES OF INSURANCE WITH THE DEPARTMENT OF BUILDINGS...

- 11. ALL DEBRIS ON THE PROPERTY DUE TO CONSTRUCTION SHALL BE REMOVED.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR ARRANGING AND PAYING FOR ALL CONTROLLED INSPECTIONS REQUIRED BY LAW AND FOR ARRANGING ALL CONSTRUCTION PLUMBING ELECTRICAL OR OTHER INSPECTIONS RELATED TO THE PROPOSED WORK...

- 40. FIRE-RATED PARTITION WALLS AND FIRE-RATED OCCUPANCY SEPARATION WALLS SHALL EXTEND FROM CONCRETE FLOOR SLABS UP TO UNDERSIDE OF STRUCTURE ABOVE. ALL OPENINGS SHALL BE PROTECTED IN ACCORDANCE WITH CHAPTER 7 OF THE 2008 NYC BUILDING CODE.
41. ALL PENETRATIONS THRU FIRE-RATED WALLS, FLOORS AND CEILING SHALL BE INSTALLED WITH FIRE DAMPERS, FIRE SEAL, ETC. SO AS TO MAINTAIN THE FIRE RESISTIVE RATING AND STRUCTURAL INTEGRITY OF WALL OR CEILING ASSEMBLY...

- 10. BUILDING SHALL COMPLY WITH SECTION 27-2050 - INSPECTION OF SPRINKLERS.
11. BUILDING SHALL COMPLY WITH ARTICLE 18 - JANITORIAL SERVICES.
12. BUILDING SHALL COMPLY WITH H.P.D. DESIGN GUIDELINES DATED MAY 1988, REVISED AUGUST 1, 2000 FOR ROOM 5125.

NEW YORK CITY BUILDING CODE REQUIREMENTS:

Table with columns: BUILDING ELEMENT, TYPE I, TYPE A, TYPE B, TYPE IV, TYPE V. Rows include Structural Frame, Nonbearing walls, Nonbearing walls and partitions, etc.

Table with columns: FIRE SEPARATION DISTANCE, TYPE OF CONSTRUCTION, OCCUPANCY GROUP. Rows include < 5', 5 to 10 ft, 10 to 15 ft, 15 to 20 ft, 20 ft.

NEW YORK STATE MULTIPLE DWELLING LAW

- 1. IN MULTIPLE DWELLING BUILDINGS, WALLS, FLOORS, ROOF, STAIRS AND PUBLIC HALLS SHALL BE FIRE PROTECTED (CHAPTER 7).
2. ALL PARTITIONS BETWEEN APARTMENTS SHALL BE FIRE STOPPED AS PER SECTION BC 708.

ENERGY CONSERVATION NOTES:

- 1. PROVIDE MIRROR IN SELF-SERVICE PASSENGER ELEVATORS AS PER CHAPTER 30, SECTION BC 300.6.
2. THE FLOOR OF EVERY BATHROOM OR PUBLIC TOILET SHALL HAVE A SMOOTH, HARD, NONABSORBENT SURFACE THAT EXTENDS UPWARD INTO THE WALLS AT LEAST 6" OR MORE ABOVE THE FLOOR, EXCEPT AT DOORS, AS PER SECTION BC 1210.

FINISH NOTES

- 1. INTERIOR FINISHES SHALL BE CLASSIFIED IN ACCORDANCE WITH SURFACE FLAME SPREAD RATINGS AS NOTED IN CHAPTER 8.
2. INTERIOR WALL AND CEILING FINISHES SHALL BE CLASSIFIED IN ACCORDANCE WITH ASTM E 84 AS PER SECTION BC 803.

SUSPENDED CEILING NOTES

- 1. NEW NON RATED, SUSPENDED ACoustical TILE CEILING TO BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF APPENDIX 'R'.
2. INSTALLATION OF CEILING SUSPENSION SYSTEMS TO SUPPORT ACoustical PANELS NEIGHING LESS THAN 4 POUNDS PER SQ. FT. NOT CONFORMING TO THE FIRE RESISTANCE RATINGS OF A FLOOR OR ROOF ASSEMBLY (APPENDIX R01).

SPECIAL / PROGRESS INSPECTIONS

TEST INSPECTIONS SHALL BE IN ACCORDANCE WITH THE APPLICABLE BUILDING CODE SECTIONS. SIGNED COPIES OF ALL TESTS AND INSPECTION REPORTS SHALL BE FILED WITH THE DEPARTMENT OF BUILDINGS THROUGH THE APPLICANT.

2008 CODE SPECIAL INSPECTIONS

Table with columns: SPECIAL INSPECTIONS, CODE / SECTION (REPORTS REQUIRED), REQUIRED YES / NO. Rows include FLOOD ZONE COMPLIANCE, FIRE ALARM TEST, PHOTOLUMINESCENCE EXIT PATH MARKINGS, etc.

2008 CODE PROGRESS INSPECTIONS

Table with columns: ASSOCIATED APPLICATIONS, DOB #. Rows include PRELIMINARY, FOOTING AND FOUNDATION, LOWEST FLOOR ELEVATION, etc.

GRAPHIC SYMBOLS

Diagrammatic symbols for column reference grid line for new steel, wall section key, building section key, elevation key, detail key, drawing title, interior elevations, room name, apartment designation, partition type, revision key & cloud, door iden tag, window iden tag, lower iden tag, smoke / carbon monoxide detector iden tag, third floor, elevation designation, hand/cap accessible tag, drawing number, drawing numbering system.

A-1.3

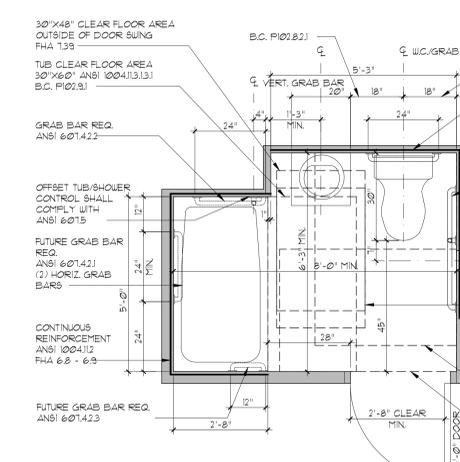
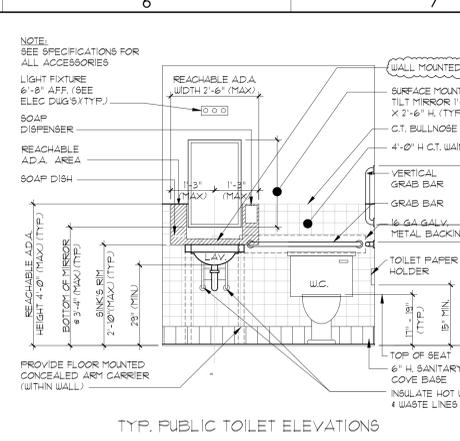
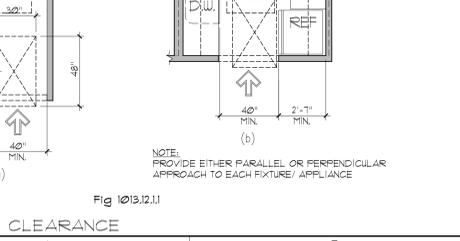
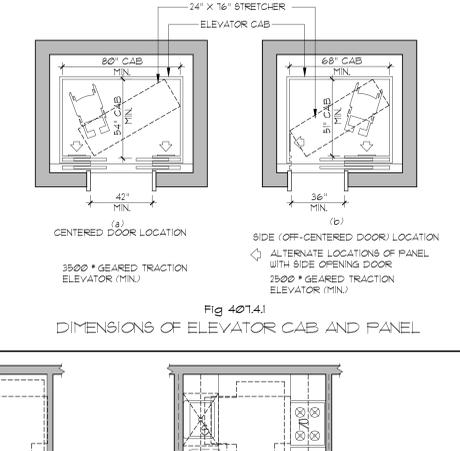
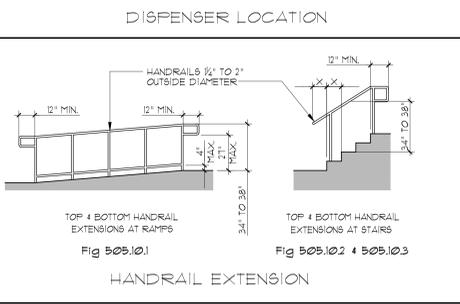
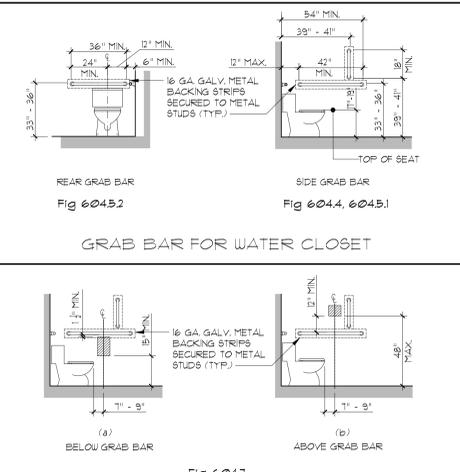
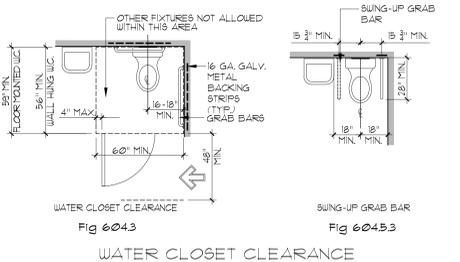
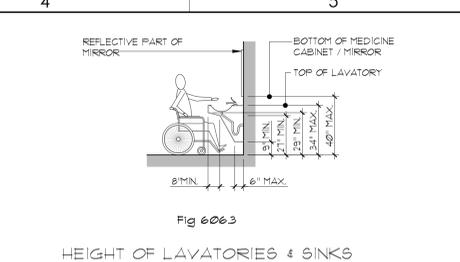
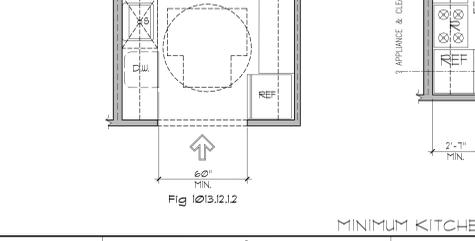
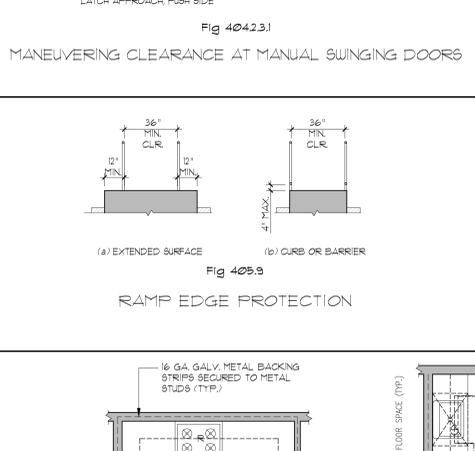
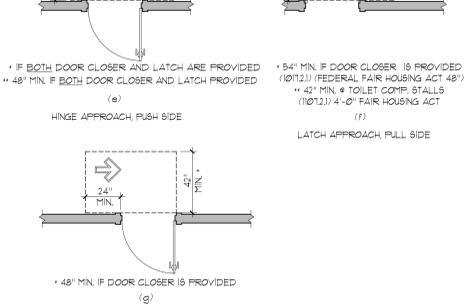
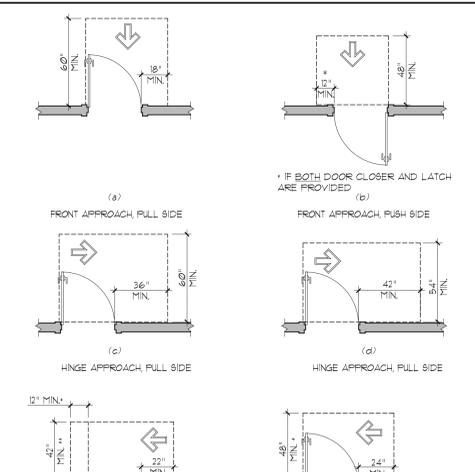
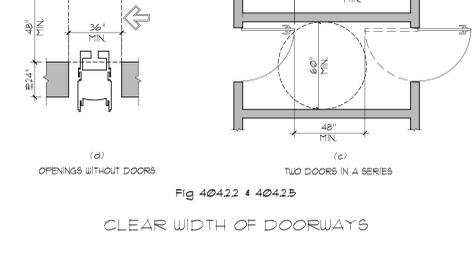
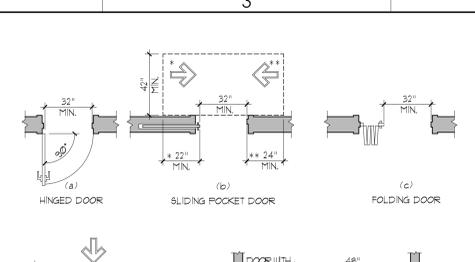
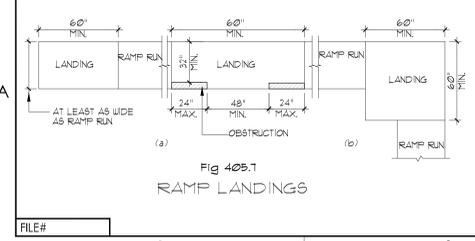
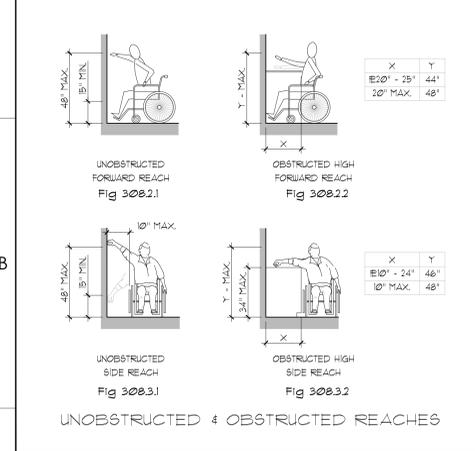
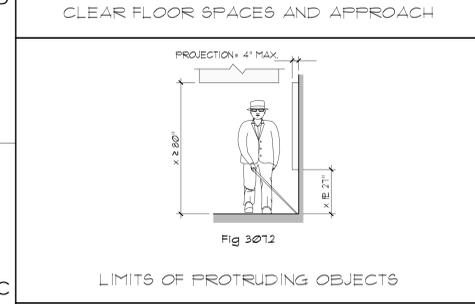
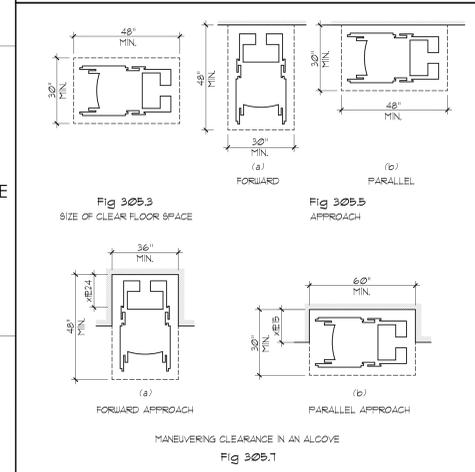
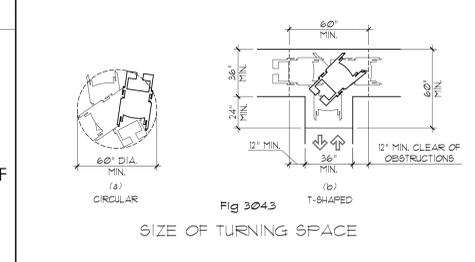
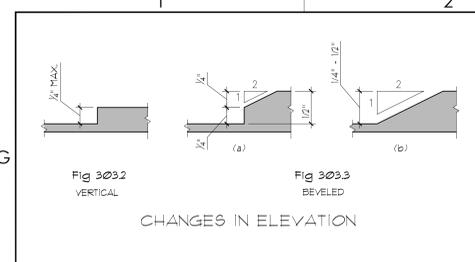
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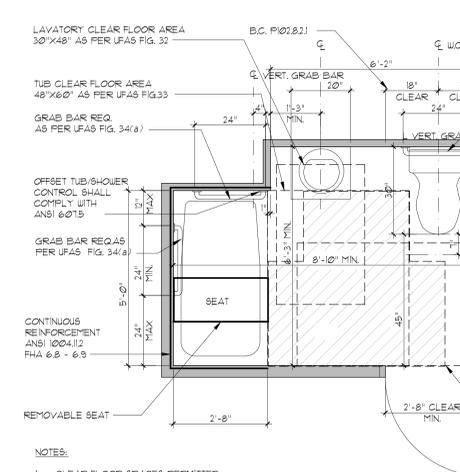
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PROPOSED LOW INCOME DEVELOPMENT FOR: CROTONA PLAZA BUILDING "B" 1825 BOSTON RD, BRONX NY 10460

GENERAL NOTES: DATE: 8-28-13, PROJECT NO: 1222, DRAWN BY: SZ, CHECKED BY: RK, DRAWING NO: G-001.00, SCALE: AS NOTED, SHEET NO: 7 of 23, NYC DOB NUMBER:

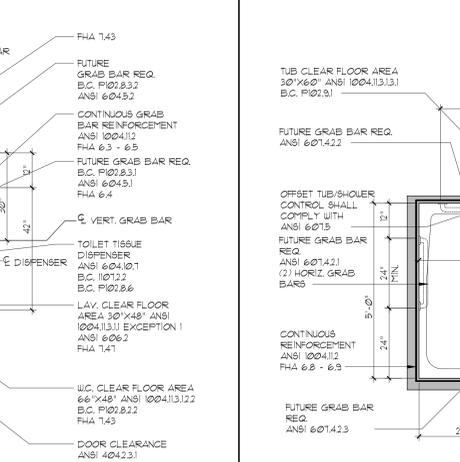
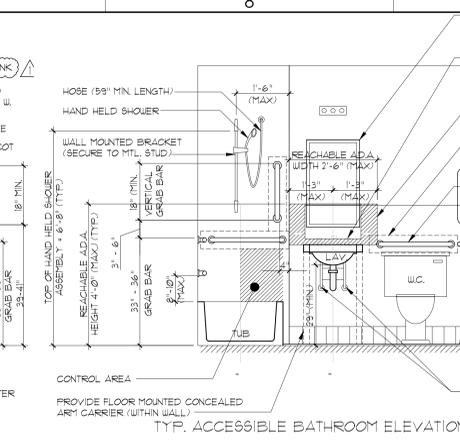


COMPLIANT WITH:
TYPE B
DWELLING UNIT - B.C. 1107.6.2.1
APPENDIX F - B.C. F10.1
ANSI A117.1-2003 - 1004.11.3.1

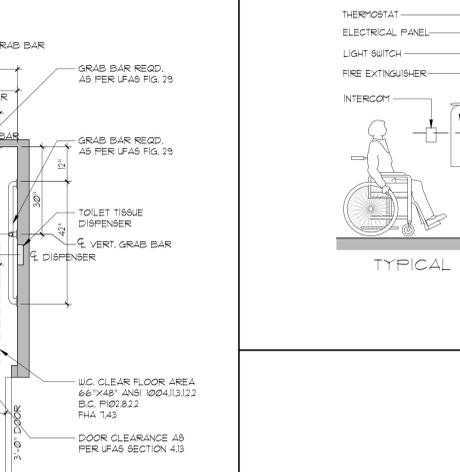


ICC/ANSI A117.1-2003
PROPOSED WORK TO COMPLY WITH APPLICABLE REQUIREMENTS OF ICC/ANSI A117.1-2003
* PROTRUDING OBJECTS SHALL NOT REDUCE THE CLEAR WIDTH REQUIRED FOR ACCESSIBLE ROUTES (301.5)
* RAMP RUN SHALL HAVE A SLOPE NOT STEEPER THAN 1:2 (405.2) & A CROSS SLOPE SHALL NOT BE STEEPER THAN 1:48 (405.3)
* ALL ELEVATOR REQUIREMENTS (CALL BUTTONS, VISIBLE & AUDIBLE SIGNALS, ETC.) SHALL COMPLY WITH SECTION 401 THRU 410.
* CAR PARKING SPACES SHALL BE 96" MIN. & VAN PARKING SPACES SHALL BE 192" MIN. IN WIDTH (502.2)
* ACCESSIBLE SERVING CAR OR VAN SHALL BE 60" MIN. IN WIDTH (502.4.2)
* VERTICAL CLEARANCE FOR VAN PARKING SPACES, ACCESSIBLE AISLES SERVING THEM AND VEHICULAR ROUTES SHALL BE 98" MIN. (505.6)
* TOP GRIPPING SURFACE OF HANDRAILS SHALL BE AT 34" MIN. & 38" MAX. AFF (505.4) - SHALL HAVE A CLEAR DISTANCE OF 1 1/2" MIN. FROM THE ADJACENT WALL (505.5) - SHALL HAVE AN OUTSIDE DIAMETER OF 1 1/2" MIN. & 2" MAX. (505.7.1)
* PROVIDE A HAND HELD SHOWER WITH A HOSE 59" MIN. LENGTH (601.6)
* FOR WASHING MACHINES AND CLOTHES DRYERS PROVIDE A 30" X 42" CLEAR FLOOR SPACE FOR PARALLEL APPROACH WHICH SHALL BE CENTERED ON THE APPLIANCE (612)
* TOP LOADING MACHINES SHALL HAVE THE DOOR COMPARTMENT 36" AFF & FRONT LOADING MACHINES SHALL HAVE THE BOTTOM OF THE OPENING COMPARTMENT 31" MIN. & 34" MAX. AFF (611.4)
* TOP OF DINING OR WORK SURFACES SHALL BE 28" MIN. & 34" MAX. IN HEIGHT AFF. (502.3)
* ACCESSIBLE STORAGE ELEMENTS SHALL COMPLY WITH AT LEAST ONE OF THE REACH RANGES SPECIFIED IN SECTION 308 (505.3)
* THE ACCESSIBLE PRIMARY ENTRANCE SHALL BE ON AN ACCESSIBLE ROUTE FROM PUBLIC AND COMMON AREAS (1004.2) - DOORWAYS SHALL HAVE A CLEAR OPENING OF 32" MIN. (1004.5.2)
* THE LATERAL DISTANCE FROM THE CENTERLINE OR THE WATER CLOSET TO A BATHTUB OR LAVATORY SHALL BE 18" MIN. ON THE OPPOSITE SIDE OF APPROACH & 15" MIN. ON THE OTHER SIDE. (1004.13.12)

PROPOSED WORK TO COMPLY WITH APPLICABLE REQUIREMENTS OF ICC/ANSI A117.1-2003
* PROTRUDING OBJECTS SHALL NOT REDUCE THE CLEAR WIDTH REQUIRED FOR ACCESSIBLE ROUTES (301.5)
* RAMP RUN SHALL HAVE A SLOPE NOT STEEPER THAN 1:2 (405.2) & A CROSS SLOPE SHALL NOT BE STEEPER THAN 1:48 (405.3)
* ALL ELEVATOR REQUIREMENTS (CALL BUTTONS, VISIBLE & AUDIBLE SIGNALS, ETC.) SHALL COMPLY WITH SECTION 401 THRU 410.
* CAR PARKING SPACES SHALL BE 96" MIN. & VAN PARKING SPACES SHALL BE 192" MIN. IN WIDTH (502.2)
* ACCESSIBLE SERVING CAR OR VAN SHALL BE 60" MIN. IN WIDTH (502.4.2)
* VERTICAL CLEARANCE FOR VAN PARKING SPACES, ACCESSIBLE AISLES SERVING THEM AND VEHICULAR ROUTES SHALL BE 98" MIN. (505.6)
* TOP GRIPPING SURFACE OF HANDRAILS SHALL BE AT 34" MIN. & 38" MAX. AFF (505.4) - SHALL HAVE A CLEAR DISTANCE OF 1 1/2" MIN. FROM THE ADJACENT WALL (505.5) - SHALL HAVE AN OUTSIDE DIAMETER OF 1 1/2" MIN. & 2" MAX. (505.7.1)
* PROVIDE A HAND HELD SHOWER WITH A HOSE 59" MIN. LENGTH (601.6)
* FOR WASHING MACHINES AND CLOTHES DRYERS PROVIDE A 30" X 42" CLEAR FLOOR SPACE FOR PARALLEL APPROACH WHICH SHALL BE CENTERED ON THE APPLIANCE (612)
* TOP LOADING MACHINES SHALL HAVE THE DOOR COMPARTMENT 36" AFF & FRONT LOADING MACHINES SHALL HAVE THE BOTTOM OF THE OPENING COMPARTMENT 31" MIN. & 34" MAX. AFF (611.4)
* TOP OF DINING OR WORK SURFACES SHALL BE 28" MIN. & 34" MAX. IN HEIGHT AFF. (502.3)
* ACCESSIBLE STORAGE ELEMENTS SHALL COMPLY WITH AT LEAST ONE OF THE REACH RANGES SPECIFIED IN SECTION 308 (505.3)
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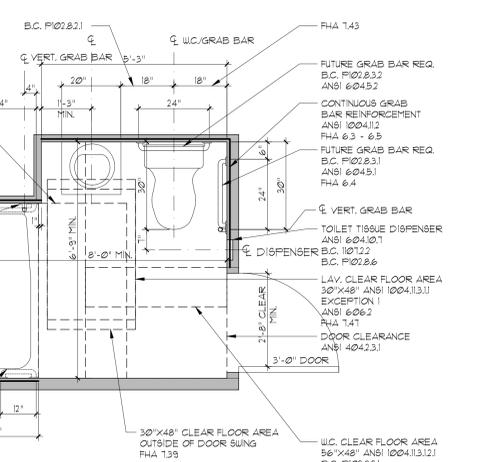
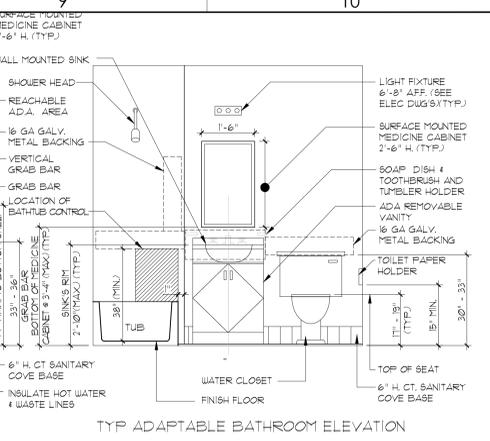


COMPLIANT WITH:
TYPE B
DWELLING UNIT - B.C. 1107.6.2.1
APPENDIX F - B.C. F10.1
ANSI A117.1-2003 - 1004.11.3.1

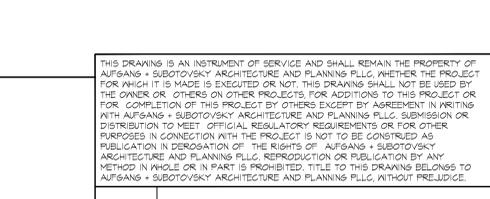
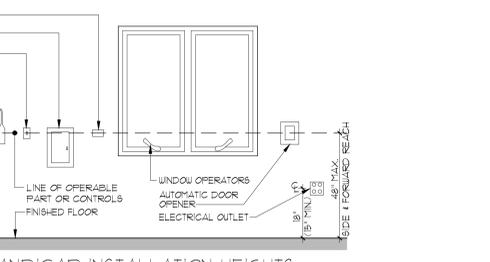


ICC/ANSI A117.1-2003
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COMPLIANT WITH:
TYPE B
DWELLING UNIT - B.C. 1107.6.2.1
APPENDIX F - B.C. F10.1
ANSI A117.1-2003 - 1004.11.3.1



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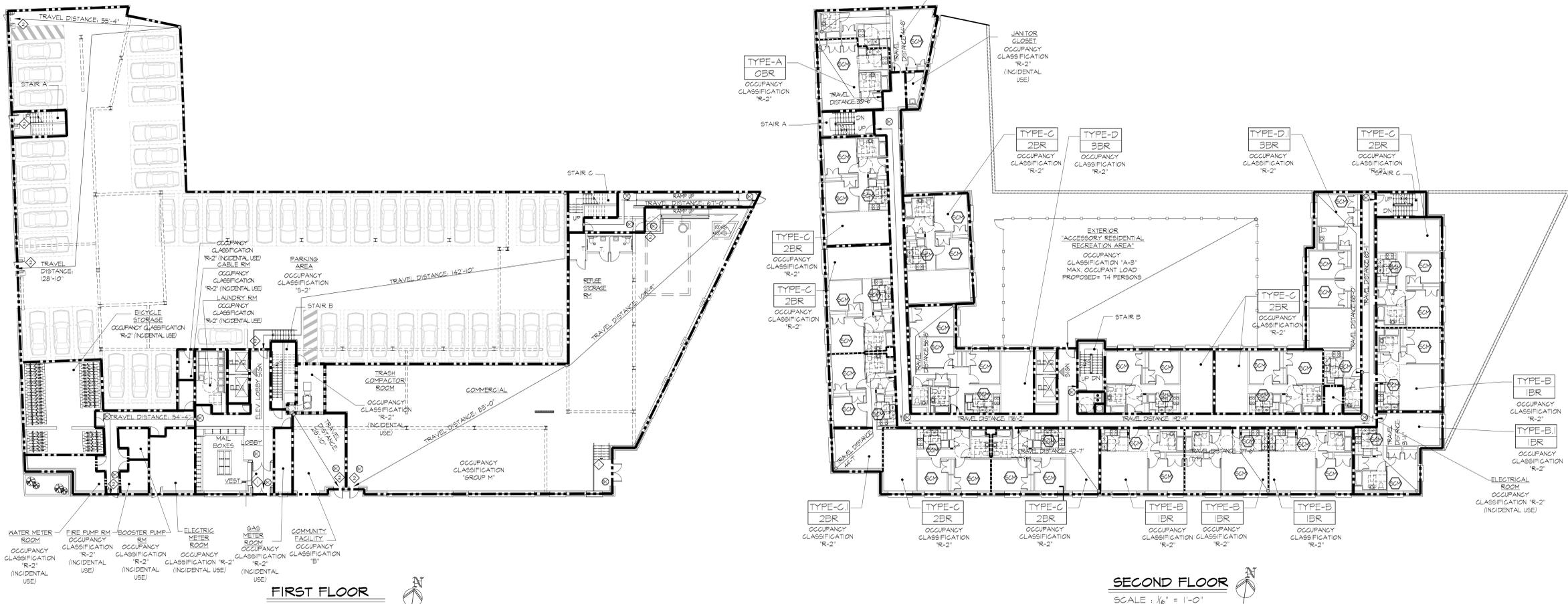
11-25-14	ISSUED TO OER
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DATE	REVISIONS

AUFANG ARCHITECTS PLLC
49 North Armistead Road, Suffern, NY 10901 | Tel: 845.368.0004 | Fax: 800.772.8304 | www.aufangarchitects.com

PROPOSED LOW INCOME DEVELOPMENT FOR:
CROTONA PLAZA BUILDING "B"
1825 BOSTON RD, BRONX, NY 10460

ACCESSIBILITY DIAGRAMS

DATE:	8-28-13
PROJECT NO.:	1222
DRAWN BY:	SZ
CHECKED BY:	RK
DRAWING NO.:	G-002.00
SCALE:	AS NOTED SHEET NO.:
NYC DOB NUMBER:	8 of 26



FIRST FLOOR
SCALE: 1/16" = 1'-0"

SECOND FLOOR
SCALE: 1/16" = 1'-0"

FIRE PROTECTION
BUILDING IS FULLY SPRINKLERED AND EQUIPPED WITH AN ALTERNATIVE FIRE EXTINGUISHING SYSTEM A STAND PIPE SYSTEM SMOKE VENTS A FIRE ALARM AND DETECTION SYSTEM A FIRE COMMAND CENTER IN COMPLIANCE WITH THE NYC BUILDING CODE AND THE LOCAL FIRE DEPARTMENT REQUIREMENTS.

EGRESS NOTES CHAPTER 10

- MEANS OF EGRESS SHALL HAVE A CEILING HEIGHT NOT LESS THAN 7'-6" (BC 1008)
- OCCUPANT LOAD AS DETERMINED ON TABLE 1004.1.2
- EXIT AND ACCESS REQUIREMENTS ARE TO BE CALCULATED AS PER TABLE 1008.1 AS PER SECTION BC 1005
- EXITS AND DISCHARGES AND PUBLIC CORRIDORS SHALL BE ILLUMINATED AT ALL TIMES AS PER SECTION BC 1008
- PUBLIC CORRIDORS AND EXITS SHALL BE PROVIDED WITH ARTIFICIAL LIGHT FIXTURES SURFING AT LEAST TWO FOOT CANDLELUX MEASURED AT THE FLOOR LEVEL TO BE MAINTAINED CONTINUOUSLY THROUGHOUT. EXITS AND THEIR ACCESS FACILITIES FOR THEIR FULL LENGTH (BC 1008.2)
- EXIT LIGHTING EXITS AND THE PORTION OF THE EXTERIOR EXIT DISCHARGE IMMEDIATELY ADJACENT TO EXITS SHALL BE CONNECTED TO AN EMERGENCY POWER SYSTEM FOR A DURATION NOT LESS THAN 90 MINUTES. SHALL CONSIST OF STORAGE BATTERIES, UNIT EQUIPMENT OR AN ON-SITE GENERATOR. (BC 1008.3)
- ALL EXITS SHALL BE KEPT READILY ACCESSIBLE AND UNOBSTRUCTED AT ALL TIMES AS PER SECTION BC 1001
- DOORS ARE TO COMPLY WITH ALL APPLICABLE REQUIREMENTS OF SECTION BC 1008 INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
A. CLEAR OPENING OF 32" MIN. IS REQUIRED AND SHALL BE MEASURED BETWEEN THE FACE OF THE DOOR AND THE STOP WITH THE DOOR OPEN 90 DEGREES. (SECTION BC 1008.1.1)
B. DOOR HEIGHT NOT TO BE LESS THAN 6'-8" (BC 1008.1.2)
C. ALL EXITS SHALL BE KEPT OPEN IN THE DIRECTION OF EGRESS (1008.1.2.2) FLOOR LEVELS ON BOTH SIDES OF ALL EXITS AND CORRIDOR DOORS ARE TO BE LEVEL AND AT THE SAME ELEVATION FOR A DISTANCE AT LEAST EQUAL TO THE WIDTH OF THE DOOR (1008.1.4)
D. EXITS SHALL BE KEPT OPEN AT ALL TIMES FROM THE SIDE FROM WHICH EGRESS IS TO BE MADE. DOORS OPENING INTO EXTERIOR EXITS SHALL NOT BE LOCKED FROM THE INSIDE EXCEPT THAT DOORS MAY BE LOCKED TO PREVENT ACCESS TO THE STAIR FROM THE OUTSIDE AT STREET LEVEL AS PER SECTION 1008.1.5
- FRAMING AND FIRE EXIT HARDWARE SHALL BE INSTALLED ON ALL EGRESS DOORS FROM OCCUPANCY GROUP "A" OR "B" HAVING AN OCCUPANT LOAD OF 15 PEOPLE OR MORE AS PER SECTION 1008.1.6
- REQUIRED EXITS & SMOKE DOORS ARE TO BE SELF-CLOSING (BC 1008.1.7) WITH A 1 1/2 HOUR FIRE PROTECTION RATINGS (TABLE 1008.1.7) EXCEPT IN THE FIRST STORY OF EXTERIOR WALLS FACING A STREET THAT HAVE A FIRE SEPARATION DISTANCE OF GREATER THAN 15'-0" (BC 1008.1.7) THEN DOORS NEED NOT TO BE RATED.

STAIRS CHAPTER 10 (NOT IN USE)

- A STAIR WIDTH SHALL BE DETERMINED AS SPECIFIED IN SECTION 1008.1.1 BUT SUCH WIDTH SHALL NOT BE LESS THAN 44" (BC 1008.1.1) OR 36" (BC 1008.1.2)
- AREA OF RESCUE ASSISTANCE SHALL BE 30' X 48' FOR EACH 200 OCCUPANTS AS PER SECTION R-2 OCCUPANCY
- THE CLEAR HEADROOM SHALL BE AT LEAST 6'-8" MINIMUM AS SPECIFIED IN SECTION 1004.2.1
- LANDINGS AND PLATFORMS PROVIDED AT THE HEAD AND FOOT OF EACH FLIGHT OF STAIRS SHALL HAVE A MINIMUM WIDTH PERPENDICULAR TO THE DIRECTION OF TRAVEL OF AT LEAST THE WIDTH OF THE STAIR. IN STRAIGHT RUN STAIRS THE DISTANCE BETWEEN STAIRS WITHIN THE RUN SHALL NOT BE MORE THAN 48". NO DOOR SHALL OPEN ONTO A LANDING AND REDUCE THE CLEARANCE. REQUIRED CLEAR WIDTH OF THE STAIR OR STAIR PLATFORM TO BE LESS THAN 70% OF THE REQUIRED WIDTH OR WHEN FULLY OPEN THE DOOR SHALL NOT PROJECT MORE THAN 1" INTO THE LANDING AS PER SECTION 1004.4
- STAIRS, TREADS, STRINGERS, LANDINGS, PLATFORMS AND GUARDS EXCLUSIVE OF HANDRAILS SHALL BE BUILT OF NONCOMBUSTIBLE MATERIALS. WHEN TWO STAIRS ARE CONTAINED WITHIN THE SAME ENCLOSURE EACH STAIR SHALL BE SEPARATED FROM THE OTHER BY NONCOMBUSTIBLE CONSTRUCTION HAVING A FIRE RESISTANCE RATING EQUAL TO THAT REQUIRED FOR THE STAIR ENCLOSURE (BC 1004.5)
- ALL INTERIOR STAIRS SHALL EXTEND UP TO THE ROOF (BC 1004.2.1)
- STAIRS SHALL HAVE HANDRAILS ON EACH SIDE EXCEPT STAIRS LESS THAN 44" IN WIDTH HAVING FINISH CLEARANCE OF 11" MIN. PROTECTING NOT IN HEIGHT IS REQUIRED OVER ANY WALKING SURFACE. WIDTH OF HANDRAIL SHALL BE UNIFORM NOT LESS THAN 3 1/2" AND NOT MORE THAN 3 3/4" MEASURED ABOVE THE STAIR TREAD NOSING. HANDRAILS SHALL BE DESIGNED IN COMPLIANCE WITH SECTION 1004.1
- THE MAXIMUM VERTICAL RISE OF A SINGLE FLIGHT OF STAIRS BETWEEN FLOORS IS NOT TO EXCEED 12' EXCEPT IN OCCUPANCY GROUP A AND D WHERE THE VERTICAL RISE IS NOT TO EXCEED 8'-0" (SECTION 1004.6)
- INTERIOR STAIRS EXTENDING TO THE ROOF SHALL BE VENTED AS PER THE REQUIREMENTS OF SECTION 910.5
- STAIR EXIT DOORS SHALL BE PLACED A DISTANCE APART EQUAL TO NO LESS THAN 15'-0" IN R2 OCCUPANCY (SECTION 1042.1.5)
- EGRESS CORRIDORS SHALL COMPLY WITH ALL APPLICABLE REQUIREMENTS STATED IN SECTIONS BC 1011, 1023 THRU 1026, 1028 THRU 1029, 1024 & 1026 INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
A. PROTRUDING OBJECTS ARE PERMITTED TO EXTEND BELOW THE MIN. CEILING HEIGHT PROVIDED THAT A MIN. HEADROOM OF 7'-0" IN HEIGHT IS REQUIRED OVER ANY WALKING SURFACE. NOT MORE THAN 50% OF THE CEILING AREA CAN BE REDUCED IN HEIGHT BY PROTRUDING OBJECTS SO AS TO OBSTRUCT FULL VIEW OF EXIT SIGNS (SECTION 1008.3.1)
B. CORRIDOR WIDTH SHALL BE DETERMINED AS PER SECTION 1005.1 (BUT NOT LESS THAN 44")
C. DEAD END CORRIDORS SHALL NOT EXCEED 80'-0" IN LENGTH (BC 106.5)
D. DOORS WHEN FULLY OPEN & HANDRAILS SHALL NOT REDUCE THE REQUIRED WIDTH BY MORE THAN 1". DOORS IN ANY POSITION SHALL NOT REDUCE THE REQUIRED WIDTH BY MORE THAN 1/2". OTHER STRUCTURAL PROJECTIONS ARE PERMITTED TO PROJECT INTO THE REQUIRED WIDTH 1/2" ON EACH SIDE (BC 1002.2)
E. THE FINISHES IN ALL EXITS SHALL BE OF NONCOMBUSTIBLE MATERIALS AS PER CHAPTER 8 AND SUB-SECTION 1008.4 OF SECTION BC 1008
F. THE LOCATION OF EVERY EXIT ON EVERY FLOOR SHALL BE CLEARLY INDICATED BY EXIT SIGNS (SECTION BC 1011). EXIT SIGN SHALL BE PLACED APART, SO THAT NO POINT IN THE EXIT CORRIDOR IS MORE THAN 100'-0"

MAXIMUM BUILDING OCCUPANCY		MINIMUM EGRESS WIDTH (BC 1005)	
FLOOR	OCCUPANCY GROUP	NET FLOOR AREA PER OCCUPANT (sq/ft)	NET FLOOR AREA MAXIMUM NUMBER OF OCCUPANTS
1st	COMMERCIAL M	30	7,199.52
1st	PARKING S-2	200	14,802.03
1st	COMMUNITY FACILITY B	100	908.15
1st	RESIDENTIAL R-2	200	5,745.87
2nd	OUTDOOR RECREATION AREA A-3	15	3,669.5
2nd	RESIDENTIAL R-2	200	11,752.04
3rd	RESIDENTIAL R-2	200	11,752.04
4th	RESIDENTIAL R-2	200	11,752.04
5th	RESIDENTIAL R-2	200	11,752.04
6th	RESIDENTIAL R-2	200	11,752.04
7th	RESIDENTIAL R-2	200	12,738.78
8th	RESIDENTIAL R-2	200	12,738.78

SYMBOL LEGEND		
—	3 HR RATED WALL	
- - -	2 HR RATED WALL	
.....	1 HR RATED WALL	
⊙	CEILING MOUNTED EXIT SIGN	
⊗	WALL MOUNTED EXIT SIGN	
⊞	SIGN AT ELEVATOR LANDING	
⬢	3'-0" WIDE DOOR (2 LEAF) EXIT CAPACITY = 68' / 0.2 = 340	
⬢	3'-0" WIDE DOOR (1 LEAF) EXIT CAPACITY = 34' / 0.2 = 170	

SPACES WITH ONE MEANS OF EGRESS		
OCCUPANCY GROUP	MAXIMUM OCCUPANT LOAD	
ASSEMBLY A-3	74	
RESIDENTIAL R-2	20	
MERCANTILE M	74	
STORAGE S-2	30	

MAXIMUM TRAVEL DISTANCE (W/ SPRINKLERS)		
OCCUPANCY GROUP	MAX. PERMITTED (ft)	PROVIDED (ft)
ASSEMBLY A-3	150'-0"	28'-10"
MERCANTILE M	200'-0"	109'-4"
RESIDENTIAL R-2	200'-0"	192'-4"

* SEE NYC BUILDING CODE TABLE 1015.1 FOR MORE INFORMATION

* DEAD END IN R-2 OCCUPANCY SHALL NOT EXCEED 80'
ALL FLOORS COMPLY - BC 1016.3

TRAVEL DISTANCE WITHIN DWELLING UNIT			
UNIT TYPE	TRAVEL DISTANCE	UNIT TYPE	TRAVEL DISTANCE
A	30'-6"	C	*****
A1	44'-8"	C1	*****
B	27'-6"	D	68'-0"
B1	31'-11"	D1	56'-8"

MINIMUM WIDTH OF EGRESS			
	NYC BUILDING CODE SECTION	MIN. REQUIRED (ft)	PROVIDED (ft)
STAIRWAYS	1004.1	44"	44"
CORRIDOR	1016.2	44"	60"

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www.aasarchitecture.com

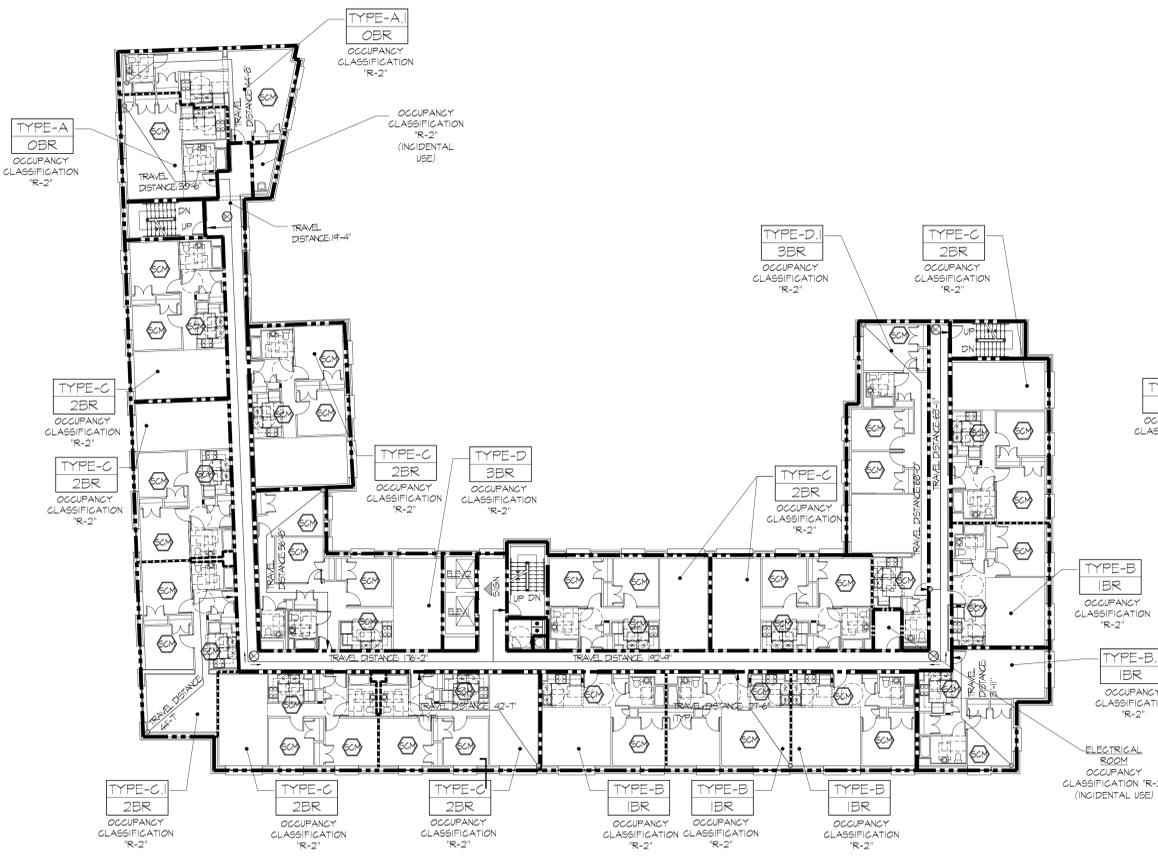
PROPOSED LOW INCOME DEVELOPMENT FOR:
CROTONA PLAZA BUILDING "B"
1825 BOSTON RD, BRONX, NY 10460

1ST AND 2ND FLOOR EGRESS PLANS

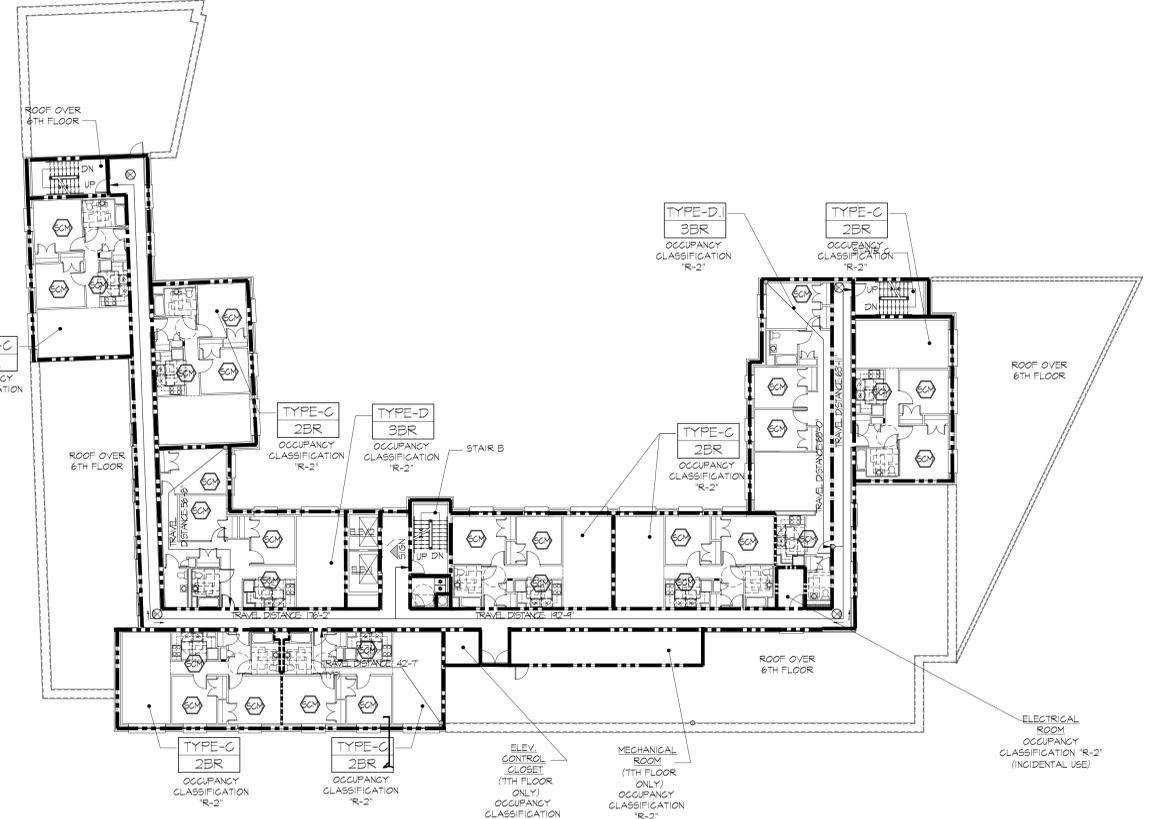
DATE:	8-21-13
PROJECT NO.:	1222
DRAWN BY:	SZ
CHECKED BY:	RK
DRAWING NO.:	G-003.00

SCALE: AS NOTED | SHEET NO: 9 of 26
NYC DOB NUMBER:

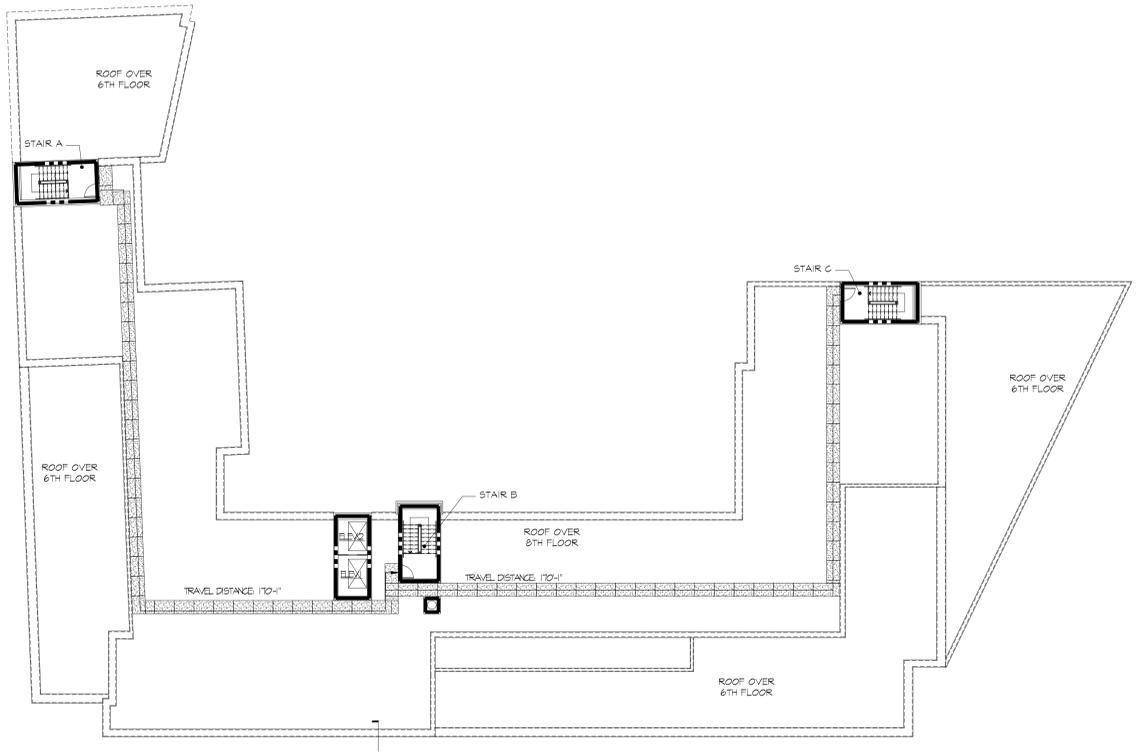




3RD TO 6TH FLOOR PLAN
SCALE: 1/8" = 1'-0"



7TH & 8TH FLOOR PLAN
SCALE: 1/8" = 1'-0"



ROOF PLAN
SCALE: 1/8" = 1'-0"

MAXIMUM BUILDING OCCUPANCY		MINIMUM EGRESS WIDTH (BC 1005)	
FLOOR	OCCUPANCY GROUP	NET FLOOR AREA PER OCCUPANT (sq ft)	MAXIMUM NUMBER OF OCCUPANTS
1st	COMMERCIAL M	30	1,188.52
1st	PARKING S-2	200	14,802.03
1st	COMMUNITY FACILITY B	100	508.15
1st	RESIDENTIAL R-2	200	5,715.87
2nd	OUTDOOR RECREATION AREA A-3	15	3,664.51
2nd	RESIDENTIAL R-2	200	11,752.04
3rd	RESIDENTIAL R-2	200	11,752.04
4th	RESIDENTIAL R-2	200	11,752.04
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SYMBOL LEGEND	
—	3 HR RATED WALL
- - -	2 HR RATED WALL
.....	1 HR RATED WALL
⊙	CEILING MOUNTED EXIT SIGN
⊕	MALL MOUNTED EXIT SIGN
⊙	STAIR AT ELEVATOR LANDINGS
⊕	3'-0" WIDE DOOR (2 LEAF) EXIT CAPACITY = 68' / 0.2 = 340
⊕	3'-0" WIDE DOOR (1 LEAF) EXIT CAPACITY = 34' / 0.2 = 170

SPACES WITH ONE MEANS OF EGRESS		
OCCUPANCY GROUP	MAXIMUM OCCUPANT LOAD	MAXIMUM TRAVEL DISTANCE (ft)
ASSEMBLY A-3	74	20'
RESIDENTIAL R-2	20	74'
MERCANTILE M	74	109'-8"
STORAGE S-2	30	182'-8"

MAXIMUM TRAVEL DISTANCE (w/ SPRINKLERS)		
OCCUPANCY GROUP	MAX. PERMITTED (ft)	PROVIDED (ft)
ASSEMBLY A-3	150'-0"	28'-10"
MERCANTILE M	200'-0"	109'-8"
RESIDENTIAL R-2	200'-0"	182'-8"

TRAVEL DISTANCE WITHIN DWELLING UNIT			
UNIT TYPE	TRAVEL DISTANCE	UNIT TYPE	TRAVEL DISTANCE
A	50'-4"	C	60'-0"
A1	44'-8"	C1	56'-0"
B	27'-6"	D	60'-0"
B1	31'-1"	D1	56'-0"

MINIMUM WIDTH OF EGRESS			
	NYC BUILDING CODE SECTION	MIN. REQUIRED (ft)	PROVIDED (ft)
STAIRWAYS	1009.1	44"	44"
CORRIDOR	1016.2	44"	60"

- FIRE PROTECTION**
- BUILDING IS FULLY SPRINKLERED AND EQUIPPED WITH AN ALTERNATIVE FIRE EXTINGUISHING SYSTEM: A STAND PIPE SYSTEM SHOWN VENTS A FIRE ALARM AND DETECTION SYSTEM & A FIRE COMMAND CENTER IN COMPLIANCE WITH THE NYC BUILDING CODE, NYC FIRE CODE & LOCAL FIRE DEPARTMENT REQUIREMENTS.
- EGRESS NOTES, CHAPTER 10**
- MEANS OF EGRESS SHALL HAVE A CEILING HEIGHT NOT LESS THAN 7'-6" (BC 1005)
 - OCCUPANT LOAD AS DETERMINED ON TABLE 1004.1.2
 - ENTRANCE AND ACCESS REQUIREMENTS ARE TO BE CALCULATED AS PER TABLE 1005.1 AS PER SECTION BC 1005
 - ENTRANCE DISCHARGES AND PUBLIC CORRIDORS SHALL BE ILLUMINATED AT ALL TIMES AS PER SECTION 1006
 - PUBLIC CORRIDORS AND ENTRANCES SHALL BE PROVIDED WITH ARTIFICIAL LIGHT FIXTURES SUPPLYING AT LEAST TWO FOOT CANDLES MEASURED AT THE FLOOR LEVEL, TO BE MAINTAINED CONTINUOUSLY THROUGHOUT ENTIRE AND THEIR ACCESS FACILITIES FOR THEIR FULL LENGTH (BC 1006.2)
 - EXIT LIGHTING EXIT SIGNS & THE PORTION OF THE EXTERIOR EXIT DISCHARGE IMMEDIATELY ADJACENT TO EXIT DISCHARGE DOORWAYS SHALL BE CONNECTED TO AN INDEPENDENT POWER SUPPLYING AT LEAST TWO FOOT CANDLES MEASURED AT THE FLOOR LEVEL, TO BE MAINTAINED CONTINUOUSLY THROUGHOUT ENTIRE AND THEIR ACCESS FACILITIES FOR THEIR FULL LENGTH (BC 1006.3)
 - ALL EXITS SHALL BE KEPT READILY ACCESSIBLE AND UNOBSTRUCTED AT ALL TIMES AS PER SECTION BC 1007
 - DOORS ARE TO COMPLY WITH ALL APPLICABLE REQUIREMENTS OF SECTION BC 1008 INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
 - A CLEAR OPENING OF 30" MIN IS REQUIRED AND SHALL BE MEASURED BETWEEN THE FACE OF THE DOOR AND THE STOP WITH THE DOOR OPEN 90 DEGREES (SECTION BC 1008.1)
 - DOOR HEIGHT NOT TO BE LESS THAN 6'-8" (BC 1008.1.3)
 - ALL EXITS DOORS ARE TO OPEN IN THE DIRECTION OF EGRESS (BC 1008.2) FLOOR LEVELS ON BOTH SIDES OF ALL EXITS AND CORRIDOR DOORS ARE TO BE LEVEL AND AT THE SAME ELEVATION FOR A DISTANCE AT LEAST EQUAL TO THE WIDTH OF THE DOOR (BC 1008.4)
 - EXIT DOORS SHALL BE READILY OPERABLE AT ALL TIMES FROM THE SIDE FROM WHICH EGRESS IS TO BE MADE DOORS OPENING ONTO INTERIOR ENCLOSED STAIRS SHALL NOT BE LOCKED FROM EITHER SIDE EXCEPT THAT DOORS MAY BE LOCKED TO PREVENT ACCESS TO THE STAIR FROM THE OUTSIDE AT STREET LEVEL AS PER SECTION 1009.5
 - EXIT DOORS SHALL BE READILY OPERABLE AT ALL TIMES FROM THE SIDE FROM WHICH EGRESS IS TO BE MADE DOORS OPENING ONTO INTERIOR ENCLOSED STAIRS SHALL NOT BE LOCKED FROM EITHER SIDE EXCEPT THAT DOORS MAY BE LOCKED TO PREVENT ACCESS TO THE STAIR FROM THE OUTSIDE AT STREET LEVEL AS PER SECTION 1009.5
 - REQUIRED EXITS & SMOKE DOORS ARE TO BE SELF-CLOSING (BC 1008.3) WITH A 1-1/2 HOUR FIRE PROTECTION RATING (TABLE 1013) EXCEPT IN THE FIRST STORY OF EXTERIOR WALLS FACING A STREET THAT HAVE A FIRE SEPARATION DISTANCE OF GREATER THAN 5'-0" (BC 1008.2) THEN DOORS NEED NOT TO BE RATED
 - STAIRWAYS SHALL BE KEPT READILY ACCESSIBLE AND UNOBSTRUCTED (NOT IN USE)
 - A STAIR WIDTH SHALL BE DETERMINED AS SPECIFIED IN SECTION 1005.1.1 BUT STAIR WIDTH SHALL NOT BE LESS THAN 44" (BC 1004.1) OR 36" (BC 1005.1.2)
 - AREA OF RESCUE ASSISTANCE SHALL BE 30' X 45' FOR EACH 200 OCCUPANTS AS PER SECTION 1007.6
 - THE CLEAR HEADROOM SHALL BE AT LEAST 6'-8" MINIMUM AS SPECIFIED IN SECTION 1004.2 (R-2 OCCUPANCY)
 - LANDINGS AND PLATFORMS PROVIDED AT THE HEAD AND FOOT OF EACH FLIGHT OF STAIRS SHALL HAVE A MINIMUM WIDTH PERPENDICULAR TO THE DIRECTION OF TRAVEL OF AT LEAST THE WIDTH OF THE STAIR, IN STRAIGHT RUN STAIRS, THE DISTANCE BETWEEN STAIRS WITHIN THE RUN SHALL NOT BE MORE THAN 48" NO DOOR SHALL SWING ONTO A LANDING AND REDUCE THE REQUIRED CLEAR WIDTH OF THE STAIR OR STAIR PLATFORM TO BE LESS THAN 75% OF THE REQUIRED WIDTH OR WHEN FULLY OPEN, THE DOOR SHALL NOT PROJECT MORE THAN 1" INTO THE LANDING AS PER SECTION 1004.4
 - EXISTS TREADS, STRINGERS, LANDINGS, PLATFORMS AND GUARDS EXCLUSIVE OF HANDRAILS SHALL BE MADE OF NONCOMBUSTIBLE MATERIALS WHEN TWO STAIRS ARE CONTAINED WITHIN THE SAME ENCLOSURE EACH STAIR SHALL BE SEPARATED FROM THE OTHER BY NONCOMBUSTIBLE CONSTRUCTION HAVING A FIRE RESISTANCE RATING EQUAL TO THAT REQUIRED FOR THE STAIR ENCLOSURE (BC 1009.5)
 - ALL INTERIOR STAIRS SHALL EXTEND UP TO THE ROOF (BC 1004.1.2)
 - STAIRS SHALL HAVE HANDRAILS ON EACH SIDE (EXCEPT STAIRS LESS THAN 44" IN WIDTH) HAVING FINISH CLEARANCE OF 1-1/2" MIN. PROJECTIONS NOT MORE THAN 1-1/2" INTO THE REQUIRED STAIR WIDTH HEIGHT OF HANDRAIL SHALL BE UNIFORM NOT LESS THAN 34" AND NOT MORE THAN 38" MEASURED ABOVE THE STAIR TREAD NOSE HANDRAILS SHALL BE DESIGNED IN COMPLIANCE WITH SECTION 1004.1
 - THE MAXIMUM VERTICAL RISE OF A SINGLE FLIGHT OF STAIRS BETWEEN FLOORS IS NOT TO EXCEED 12' EXCEPT IN OCCUPANCY GROUP A AND I WHERE THE VERTICAL RISE IS NOT TO EXCEED 8'-0" (SECTION 1009.6)
 - INTERIOR REQUIRED STAIRS EXTENDING TO THE ROOF SHALL BE VENTED AS PER THE REQUIREMENTS OF SECTION 1010.5
 - STAIR EXIT DOORS SHALL BE PLACED A DISTANCE APART EQUAL TO NO LESS THAN 5'-0" IN R2 OCCUPANCY (SECTION 104.2.1.3)
 - EGRESS CORRIDORS SHALL COMPLY WITH ALL APPLICABLE REQUIREMENTS STATED IN SECTIONS BC 1011.02B THRU 1018, 1020 THRU 1023, 1024 & 1026 INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
 - PROTRUDING OBJECTS ARE PERMITTED TO EXTEND BELOW THE MIN. CEILING HEIGHT REQUIRED PROVIDED THAT A MIN. HEADROOM OF 7'-0" IN HEIGHT IS REQUIRED OVER ANY WALKING SURFACE NOT MORE THAN 50% OF THE CEILING AREA CAN BE REDUCED IN HEIGHT BY PROTRUDING OBJECTS SO AS TO OBSTRUCT FULL VIEW OF EXIT SIGNS (SECTION 1003.3)
 - CORRIDOR WIDTH SHALL BE DETERMINED AS PER SECTION 1005.1, BUT NOT LESS THAN 44"
 - DEAD END CORRIDORS SHALL NOT EXCEED 80'-0" IN LENGTH (BC 106.3)
 - DOORS WHEN THEY FULLY OPEN & HANDRAILS SHALL NOT REDUCE THE REQUIRED WIDTH BY MORE THAN 1" DOORS IN ANY POSITION SHALL NOT REDUCE THE REQUIRED WIDTH BY MORE THAN 1/2" OTHER NONSTRUCTURAL PROJECTIONS ARE PERMITTED TO PROJECT INTO THE REQUIRED WIDTH 1/2" ON EACH SIDE (BC 1020.2)
 - THE FINISHES IN ALL EXITS SHALL BE OF NONCOMBUSTIBLE MATERIALS AS PER CHAPTER 8 AND SUBSECTION 1009.5 OF SECTION BC 1005
 - THE LOCATION OF EVERY EXIT ON EVERY FLOOR SHALL BE CLEARLY INDICATED BY EXIT SIGNS (SECTION BC 1011) EXIT SIGN SHALL BE PLACED APART SO THAT NO POINT IN THE EXIT CORRIDOR IS MORE THAN 100'-0"

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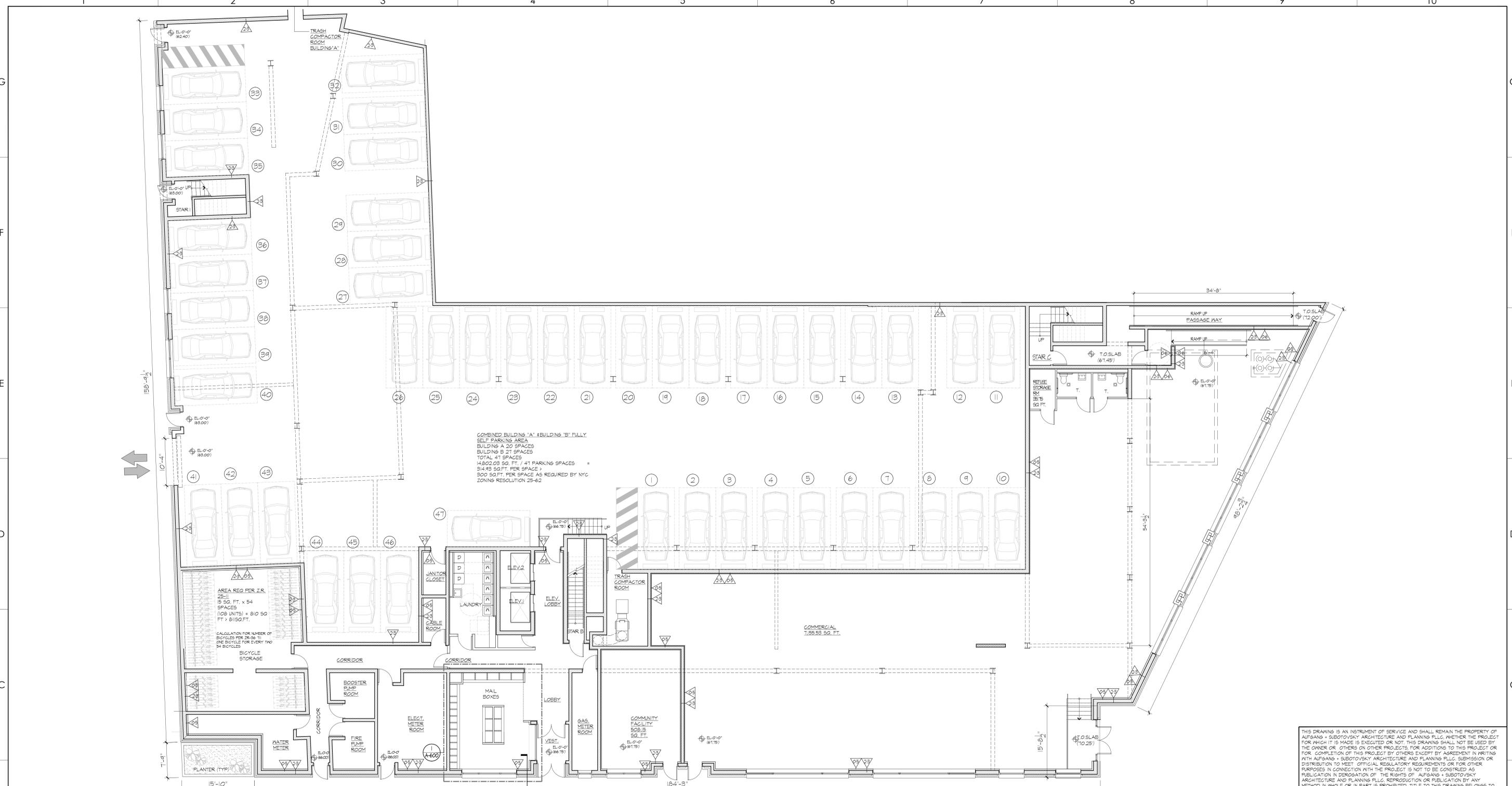
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PROPOSED LOW INCOME DEVELOPMENT FOR:
CROTONA PLAZA BUILDING "B"
1825 BOSTON RD, BRONX, NY 10460

3RD THRU 8TH FLOOR, ROOF EGRESS PLANS

DATE:	8-21-13
PROJECT NO.:	1222
DRAWN BY:	SZ
CHECKED BY:	RK
DRAWING NO.:	G-004.00

SCALE: AS NOTED | SHEET NO: 10 of 24
NYC DOB NUMBER:



COMBINED BUILDING 'A' & BUILDING 'B' FULLY SELF PARKING AREA
 BUILDING A 20 SPACES
 BUILDING B 21 SPACES
 TOTAL 41 SPACES
 4802 SQ. FT. / 41 PARKING SPACES = 117.12 SQ. FT. PER SPACE
 300 SQ. FT. PER SPACE AS REQUIRED BY NYC ZONING RESOLUTION 25-62

1ST FLOOR PLAN
 SCALE: 1/8" = 1'-0"

- WALL TYPE LEGEND:**
- NON RATED
 - (1) LAYER 1/2" TYPE 'X' GYPSUM BOARD ONE SIDE OF 2" METAL STUDS @ 16" O.C.
 - TYPICAL PARTITION - (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD ON EACH SIDE OF 2 1/2" METAL STUDS @ 16" O.C.
 - BATHROOM CHASE WALL PARTITION - (1) LAYER 5/8" TYPE 'X' WATER RESISTANT GYPSUM BOARD ONE SIDE OF 2" METAL STUDS @ 16" O.C.
 - PARTITION - (1) LAYER OF 5/8" TYPE 'X' GYPSUM BOARD ON EACH SIDE OF 3 3/8" METAL STUDS @ 16" O.C. (APARTMENT ELECTRICAL PANEL)
 - FURRING AT EXTERIOR CMU WALL - (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD ON 3 3/8" GALV. METAL STUDS @ 16" O.C. WITH 3/4" (R-5) BATT INSULATION UNFACED
 - FURRING AT INTERIOR CMU WALL (APARTMENT SIDE) - (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD OVER 1 1/2" Z" METAL FURRING @ 16" O.C.
 - FURRING AT INTERIOR CMU WALL (PUBLIC CORRIDOR SIDE) - (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD OVER 3/8" METAL FURRING CHANNELS @ 16" O.C.
 - FURRING AT INTERIOR CMU WALL (PUBLIC CORRIDOR SIDE) - (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD ON 1 1/2" GALV. METAL STUDS @ 16" O.C. WITH 1/2" SEMI-RIGID INSULATION (R15) UNFACED
 - 1 HOUR RATED
 - 1 HOUR RATED TENANT SEPARATION PARTITION - (1) LAYER OF 5/8" TYPE 'X' GYPSUM BOARD ON (1) SIDE, (2) LAYERS OF 3/8" TYPE 'X' GYPSUM BOARD ON OTHER SIDE OF 3 3/8" METAL STUDS @ 16" O.C. WITH 3/4" SOUND ATTENUATION INSULATION, EXTEND STUDS & GYPSUM BOARD UP TO UNDERSIDE OF CONCRETE DECK & SEAL TIGHT TO UNDERSIDE OF CONCRETE/METAL DECK AND/OR ROOF DECK w/ CONT. FIRESTOP SEALANT & FIRESTOP INSULATION (GA FILE #40-052) (STC 50-54)
 - 1 HOUR RATED MECHANICAL SHAFT WALL - (2) LAYERS OF 1/2" TYPE 'X' GYPSUM BOARD ON ONE SIDE OF 2 1/2" METAL STUDS @ 24" O.C. WITH (1) LAYER OF 1" TYPE 'X' GYPSUM LINER PANEL ON SHAFT SIDE w/ 1" MINERAL FIBER INSULATION IN CAVITY. SEAL TOP OF WALL TIGHT TO UNDERSIDE OF CONCRETE DECK w/ CONT. FIRESTOP SEALANT. GA FILE #40-045 (STC 45-48)
 - 2 HOUR RATED
 - 2 HOUR RATED EXTERIOR PARTITION - (2) LAYERS OF 3/4" TYPE 'X' GYPSUM BOARD, (INSIDE) 5/8" EXP EXTERIOR GYPSUM BOARD SHEATHING (OUTSIDE) OVER 3 3/8" GALV. METAL STUDS @ 16" O.C. WITH 3/4" BATT INSULATION (UNFACED) (R-15) (UL-424)
 - 2 HOUR RATED INTERIOR PARTITION - (2) LAYERS 5/8" TYPE 'X' GYPSUM BOARD ON EACH SIDE, 3 3/8" METAL STUDS @ 16" O.C. WITH 3/4" SOUND ATTENUATION INSULATION, EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF FLOOR METAL DECK OR ROOF DECK. SEAL TIGHT TO DECK w/ CONT. FIRESTOP SEALANT & FIRESTOP INSULATION (GA FILE #40-052) (STC 50-54)
 - 2 HOUR RATED CMU WALL - CMU WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE BLOCK COURSES. SEAL TOP OF CONCRETE/METAL BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE/METAL DECK OR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESTOP INSULATION WHERE GAP EXIST. BETWEEN TOP OF WALL AND BOTTOM OF DECK (UL #406)
 - 2 HOUR RATED MECHANICAL SHAFT WALL - (2) LAYERS OF 1/2" TYPE 'X' GYPSUM BOARD ON ONE SIDE OF 2 1/2" METAL STUDS @ 24" O.C. WITH (1) LAYER OF 1" TYPE 'X' GYPSUM LINER PANEL ON SHAFT SIDE w/ 1" MINERAL FIBER INSULATION IN CAVITY. SEAL TOP OF WALL TIGHT TO UNDERSIDE OF CONCRETE DECK w/ CONT. FIRESTOP SEALANT. GA FILE #40-045 (STC 45-48)
 - 3 HOUR RATED
 - 3 HOUR RATED WALL - (1) LAYER 1/2" TYPE 'X' GYPSUM BOARD OVER 3/8" METAL CHASE CHANNELS @ 24" O.C. OVER 2 HR RATED CONCRETE BLOCK WALL WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE/METAL FLOOR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESTOP INSULATION WHERE A GAP EXISTS BETWEEN TOP OF WALL AND BOTTOM OF CONCRETE/METAL DECK (UL #414) (PROVIDE STC RATINGS OF 80-84 COMPACTOR CHUTE FOR SHAFT ADJACENT TO DWELLING UNITS)
 - 3 HOUR RATED CMU WALL - 3 CORE 15# SOLID CMU WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE BLOCK COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE DECK OR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESTOP INSULATION WHERE GAP EXIST. BETWEEN TOP OF WALL AND BOTTOM OF DECK

- LEGEND:**
- CONCRETE FOUNDATION WALL
 - CONCRETE BLOCK WALL - 2HR FIRE RATED
 - GYPSUM BOARD PARTITION - SEE PLAN FOR SIZE
 - MASONRY VENEER
 - REMOVABLE KITCHEN BASE CABINET 2'-0" WIDE BY 2'-0" DEEP
 - PARTITION - SEE WALL TYPE LEGEND
 - HANDICAP ADAPTABLE APARTMENT UNIT
 - U.F.A.S. ACCESSIBLE EFFICIENCY UNIT (TOTAL 4 UNITS)
 - U.F.A.S. COMPLIANT H.V. EFFICIENCY UNIT - OUTFITTED FOR PEOPLE w/ HEARING OR VISUAL IMPAIRMENTS (TOTAL 2 UNITS)
 - SUSPENDED GYPSUM BOARD
 - 8'-0" DIAMETER CLEAR HANDICAP FLOOR TURNING SPACE
 - 11" FLOOR TURNING SPACE
 - 30' X 48" CLEAR FLOOR SPACE
 - FIRE RATED SHAFT WALL - PARTITION WALL TYPE 2-4
 - CARBON MONOXIDE DETECTOR
 - EXIT LIGHT AND SIGN - CEILING MOUNTED
 - EXIT LIGHT AND SIGN - WALL MOUNTED
 - ELECTRICAL PANEL UNIT

- GENERAL NOTES:**
- FOR KITCHEN AND TOILET ELEVATIONS SEE DRAWING A-501.
 - G.C. SHALL COORDINATE SIZE & LOCATION OF ALL HVAC OPENINGS IN CONCRETE DECK WITH MECHANICAL DRAWINGS
 - CONTRACTOR SHALL COORDINATE SIZE AND LOCATION OF ALL MASONRY OPENINGS AT ELEVATOR ENTRANCES WITH ELEVATOR VENDOR.
 - ALL ENLARGED PLAN DIMENSIONS ARE TAKEN FINISH TO FINISH (F.O.F.).

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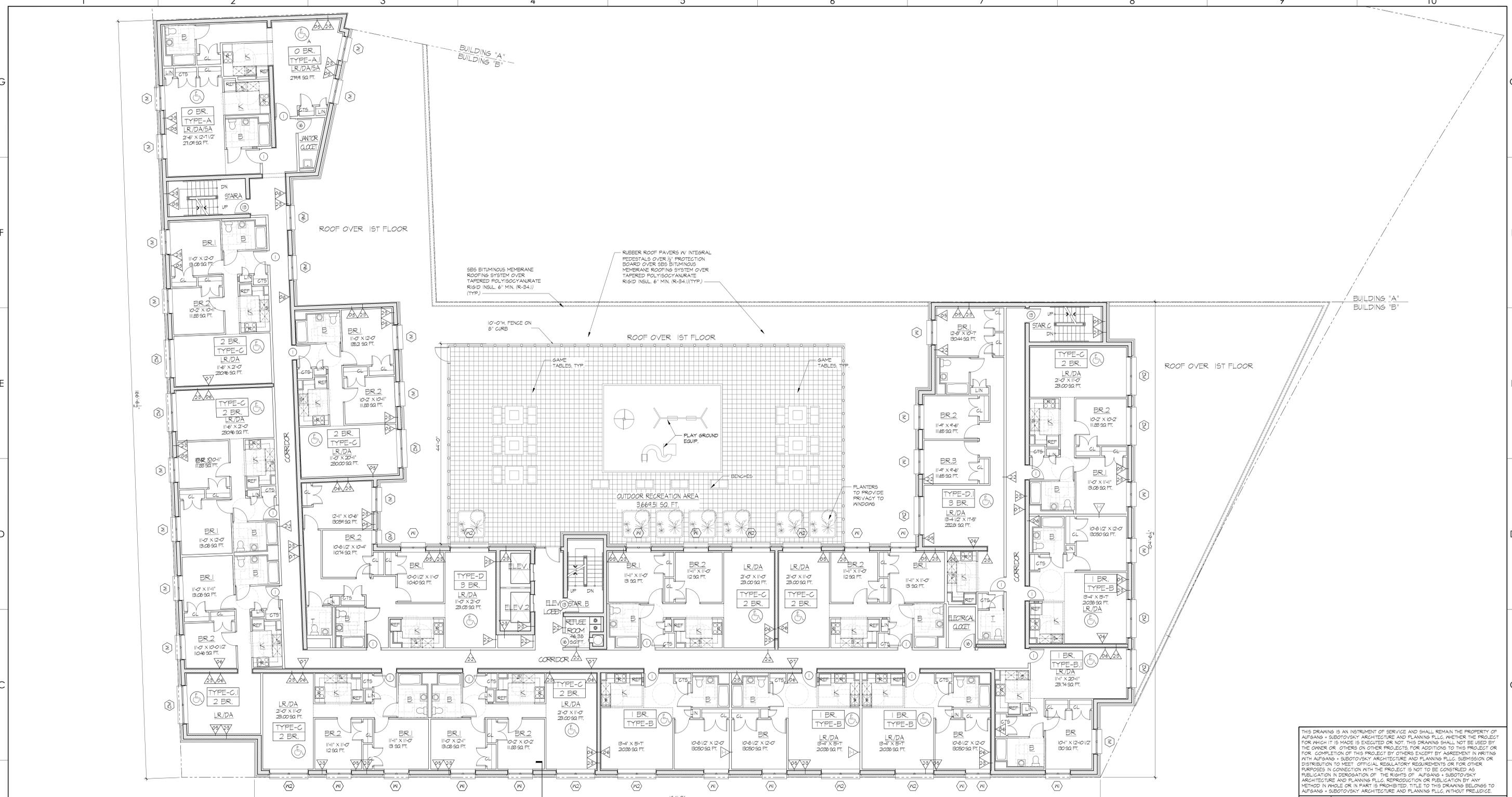
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PROPOSED LOW INCOME DEVELOPMENT FOR:
CROTONA PLAZA BUILDING "B"
 1825 BOSTON RD, BRONX, NY 10460

1ST FLOOR PLAN	
DATE:	7-30-13
PROJECT NO.:	1222
DRAWN BY:	SZ
CHECKED BY:	SZ
DRAWING NO.:	A-100.00
SCALE:	AS NOTED SHEET NO.:
NYC DOB NUMBER:	11 OF 26





2ND FLOOR PLAN
SCALE: 1/8" = 1'-0"

- WALL TYPE LEGEND:**
- NON RATED**
 - PARTITION - (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD ONE SIDE OF 2" METAL STUDS @ 16" O.C.
 - TYPICAL PARTITION - (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD ON EACH SIDE OF 2 1/2" METAL STUDS @ 16" O.C.
 - BATHROOM CHASE WALL PARTITION - (1) LAYER 5/8" TYPE 'X' WATER RESISTANT GYPSUM BOARD ONE SIDE OF 2" METAL STUDS @ 16" O.C.
 - PARTITION - (1) LAYER OF 5/8" TYPE 'X' GYPSUM BOARD ON EACH SIDE OF 3 1/2" METAL STUDS @ 16" O.C. (APARTMENT ELECTRICAL PANEL)
 - FURRING AT EXTERIOR CMU WALL - (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD ON 3 1/2" GALV. METAL STUDS @ 16" O.C. WITH 3/8" (R-15) BATT INSULATION UNFACED
 - FURRING AT INTERIOR CMU WALL (APARTMENT SIDE) - (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD OVER 1 1/2" Z" METAL FURRING @ 16" O.C.
 - FURRING AT INTERIOR CMU WALL (PUBLIC CORRIDOR SIDE) - (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD OVER 3/8" METAL FURRING CHANNELS @ 16" O.C.
 - FURRING AT INTERIOR CMU WALL (PUBLIC CORRIDOR SIDE) - (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD ON 1 1/2" GALV. METAL STUDS @ 16" O.C. WITH 1 1/2" SEMI-RIGID INSULATION (R15) UNFACED
 - 1 HOUR RATED**
 - TENANT SEPARATION PARTITION - (1) LAYER OF 5/8" TYPE 'X' GYPSUM BOARD ON (1) SIDE, (2) LAYERS OF 5/8" TYPE 'X' GYPSUM BOARD ON OTHER SIDE OF 3 1/2" METAL STUDS @ 16" O.C. WITH 3/8" SOUND ATTENUATION INSULATION, EXTEND STUDS & GYPSUM BOARD UP TO UNDERSIDE OF CONCRETE DECK & SEAL TIGHT TO UNDERSIDE OF CONCRETE/METAL DECK AND/OR ROOF DECK W/ CONT. FIRESTOP SEALANT & FIRESTOP INSULATION (GA FILE #401-052) (STC 50-54)
 - 2 HOUR RATED TENANT SEPARATION PARTITION - (1) LAYER OF 5/8" TYPE 'X' GYPSUM BOARD ON (1) SIDE, (2) LAYERS OF 5/8" TYPE 'X' GYPSUM BOARD ON OTHER SIDE OF 3 1/2" METAL STUDS @ 16" O.C. WITH 3/8" SOUND ATTENUATION INSULATION, EXTEND STUDS & GYPSUM BOARD UP TO UNDERSIDE OF CONCRETE/METAL DECK AND/OR ROOF DECK W/ CONT. FIRESTOP SEALANT & FIRESTOP INSULATION (GA FILE #401-052) (STC 50-54)
 - 2 HOUR RATED EXTERIOR PARTITION - (2) LAYERS OF 3/4" TYPE 'X' GYPSUM BOARD, (INSIDE) 5/8" EXP EXTERIOR GYPSUM BOARD SHEATHING (OUTSIDE) OVER 6" GA 18 GALV. METAL STUDS @ 16" O.C. WITH 3 1/2" BATT INSULATION (UNFACED) (R-15) (UL-424)
 - 2 HOUR RATED INTERIOR PARTITION - (2) LAYERS OF 5/8" TYPE 'X' GYPSUM BOARD ON EACH SIDE, 3 1/2" METAL STUDS @ 16" O.C. WITH 3 1/2" SOUND ATTENUATION INSULATION, EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF FLOOR METAL DECK OR ROOF DECK, SEAL TIGHT TO DECK W/ CONT. FIRESTOP SEALANT & FIRESTOP INSULATION (GA FILE #401-052) (STC 50-54)
 - 2 HOUR RATED CMU WALL - CMU WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE BLOCK COURSES, SEAL TOP OF CONCRETE/METAL DECK OR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESTOP INSULATION WHERE GAP EXIST. BETWEEN TOP OF WALL AND BOTTOM OF DECK (UL #406)
 - 2 HOUR RATED MECHANICAL SHAFT WALL - (2) LAYERS OF 1/2" TYPE 'X' GYPSUM BOARD ON ONE SIDE OF 2 1/2" METAL STUDS @ 24" O.C. WITH (1) LAYER OF 1/2" TYPE 'X' GYPSUM LINER PANEL ON SHAFT SIDE, W/ 1" MINERAL FIBER INSULATION IN CAVITY, SEAL TOP OF WALL TIGHT TO UNDERSIDE OF CONCRETE DECK W/ CONT. FIRESTOP SEALANT, GA FILE #401B (STC 45-48)

- LEGEND:**
- CONCRETE FOUNDATION WALL
 - CONCRETE BLOCK WALL - 2HR FIRE RATED
 - GYPSUM BOARD PARTITION - SEE PLAN FOR SIZE
 - MASONRY VENEER
 - REMOVABLE KITCHEN BASE CABINET 2-6" DEEP BY 2'-0" DEEP PARTITION - SEE WALL TYPE LEGEND
 - HANDICAP ADAPTABLE APARTMENT UNIT
 - UFAS ACCESSIBLE EFFICIENCY UNIT (TOTAL 4 UNITS)
 - UFAS COMPLIANT H.V. EFFICIENCY UNIT - OUTFITTED FOR PEOPLE W/ HEARING OR VISUAL IMPAIRMENTS (TOTAL 2 UNIT)
 - SUSPENDED GYPSUM BOARD
 - 8'-0" DIAMETER CLEAR HANDICAP FLOOR TURNING SPACE
 - 11" FLOOR TURNING SPACE
 - 30' X 48" CLEAR FLOOR SPACE
 - FIRE RATED SHAFT WALL - PARTITION WALL TYPE 2-4
 - CARBON MONOXIDE DETECTOR
 - EXIT LIGHT AND SIGN - CEILING MOUNTED
 - EXIT LIGHT AND SIGN - WALL MOUNTED
 - ELECTRICAL PANEL UNIT
- GENERAL NOTES:**
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2ND FLOOR PLAN

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DRAWN BY:	SZ
CHECKED BY:	SZ
DRAWING NO.:	A-101.00
SCALE:	AS NOTED SHEET NO.: 12 OF 26
NYC DOB NUMBER:	



3RD TO 6TH FLOOR PLAN
SCALE: 1/8" = 1'-0"

- WALL TYPE LEGEND:**
- NON RATED
 - △ PARTITION - (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD ONE SIDE OF 2" METAL STUDS @ 16" O.C.
 - △ TYPICAL PARTITION - (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD ON EACH SIDE OF 2 1/2" METAL STUDS @ 16" O.C.
 - △ BATHROOM CHASE WALL PARTITION - (1) LAYER 5/8" TYPE 'X' WATER RESISTANT GYPSUM BOARD ONE SIDE OF 2" METAL STUDS @ 16" O.C.
 - △ PARTITION - (1) LAYER OF 5/8" TYPE 'X' GYPSUM BOARD ON EACH SIDE OF 3 3/8" METAL STUDS @ 16" O.C. (APARTMENT ELECTRICAL PANEL)
 - △ FURRING AT EXTERIOR CMU WALL - (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD ON 3 3/8" GALV. METAL STUDS @ 16" O.C. WITH 3/8" (R-15) BATT INSULATION UNFACED
 - △ FURRING AT INTERIOR CMU WALL (APARTMENT SIDE) - (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD OVER 1 1/2" Z" METAL FURRING @ 16" O.C.
 - △ FURRING AT INTERIOR CMU WALL (PUBLIC CORRIDOR SIDE) - (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD OVER 1 1/2" Z" METAL FURRING CHANNELS @ 16" O.C.
 - △ FURRING AT INTERIOR CMU WALL (PUBLIC CORRIDOR SIDE) - (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD ON 1 1/2" GALV. METAL STUDS @ 16" O.C. WITH 1 1/2" SEMI-RIGID INSULATION (R15) UNFACED
 - 1 HOUR RATED
 - △ 1 HOUR RATED TENANT SEPARATION PARTITION - (1) LAYER OF 5/8" TYPE 'X' GYPSUM BOARD ON (1) SIDE, (2) LAYERS OF 3/8" TYPE 'X' GYPSUM BOARD ON OTHER SIDE OF 3 3/8" METAL STUDS @ 16" O.C. WITH 3/8" SOUND ATTENUATION INSULATION, EXTEND STUDS & GYPSUM BOARD UP TO UNDERSIDE OF CONCRETE DECK & SEAL TIGHT TO UNDERSIDE OF CONCRETE/METAL DECK AND/OR ROOF DECK. CONT. FIRESTOP SEALANT & FIRESTOP INSULATION (GA FILE #401-052) (STC 50-54)
 - △ 1 HOUR RATED MECHANICAL SHAFT WALL - (2) LAYERS OF 1/2" TYPE 'X' GYPSUM BOARD ON ONE SIDE OF 2 1/2" METAL CH STUDS @ 24" O.C. WITH (1) LAYER OF 1" TYPE 'X' GYPSUM LINER PANEL ON SHAFT SIDE. 1/1" MINERAL FIBER INSULATION IN CAVITY. SEAL TOP OF WALL TIGHT TO UNDERSIDE OF CONCRETE DECK. CONT. FIRESTOP SEALANT. GA FILE #401B (STC 45-48)

- △ 1 HOUR RATED TENANT SEPARATION CHASEWALL - (2) LAYERS OF (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD ON ONE SIDE OF 2 1/2" METAL STUDS @ 16" O.C. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF FLOOR PLANK OR ROOF PLANK. SEAL TIGHT TO PLANK WITH CONT. FIRESTOP SEALANT. SEAL ALL PENETRATIONS THRU CHASEWALL WITH FIRESTOP INSULATION AND CONT. FIRESTOP SEALANT AS REQ. PROVIDE HORIZONTAL 2X2" MTL STUD BRACING @ 48" O.C. MAX. (UL #1442) (PROVIDE INSL. AS REQ. TO ACHIEVE A MIN STC RATING OF 50)
- △ 2 HOUR RATED
 - △ 2 HOUR RATED EXTERIOR PARTITION - (2) LAYERS OF 3/4" TYPE 'X' GYPSUM BOARD, (INSIDE) 5/8" EXP EXTERIOR GYPSUM BOARD SHEATHING (OUTSIDE) OVER 6" GA 18 GALV. METAL STUDS @ 16" O.C. WITH 3 1/2" BATT INSULATION (UNFACED) (R-15) (UL-424)
 - △ 2 HOUR RATED INTERIOR PARTITION - (2) LAYERS 5/8" TYPE 'X' GYPSUM BOARD ON EACH SIDE, 3 3/8" METAL STUDS @ 16" O.C. WITH 3 1/2" SOUND ATTENUATION INSULATION, EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF FLOOR METAL DECK OR ROOF DECK. SEAL TIGHT TO DECK. CONT. FIRESTOP SEALANT & FIRESTOP INSULATION. (GA FILE #401-052) (STC 50-54)
 - △ 2 HOUR RATED CMU WALL - CMU WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE BLOCK COURSES. SEAL TOP OF CONCRETE/METAL BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE/METAL DECK OR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESTOP INSULATION WHERE GAP EXIST. BETWEEN TOP OF WALL AND BOTTOM OF DECK (UL #406)
 - △ 2 HOUR RATED MECHANICAL SHAFT WALL - (2) LAYERS OF 1/2" TYPE 'X' GYPSUM BOARD ON ONE SIDE OF 2 1/2" METAL CH STUDS @ 24" O.C. WITH (1) LAYER OF 1" TYPE 'X' GYPSUM LINER PANEL ON SHAFT SIDE. 1/1" MINERAL FIBER INSULATION IN CAVITY. SEAL TOP OF WALL TIGHT TO UNDERSIDE OF CONCRETE DECK. CONT. FIRESTOP SEALANT. GA FILE #401B (STC 45-48)

- △ 2 HOUR RATED EXTERIOR PARTITION - (2) LAYERS OF 3/4" TYPE 'X' GYPSUM BOARD, (INSIDE) 5/8" EXP EXTERIOR GYPSUM BOARD SHEATHING (OUTSIDE) OVER 6" GA 18 GALV. METAL STUDS @ 16" O.C. WITH 3 1/2" BATT INSULATION (UNFACED) (R-15) (UL-424)
- △ 2 HOUR RATED
 - △ 2 HOUR RATED EXTERIOR PARTITION - (2) LAYERS OF 3/4" TYPE 'X' GYPSUM BOARD, (INSIDE) 5/8" EXP EXTERIOR GYPSUM BOARD SHEATHING (OUTSIDE) OVER 6" GA 18 GALV. METAL STUDS @ 16" O.C. WITH 3 1/2" BATT INSULATION (UNFACED) (R-15) (UL-424)
 - △ 2 HOUR RATED INTERIOR PARTITION - (2) LAYERS 5/8" TYPE 'X' GYPSUM BOARD ON EACH SIDE, 3 3/8" METAL STUDS @ 16" O.C. WITH 3 1/2" SOUND ATTENUATION INSULATION, EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF FLOOR METAL DECK OR ROOF DECK. SEAL TIGHT TO DECK. CONT. FIRESTOP SEALANT & FIRESTOP INSULATION. (GA FILE #401-052) (STC 50-54)
 - △ 2 HOUR RATED CMU WALL - CMU WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE BLOCK COURSES. SEAL TOP OF CONCRETE/METAL BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE/METAL DECK OR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESTOP INSULATION WHERE GAP EXIST. BETWEEN TOP OF WALL AND BOTTOM OF DECK (UL #406)
 - △ 3 HOUR RATED CMU WALL - 3 CORE 15# SOLID CMU WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE BLOCK COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE DECK OR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESTOP INSULATION WHERE GAP EXIST. BETWEEN TOP OF WALL AND BOTTOM OF DECK

- LEGEND:**
- CONCRETE FOUNDATION WALL
 - CONCRETE BLOCK WALL - 2HR FIRE RATED
 - GYPSUM BOARD PARTITION - SEE PLAN FOR SIZE
 - MASONRY VENEER
 - REMOVABLE KITCHEN BASE CABINET 2-6" DEEP BY 2-0" DEEP PARTITION - SEE WALL TYPE LEGEND
 - HANDICAP ADAPTABLE APARTMENT UNIT
 - UFAS ACCESSIBLE EFFICIENCY UNIT (TOTAL 4 UNITS)
 - UFAS COMPLIANT H.V.I. EFFICIENCY UNIT - OUTFITTED FOR PEOPLE W/ HEARING OR VISUAL IMPAIRMENTS (TOTAL 2 UNIT)
 - 3'-0" DIAMETER CLEAR HANDICAP FLOOR TURNING SPACE
 - 1'-0" FLOOR TURNING SPACE
 - 30' X 48" CLEAR FLOOR SPACE
 - FIRE RATED SHAFT WALL - PARTITION WALL TYPE 2-4
 - CARBON MONOXIDE DETECTOR
 - EXIT LIGHT AND SIGN - CEILING MOUNTED
 - EXIT LIGHT AND SIGN - WALL MOUNTED
 - ELECTRICAL PANEL UNIT
 - SUSPENDED GYPSUM BOARD

- GENERAL NOTES:**
- FOR KITCHEN AND TOILET ELEVATIONS SEE DRAWING A-501.
 - G.C. SHALL COORDINATE SIZE & LOCATION OF ALL HVAC OPENINGS IN CONCRETE DECK WITH MECHANICAL DRAWINGS.
 - CONTRACTOR SHALL COORDINATE SIZE AND LOCATION OF ALL MASONRY OPENINGS AT ELEVATOR ENTRANCES WITH ELEVATOR VENDOR.
 - ALL ENLARGED PLAN DIMENSIONS ARE TAKEN FINISH TO FINISH (I.O.N.).

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11-25-14	ISSUED TO MTA
07-31-14	ISSUED TO DOB FOR REVIEW AND COMMENT
5-15-14	ISSUED TO HPD FOR REVIEW AND COMMENT
DATE	REVISIONS

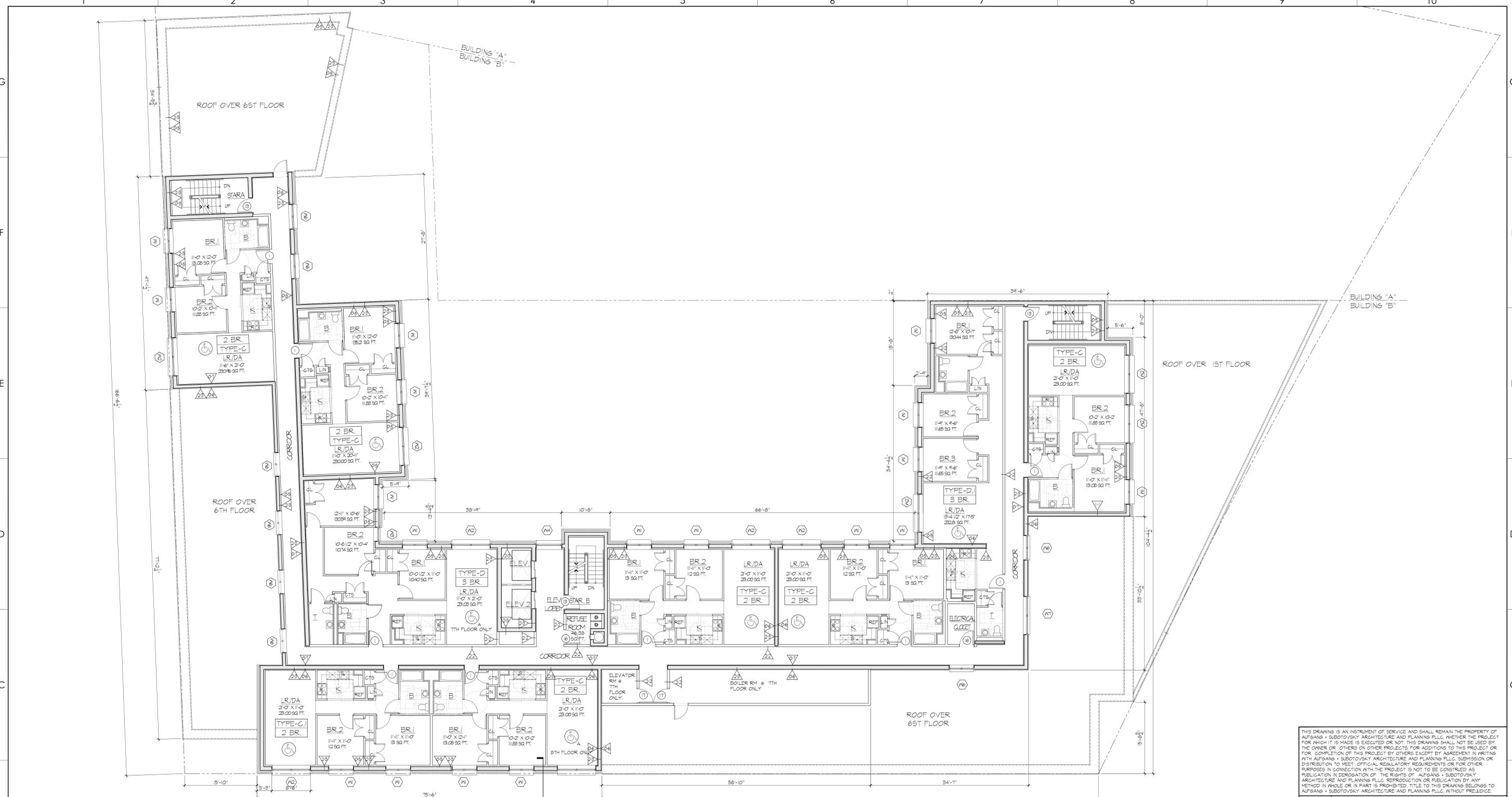
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PROPOSED LOW INCOME DEVELOPMENT FOR:
CROTONA PLAZA BUILDING "B"
1825 BOSTON RD, BRONX, NY 10460

3RD TO 6TH FLOOR PLAN

DATE:	7-30-13
PROJECT NO.:	1222
DRAWN BY:	SZ
CHECKED BY:	SZ
DRAWING NO.:	A-102.00
SCALE:	AS NOTED SHEET NO.: 13 OF 26
NYC DOB NUMBER:	





7TH AND 8TH FLOOR PLAN
SCALE: 1/8" = 1'-0"

- WALL TYPE LEGEND:**
- NON RATED**
 - PARTITION - (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD ONE SIDE OF 2" METAL STUDS @ 16" O.C.
 - TYPICAL PARTITION - (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD ON EACH SIDE OF 2 1/2" METAL STUDS @ 16" O.C.
 - BATHROOM CHASE WALL PARTITION - (1) LAYER 5/8" TYPE 'X' WATER RESISTANT GYPSUM BOARD ONE SIDE OF 2" METAL STUDS @ 16" O.C.
 - PARTITION - (1) LAYER OF 5/8" TYPE 'X' GYPSUM BOARD ON EACH SIDE OF 3 1/2" METAL STUDS @ 16" O.C. @ APARTMENT ELECTRICAL PANEL
 - FURRING AT EXTERIOR CMU WALL - (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD ON 3 1/2" GALV. METAL STUDS @ 16" O.C. WITH 3/4" (R-15) BATT INSULATION UNFACED
 - FURRING AT INTERIOR CMU WALL (APARTMENT SIDE) - (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD OVER 1 1/2" Z" METAL FURRING @ 16" O.C.
 - FURRING AT INTERIOR CMU WALL (PUBLIC CORRIDOR SIDE) - (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD OVER 3/8" METAL FURRING CHANNELS @ 16" O.C.
 - FURRING AT INTERIOR CMU WALL (PUBLIC CORRIDOR SIDE) - (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD ON 1 1/2" GALV. METAL STUDS @ 16" O.C. WITH 1/2" SEMI-RIGID INSULATION (R15) UNFACED
 - 1 HOUR RATED**
 - 1 HOUR RATED TENANT SEPARATION PARTITION - (1) LAYER OF 5/8" TYPE 'X' GYPSUM BOARD ON (1) SIDE, (2) LAYERS OF 3/8" TYPE 'X' GYPSUM BOARD ON OTHER SIDE OF 3 3/8" METAL STUDS @ 16" O.C. WITH 3/4" SOUND ATTENUATION INSULATION, EXTEND STUDS & GYPSUM BOARD UP TO UNDERSIDE OF CONCRETE DECK & SEAL TIGHT TO UNDERSIDE OF CONCRETE/METAL DECK AND/OR ROOF DECK w/ CONT. FIRESTOP SEALANT & FIRESTOP INSULATION (GA FILE #401-052) (STC 50-54)

- 2 HOUR RATED**
 - 2 HOUR RATED TENANT SEPARATION CHASEWALL - (2) LAYERS OF (1) LAYER 5/8" TYPE 'X' GYPSUM BOARD ON ONE SIDE OF 2 1/2" METAL STUDS @ 16" O.C. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF FLOOR PLANK OR ROOF PLANK, SEAL TIGHT TO PLANK WITH CONT. FIRESTOP SEALANT. SEAL ALL PENETRATIONS THRU CHASEWALL WITH FIRESTOP INSULATION AND CONT. FIRESTOP SEALANT AS REQ. PROVIDE HORIZONTAL 2X4" METAL STUD BRACING @ 16" O.C. MAX. (UL #1442) (PROVIDE INSUL. AS REQ. TO ACHIEVE A MIN STC RATINGS OF 50)
 - 2 HOUR RATED EXTERIOR PARTITION - (2) LAYERS OF 3/4" TYPE 'X' GYPSUM BOARD, (INSIDE) 5/8" EXP EXTERIOR GYPSUM BOARD SHEATHING (OUTSIDE) OVER 3 3/8" GALV. METAL STUDS @ 16" O.C. WITH 3/4" BATT INSULATION (UNFACED) (R-15) (UL-424)
 - 2 HOUR RATED INTERIOR PARTITION - (2) LAYERS 5/8" TYPE 'X' GYPSUM BOARD ON EACH SIDE, 3 3/8" METAL STUDS @ 16" O.C. WITH 3/4" SOUND ATTENUATION INSULATION, EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF FLOOR PLANK, ROOF DECK OR ROOF DECK. SEAL TIGHT TO DECK w/ CONT. FIRESTOP SEALANT & FIRESTOP INSULATION. (GA FILE #401-052 STC 50-54)
 - 2 HOUR RATED CMU WALL - CMU WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE BLOCK COURSES, SEAL TOP OF CONCRETE/METAL BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE/METAL DECK OR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESTOP INSULATION WHERE GAP EXIST. BETWEEN TOP OF WALL AND BOTTOM OF DECK (UL #406)
 - 2 HOUR RATED MECHANICAL SHAFT WALL - (2) LAYERS OF 1/2" TYPE 'X' GYPSUM BOARD ON ONE SIDE OF 2 1/2" METAL STUDS @ 24" O.C. WITH (1) LAYER OF 1" TYPE 'X' GYPSUM LINER PANEL ON SHAFT SIDE w/ 1" MINERAL FIBER INSULATION IN CAVITY. SEAL TOP OF WALL TIGHT TO UNDERSIDE OF CONCRETE DECK w/ CONT. FIRESTOP SEALANT. GA FILE #401B (STC 45-48)

- 3 HOUR RATED**
 - 3 HOUR RATED WALL - (1) LAYER 1/2" TYPE 'X' GYPSUM BOARD OVER 3/8" METAL HAT CHANNELS @ 24" O.C. OVER 2 HR RATED CONCRETE BLOCK WALL WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE/METAL FLOOR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESTOP INSULATION WHERE A GAP EXISTS BETWEEN TOP OF WALL AND BOTTOM OF CONCRETE/METAL DECK. (UL #414) (PROVIDE STC RATINGS OF 80-84 COMPACTOR CHUTE FOR SHAFT ADJACENT TO DWELLING UNITS)
 - 3 HOUR RATED CMU WALL - 3 CORE 15# SOLID CMU WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE BLOCK COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE DECK OR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESTOP INSULATION WHERE GAP EXIST. BETWEEN TOP OF WALL AND BOTTOM OF DECK
- GENERAL NOTES:**
- FOR KITCHEN AND TOILET ELEVATIONS SEE DRAWING A-501.
 - G.C. SHALL COORDINATE SIZE & LOCATION OF ALL HVAC OPENINGS IN CONCRETE/METAL DECK WITH MECHANICAL DRAWINGS. CONTRACTOR SHALL COORDINATE SIZE AND LOCATION OF ALL MASONRY OPENINGS AT ELEVATOR ENTRANCES WITH ELEVATOR VENDOR.
 - ALL ENLARGED PLAN DIMENSIONS ARE TAKEN FINISH TO FINISH (I.O.N.).

- LEGEND:**
- CONCRETE FOUNDATION WALL
 - CONCRETE BLOCK WALL - 2HR FIRE RATED
 - GYPSUM BOARD PARTITION - SEE PLAN FOR SIZE
 - MASONRY VENEER
 - REMOVABLE KITCHEN BASE CABINET 2'-6" WIDE BY 2'-0" DEEP PARTITION - SEE WALL TYPE LEGEND
 - HANDICAP ADAPTABLE APARTMENT UNIT
 - UFAS ACCESSIBLE EFFICIENCY UNIT (TOTAL 4 UNITS)
 - UFAS COMPLIANT H.V. EFFICIENCY UNIT - OUTFITTED FOR PEOPLE W/ HEARING OR VISUAL IMPAIRMENTS (TOTAL 2 UNIT)
 - 9'-0" DIAMETER CLEAR HANDICAP FLOOR TURNING SPACE
 - 7" FLOOR TURNING SPACE
 - 30' X 48" CLEAR FLOOR SPACE
 - FIRE RATED SHAFT WALL - PARTITION WALL TYPE 2-4
 - CARBON MONOXIDE DETECTOR
 - EXIT LIGHT AND SIGN - CEILING MOUNTED
 - EXIT LIGHT AND SIGN - WALL MOUNTED
 - ELECTRICAL PANEL UNIT
 - SUSPENDED GYPSUM BOARD

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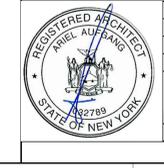
11-25-14	ISSUED TO OER
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5-15-14	ISSUED TO HPD FOR REVIEW AND COMMENT
DATE	REVISIONS

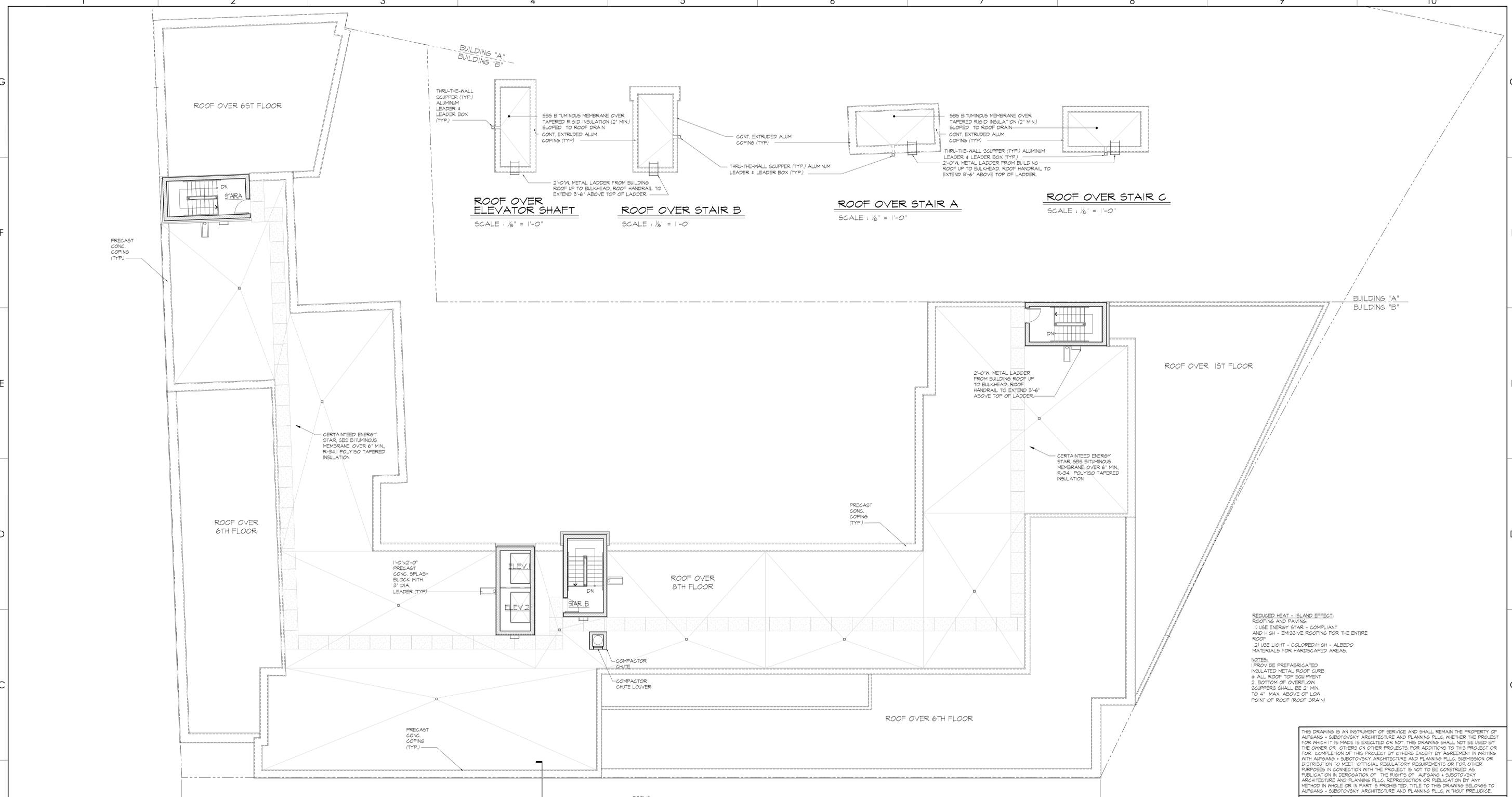
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PROPOSED LOW INCOME DEVELOPMENT FOR:
CROTONA PLAZA BUILDING "B"
1825 BOSTON RD, BRONX, NY 10460

7TH AND 8TH FLOOR PLAN

DATE:	7-30-13
PROJECT NO.:	1222
DRAWN BY:	SZ
CHECKED BY:	SZ
DRAWING NO.:	A-103.00
SCALE:	AS NOTED SHEET NO: 14 OF 26
NYC DOB NUMBER:	





ROOF OVER ELEVATOR SHAFT
SCALE: 1/8" = 1'-0"

ROOF OVER STAIR B
SCALE: 1/8" = 1'-0"

ROOF OVER STAIR A
SCALE: 1/8" = 1'-0"

ROOF OVER STAIR C
SCALE: 1/8" = 1'-0"

ROOF FLOOR PLAN
SCALE: 1/8" = 1'-0"

REDUCED HEAT - ISLAND EFFECT;
ROOFING AND PAVING:
1) USE ENERGY STAR - COMPLIANT
AND HIGH - EMISSIVE ROOFING FOR THE ENTIRE
ROOF
2) USE LIGHT - COLORED/HIGH - ALBEDO
MATERIALS FOR HARDCAPED AREAS.

NOTES:
1) PROVIDE PREFABRICATED
INSULATED METAL ROOF CURB
2) ALL ROOF TOP EQUIPMENT
3) BOTTOM OF OVERFLOW
SCUPPERS SHALL BE 2" MIN.
TO 4" MAX. ABOVE OF LOW
POINT OF ROOF (ROOF DRAIN)

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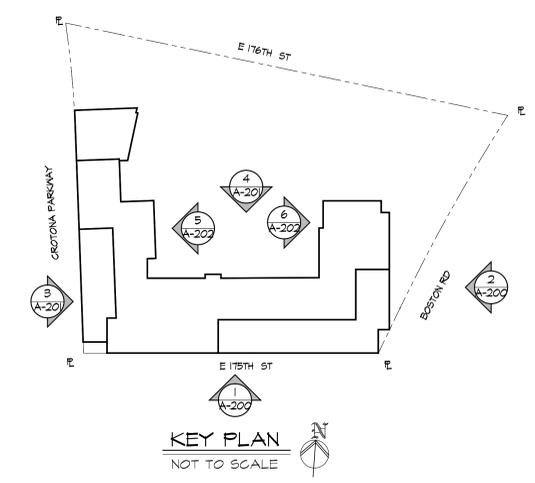
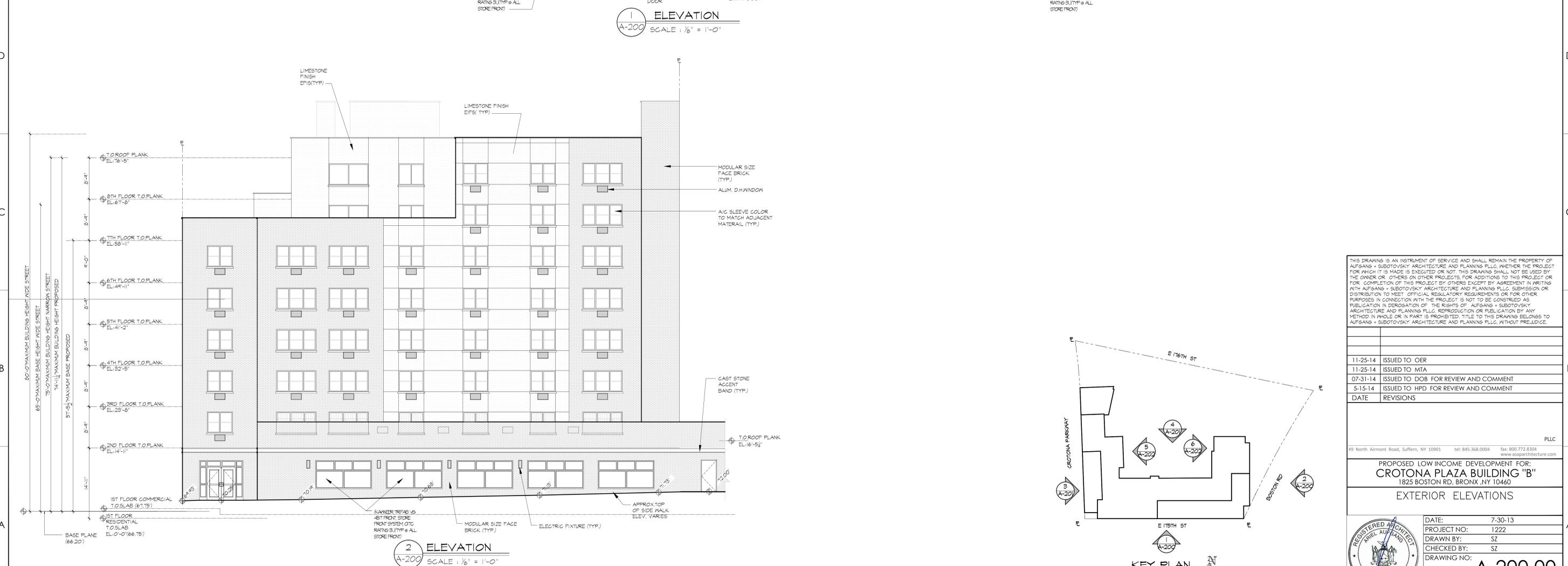
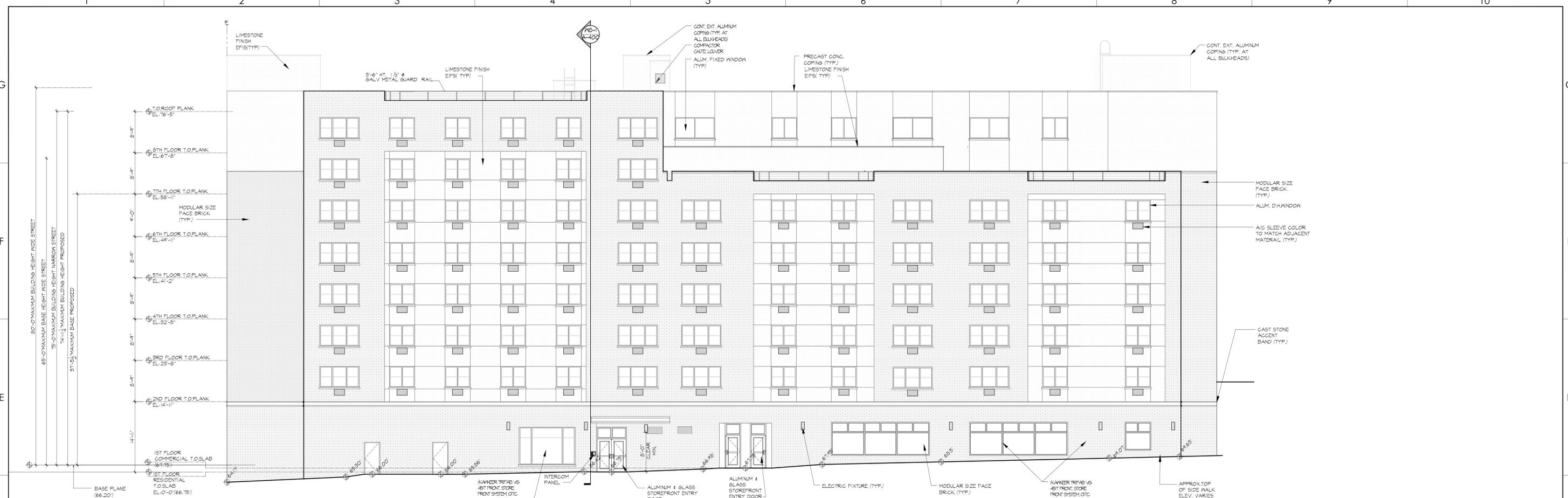
PROPOSED LOW INCOME DEVELOPMENT FOR:
CROTONA PLAZA BUILDING "B"
1825 BOSTON RD, BRONX, NY 10460

ROOF FLOOR PLAN

DATE:	7-30-13
PROJECT NO.:	1222
DRAWN BY:	SZ
CHECKED BY:	SZ
DRAWING NO.:	A-104.00

SCALE: AS NOTED | SHEET NO: 15 OF 26
NYC DOB NUMBER:





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CROTONA PLAZA BUILDING "B"
1825 BOSTON RD, BRONX, NY 10460

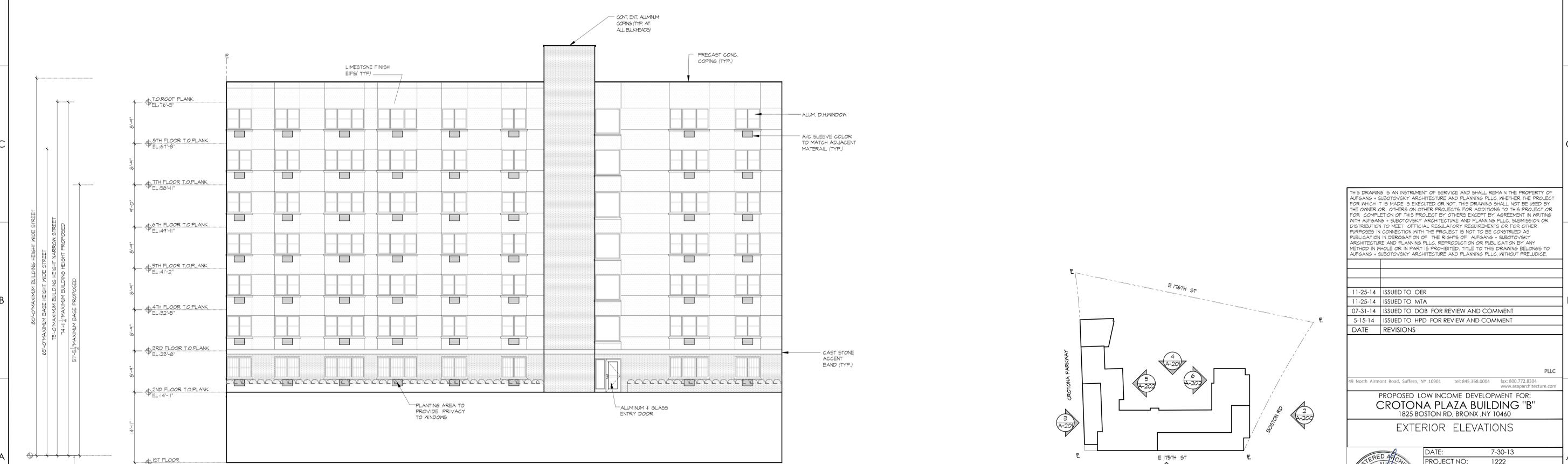
EXTERIOR ELEVATIONS

DATE:	7-30-13
PROJECT NO.:	1222
DRAWN BY:	SZ
CHECKED BY:	SZ
DRAWING NO.:	A-200.00

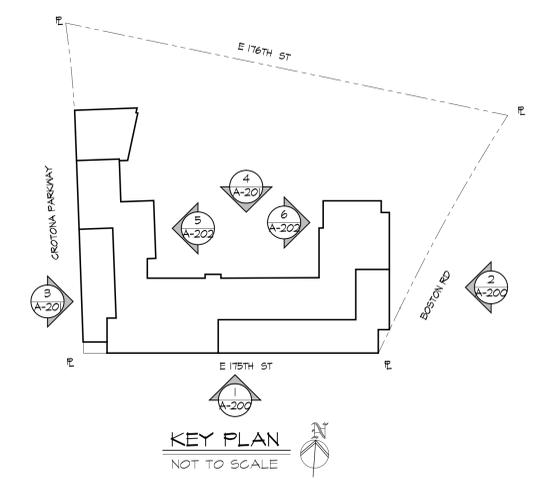
SCALE: AS NOTED | SHEET NO: 16 OF 26
NYC DOB NUMBER:



3 ELEVATION
A-201 SCALE: 1/8" = 1'-0"



4 ELEVATION
A-201 SCALE: 1/8" = 1'-0"



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DATE	REVISIONS
11-25-14	ISSUED TO OER
11-25-14	ISSUED TO MTA
07-31-14	ISSUED TO DOB FOR REVIEW AND COMMENT
5-15-14	ISSUED TO HPD FOR REVIEW AND COMMENT

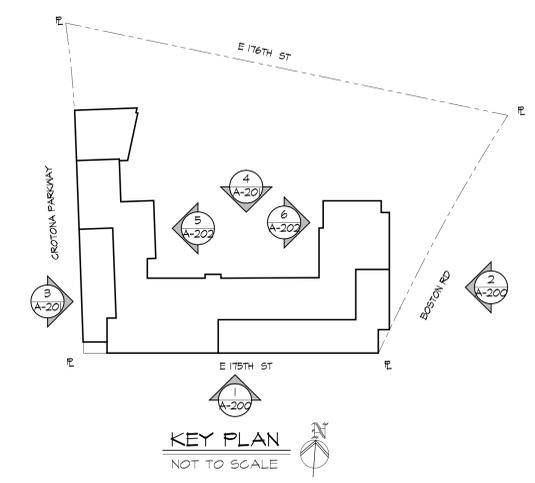
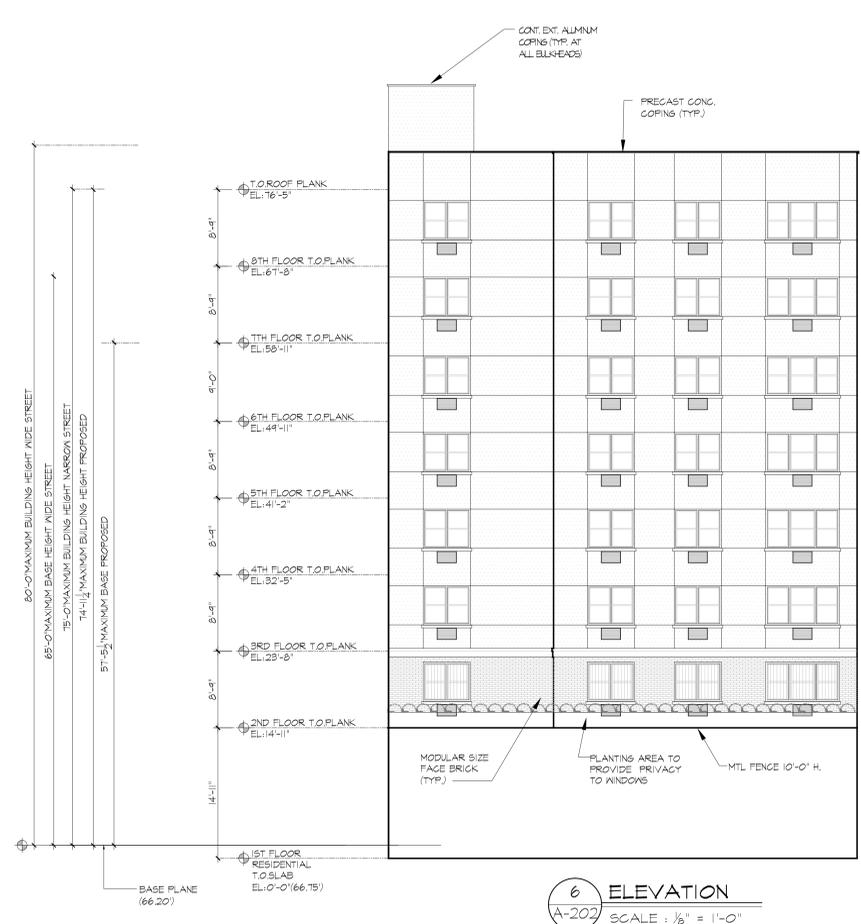
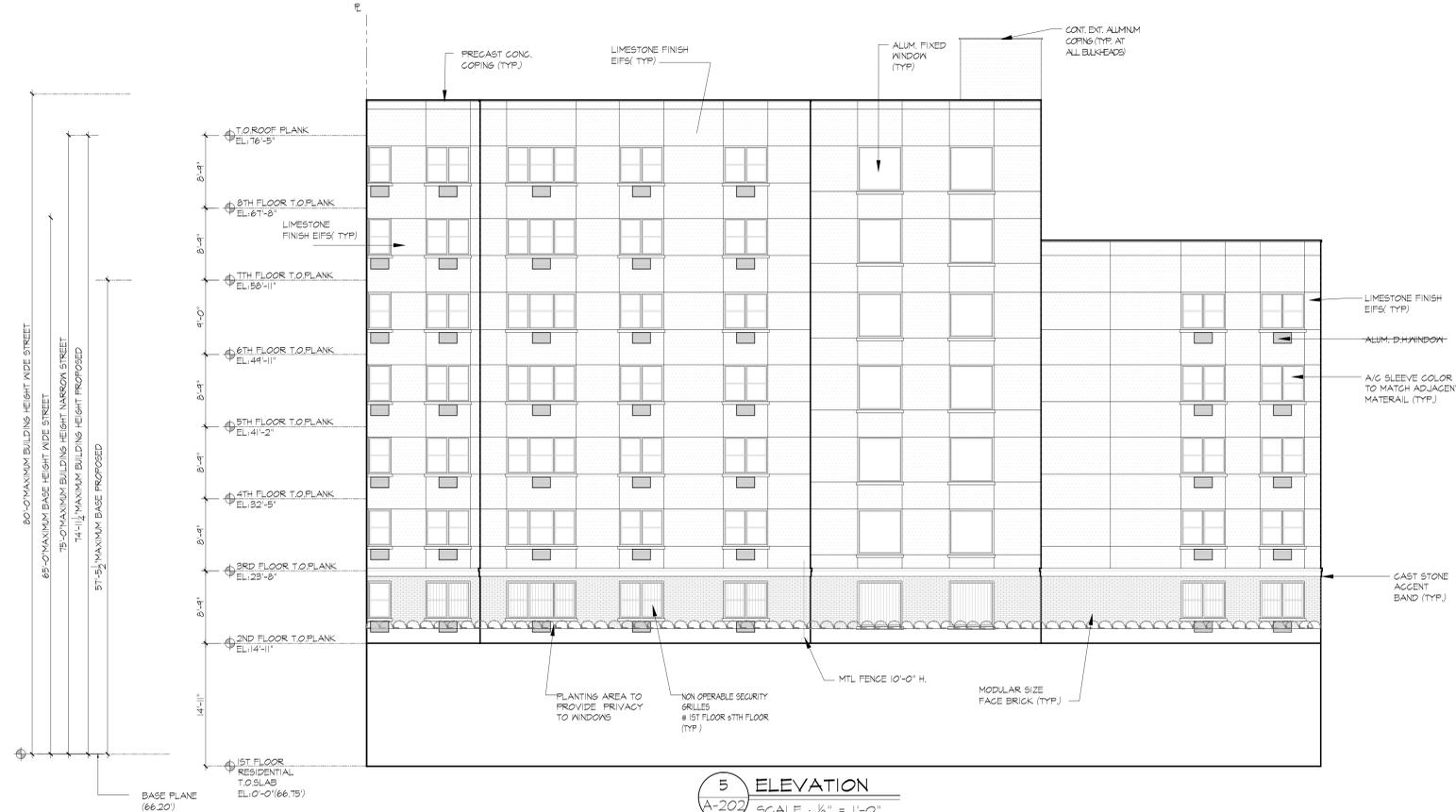
PLLC
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PROPOSED LOW INCOME DEVELOPMENT FOR:
CROTONA PLAZA BUILDING "B"
1825 BOSTON RD, BRONX, NY 10460

EXTERIOR ELEVATIONS

DATE:	7-30-13
PROJECT NO.:	1222
DRAWN BY:	SZ
CHECKED BY:	SZ
DRAWING NO.:	A-201.00

SCALE: AS NOTED | SHEET NO: 17 OF 26
NYC DOB NUMBER:



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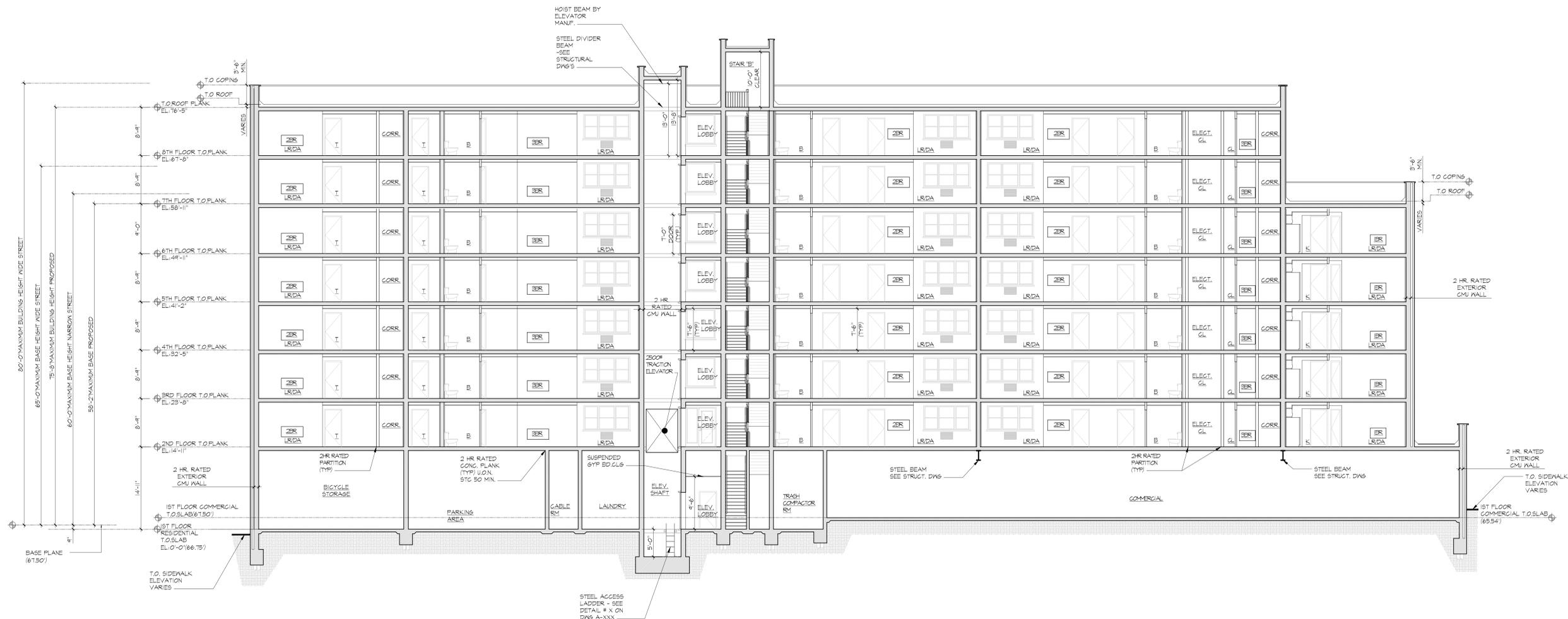
PROPOSED LOW INCOME DEVELOPMENT FOR:
CROTONA PLAZA BUILDING "B"
1825 BOSTON RD, BRONX, NY 10460

EXTERIOR ELEVATIONS

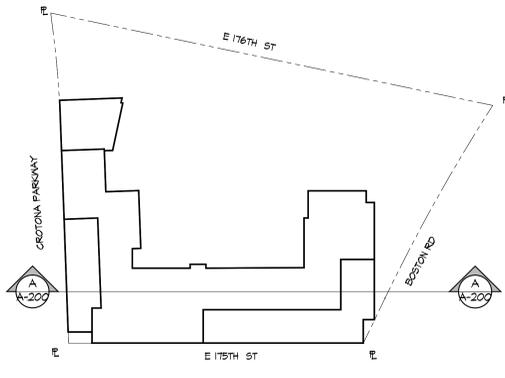
DATE:	7-30-13
PROJECT NO.:	1222
DRAWN BY:	SZ
CHECKED BY:	SZ
DRAWING NO.:	A-202.00

SCALE: AS NOTED | SHEET NO: 18 OF 24
NYC DOB NUMBER:





A-A CROSS SECTION
 SCALE: 1/8" = 1'-0"
 A-100 TO 105 A-300



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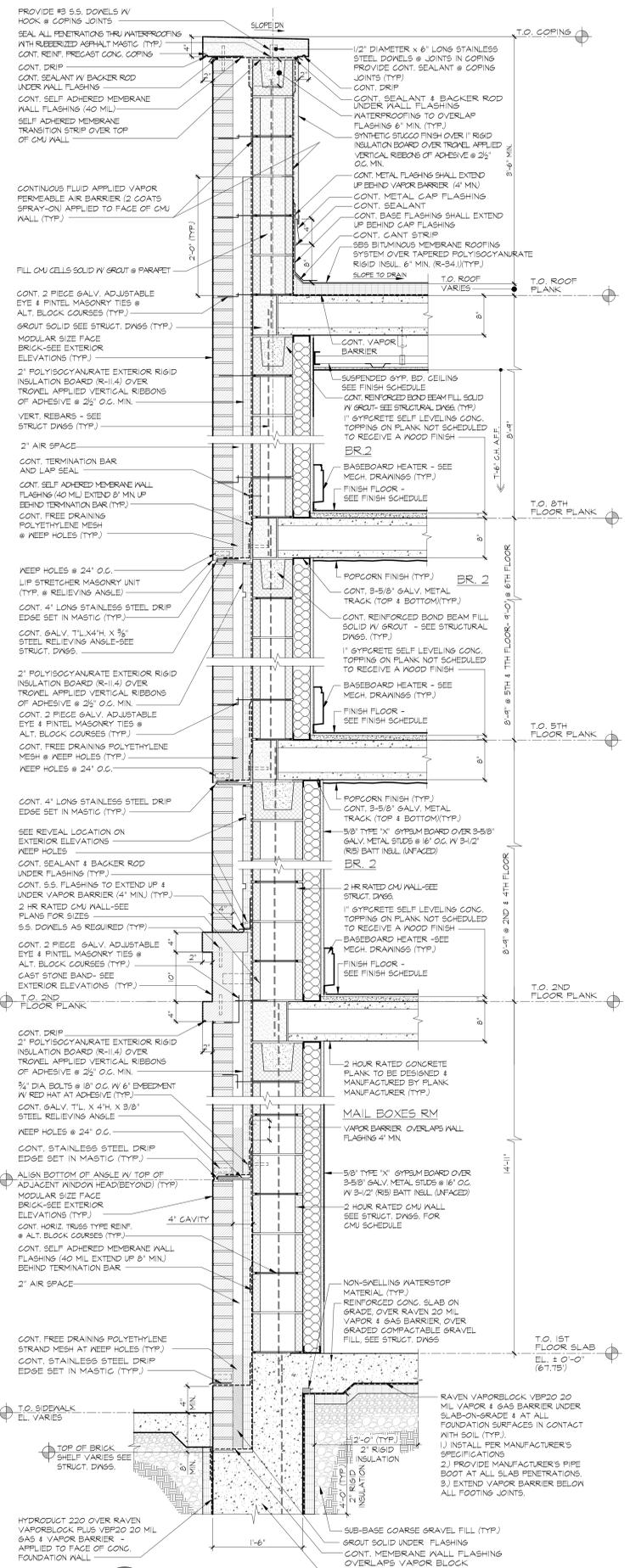
PROPOSED LOW INCOME DEVELOPMENT FOR:
CROTONA PLAZA BUILDING "B"
 1825 BOSTON RD, BRONX, NY 10460

CROSS SECTION

DATE:	7-30-13
PROJECT NO.:	1222
DRAWN BY:	RK
CHECKED BY:	SZ
DRAWING NO.:	A-203.00

SCALE: AS NOTED | SHEET NO.: 19 OF 26
 NYC DOB NUMBER:





MS-1 WALL SECTION
SCALE: 1" = 1'-0"
A-100, TO A-104 & A-200

- ENERGY MODEL GENERAL NOTES:**
- CONTINUOUS EXTERIOR BELOW GRADE INSULATION MUST BE INSTALLED WITHOUT BREAKS AND AT FULL THICKNESS AT ALL LOCATIONS. 2" XPS (R-11.4) MIN.
 - INTERIOR AND CAVITY INSULATION MUST BE PROTECTED FROM AIR INTRUSION, MOISTURE INTRUSION AND FREE OF VOIDS, GAPS AND COMPRESSION.
 - CAVITY INSULATION MUST BE IN CONTACT WITH THE INTERIOR WALL SURFACE (I.E. DRYWALL) AND COMPLETELY FILL THE INTERIOR WALL CAVITY.
 - BATT INSULATION MUST BE INSTALLED PROPERLY USING SPLICES TO SURROUND WIRES, ELECTRICAL OUTLETS/SWITCH/CONTROL BOXES, PIPES AND OTHER OBSTRUCTION WITHIN THE INSULATED CAVITY.
 - EXTERIOR RIGID AND INTERIOR INSULATION MUST BE INSTALLED WITHOUT BREAKS AND AT FULL THICKNESS AT ALL LOCATIONS.
 - BATT INSULATION MUST BE INSTALLED SUCH THAT RESNET-DEFINED GRADE 2 INSTALLATION IS ACHIEVED. FIBERGLASS INSULATION TO BE UNFACED.
 - 4" BRICK + 2" AIR SPACE + 2" XPS (R-11.4) + 8" CMU + 3 1/2" BATT (R-15) BETWEEN STEEL STUDS + INTERIOR GYPSUM (U-0.04)
 - CONTINUOUS INSULATION MUST SPANN PLANK EDGES.

- GENERAL NOTES:**
- G.G. SHALL PROVIDE 'LOX-ALL' MODEL #10 WITH SEISMIC GLIP N.Y. CITY APPROVED CAST STONE & MASONRY VENEER TIES. SUBMIT SHOP DWGS. TO STRUCTURAL ENGINEER FOR APPROVAL PRIOR TO INSTALLATION (TYP).
 - WATERPROOFING SYSTEM SHALL BE FURNISHED & INSTALLED AS PER GEO-TECH ENGINEERS RECOMMENDATIONS.
 - ALL MASONRY TIES SHALL BE HOT DIPPED GALVANIZED (TYP).
 - STAINLESS STEEL FLASHING SHALL EXTEND PAST FACE OF MASONRY 3/4" MIN.
 - APPLY 2 HOUR RATED SPRAY-ON FIREPROOFING TO ALL EXPOSED STRUCTURAL STEEL SURFACES.
 - ALL METAL FLASHING SHALL BE STAINLESS STEEL, GALVANIZED OR COATED METAL.
 - CONTINUOUS WALL FLASHING SHALL EXTEND UP AND BEHIND TERMINATION BAR W/ LAP SEAL.
 - PROVIDE 2 ROWS OF SMOOTH FINISH ADAIR DOLOMITE LIMESTONE BLOCK COURSES AT BASE OF MASONRY VENEER WALL (TYP.).

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07-31-14	ISSUED TO DOB FOR REVIEW AND COMMENT
DATE	REVISIONS

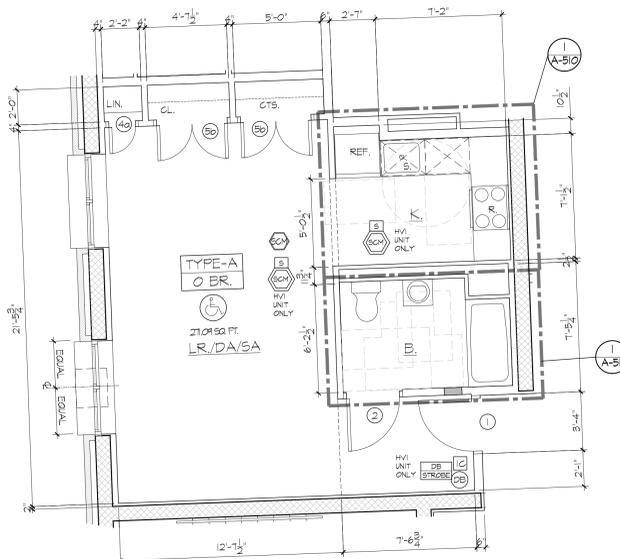
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PROPOSED LOW INCOME DEVELOPMENT FOR:
CROTONA PLAZA BUILDING "B"
1825 BOSTON RD, BRONX, NY 10460

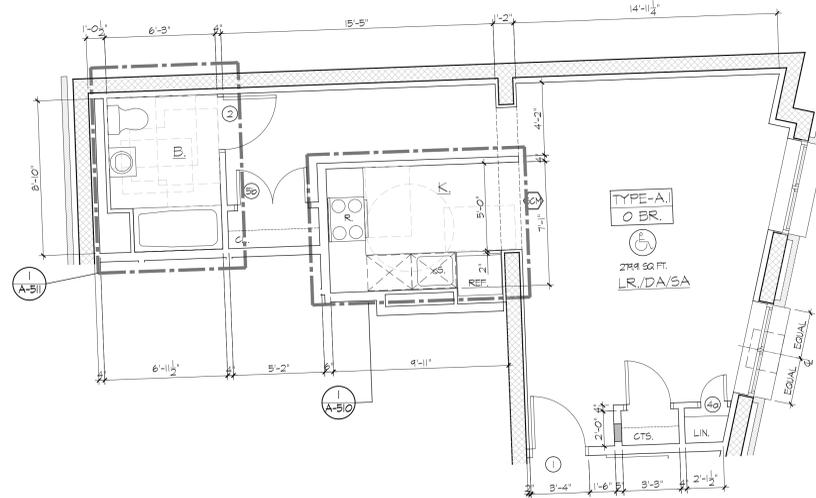
TYPICAL EXTERIOR WALL SECTION

DATE:	8-28-13
PROJECT NO.:	1222
DRAWN BY:	SZ
CHECKED BY:	RK
DRAWING NO.:	A-400.00
SCALE:	AS NOTED SHEET NO.: 20 OF 26
NYC DOB NUMBER:	

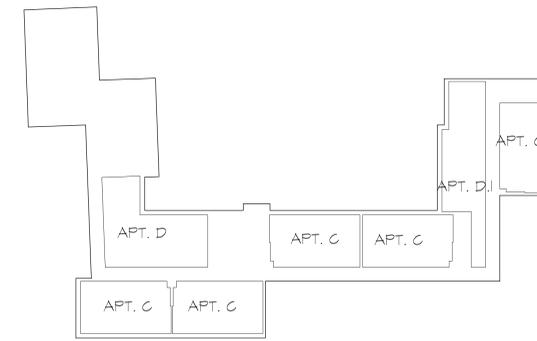




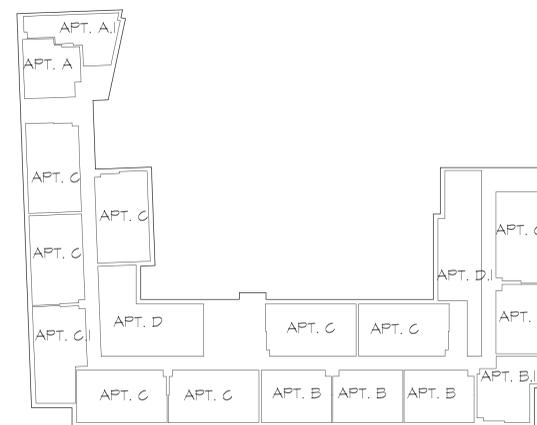
1 APT. A- ENLARGED FLOOR PLAN (478.31 NSF)
 A-500 SCALE: 1/4" = 1'-0"
 HVI UNIT 3RD FLOOR ONLY



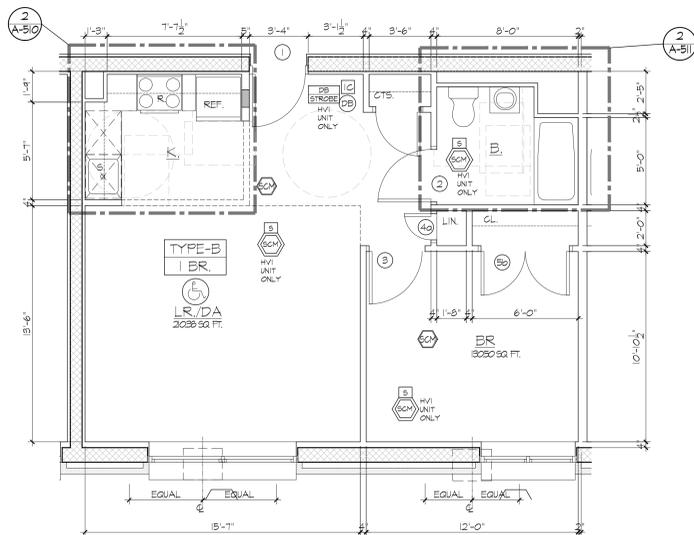
2 APT. A.I - ENLARGED FLOOR PLAN (512.72 NSF)
 A-500 SCALE: 1/4" = 1'-0"
 UFAS ACCESSIBLE UNIT 2ND ONLY NO REMOVABLE CABINETS AT UFAS UNIT



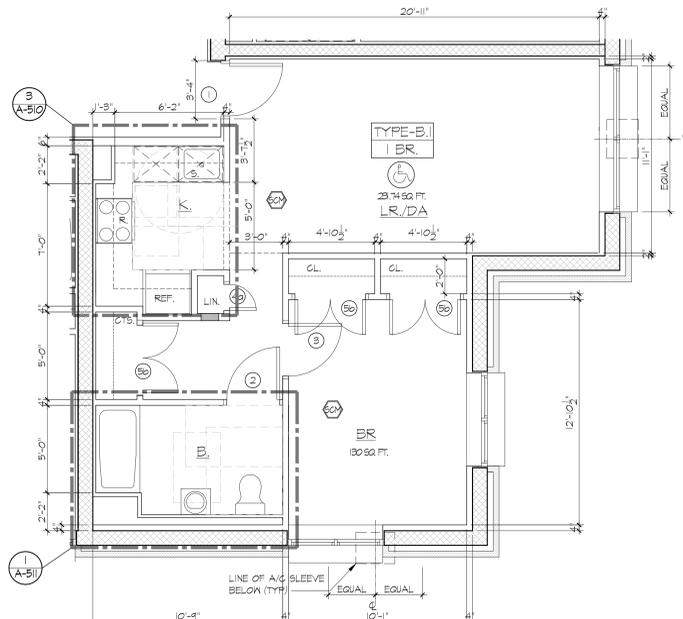
7TH-8TH FLOOR KEY PLAN
 NOT TO SCALE



2ND - 6TH FLOOR KEY PLAN
 NOT TO SCALE



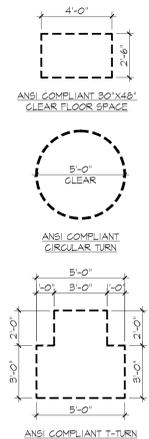
3 APT. B ENLARGED FLOOR PLAN (573.99 NSF)
 A-500 SCALE: 1/4" = 1'-0"
 HVI UNIT 5TH FLOOR ONLY



4 APT. B.I ENLARGED FLOOR PLAN (592.53 NSF)
 A-500 SCALE: 1/4" = 1'-0"
 UFAS ACCESSIBLE UNIT 5TH FLOOR ONLY

- COMBINATION SMOKE & CARBON MONOXIDE MONITOR W/ STROBE
- DOORBELL HARD WIRED TO DOORBELL CHIME & STROBE
- DOORBELL CHIME & STROBE
- INTERCOM W/ STROBE

HVI UNIT FIXTURES LEGEND



ACCESSIBLE CLEAR FLOOR AREA DIAGRAMS
 SCALE: 1/4" = 1'-0"

LIGHT AND VENTILATION SCHEDULE					
ROOM NAME	FLOOR AREA (sq.ft.)	10% REQ.	10% PROV.	5% REQ.	5% PROV.
APT. TYPE - A					
LIVING / DINING/SLEEPING	271.04	27.11	27.10	13.55	13.54
APT. TYPE - A.I					
LIVING / DINING/SLEEPING	274.91	27.49	27.10	14.00	13.54
APT. TYPE - B					
LIVING / DINING	2026	21.04	20.34	10.52	15.65
BEDROOM	1305	13.05	12.54	6.53	8.94
APT. TYPE - B.I					
LIVING / DINING	2374	23.74	20.34	11.54	15.65
BEDROOM	1300	13.00	12.54	6.50	8.94

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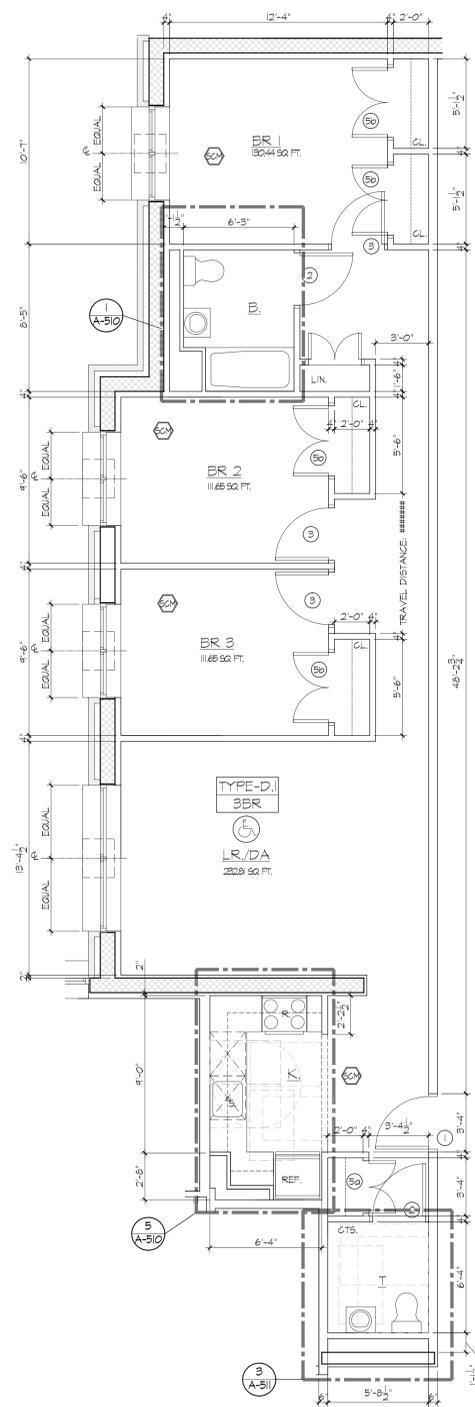
DATE	REVISIONS
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07-31-14	ISSUED TO DOB FOR REVIEW AND COMMENT
5-15-14	ISSUED TO HPD FOR REVIEW AND COMMENT

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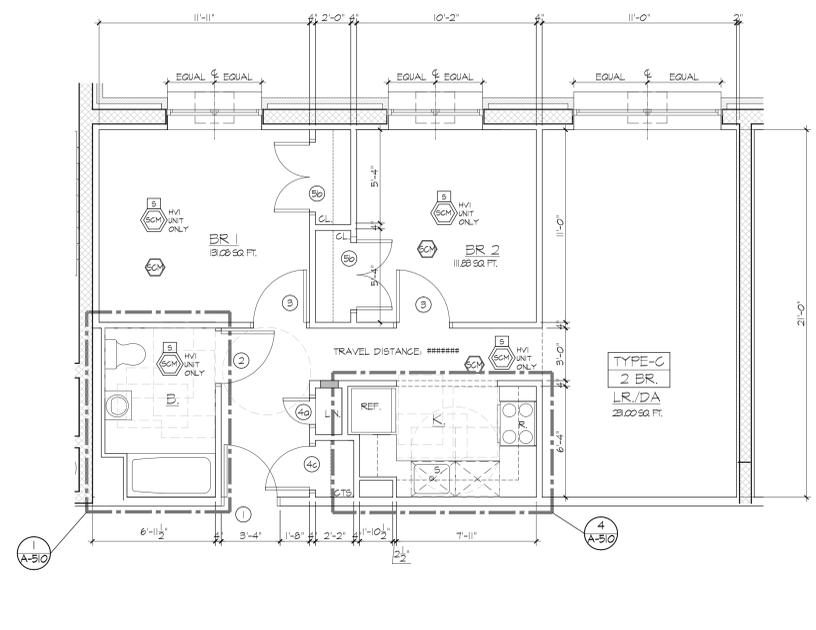
PROPOSED LOW INCOME DEVELOPMENT FOR:
CROTONA PLAZA BUILDING "B"
 1825 BOSTON RD, BRONX, NY 10460

ENLARGED APARTMENT LAYOUTS	
DATE:	8-28-13
PROJECT NO.:	1222
DRAWN BY:	SZ
CHECKED BY:	RK
DRAWING NO.:	A-500.00
SCALE:	AS NOTED SHEET NO.: 21 OF 26
NYC DOB NUMBER:	

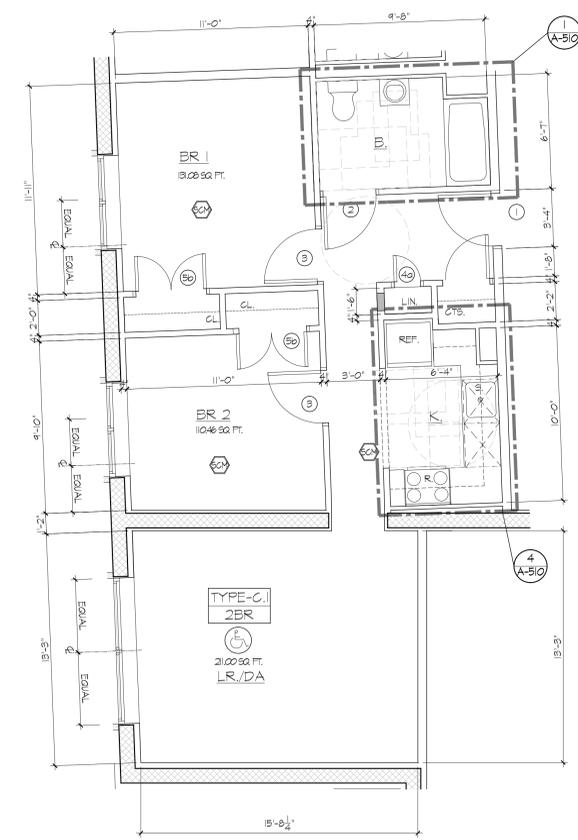




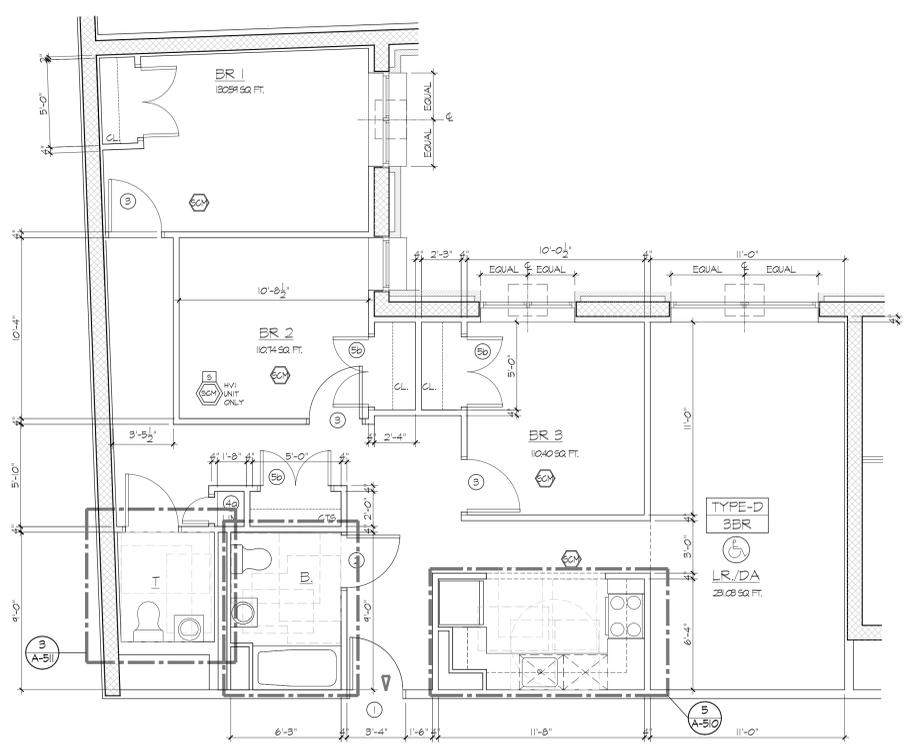
1 APT. D.I. - ENLARGED FLOOR PLAN (1051.35 NSF)
 SCALE: 1/4" = 1'-0"
 UFAS ACCESSIBLE UNIT 7TH FLOOR ONLY



1 APT. C - ENLARGED FLOOR PLAN (748.47 NSF)
 SCALE: 1/4" = 1'-0"
 UFAS ACCESSIBLE UNIT 4TH, 6TH, AND 8TH FLOOR ONLY

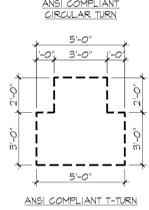
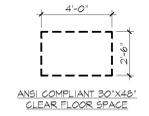


2 APT. C.I - ENLARGED FLOOR PLAN (740.02 NSF)
 SCALE: 1/4" = 1'-0"



3 APT. D - ENLARGED FLOOR PLAN (1095.77 NSF)
 SCALE: 1/4" = 1'-0"

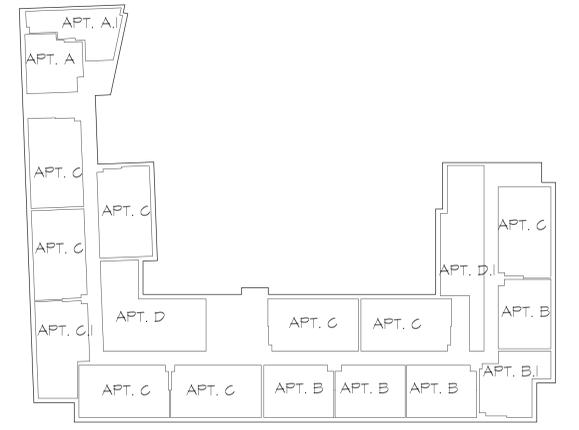
- HVI UNIT/FIXTURES LEGEND**
- COMBINATION SMOKE & CARBON MONOXIDE MONITOR W/ STROBE
 - DOORBELL HARD WIRED TO DOORBELL CHIME & STROBE
 - DOORBELL CHIME & STROBE
 - INTERCOM W/ STROBE



ACCESSIBLE CLEAR FLOOR AREA DIAGRAMS
 SCALE: 1/4" = 1'-0"

LIGHT AND VENTILATION SCHEDULE					
ROOM NAME	FLOOR AREA (sq. ft.)	10% REQ.	PROV.	5% REQ.	PROV.
APT. TYPE - C					
LIVING / DINING	231.00	23.10	30.34	11.55	15.65
BEDROOM. 1	131.08	13.11	18.54	6.55	8.99
BEDROOM. 2	111.83	11.18	16.54	5.54	8.99
APT. TYPE - C.I					
LIVING / DINING	211.00	21.10	30.34	10.55	15.65
BEDROOM. 1	131.08	13.11	18.54	6.55	8.99
BEDROOM. 2	110.46	11.05	15.65	5.52	8.02
APT. TYPE - D					
LIVING / DINING	232.81	23.28	30.34	11.64	15.65
BEDROOM. 1	130.44	13.04	18.54	6.52	8.99
BEDROOM. 2	111.65	11.17	15.65	5.58	8.99
BEDROOM. 3	111.65	11.17	15.65	5.58	8.99
APT. TYPE - D.I					
LIVING / DINING	231.03	23.10	30.34	11.55	15.65
BEDROOM. 1	130.59	13.06	18.54	6.53	8.99
BEDROOM. 2	110.74	11.07	15.65	5.54	8.02
BEDROOM. 3	110.40	11.04	15.65	5.52	8.99

7TH-8TH FLOOR KEY PLAN
 NOT TO SCALE



2ND - 6TH FLOOR KEY PLAN
 NOT TO SCALE

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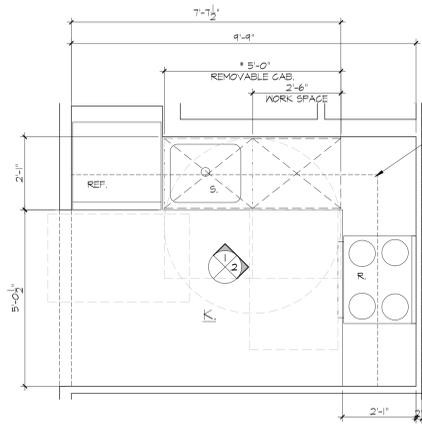
11-25-14	ISSUED TO OER
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07-31-14	ISSUED TO DOB FOR REVIEW AND COMMENT
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DATE	REVISIONS

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PROPOSED LOW INCOME DEVELOPMENT FOR:
CROTONA PLAZA BUILDING "B"
 1825 BOSTON RD, BRONX, NY 10460

ENLARGED APARTMENT LAYOUTS

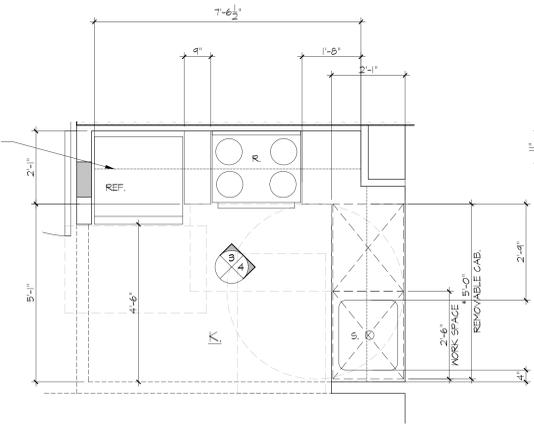
	DATE: 8-28-13
	PROJECT NO: 1222
	DRAWN BY: SZ
	CHECKED BY: RK
	DRAWING NO: A-501.00
	SCALE: AS NOTED SHEET NO: 22 OF 24
	NYC DOB NUMBER:



1
ENLARGED KITCHEN PLAN
APARTMENT TYPE A & A.1
SCALE: 1/2" = 1'-0"

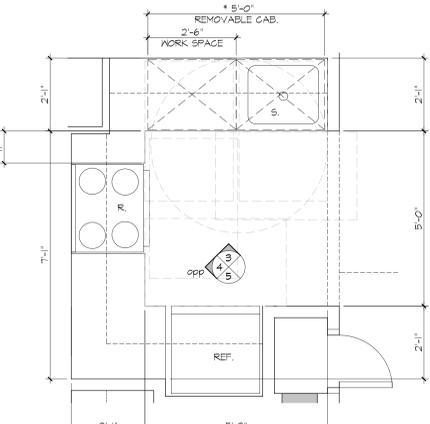
KITCHEN	REQ. (L.F.)	PROP. (L.F.)
COUNTERTOP	8'-0"	8'-5"
SHELVING	30'-0"	58'-4"

*REMOVED CABINETS AT U.F.A.S. UNIT - INSULATE HOT WATER & WASTE LINES



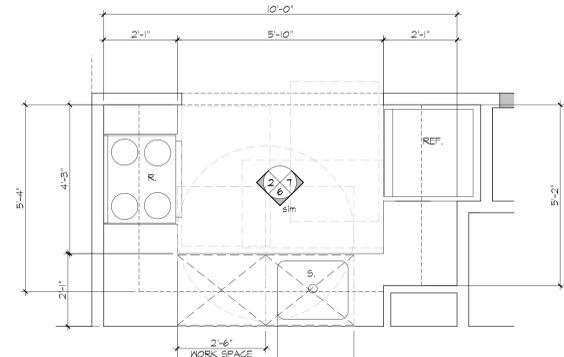
2
ENLARGED KITCHEN PLAN
APARTMENT TYPE B
SCALE: 1/2" = 1'-0"

KITCHEN	REQ. (L.F.)	PROP. (L.F.)
COUNTERTOP	8'-0"	8'-6"
SHELVING	30'-0"	47'-11"



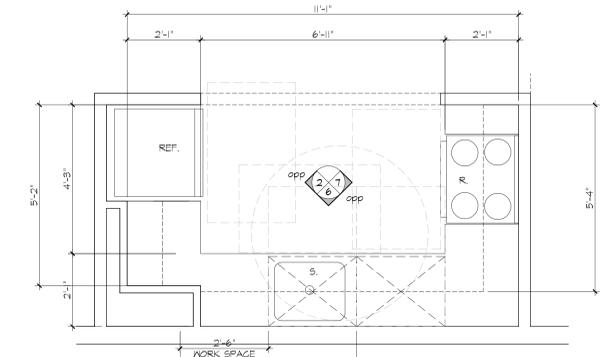
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ENLARGED KITCHEN PLAN
APARTMENT TYPE B.1
SCALE: 1/2" = 1'-0"

KITCHEN	REQ. (L.F.)	PROP. (L.F.)
COUNTERTOP	8'-0"	6'-2"
SHELVING	40'-0"	60'-0"



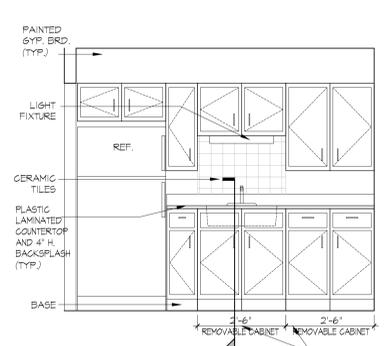
4
ENLARGED KITCHEN PLAN
APARTMENT TYPE C & C.1
SCALE: 1/2" = 1'-0"

KITCHEN	REQ. (L.F.)	PROP. (L.F.)
COUNTERTOP	7'-0"	7'-0"
SHELVING	50'-0"	64'-11"

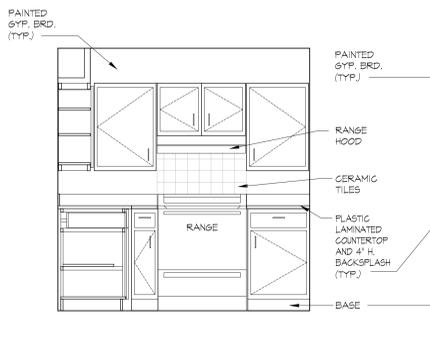


5
ENLARGED KITCHEN PLAN
APARTMENT TYPE D & D.1
SCALE: 1/2" = 1'-0"

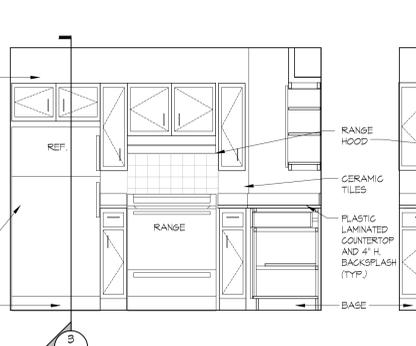
KITCHEN	REQ. (L.F.)	PROP. (L.F.)
COUNTERTOP	8'-0"	8'-11"
SHELVING	58'-0"	78'-0"



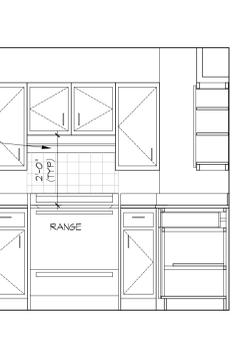
ELEVATION 1
SCALE: 1/2" = 1'-0"



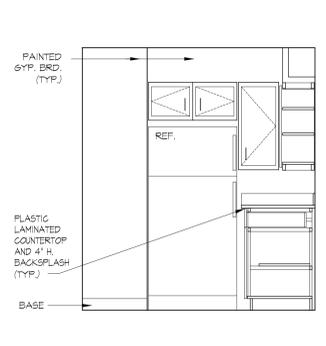
ELEVATION 2
SCALE: 1/2" = 1'-0"



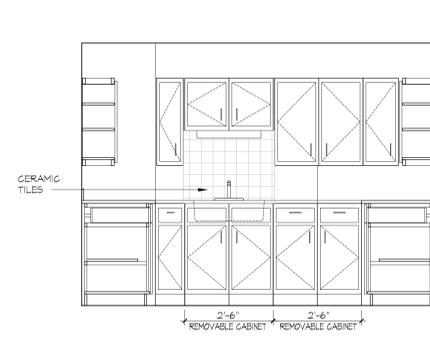
ELEVATION 3
SCALE: 1/2" = 1'-0"



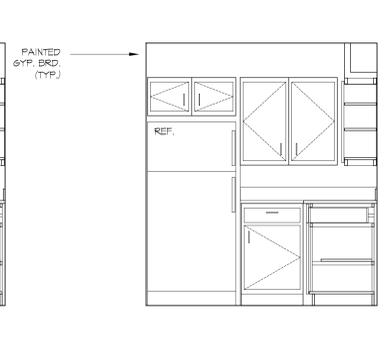
ELEVATION 4
SCALE: 1/2" = 1'-0"



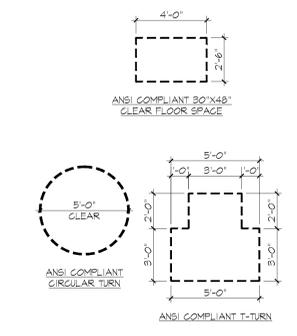
ELEVATION 5
SCALE: 1/2" = 1'-0"



ELEVATION 6
SCALE: 1/2" = 1'-0"



ELEVATION 7
SCALE: 1/2" = 1'-0"



ACCESSIBLE CLEAR FLOOR AREA DIAGRAMS
SCALE: 1/4" = 1'-0"

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DATE	REVISIONS
11-25-14	ISSUED TO OER
11-25-14	ISSUED TO MTA
07-31-14	ISSUED TO DOB FOR REVIEW AND COMMENT
5-15-14	ISSUED TO HPD FOR REVIEW AND COMMENT

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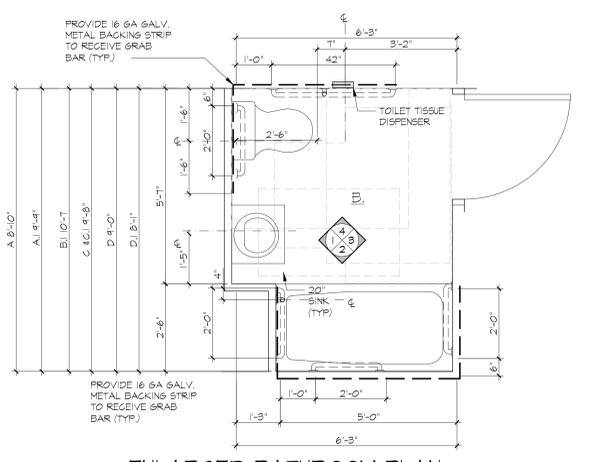
PROPOSED LOW INCOME DEVELOPMENT FOR:
CROTONA PLAZA BUILDING "B"
1825 BOSTON RD, BRONX, NY 10460

ENLARGED KITCHENS LAYOUT
& ELEVATION & DETAILS

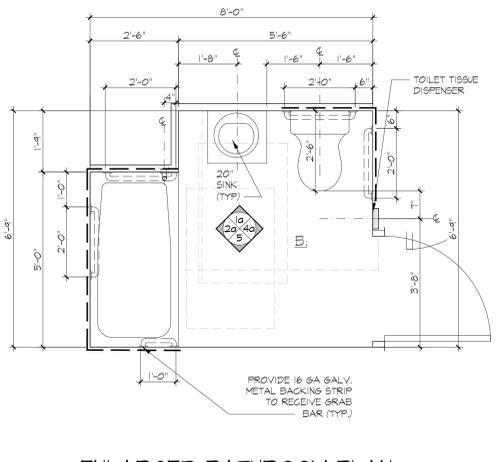
DATE:	8-28-13
PROJECT NO.:	1222
DRAWN BY:	ED
CHECKED BY:	RK
DRAWING NO.:	A-510.00

SCALE: AS NOTED | SHEET NO: 23 OF 26
NYC DOB NUMBER:

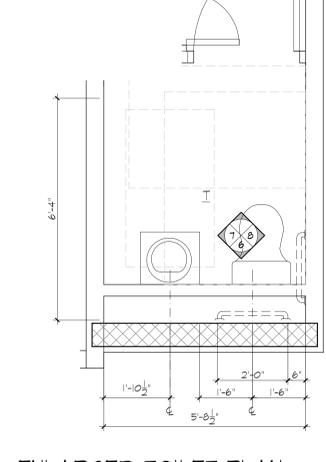




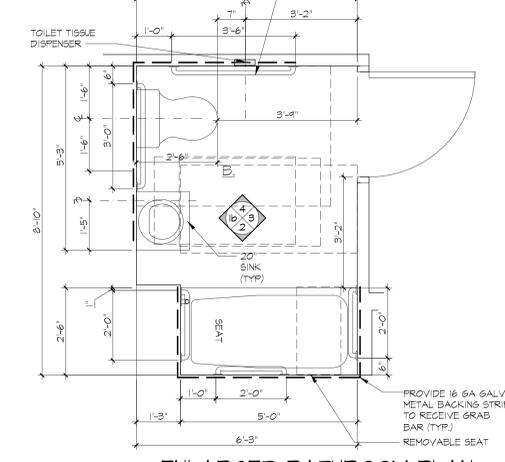
1
A-500
ENLARGED BATHROOM PLAN
APARTMENT TYPE A, A.1, B.1, C, C.1, D & D.1
SCALE: 1/2" = 1'-0"
COMPLIES W/ TYPE "B" - APPENDIX "P"
BATHROOMS



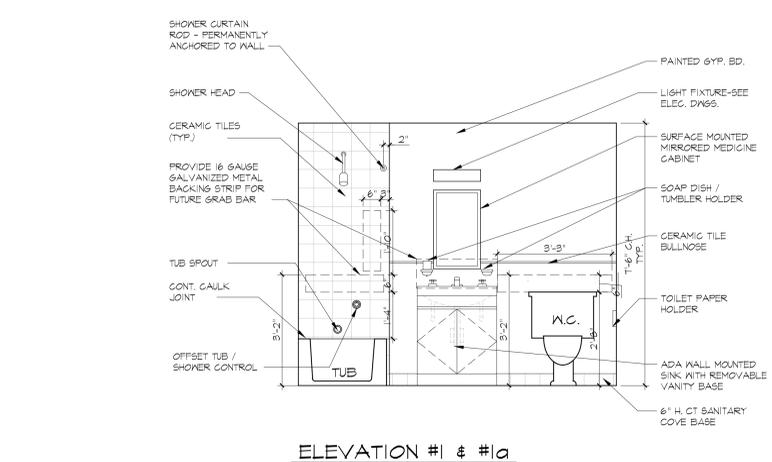
2
A-500
ENLARGED BATHROOM PLAN
APARTMENT TYPE B
SCALE: 1/2" = 1'-0"
COMPLIES W/ TYPE "B" - APPENDIX "P"
BATHROOMS



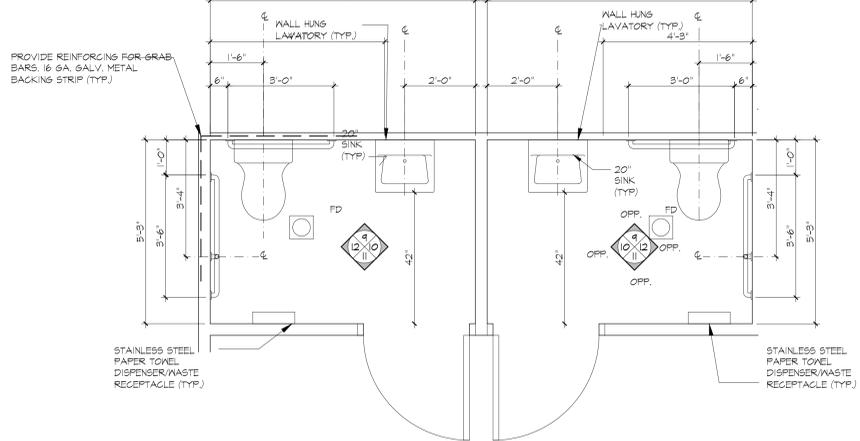
3
A-500
ENLARGED TOILET PLAN
APARTMENT TYPE D.1 & D (OPP. SIM.)
SCALE: 1/2" = 1'-0"
COMPLIES W/ TYPE "B" - APPENDIX "P"
BATHROOMS



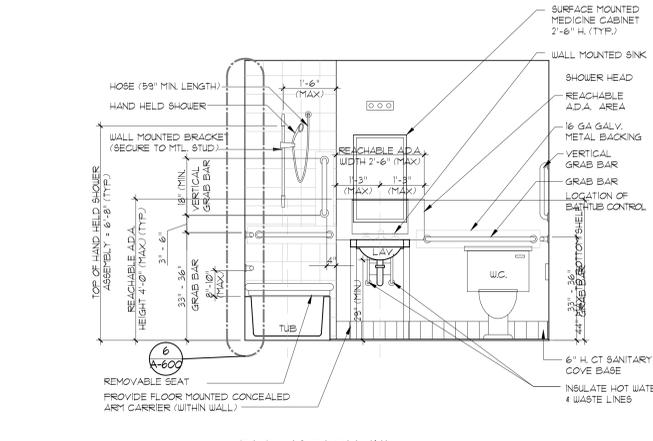
4
A-500
ENLARGED BATHROOM PLAN
APARTMENT TYPE A & C
SCALE: 1/2" = 1'-0"
UFAS BATHROOM PLANS @ 2ND, 4TH,
5TH, 6TH, 7TH & 8TH FLOORS.
(ACCESSIBLE)



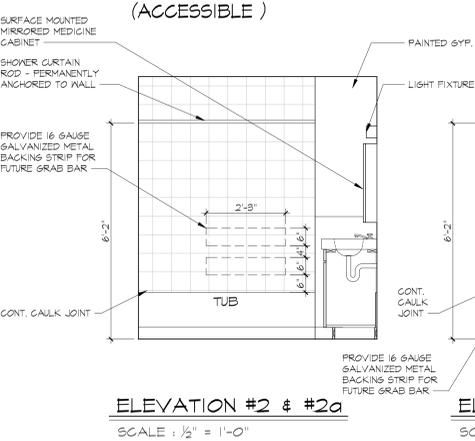
ELEVATION #1 & #1a
SCALE: 1/2" = 1'-0"
ELEVATION #1 (AS SHOWN)
ELEVATION #1a (OPPOSITE HAND)
ELEVATION #1
ELEVATION #1a



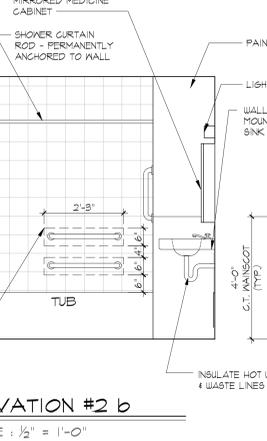
6
A-100
ENLARGED PUBLIC TOILET PLAN
AT COMMERCIAL
SCALE: 1/2" = 1'-0"



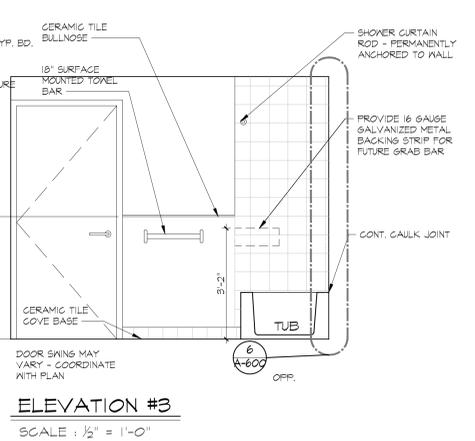
ELEVATION #1b
SCALE: 1/2" = 1'-0"



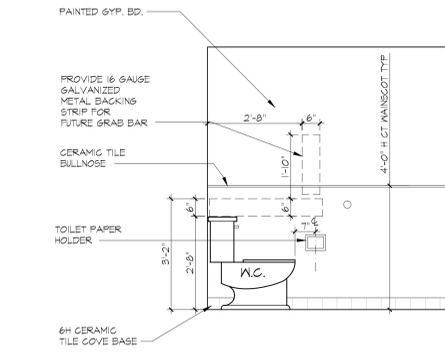
ELEVATION #2 & #2a
SCALE: 1/2" = 1'-0"
ELEVATION #2 (AS SHOWN)
ELEVATION #2a (OPPOSITE HAND)



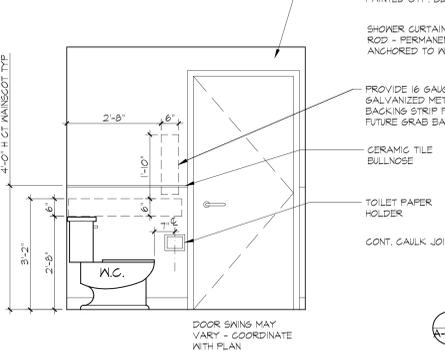
ELEVATION #2 b
SCALE: 1/2" = 1'-0"



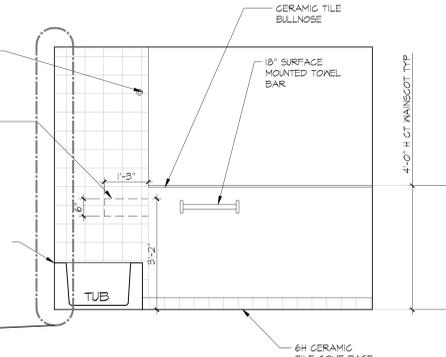
ELEVATION #3
SCALE: 1/2" = 1'-0"



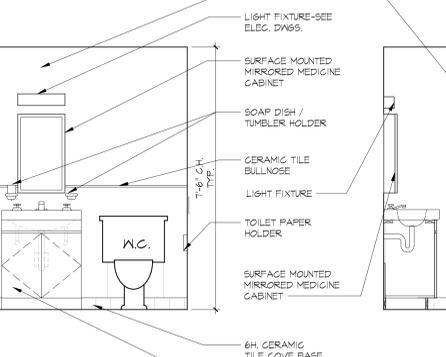
ELEVATION #4
SCALE: 1/2" = 1'-0"



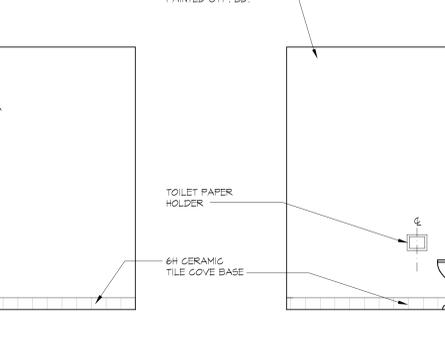
ELEVATION #4a
SCALE: 1/2" = 1'-0"
ELEVATION #4a (AS SHOWN)
ELEVATION #4a (OPPOSITE HAND)



ELEVATION #5
SCALE: 1/2" = 1'-0"



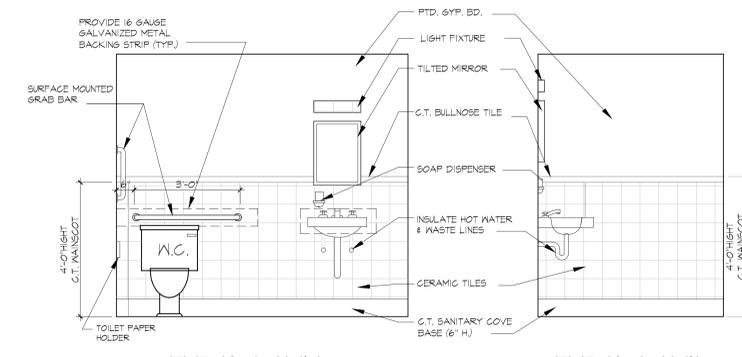
ELEVATION #6
SCALE: 1/2" = 1'-0"



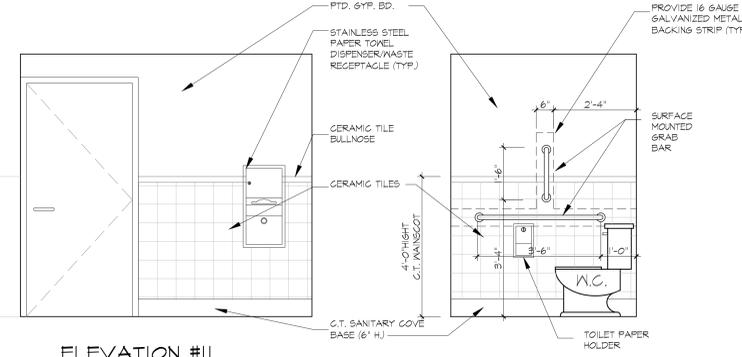
ELEVATION #7
SCALE: 1/2" = 1'-0"



ELEVATION #8
SCALE: 1/2" = 1'-0"



ELEVATION #9
SCALE: 1/2" = 1'-0"



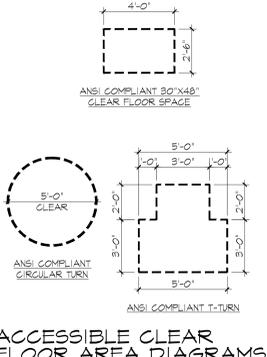
ELEVATION #10
SCALE: 1/2" = 1'-0"



ELEVATION #11
SCALE: 1/2" = 1'-0"



ELEVATION #12
SCALE: 1/2" = 1'-0"



ACCESSIBLE CLEAR FLOOR AREA DIAGRAMS
SCALE: 1/4" = 1'-0"

NOTE:
IN UFAS DESIGNATED BATHROOMS GRAB BARS MUST BE INSTALLED AT THE TIME OF CONSTRUCTION

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11-25-14	ISSUED TO OER
11-25-14	ISSUED TO MTA
07-31-14	ISSUED TO DOB FOR REVIEW AND COMMENT
5-15-14	ISSUED TO HPD FOR REVIEW AND COMMENT
DATE	REVISIONS

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PROPOSED LOW INCOME DEVELOPMENT FOR:
CROTONA PLAZA BUILDING "B"
1825 BOSTON RD, BRONX, NY 10460

ENLARGED BATHROOMS LAYOUT & ELEVATION & DETAILS

DATE:	8-28-13
PROJECT NO.:	1222
DRAWN BY:	ED
CHECKED BY:	RK
DRAWING NO.:	A-511.00
SCALE:	AS NOTED SHEET NO.: 24 OF 26
NYC DOB NUMBER:	

LIST OF ABBREVIATIONS		DOOR SCHEDULE											FINISH SCHEDULE										
ALUM.	ALUMINUM	DOOR DESIGNATION	DOOR ELEVATION	WIDTH	HEIGHT	THICKNESS	TYPE	MATERIAL	FINISH	FIRE RATINGS	STC RATINGS	MATERIAL	FINISH	FIRE RATINGS	SADDLE MATERIAL	HARDWARE SET (SEE SPECS)	REMARKS	ROOM NAMES & LOCATION	FLOOR	BASE	WALL	CEILING	REMARKS
GLASS	GLASS PANEL																						
H.C.	HOLLOW CORE																						
H.M.	HOLLOW METAL																						
K.D.	KNOCK DOWN FRAME																						
MAR.	MARBLE SADDLE																						
PTD.	PAINTED																						
S.C.	SOLID CORE																						
STL.	STEEL																						
TEMP.	TEMPERED																						
W.G.	WIRE GLASS																						
WOOD	WOOD																						

ROOM DESIGNATION	DOOR DESIGNATION	DOOR ELEVATION	WIDTH	HEIGHT	THICKNESS	TYPE	MATERIAL	FINISH	FIRE RATINGS	STC RATINGS	MATERIAL	FINISH	FIRE RATINGS	SADDLE MATERIAL	HARDWARE SET (SEE SPECS)	REMARKS
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APARTMENTS	APARTMENT ENTRY	1	A	3'-0"	6'-8"	1 3/4"	FL	STL	PTD.	1/2 HR.	55	STL	PTD.	1/2 HR.	ALUM.	SEE NOTE #8, PROVIDE LATCH SET AND CHAIN GUARD
	BATHROOM/TOILET	2	B	3'-0"	6'-8"	1 3/4"	FL	ALUM.	PTD.	-	-	H.M.	PTD.	-	MAR.	DOOR 1" UNDERCUT
	BEDROOM	3	B	3'-0"	6'-8"	1 3/4"	FL	ALUM.	PTD.	-	-	H.M.	PTD.	-	-	-
	LINEN CLOSET	4a	B	1'-6"	6'-8"	1 3/4"	FL	ALUM.	PTD.	-	-	H.M.	PTD.	-	-	-
	LINEN CLOSET	4b	B	2'-0"	6'-8"	1 3/4"	FL	ALUM.	PTD.	-	-	H.M.	PTD.	-	-	-
	COAT CLOSET	4c	B	2'-6"	6'-8"	1 3/4"	FL	ALUM.	PTD.	-	-	H.M.	PTD.	-	-	-
	CLOSET	5a	C	(2) 1'-6"	6'-8"	1 3/4"	FL	ALUM.	PTD.	-	-	H.M.	PTD.	-	-	-
	CLOSET	5b	C	(2) 2'-0"	6'-8"	1 3/4"	FL	ALUM.	PTD.	-	-	H.M.	PTD.	-	-	-
	CLOSET	5c	C	(2) 2'-6"	6'-8"	1 3/4"	FL	ALUM.	PTD.	-	-	H.M.	PTD.	-	-	-
	LINEN CLOSET	4d	B	1'-0"	6'-8"	1 3/4"	FL	ALUM.	PTD.	-	-	H.M.	PTD.	-	-	-
PUB. SPACES	REG. ROOM	22	I	3'-0"	6'-8"	1 3/4"	FL	STL	PTD.	1/2 HR.	-	STL	PTD.	1/2 HR.	ALUM.	SEE NOTE #8
	COMMERCIAL 1	27	H	(2) 3'-0"	7'-0"	1 3/4"	FL	ALUM.	PTD.	-	-	ALUM.	PTD.	-	-	-
	COMMERCIAL 1	28	F	3'-0"	7'-0"	1 3/4"	FL	ALUM.	PTD.	-	-	ALUM.	PTD.	-	-	-
	COMMERCIAL 2	29	E	3'-0"	7'-0"	1 3/4"	FL	ALUM.	PTD.	-	-	ALUM.	PTD.	-	-	-
	LAUNDRY	14	J	3'-0"	6'-8"	1 3/4"	FL	STL	PTD.	1/2 HR.	-	STL	PTD.	1/2 HR.	ALUM.	SEE NOTE #8
	EXTERIOR ACCESS	24	D	3'-0"	6'-8"	1 3/4"	FL	STL	PTD.	1/2 HR.	-	STL	PTD.	1/2 HR.	ALUM.	SEE NOTE #1 & #8
SERVICE AREAS	PUBLIC BATHROOMS	25	D	3'-0"	6'-8"	1 3/4"	FL	STL	PTD.	-	-	STL	PTD.	-	-	-
	STAIR A	13	I	3'-0"	6'-8"	1 3/4"	FL	STL	PTD.	1/2 HR.	-	STL	PTD.	1/2 HR.	ALUM.	-
	STAIR B	13	I	3'-0"	6'-8"	1 3/4"	FL	STL	PTD.	1/2 HR.	-	STL	PTD.	1/2 HR.	ALUM.	SEE NOTE #8
	JANITORS CL. / REFUSE ROOM	16	J	3'-0"	6'-8"	1 3/4"	FL	STL	PTD.	1/2 HR.	-	STL	PTD.	1/2 HR.	ALUM.	SEE NOTE #8
	BICYCLE STORAGE	17	J	3'-0"	6'-8"	1 3/4"	FL	STL	PTD.	1/2 HR.	-	STL	PTD.	1/2 HR.	ALUM.	SEE NOTE #8
	MECH. AREAS/UTILITY ROOMS	17	J	3'-0"	6'-8"	1 3/4"	FL	STL	PTD.	1/2 HR.	-	STL	PTD.	1/2 HR.	ALUM.	SEE NOTE #8
	STAIR A @ ROOF	20	B	3'-0"	6'-8"	1 3/4"	FL	STL	PTD.	1/2 HR.	-	STL	PTD.	1/2 HR.	STL	SEE NOTE #5 & #8
	STAIR B @ ROOF	20	B	3'-0"	6'-8"	1 3/4"	FL	STL	PTD.	1/2 HR.	-	STL	PTD.	1/2 HR.	STL	SEE NOTE #5 & #8
	BUILDING ENTRY	26	G	(2) 3'-0"	7'-0"	1 3/4"	FL	ALUM.	PTD.	-	-	ALUM.	PTD.	-	-	-
	COMPACTOR ROOM	30	B	3'-0"	6'-8"	1 3/4"	FL	H.M.	PTD.	1/2 HR.	-	H.M.	PTD.	1/2 HR.	STL	SEE NOTE #5 & #8
TELEPHONE CLOSET	31	C	(2) 2'-0"	6'-8"	1 3/4"	FL	STL	PTD.	1/2 HR.	-	STL	PTD.	1/2 HR.	STL	SEE NOTE #8	
TELEPHONE CLOSET	32	C	(2) 2'-6"	6'-8"	1 3/4"	FL	STL	PTD.	-	-	STL	PTD.	-	-	STL	SEE NOTE #8

ROOM NAMES & LOCATION	FLOOR	BASE	WALL	CEILING	REMARKS
PARKING AREA					
COMMERCIAL					
FIRE PUMP RM					
METER ROOMS (WATER / GAS / ELEC.)					
CABLE ROOM					
TRASH/COMPACTOR ROOM					
JANITOR CLOSET					3 HR RATED GLB & WALLS / 4'-0" C.T. MAINSCOT (NON PERFOR. TILE)
VESTIBULE / MAIN LOBBY / MAIL					SEE NOTE #18
ELEVATOR LOBBY					SEE NOTE #18
PUBLIC CORRIDOR					
STAIR A, B & C					SEE NOTE #14
LAUNDRY ROOM					SEE NOTE #18
BICYCLE STORAGE					PROVIDE RACKS FOR BIKE STORAGE
ELEV. LOBBY / PUBLIC CORRIDOR					
JANITOR'S CLOSET / REFUSE ROOM					4'-0" C.T. MAINSCOT
STAIR A, B & C					SEE NOTE #14
MECHANICAL / BOILER RM.					
KITCHEN					SEE NOTE #11
LIVING / DINING RM. / SLEEPING AREA					
BEDROOM					
BATHROOM					SEE NOTES #4-#8
CLOSET / WALK-IN CLOSET					
LINEN CLOSET / COAT CLOSET					
STAIR A & B					SEE NOTE #14

FINISH NOTES:

APARTMENT UNITS:

- PROVIDE SOFFITS AT 7'-6" A.F.F. MIN. AND/OR GYPSUM BOARD CEILING AS REQUIRED TO CONCEAL ALL MECHANICAL, ELECTRICAL, & PLUMBING LINES, ETC. SOFFITS SHALL EXTEND FROM WALL TO WALL TO CREATE "BEAM" EFFECT
- PROVIDE 6" HIGH WOOD BASE THROUGHOUT ENTIRE APARTMENT.

BATHROOMS:

- ALL INTERIOR DOOR HARDWARE TO BE LEVER HANDLE - STYLE T.B.D.
- PROVIDE WATER RESISTANT GYPSUM BOARD AT WALLS & CEILING OF ALL BATHROOMS & TOILETS (EXCEPT SHOWER & MAINSCOT AREAS)
- PROVIDE GEMTITIOUS BACKER BOARD AS SUBSTRATE FOR SURFACES TO RECEIVE CERAMIC TILE FINISH @ SHOWER AREAS & MAINSCOT ONLY.
- PROVIDE 4'-0" HIGH CERAMIC TILE MAINSCOT AT ALL BATHROOM WALLS/JANITOR, REFUSE RM./COMPACTOR RM.
- CERAMIC WALL TILE SET ON THIN SET GEMENTITIOUS ADHESIVE.
- BATHROOM VANITY TO BE FULL PLYWOOD BOX MATCHING THE KITCHEN CABINETS - COLOR T.B.D.
- PROVIDE GYPCRETE CONC. SELF LEVELING TOPPING OVER ALL CONC. FLOOR SURFACES THAT ARE SCHEDULED TO RECEIVE A FINISH OTHER THAN WOOD.

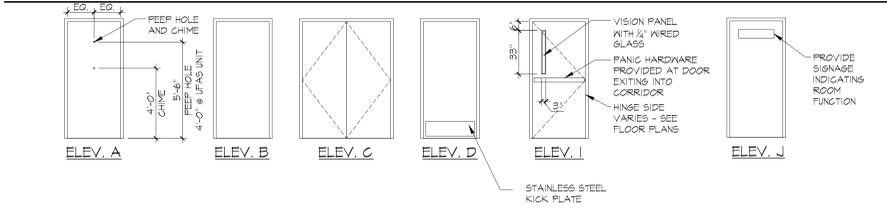
PUBLIC CORRIDORS:

- PROVIDE M.D. SET AT ALL FLOOR TILE INSTALLATIONS.
- GREEN LEVEL CERTIFIED FLOOR COVERING, DO NOT INSTALL CARPETS IN BELOW GRADE LIVING SPACES ENTRYWAYS, LAUNDRY ROOMS, BATHROOMS, KITCHENS OR UTILITY ROOMS. IF USING CARPETS USE PRODUCTS THAT MEET THE CARPET & RUG INSTITUTES GREEN LABEL CERTIFIED CARPET PAD & CARPET ADHESIVES.
- MATERIALS IN VET AREAS: USE MATERIALS WITH SMOOTH DURABLE CLEANABLE SURFACES. DO NOT USE MOLD-PROPAGATING MATERIALS SUCH AS VINYL WALLPAPER AND UNSEALED GROUT.
- INTEGRATED PEST MANAGEMENT: SEAL ALL WALL FLOOR, CEILING AND JOINT PENETRATION TO PREVENT PEST ENTRY. PROVIDE RODENT AND CORROSION PROOF SCREENS (E.G. COPPER OR STAINLESS STEEL MESH) FOR LARGE OPENINGS.
- USE PARTICLE BOARD & MEDIUM DENSITY FIBER BOARD (MDF) THAT IS CERTIFIED COMPLIANT W/ THE ANSI Z39.1 & 208.2.

NOTES:

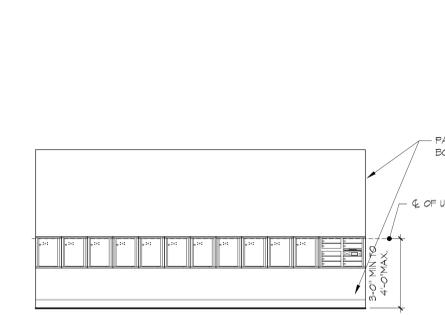
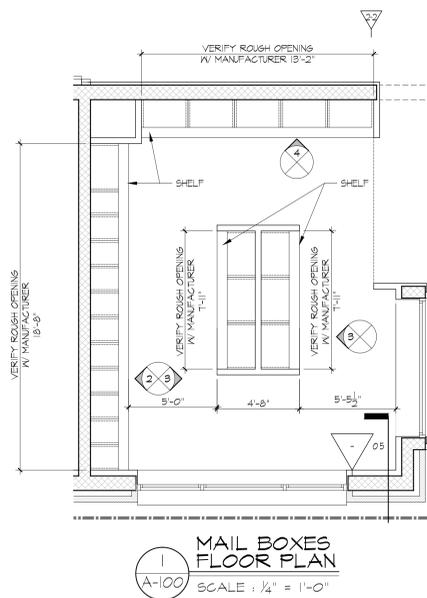
- ALL INTERIOR PAINTS, PRIMERS, ADHESIVES AND SEALANTS MUST CONTAIN LOW VOC'S
- GREEN LEVEL CERTIFIED FLOOR COVERING, DO NOT INSTALL CARPETS IN BELOW GRADE LIVING SPACES ENTRYWAYS, LAUNDRY ROOMS, BATHROOMS, KITCHENS OR UTILITY ROOMS. IF USING CARPETS USE PRODUCTS THAT MEET THE CARPET & RUG INSTITUTES GREEN LABEL CERTIFIED CARPET PAD & CARPET ADHESIVES.
- MATERIALS IN VET AREAS: USE MATERIALS WITH SMOOTH DURABLE CLEANABLE SURFACES. DO NOT USE MOLD-PROPAGATING MATERIALS SUCH AS VINYL WALLPAPER AND UNSEALED GROUT.
- INTEGRATED PEST MANAGEMENT: SEAL ALL WALL FLOOR, CEILING AND JOINT PENETRATION TO PREVENT PEST ENTRY. PROVIDE RODENT AND CORROSION PROOF SCREENS (E.G. COPPER OR STAINLESS STEEL MESH) FOR LARGE OPENINGS.
- USE PARTICLE BOARD & MEDIUM DENSITY FIBER BOARD (MDF) THAT IS CERTIFIED COMPLIANT W/ THE ANSI Z39.1 & 208.2.

DOOR ELEVATIONS

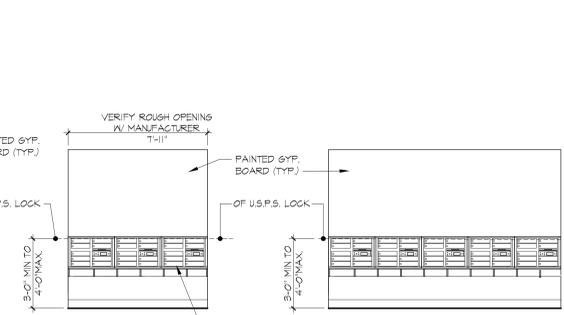


DOOR NOTES:

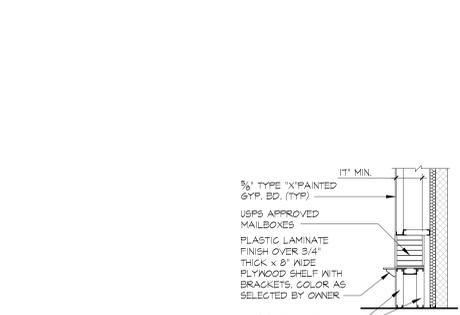
- FOR DOOR HARDWARE SCHEDULE SEE SPECIFICATIONS.
- ALL HARDWARE SHALL BE LEVER HANDLE AS PER A.D.A. REQUIREMENTS (U.O.N.).
- FOR DOOR HEAD AND JAMB DETAILS SEE DWS. A-520
- PROVIDE ADA MARBLE SADDLES AT ALL FLOOR TO TILE TRANSITIONS (U.O.N.).
- ALL EXTERIOR DOORS SHALL BE INSULATED AND PROVIDED WITH FEATHER STRIPPING AT ALL SIDES.
- ALL EXIT ACCESS DOORS SHALL BE PROVIDED WITH SELF CLOSER AND SMOKE PROOF ADA SADDLE.
- ALL EXIT AND EXIT DISCHARGE DOORS SHALL BE PROVIDED WITH PANIC HARDWARE, SELF CLOSER, AND SMOKE PROOF ADA SADDLE.
- ALL FIRE RESISTANT RATED DOORS SHALL BE FIRE PROOF AND SELF CLOSING.



1 MAIL BOXES FLOOR PLAN
SCALE: 1/4" = 1'-0"



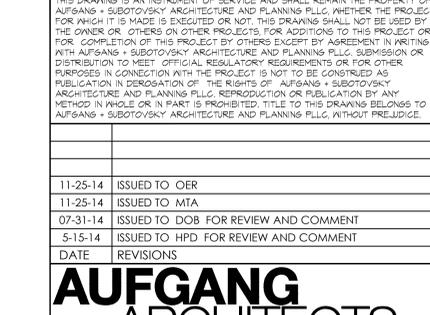
2 MAIL BOXES ELEVATION
SCALE: 1/4" = 1'-0"



3 MAIL BOXES ELEVATION
SCALE: 1/4" = 1'-0"



4 MAIL BOXES ELEVATION
SCALE: 1/4" = 1'-0"



5 SECTION THRU MAILBOX
SCALE: 1/4" = 1'-0"

NOTE: THE FACE PLATE OF MAILBOXES ABOVE THE ADA MAX REACH HEIGHT MAY BE EXCHANGED WITH ONE(S) AT AN ACCESSIBLE HEIGHT AT A LATER DATE AS REQUIRED.

USE AUTH-FLORENCE 4G HORIZONTAL MAILBOX SUITE A

MAILBOX CONFIGURATION:
(1) CS4CDT64 (12 MAILBOXES)
(2) CS4CDT64 (8 MAILBOXES)
(3) 4GAT10 (PARCEL)
TOTAL TENANT UNITS 80
TOTAL PARCEL UNITS 8

GENERAL NOTES:

- FURNISH AND INSTALL (1) PARCEL LOCKER PER (10) APARTMENT MAILBOXES.
- ALL MAILBOXES SHALL BE VERSATILE STD-4G SUITE A (ALUMINUM) FRONT LOADING HORIZONTAL MAILBOX AS MANUFACTURED BY AUTH-FLORENCE. CONTRACTOR SHALL VERIFY ALL ROUGH OPENINGS WITH MANUFACTURER.

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11-25-14	ISSUED TO OER
11-25-14	ISSUED TO MTA
07-31-14	ISSUED TO DOB FOR REVIEW AND COMMENT
5-15-14	ISSUED TO HPD FOR REVIEW AND COMMENT
DATE	REVISIONS

AUFANGANG ARCHITECTS PLLC
49 North Armonk Road, Suffern, NY 10901 | Tel: 845.368.0004 | Fax: 800.772.8304 | www.aufangang.com

PROPOSED LOW INCOME DEVELOPMENT FOR:
CROTONA PLAZA BUILDING "B"
1825 BOSTON RD, BRONX, NY 10460

DOOR SCHEDULE, FINISH SCHEDULE & MAILBOX PLAN & ELEVATIONS

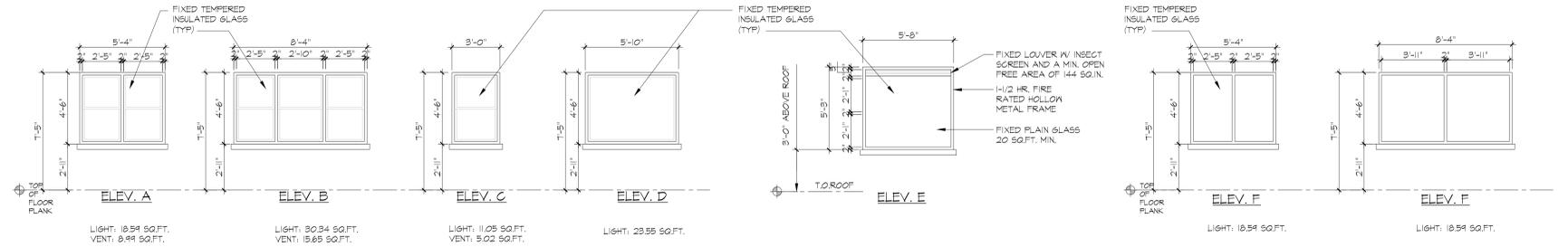
DATE:	8-28-13
PROJECT NO.:	1222
DRAWN BY:	SZ
CHECKED BY:	RK
DRAWING NO.:	A-600.00

SCALE: AS NOTED | SHEET NO: 25 OF 26
NYC DOB NUMBER:

WINDOW SCHEDULE												
WINDOW TYPE	WINDOW DESIGNATION	WINDOW / FRAME							MASONRY OPENING		REMARKS	
		WINDOW ELEVATION	UNIT WIDTH	UNIT HEIGHT	FRAME MATERIAL	FINISH	FIRE RATINGS	STC RATINGS	WIDTH	HEIGHT		INSECT SCREEN
DOUBLE HUNG	W1	A	5'-4"	4'-6"	ALUM.	PTD.	-	30 MIN	5'-6"	4'-7"	YES	SEE NOTE #1 TO 6
DOUBLE HUNG	W2	B	8'-4"	4'-6"	ALUM.	PTD.	-	30 MIN	8'-6"	4'-7"	YES	SEE NOTE #1 TO 6
DOUBLE HUNG	W3	C	2'-4"	4'-6"	ALUM.	PTD.	-	30 MIN	2'-11"	4'-7"	YES	SEE NOTE #1 TO 6
FIXED PICTURE WINDOW	W4	D	5'-0"	4'-6"	ALUM.	PTD.	-	30 MIN	6'-0"	4'-7"	YES	SEE NOTE #1 TO 6
FIXED PICTURE WINDOW WITH LOUVER	W5	E	5'-8"	5'-3"	ALUM.	PTD.	1 1/2 HR	30 MIN	5'-10"	5'-4"	YES	SEE NOTE #1 TO 6
FIXED PICTURE WINDOW	W6	F	5'-4"	4'-6"	ALUM.	PTD.	-	30 MIN	5'-6"	4'-7"		
FIXED PICTURE WINDOW	W7	G	12'-0"	6'-8"	ALUM.	PTD.	-	30 MIN	12'-2"	6'-9"		KAWNEER TRIPAB V6-4BT FRONT STORE FRONT SYSTEM (STC RATINGS 5)

WINDOW NOTES:

1. ALL WINDOW UNITS SHALL HAVE INSULATED GLASS (I.G.U.).
2. ALL WINDOW UNITS SHALL HAVE AN EXTRUDED ALUMINUM FRAME (U.O.N.).
3. CONTRACTOR SHALL PROVIDE INSECT SCREENS AT ALL OPERABLE WINDOW UNITS.
4. CONTRACTOR SHALL PROVIDE 1" ALUMINUM MINI-BLINDS AT ALL WALL WINDOW UNITS.
5. CONTRACTOR SHALL PROVIDE SUPPORT MULLION TRIM BETWEEN WINDOW UNITS AS PER MANUFACTURER SPECIFICATION.
6. PROVIDE OPERATING HARDWARE FOR WINDOWS WITHIN ACCESSIBLE EACH HEIGHT IN ALL ACCESSIBLE AND H.V.L. UNITS.



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11-25-14	ISSUED TO OER
11-25-14	ISSUED TO MTA
07-31-14	ISSUED TO DOB FOR REVIEW AND COMMENT
DATE	REVISIONS

AUFANG ARCHITECTS PLLC
 49 North Almont Road, Suffern, NY 10901 | tel: 845.368.0004 | fax: 800.772.8304
 www.auparchitecture.com

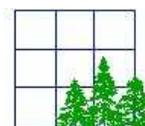
PROPOSED LOW INCOME DEVELOPMENT FOR:
CROTONA PLAZA BUILDING "B"
 1825 BOSTON RD, BRONX, NY 10460

WINDOW SCHEDULE

DATE:	8-28-13
PROJECT NO.:	1222
DRAWN BY:	ED
CHECKED BY:	RK
DRAWING NO.:	A-601.00

SCALE: AS NOTED | SHEET NO: 26 OF 26
 NYC DOB NUMBER:





APPENDIX II

APPENDIX II

CITIZEN PARTICIPATION PLAN

The NYC Office of Environmental Remediation and Joy Construction Corp. have established this Citizen Participation Plan because the opportunity for citizen participation is an important component of the NYC Voluntary Cleanup Program. This Citizen Participation Plan describes how information about the project will be disseminated to the Community during the remedial process. As part of its obligations under the NYC VCP, Joy Construction Corp. will maintain a repository for project documents and provide public notice at specified times throughout the remedial program. This Plan also takes into account potential environmental justice concerns in the community that surrounds the project Site. Under this Citizen Participation Plan, project documents and work plans are made available to the public in a timely manner. Public comment on work plans is strongly encouraged during public comment periods. Work plans are not approved by the NYC Office of Environmental Remediation (OER) until public comment periods have expired and all comments are formally reviewed. An explanation of cleanup plans in the form of a public meeting or informational session is available upon request to OER's Project Manager assigned to this Site, Shana Holberton, who can be contacted about these issues or any others questions, comments or concerns that arise during the remedial process at (212) 788-3220.

Project Contact List. OER has established a Site Contact List for this project to provide public notices in the form of fact sheets to interested members of the Community. Communications will include updates on important information relating to the progress of the cleanup program at the Site as well as to request public comments on the cleanup plan. The Project Contact List includes owners and occupants of adjacent buildings and homes, principal administrators of nearby schools, hospitals and day care centers, the public water supplier that serves the area, established document repositories, the representative Community Board, City Council members, other elected representatives and any local Brownfield Opportunity Area (BOA) grantee organizations. Any member of the public or organization will be added to the Site Contact List on request. A copy of the Site Contact List is maintained by OER's Project

Manager. If you would like to be added to the Project Contact List, contact NYC OER at (212) 788-8841 or by email at *brownfields@cityhall.nyc.gov*.

Repositories. A document repository is maintained online. Internet access to view OER's document repositories is available at public libraries. This document repository is intended to house, for community review, all principal documents generated during the cleanup program including Remedial Investigation plans and reports, Remedial Action work plans and reports, and all public notices and fact sheets produced during the lifetime of the remedial project. Joy Construction Corp. will inspect the repositories to ensure that they are fully populated with project information. The library nearest the Site is:

West Farms Library

2085 Honeywell Avenue, Bronx, NY

(718) 367-5376

Monday through Friday: 10:00 am – 9:30 pm

Sunday: 11:00 am – 6:00 pm

Digital Documentation. NYC OER strongly encourages the use of digital documents in repositories as a means of minimizing paper use while also increasing convenience in access and ease of use.

Identify Issues of Public Concern. No issues of public concern were identified.

Public Notice and Public Comment. Public notice to all members of the Project Contact List is required at three major steps during the performance of the cleanup program (listed below) and at other points that may be required by OER. Notices will include Fact Sheets with descriptive project summaries, updates on recent and upcoming project activities, repository information, and important phone and email contact information. All notices will be prepared by Joy Construction Corp., reviewed and approved by OER prior to distribution and mailed by Joy Construction Corp. Public comment is solicited in public notices for all work plans developed under the NYC Voluntary Cleanup Program. Final review of all work plans by OER will

consider all public comments. Approval will not be granted until the public comment period has been completed.

Citizen Participation Milestones. Public notice and public comment activities occur at several steps during a typical NYC VCP project. See flow chart on the following page, which identifies when during the NYC VCP public notices are issued. These steps include:

- **Public Notice of the availability of the Remedial Investigation Report and Remedial Action Work Plan and a 30-day public comment period on the Remedial Action Work Plan.**

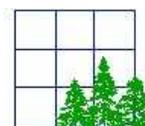
Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the availability of the Remedial Investigation Report and Remedial Action Work Plan and the initiation of a 30-day public comment period on the Remedial Action Work Plan. The Fact Sheet summarizes the findings of the RIR and provides details of the RAWP. The public comment period will be extended an additional 15 days upon public request. A public meeting or informational session will be conducted by OER upon request.

- **Public Notice announcing the approval of the RAWP and the start of remediation**

Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the approval of the RAWP and the start of remediation.

- **Public Notice announcing the completion of remediation, designation of Institutional and Engineering Controls and issuance of the Notice of Completion**

Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the completion of remediation, providing a list of all Institutional and Engineering Controls implemented for to the Site and announcing the issuance of the Notice of Completion.



APPENDIX III

APPENDIX III

SUSTAINABILITY STATEMENT

This Sustainability Statement documents sustainable activities and green remediation efforts planned under this remedial action.

Reuse of Clean, Recyclable Materials. Reuse of clean, locally-derived recyclable materials reduces consumption of non-renewable virgin resources and can provide energy savings and greenhouse gas reduction.

An estimate of the quantity (in tons) of clean, non-virgin materials (reported by type of material) reused under this plan will be quantified and reported in the RAR.

Reduce Consumption of Virgin and Non-Renewable Resources. Reduced consumption of virgin and non-renewable resources lowers the overall environmental impact of the project on the region by conserving these resources.

An estimate of the quantity (in tons) of virgin and non-renewable resources, the use of which will be avoided under this plan, will be quantified and reported in the RAR.

Reduced Energy Consumption and Promotion of Greater Energy Efficiency. Reduced energy consumption lowers greenhouse gas emissions, improves local air quality, lessens in-city power generation requirements, can lower traffic congestion, and provides substantial cost savings.

Best efforts will be made to quantify energy efficiencies achieved during the remediation and will be reported in the Remedial Action Report (RAR). Where energy savings cannot be easily quantified, a gross indicator of the amount of energy saved or the means by which energy savings was achieved will be reported.

Conversion to Clean Fuels. Use of clean fuel improves NYC's air quality by reducing harmful emissions.

An estimate of the volume of clean fuels used during remedial activities will be quantified and reported in the RAR.

Recontamination Control. Recontamination after cleanup and redevelopment is completed undermines the value of work performed, may result in a property that is less protective of public health or the environment, and may necessitate additional cleanup work later or impede future redevelopment. Recontamination can arise from future releases that occur within the property or by influx of contamination from off-Site.

An estimate of the area of the Site that utilizes recontamination controls under this plan will be reported in the RAR in square feet.

Storm-water Retention. Storm-water retention improves water quality by lowering the rate of combined storm-water and sewer discharges to NYC's sewage treatment plants during periods of precipitation, and reduces the volume of untreated influent to local surface waters.

An estimate of the enhanced storm-water retention capability of the redevelopment project will be included in the RAR.

Linkage with Green Building. Green buildings provide a multitude of benefits to the city across a broad range of areas, such as reduction of energy consumption, conservation of resources, and reduction in toxic materials use.

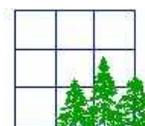
The number of Green Buildings that are associated with this brownfield redevelopment property will be reported in the RAR. The total square footage of green building space created as a function of this brownfield redevelopment will be quantified for residential, commercial and industrial/manufacturing uses.

Paperless Brownfield Cleanup Program. Joy Construction Corp. is participating in OER's Paperless Brownfield Cleanup Program. Under this program, submission of electronic documents will replace submission of hard copies for the review of project documents, communications and milestone reports.

Low-Energy Project Management Program. Joy Construction Corp. is participating in OER's low-energy project management program. Under this program, whenever possible, meetings are held using remote communication technologies, such as videoconferencing and teleconferencing to reduce energy consumption and traffic congestion associated with personal transportation.

Trees and Plantings. Trees and other plantings provide habitat and add to NYC's environmental quality in a wide variety of ways. Native plant species and native habitat provide optimal support to local fauna, promote local biodiversity, and require less maintenance.

An estimate of the land area that will be vegetated, including the number of trees planted or preserved, will be reported in square feet in the RAR.



APPENDIX IV

APPENDIX IV

SOIL/MATERIALS MANAGEMENT PLAN

1.1 SOIL SCREENING METHODS

Visual, olfactory and PID soil screening and assessment will be performed under the supervision of a Qualified Environmental Professional and will be reported in the RAR. Soil screening will be performed during invasive work performed during the remedy and development phases prior to issuance of the Notice of Completion.

1.2 STOCKPILE METHODS

Excavated soil from suspected areas of contamination (e.g., hot spots, USTs, drains, etc.) will be stockpiled separately and will be segregated from clean soil and construction materials. Stockpiles will be used only when necessary and will be removed as soon as practicable. While stockpiles are in place, they will be inspected daily, and before and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by OER. Excavated soils will be stockpiled on, at minimum, double layers of 8-mil minimum sheeting, will be kept covered at all times with appropriately anchored plastic tarps, and will be routinely inspected. Broken or ripped tarps will be promptly replaced.

All stockpile activities will be compliant with applicable laws and regulations. Soil stockpile areas will be appropriately graded to control run-off in accordance with applicable laws and regulations. Stockpiles of excavated soils and other materials shall be located at least of 50 feet from the property boundaries, where possible. Hay bales or equivalent will surround soil stockpiles except for areas where access by equipment is required. Silt fencing and hay bales will be used as needed near catch basins, surface waters and other discharge points.

1.3 CHARACTERIZATION OF EXCAVATED MATERIALS

Soil/fill or other excavated media that is transported off-Site for disposal will be sampled in a manner required by the receiving facility, and in compliance with applicable laws and regulations. Soils proposed for reuse on-Site will be managed as defined in this plan.

1.4 MATERIALS EXCAVATION, LOAD-OUT AND DEPARTURE

The PE/QEP overseeing the remedial action will:

- Oversee remedial work and the excavation and load-out of excavated material;
- Ensure that there is a party responsible for the safe execution of invasive and other work performed under this work plan;
- Ensure that Site development activities and development-related grading cuts will not interfere with, or otherwise impair or compromise the remedial activities proposed in this RAWP;
- Ensure that the presence of utilities and easements on the Site has been investigated and that any identified risks from work proposed under this plan are properly addressed by appropriate parties;
- Ensure that all loaded outbound trucks are inspected and cleaned if necessary before leaving the Site;
- Ensure that all egress points for truck and equipment transport from the Site will be kept clean of Site-derived materials during Site remediation.

Locations where vehicles exit the Site shall be inspected daily for evidence of soil tracking off premises. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials.

Open and uncontrolled mechanical processing of historical fill and contaminated soil on-Site will not be performed without prior OER approval.

1.5 OFF-SITE MATERIALS TRANSPORT

Loaded vehicles leaving the Site will comply with all applicable materials transportation requirements (including appropriate covering, manifests, and placards) in accordance with applicable laws and regulations, including use of licensed haulers in accordance with 6 NYCRR Part 364. If loads contain wet material capable of causing leakage from trucks, truck liners will be used. Queuing of trucks will be performed on-Site, when possible in order to minimize off Site disturbance. Off-Site queuing will be minimized.

Outbound truck transport routes are to turn right on Crotona Parkway, turn left onto E Tremont Ave, turn left onto Webster Ave, and merge onto I-95 to travel to the New Jersey Turnpike. This route takes into account the following factors: (a) limiting transport through residential areas and past sensitive sites; (b) use of mapped truck routes; (c) minimizing off-Site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport. To the extent possible, all trucks loaded with Site materials will travel from the Site using these truck routes. Trucks will not stop or idle in the neighborhood after leaving the project Site.

1.6 MATERIALS DISPOSAL OFF-SITE

The following documentation will be established and reported by the PE/QEP for each disposal destination used in this project to document that the disposal of regulated material exported from the Site conforms with applicable laws and regulations: (1) a letter from the PE/QEP or Enrollee to each disposal facility describing the material to be disposed and requesting written acceptance of the material. This letter will state that material to be disposed is regulated material generated at an environmental remediation Site in Bronx, New York under a governmental remediation program. The letter will provide the project identity and the name and phone number of the PE/QEP or Enrollee. The letter will include as an attachment a summary of all chemical data for the material being transported; and (2) a letter from each disposal facility stating it is in receipt of the correspondence (1, above) and is approved to accept the material. These documents will be included in the RAR.

The Remedial Action Report will include an itemized account of the destination of all material removed from the Site during this remedial action. Documentation associated with disposal of all material will include records and approvals for receipt of the material. This information will be presented in the RAR.

All impacted soil/fill or other waste excavated and removed from the Site will be managed as regulated material and will be disposed in accordance with applicable laws and regulations. Urban historic fill and contaminated soils taken off-Site will be handled as solid waste and will not be disposed at a Part 360-16 Registration Facility (also known as a Soil Recycling Facility).

Waste characterization will be performed for off-Site disposal in a manner required by the receiving facility and in conformance with its applicable permits. Waste characterization sampling and analytical methods, sampling frequency, analytical results and QA/QC will be reported in the RAR. A manifest system for off-Site transportation of exported materials will be employed. Manifest information will be reported in the RAR. Hazardous wastes derived from on-Site will be stored, transported, and disposed of in compliance with applicable laws and regulations.

If disposal of soil/fill from this Site is proposed for unregulated disposal (i.e., clean soil removed for development purposes), including transport to a Part 360-16 Registration Facility, a formal request will be made for approval by OER with an associated plan compliant with 6NYCRR Part 360-16. This request and plan will include the location, volume and a description of the material to be recycled, including verification that the material is not impacted by Site uses and that the material complies with receipt requirements for recycling under 6NYCRR Part 360. This material will be appropriately handled on-Site to prevent mixing with impacted material.

1.7 MATERIALS REUSE ON-SITE

Soil and fill that is derived from the property that meets the soil cleanup objectives established in this plan may be reused on-Site. ‘Reuse on-site’ means material that is excavated during the remedy or development, does not leave the property, and is relocated within the same property and on comparable soil/fill material, and addressed pursuant to the NYC VCP agreement subject to Engineering and Institutional Controls. Currently, no material reuse is planned at the Site.

Organic matter (wood, roots, stumps, etc.) or other waste derived from clearing and grubbing of the Site will not be buried on-site. Soil or fill excavated from the site for grading or other purposes will not be reused within a cover soil layer or within landscaping berms.

1.8 DEMARCATION

After completion of hotspot removal and any other invasive remedial activities, and prior to backfilling, the top of the residual soil/fill will be defined by one of three methods: (1) placement of a demarcation layer. The demarcation layer will consist of geosynthetic fencing or equivalent material to be placed on the surface of residual soil/fill to provide an observable reference layer.

A description or map of the approximate depth of the demarcation layer will be provided in the SMP; or (2) a land survey of the top elevation of residual soil/fill before the placement of cover soils, pavement and associated sub-soils, or other materials or structures or, (3) all materials beneath the approved cover will be considered impacted and subject to site management after the remedy is complete. Demarcation may be established by one or any combination of these three methods. As appropriate, a map showing the method of demarcation for the Site and all associated documentation will be presented in the RAR.

This demarcation will constitute the top of the site management horizon. Materials within this horizon require adherence to special conditions during future invasive activities as defined in the Site Management Plan.

1.9 IMPORT OF BACKFILL SOIL FROM OFF-SITE SOURCES

This Section presents the requirements for imported fill materials to be used below the cover layer and within the clean soil cover layer. All imported soils will meet OER-approved backfill and cover soil quality objectives for this Site.

A process will be established to evaluate sources of backfill and cover soil to be imported to the Site, and will include an examination of source location, current and historical use(s), and any applicable documentation. Material from industrial sites, spill sites, environmental remediation sites or other potentially contaminated sites will not be imported to the Site.

The following potential sources may be used pending attainment of backfill and cover soil quality objectives:

- Clean soil from construction projects at non-industrial sites in compliance with applicable laws and regulations;
- Clean soil from roadway or other transportation-related projects in compliance with applicable laws and regulations;
- Clean recycled concrete aggregate (RCA) from facilities permitted or registered by the regulations of NYS DEC.

All materials received for import to the Site will be approved by a PE/QEP and will be in compliance with provisions in this RAWP. The RAR will report the source of the fill, evidence that an inspection was performed on the source, chemical sampling results, frequency of testing, and a Site map indicating the locations where backfill or soil cover was placed.

Source Screening and Testing

Inspection of imported fill material will include visual, olfactory and PID screening for evidence of contamination. Materials imported to the Site will be subject to inspection, as follows:

- Trucks with imported fill material will be in compliance with applicable laws and regulations and will enter the Site at designated locations;
- The PE/QEP is responsible to ensure that every truck load of imported material is inspected for evidence of contamination; and
- Fill material will be free of solid waste including pavement materials, debris, stumps, roots, and other organic matter, as well as ashes, oil, perishables or foreign matter.

Composite samples of imported material will be taken at a minimum frequency of one sample for every 500 cubic yards of material. Once it is determined that the fill material meets imported backfill or cover soil chemical requirements and is non-hazardous, and lacks petroleum contamination, the material will be loaded onto trucks for delivery to the Site.

Recycled concrete aggregate (RCA) will be imported from facilities permitted or registered by NYSDEC. Facilities will be identified in the RAR. A PE/QEP is responsible to ensure that the facility is compliant with 6NYCRR Part 360 registration and permitting requirements for the period of acquisition of RCA. RCA imported from compliant facilities will not require additional testing, unless required by NYSDEC under its terms for operation of the facility. RCA imported to the Site must be derived from recognizable and uncontaminated concrete. RCA material is not acceptable for, and will not be used as cover material.

1.10 FLUIDS MANAGEMENT

All liquids to be removed from the Site, including dewatering fluids, will be handled, transported and disposed in accordance with applicable laws and regulations. Liquids discharged

into the New York City sewer system will receive prior approval by New York City Department of Environmental Protection (NYC DEP). The NYC DEP regulates discharges to the New York City sewers under Title 15, Rules of the City of New York Chapter 19. Discharge to the New York City sewer system will require an authorization and sampling data demonstrating that the groundwater meets the City's discharge criteria. The dewatering fluid will be pretreated as necessary to meet the NYC DEP discharge criteria. If discharge to the City sewer system is not appropriate, the dewatering fluids will be managed by transportation and disposal at an off-Site treatment facility.

Discharge of water generated during remedial construction to surface waters (i.e. a stream or river) is prohibited without a State Pollutant Discharge Elimination System (SPDES) permit issued by New York State Department of Environmental Conservation.

1.11 STORM-WATER POLLUTION PREVENTION

Applicable laws and regulations pertaining to storm-water pollution prevention will be addressed during the remedial program. Erosion and sediment control measures identified in this RAWP (silt fences and barriers, and hay bale checks) will be installed around the entire perimeter of the remedial construction area and inspected once a week and after every storm event to ensure that they are operating appropriately. Discharge locations will be inspected to determine whether erosion control measures are effective in preventing significant impacts to receptors. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by OER. All necessary repairs shall be made immediately. Accumulated sediments will be removed as required to keep the barrier and hay bale check functional. Undercutting or erosion of the silt fence toe anchor will be repaired immediately with appropriate backfill materials. Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

1.12 CONTINGENCY PLAN

This contingency plan is developed for the remedial construction to address the discovery of unknown structures or contaminated media during excavation. Identification of unknown contamination source areas during invasive Site work will be promptly communicated to OER's Project Manager. Petroleum spills will be reported to the NYS DEC Spill Hotline. These

findings will be included in the daily report. If previously unidentified contaminant sources are found during on-Site remedial excavation or development-related excavation, sampling will be performed on contaminated source material and surrounding soils and reported to OER. Chemical analytical testing will be performed for TAL metals, TCL volatiles and semi-volatiles, TCL pesticides and PCBs, as appropriate.

1.13 ODOR, DUST AND NUISANCE CONTROL

Odor Control

All necessary means will be employed to prevent on- and off-Site odor nuisances. At a minimum, procedures will include: (a) limiting the area of open excavations; (b) shrouding open excavations with tarps and other covers; and (c) use of foams to cover exposed odorous soils. If odors develop and cannot otherwise be controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-Site disposal; and (e) use of chemical odorants in spray or misting systems.

This odor control plan is capable of controlling emissions of nuisance odors. If nuisance odors are identified, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. OER will be notified of all odor complaint events. Implementation of all odor controls, including halt of work, will be the responsibility of the PE/QEP's certifying the Remedial Action Report.

Dust Control

Dust management during invasive on-site work will include, at a minimum:

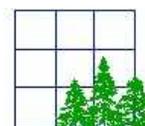
- Use of a dedicated water spray methodology for roads, excavation areas and stockpiles.
- Use of properly anchored tarps to cover stockpiles.
- Exercise extra care during dry and high-wind periods.
- Use of gravel or recycled concrete aggregate on egress and other roadways to provide a clean and dust-free road surface.

This dust control plan is capable of controlling emissions of dust. If nuisance dust emissions are identified, work will be halted and the source of dusts will be identified and corrected. Work will not resume until all nuisance dust emissions have been abated. OER will be notified of all dust complaint events. Implementation of all dust controls, including halt of work, will be the responsibility of the PE/QEP's responsible for certifying the Remedial Action Report.

Other Nuisances

Noise control will be exercised during the remedial program. All remedial work will conform, at a minimum, to NYC noise control standards.

Rodent control will be provided, during Site clearing and grubbing, and during the remedial program, as necessary, to prevent nuisances.



APPENDIX V

APPENDIX V

REMEDIAL COVER TYPE DESIGN DETAIL

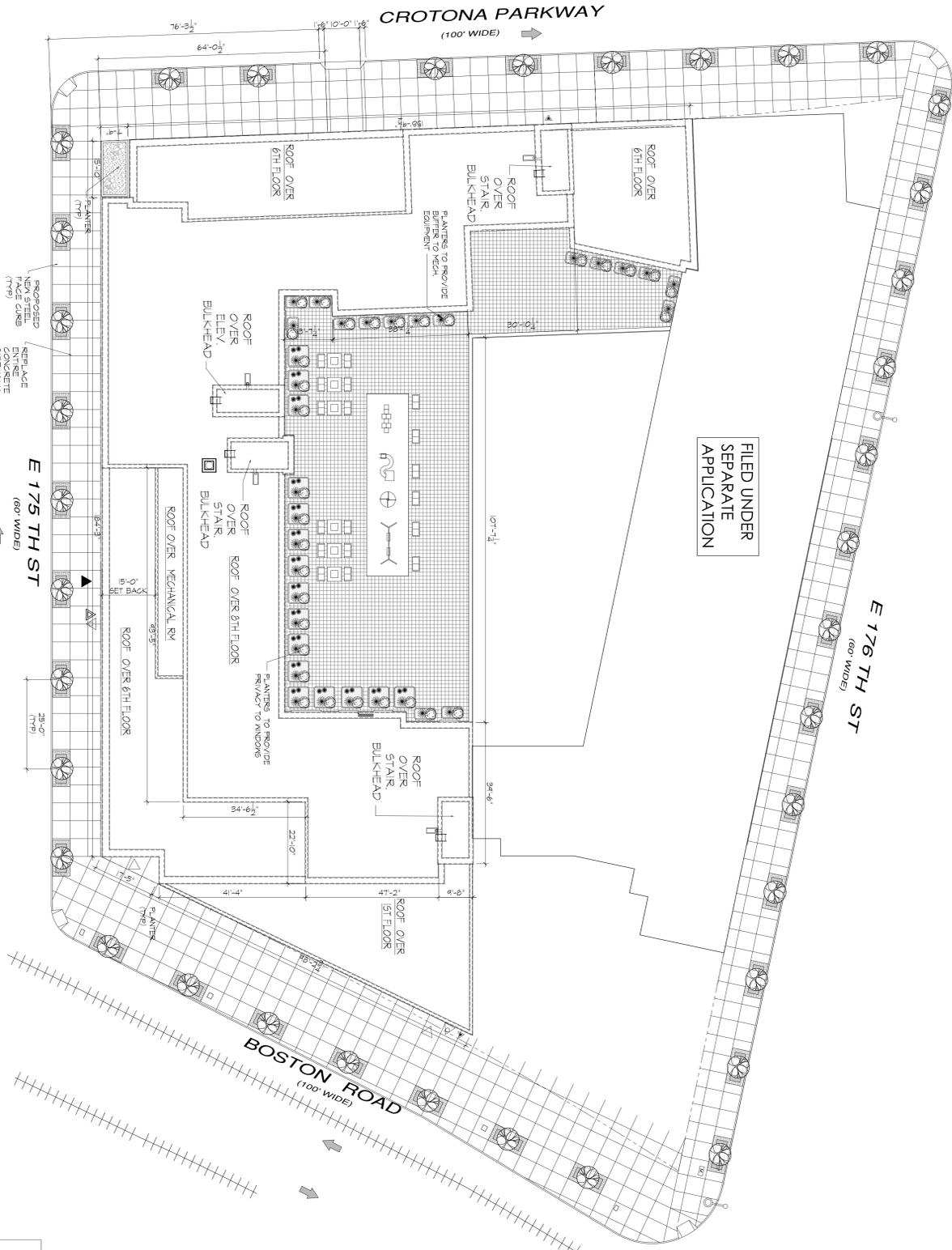
As stated in Section 4.3, the entire site will be capped. Two (2) engineering controls are proposed for the site to include a composite cover system consisting of the concrete building slab, an at-grade ventilated parking area, and concrete covered sidewalks. A vapor barrier membrane will be installed beneath the concrete building slab and the parking area. The vapor barrier will be installed over the entire site. A schematic site plan, the 1st floor plan, and a composite cover system cross-sectional view are included in this appendix.

GENERAL NOTES

1. ALL FILL USED BELOW GRADE UNDER BUILDINGS AND IN PAVED AREAS SHALL BE QUALITY SANDY MATERIAL AND SHALL BE SPECIFIED AS FILL AND DISPOSED OF TO PREVENT SETTLEMENT AND DRAINAGE PROBLEMS.
2. CONTRACTOR MUST FOLLOW ALL REQUIREMENTS FOR MAINTAINING EXISTING NEIGHBORING STRUCTURES RECOMMENDED BY A REPORT ON SOIL AND FOUNDATION INVESTIGATION.
3. ALL FILL SHALL BE COMPACTED WITH SOIL COMPACTION EQUIPMENT RATHER THAN BY HAND TAMPING (EXCEPT AROUND PIPES, ETC.) WITH THE TYPE OF COMPACTION EQUIPMENT USED.
4. THE ATTAINMENT OF SPECIFIED PENETRES SHALL BE VERIFIED BY FIELD DENSITY TESTS MADE BY AN INDEPENDENT TESTING LABORATORY ON EACH LAYER OF MATERIAL COMPACTED ONCE TEST RESULTS HAVE BEEN OBTAINED. TESTS SHALL BE MADE ON EACH LAYER WITHIN THE BUILDING.
5. USE ENERGY STAR APPLIANCES, LIGHT FIXTURES AND HEATING SYSTEMS.
6. SELECT WATER OR NON INVASIVE NEW TREES AND PLANTS THAT ARE APPROPRIATE TO THE SITE'S SOIL AND MICROCLIMATE.
7. INSTALL WATER COVERINGS FINISHED THROUGHOUT.
8. USE DAYLIGHT SENSORS OR TIMERS ON OUTDOOR LIGHTING TO MAXIMIZE ENERGY EFFICIENCY.
9. ALL INTERIOR PAINTS, PRIMER, ADHESIVES AND SEALANTS MUST CONTAIN LOW OR NO VOC'S.
10. GREEN LABEL CERTIFIED FLOOR COVERINGS DO NOT INSTALL CARPET IN BELOW GRADE LIVING SPACES, ENTRYWAYS, LAUNDRY FINISH CABINET USE PRODUCTS THAT MEET THE CARPET AND RUG INSTITUTE'S GREEN LABEL CERTIFIED CARPET PAD AND CARPET ADHESIVES.
11. EXHAUST FANS - BATHROOM - INSTALL ENERGY STAR LABELLED CONTINUOUSLY RUNNING EXHAUST FANS TO THE OUTDOORS AND OPERATE CONTINUOUSLY.
12. VENTILATION - INSTALL A MECHANICAL EXHAUST FAN FOR DRYING IN KITCHEN AND/OR BATH. CAP THE REMAINDER OF THE VENTS FOR OCCUPANT.
13. COLD WATER PIPE INSULATION - INSULATE EXPOSED COLD WATER PIPES.
14. MATERIALS IN NEW AREAS USE MATERIALS WITH SMOOTH DURABLE CLEANABLE SURFACES. DO NOT USE WOOD - PROGRAMMING MATERIALS SUCH AS VINYL, MALLAPAPER AND INSULATED SCOT.
15. CLOTHES - DRYER EXHAUST - CLOTHES DRYERS MUST BE EXHAUSTED DIRECTLY TO THE OUTDOORS.
16. INTEGRATED PEST MANAGEMENT - SEAL ALL WALL, FLOOR AND JOINT PENETRATIONS TO PREVENT PEST ENTRY. PROVIDE ROBBENT AND CORROSION PROOF SCREENS (E.G. COPPER OR STAINLESS STEEL MESH) FOR LARGE SCREENS.
17. REDUCED HEAT - ISLAND EFFECT - ROOFING AND PAVING - USE ENTRY ROOF 2) USE LIGHT - COLORED/HIGH - ALBEDO MATERIALS FOR HARDSCAPED AREAS.
18. ALL DWELLING UNITS ARE HANDICAP ADAPTABLE ION.

EROSION AND SEDIMENT CONTROL PLAN - CONSTRUCTION SEQUENCE

1. ALL EROSION AND SEDIMENT CONTROL MEASURES INCLUDING LANDSCAPE INSTALLATION OF ROOTED STRUCTURES AND OR OTHERS.
2. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL REMAIN IN PLACE AND BE MAINTAINED UNTIL CONSTRUCTION IS COMPLETED AND/OR STABILIZED.
3. INSTALL STABILIZED CONSTRUCTION ENTRANCE AS INDICATED ON PLAN.
4. INSTALL SILT FENCE AND/OR ANY BALE BARRIERS DOWN SLOPE OF ALL AREAS TO BE DISTURBED AND DOWN SLOPE OF ALL AREAS DISAPPOINTED FOR TOPSOIL STOCKPILING.
5. CONSTRUCT BERM, TEMPORARY SWALES AND PILES AS NECESSARY TO DIRECT RUNOFF TO TEMPORARY SEDIMENTATION ENTRANCE AREAS.
6. CLEAR EXISTING TREES, VEGETATION AND EXISTING STRUCTURES TO BE REMOVED. EXISTING TREES TO BE MAINTAINED SHALL BE TOPSOIL FROM ALL AREAS TO BE DISTURBED. SEED STOCKPILED TOPSOIL WITH TEMPORARY PINE RAWS COVER.
7. EROSION EVALUATION AND FILL TO BRING LAND TO DESIRED GRADE. ANY DISTURBED AREAS TO REMAIN BARE SHOULD BE SEED WITH TEMPORARY PINE GRASS.
8. INSTALL UNDERGROUND UTILITIES, MANHOLES AND CATCH BASINS (GRADES OF CURB AND FIELD NELTS SHOULD BE LEFT AT ELEVATIONS FROM THE PREVIOUS COLLECTION OF SERVICES SECTOR).
9. INSTALL LAY BALE BARRIERS AROUND ALL CURB AND FIELD NELTS EXCEPT PAID SHALL BE TREATED WITH THE CATCH-BASIN/FILTER FABRIC DETAIL.
10. CONSTRUCT CURB AND VERTICAL BARGE AND BURNER COASSES OF PAVED AREAS. BARGE GRADES OF CURB AND FIELD NELTS ACCORDINGLY.
11. COMPLETE PINE BARRIERS.
12. RAISE GRADES OF CURB AND FIELD NELTS TO FINAL ELEVATIONS.
13. INSTALL BARGE COVER OF PAVED AREAS.
14. UPON COMPLETION OF CONSTRUCTION ALL DISTURBED AREAS MUST BE SEEDING. REFER TO LANDSCAPE PLAN FOR PERMANENT SEEDING. THE SEEDING AREAS RE-SEEDING PLANTED OR RELATED IN ACCORDANCE WITH THE APPROVED SITE PLANS.

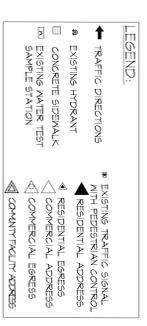


SCHEMATIC SITE PLAN
SCALE: 1/8" = 1'-0"



SHEET PLANNING CALCULATION
4/14/08 / 25.0' ST. TREES REQUIRED

- NOTE:
1. LANDSCAPE SELECT NATIVE OR NON INVASIVE TREES & PLANTS THAT ARE APPROPRIATE TO THE SITE'S SOIL AND CLIMATE.
 2. USE DAYLIGHT SENSORS OR TIMERS ON OUTDOOR LIGHTING TO MAXIMIZE ENERGY EFFICIENCY.
 3. SEEDPAK FINISH ELEVATIONS WITH BUILDING PAVEDMENT PLAN.



STANDARD EROSION CONTROL NOTES

1. ALL CONTROL MEASURES FOR EROSION AND SEDIMENTATION SHALL COMPLY WITH THE STANDARD POLLUTION PREVENTION PLAN (SPPP).
2. THE INSPECTIONS SHALL BE CONDUCTED BY THE APPLICANT AND/OR HIS REPRESENTATIVE, I.E. THE SITE ENGINEER OR THE CONTRACTOR TO DETERMINE THE CONDITIONS OF THE CONTROL MEASURES AND THE NEED FOR REPAIR OR REPAIR ACCEPTANCE MAINTENANCE. E.G. REMOVAL OF SEDIMENT BARRIERS.
3. THE NEED FOR ADDITIONAL CONTROL MEASURES.
4. THE NEED FOR ADDITIONAL CONTROL MEASURES.
5. THE OVERALL EFFECTIVENESS OF THE CONTROL PLAN.
6. ALL TEMPORARY AND PERMANENT CONTROL MEASURES MUST BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD. THE SEEDING SHALL BE PERFORMED IMMEDIATELY.
7. THESE PLANS INDICATE THE CONTROL MEASURES TO BE PUT IN PLACE. ADDITIONAL CONTROL MEASURES SHALL BE IMPLEMENTED AS SITE CONDITIONS CHANGE AND UNDESIRABLE PROBLEMS OCCUR. IMPLEMENTATION OF THE CONTROL MEASURES SHALL BE AT THE DISCRETION OF THE SITE ENGINEER.
8. AN EROSION CONTROL SYSTEM WILL BE UTILIZED BY THE PERMITTEE TO MINIMIZE THE PRODUCTION OF SEDIMENT FROM THE SITE. METHODS TO BE UTILIZED SHALL BE THOSE FOUND MOST EFFECTIVE FOR THE SITE AND SHALL BE APPROVED BY THE PERMITTING AGENCY.
9. TEMPORARY SEDIMENTATION ENTRANCE AREAS SHALL BE LOCATED AT THE LOCATION OF INTERSECT AND CLEAR AT LEAST 50 FEET FROM THE SITE. THESE AREAS SHALL BE CONSTRUCTED WITH EXISTING EXISTING ROADWAY OR EXISTING DRIVE OR OTHER CALIBRATION SHALL BE CONSTRUCTED TO INSURE THAT ALL SIX LANEWAYS ARE PROTECTED. THE ENTRANCE AREA MUST BE CONSTRUCTED TO PREVENT THE COLLECTION OF SEDIMENT IN THE ROADWAY FROM THE ROADWAY.
10. ROADWAY ENTRANCE AREAS MUST BE MAINTAINED FOR MORE THAN 90 DAYS SHALL BE TEMPORARILY SEEDING WITH 12 LB OF PINE GRASS OR WILDED WITH 100 LBS OF STRAW OR HAY PER 1000 SQUARE FEET. ROADWAYS MUST BE SEEDING AS REQUIRED AS INDICATED BY THE REGULATION OF THE SILT THAT LEAVES THE SITE IN THE SITE OF THE REQUIRED REGULATIONS SHALL BE COLLECTED AND REMOVED AS DIRECTED BY APPROPRIATE MUNICIPAL AUTHORITIES.



IMAGE D
NOT TO SCALE



IMAGE E
NOT TO SCALE



IMAGE F
NOT TO SCALE



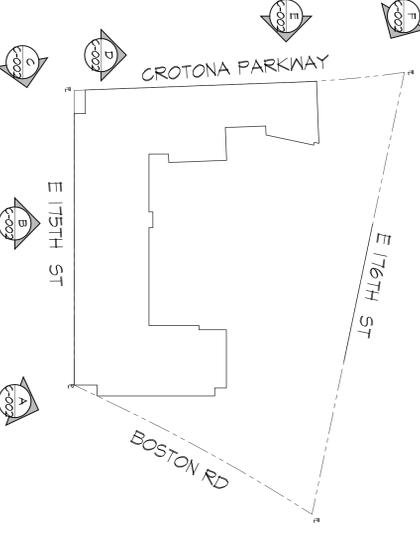
IMAGE A
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IMAGE B
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IMAGE C
NOT TO SCALE



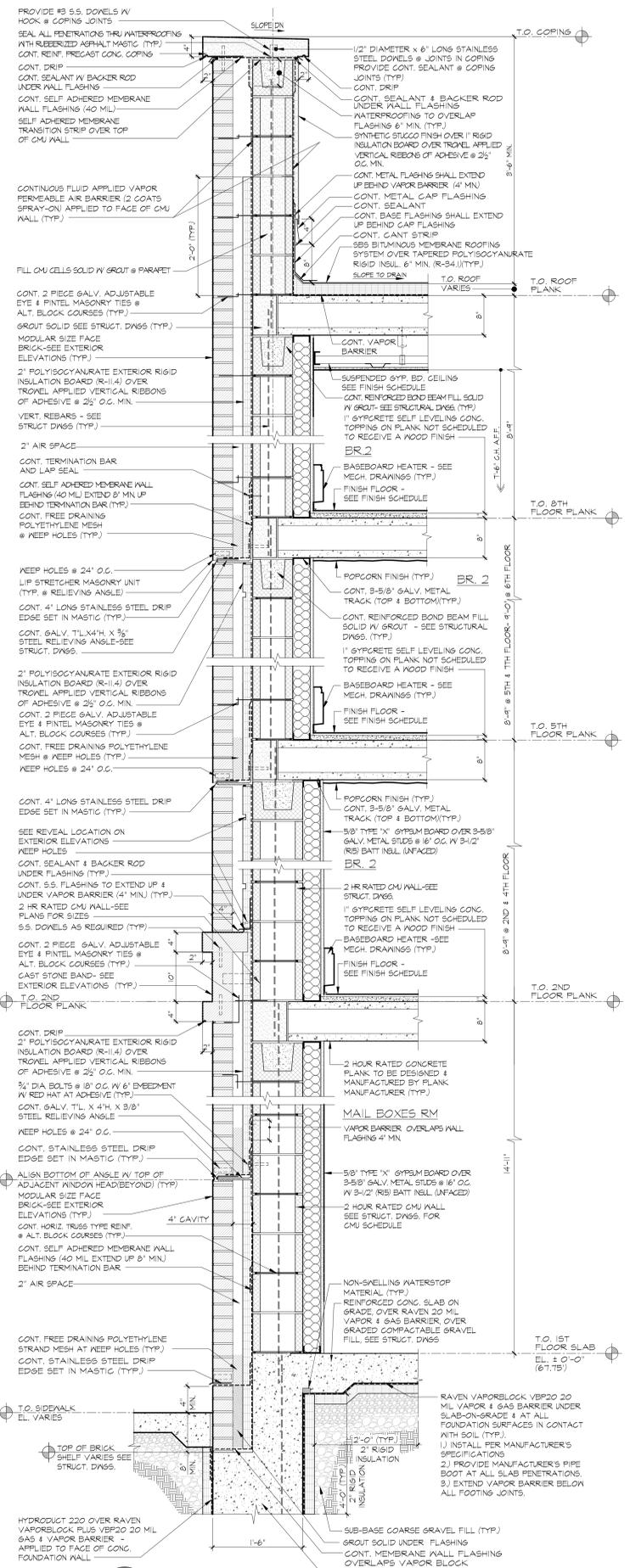
KEY PLAN
NOT TO SCALE

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PROPOSED LOW INCOME DEVELOPMENT FOR "CROTONA PLAZA BUILDING 'B'"
1808 CROTONA PARKWAY, BRONX, NY 10460
SCHEMATIC SITE PLAN

DATE:	8-28-13
PROJECT NO.:	1222
DRAWN BY:	BK
CHECKED BY:	SZ
DRAWING NO.:	C-002.01
SCALE:	AS NOTED / SHEET NO.: 3 OF 18
NVC DOB NUMBER:	



MS-1 WALL SECTION
SCALE: 1" = 1'-0"
A-100, TO A-104 & A-200

- ENERGY MODEL GENERAL NOTES:**
- CONTINUOUS EXTERIOR BELOW GRADE INSULATION MUST BE INSTALLED WITHOUT BREAKS AND AT FULL THICKNESS AT ALL LOCATIONS. 2" XPS (R-11.4) MIN.
 - INTERIOR AND CAVITY INSULATION MUST BE PROTECTED FROM AIR INTRUSION, MOISTURE INTRUSION AND FREE OF VOIDS, GAPS AND COMPRESSION.
 - CAVITY INSULATION MUST BE IN CONTACT WITH THE INTERIOR WALL SURFACE (I.E. DRYWALL) AND COMPLETELY FILL THE INTERIOR WALL CAVITY.
 - BATT INSULATION MUST BE INSTALLED PROPERLY USING SPLICES TO SURROUND WIRES, ELECTRICAL OUTLETS/SWITCH/CONTROL BOXES, PIPES AND OTHER OBSTRUCTION WITHIN THE INSULATED CAVITY.
 - EXTERIOR RIGID AND INTERIOR INSULATION MUST BE INSTALLED WITHOUT BREAKS AND AT FULL THICKNESS AT ALL LOCATIONS.
 - BATT INSULATION MUST BE INSTALLED SUCH THAT RESNET-DEFINED GRADE 2 INSTALLATION IS ACHIEVED. FIBERGLASS INSULATION TO BE UNFACED.
 - 4" BRICK + 2" AIR SPACE + 2" XPS (R-11.4) + 8" CMU + 3 1/2" BATT (R-15) BETWEEN STEEL STUDS + INTERIOR GYPSUM (U-0.04)
 - CONTINUOUS INSULATION MUST SPANN PLANK EDGES.

- GENERAL NOTES:**
- GC SHALL PROVIDE 'LOX-ALL' MODEL #10 WITH SEISMIC GLIP N.Y. CITY APPROVED CAST STONE & MASONRY VENEER TIES. SUBMIT SHOP DWGS. TO STRUCTURAL ENGINEER FOR APPROVAL PRIOR TO INSTALLATION (TYP).
 - WATERPROOFING SYSTEM SHALL BE FURNISHED & INSTALLED AS PER GEO-TECH ENGINEERS RECOMMENDATIONS.
 - ALL MASONRY TIES SHALL BE HOT DIPPED GALVANIZED (TYP).
 - STAINLESS STEEL FLASHING SHALL EXTEND PAST FACE OF MASONRY 3/4" MIN.
 - APPLY 2 HOUR RATED SPRAY-ON FIREPROOFING TO ALL EXPOSED STRUCTURAL STEEL SURFACES.
 - ALL METAL FLASHING SHALL BE STAINLESS STEEL, GALVANIZED OR COATED METAL.
 - CONTINUOUS WALL FLASHING SHALL EXTEND UP AND BEHIND TERMINATION BAR W/ LAP SEAL.
 - PROVIDE 2 ROWS OF SMOOTH FINISH ADAIR DOLOMITE LIMESTONE BLOCK COURSES AT BASE OF MASONRY VENEER WALL (TYP.).

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11-25-14	ISSUED TO OER
11-25-14	ISSUED TO MTA
07-31-14	ISSUED TO DOB FOR REVIEW AND COMMENT
DATE	REVISIONS

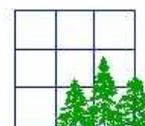
AUFANG ARCHITECTS PLLC
49 North Almont Road, Suffern, NY 10901 | tel: 845.368.0004 | fax: 803.772.8304 | www.aufangarchitecture.com

PROPOSED LOW INCOME DEVELOPMENT FOR:
CROTONA PLAZA BUILDING "B"
1825 BOSTON RD, BRONX, NY 10460

TYPICAL EXTERIOR WALL SECTION

DATE:	8-28-13
PROJECT NO.:	1222
DRAWN BY:	SZ
CHECKED BY:	RK
DRAWING NO.:	A-400.00
SCALE:	AS NOTED SHEET NO.: 20 OF 26
NYC DOB NUMBER:	





APPENDIX VI

APPENDIX VI
INSTALLATION DETAILS AND PRODUCT SPECIFICATION
SHEETS OF VAPOR BARRIER

VAPORBLOCK® PLUS™ VBP20

Under-Slab Vapor / Gas Barrier

RAVEN
INDUSTRIES

Product Description

VaporBlock® Plus™ 20 is a seven-layer co-extruded barrier made from state-of-the-art polyethylene and EVOH resins to provide unmatched impact strength as well as superior resistance to gas and moisture transmission. VaporBlock® Plus™ 20 is a highly resilient underslab / vertical wall barrier designed to restrict naturally occurring gases such as radon and/or methane from migrating through the ground and concrete slab. VaporBlock® Plus™ 20 is more than 100 times less permeable than typical high-performance polyethylene vapor retarders against Methane, Radon and other harmful VOCs.

VaporBlock® Plus™ 20 is one of the most effective underslab gas barriers in the building industry today far exceeding ASTM E-1745 (Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs) Class A, B and C requirements. Available in a 20 (Class A) mil thicknesses designed to meet the most stringent requirements. VaporBlock® Plus™ 20 is produced within the strict guidelines of our ISO 9001:2008 Certified Management System.

Product Use

VaporBlock® Plus™ 20 resists gas and moisture migration into the building envelop when properly installed to provide protection from toxic/harmful chemicals. It can be installed as part of a passive or active control system extending across the entire building including floors, walls and crawl spaces. When installed as a passive system it is recommended to also include a ventilated system with sump(s) that could be converted to an active control system with properly designed ventilation fans.

VaporBlock® Plus™ 20 works to protect your flooring and other moisture-sensitive furnishings in the building's interior from moisture and water vapor migration, greatly reducing condensation, mold and degradation.

Size & Packaging

VaporBlock® Plus™ 20 is available in 10' x 150' rolls to maximize coverage. All rolls are folded on heavy-duty cores for ease in handling and installation. Other custom sizes with factory welded seams are available based on minimum volume requirements. Installation instructions and ASTM E-1745 classifications accompany each roll.



Under-Slab Vapor/Gas Retarder

Product	Part #
VaporBlock Plus 20	VBP 20

APPLICATIONS

Radon Barrier	Under-Slab Vapor Retarder
Methane Barrier	Foundation Wall Vapor Retarder
VOC Barrier	

VaporBlock® Plus™
UNDERSLAB VAPOR RETARDER / GAS BARRIER

VAPORBLOCK® PLUS™ VBP20

Under-Slab Vapor / Gas Barrier



		VAPORBLOCK PLUS 20	
PROPERTIES	TEST METHOD	IMPERIAL	METRIC
APPEARANCE		White/Gold	
THICKNESS, NOMINAL		20 mil	0.51 mm
WEIGHT		102 lbs/MSF	498 g/m ²
CLASSIFICATION	ASTM E 1745	CLASS A, B & C	
TENSILE STRENGTH LBF/IN (N/CM)	ASTM E 154 Section 9 (D-882)	58 lbf	102 N
AVERAGE MD & TD (NEW MATERIAL)			
IMPACT RESISTANCE	ASTM D 1709	2600 g	
MAXIMUM USE TEMPERATURE		180° F	82° C
MINIMUM USE TEMPERATURE		-70° F	-57° C
PERMEANCE (NEW MATERIAL)	ASTM E 154 Section 7	0.0051 Perms grains/(ft ² ·hr·in·Hg)	0.0034 Perms g/(24hr·m ² ·mm Hg)
RADON DIFFUSION COEFFICIENT	K124/02/95	< 1.1 x 10 ⁻¹³ m ² /s	
METHANE PERMEANCE	ASTM D 1434	< 1.7 x 10 ⁻¹⁰ m ² /d·atm 0.32 GTR (Gas Transmission Rate) ml/m ² ·D·ATM	

VaporBlock® Plus™ Placement

All instructions on architectural or structural drawings should be reviewed and followed.
Detailed installation instructions accompany each roll of VaporBlock® Plus™ and can also be located on our website.
ASTM E-1643 also provides general installation information for vapor retarders.



VaporBlock® Plus™ is a seven-layer co-extruded barrier made using high quality virgin-grade polyethylene and EVOH resins to provide unmatched impact strength as well as superior resistance to gas and moisture transmission.

Note: To the best of our knowledge, unless otherwise stated, these are typical property values and are intended as guides only, not as specification limits. Chemical resistance as well as other performance criteria is not implied or given and actual testing must be performed for applicability in specific applications and/or conditions. RAVEN INDUSTRIES MAKES NO WARRANTIES AS TO THE FITNESS FOR A SPECIFIC USE OR MERCHANTABILITY OF PRODUCTS REFERRED TO, no guarantee of satisfactory results from reliance upon contained information or recommendations and disclaims all liability for resulting loss or damage.



Engineered Films Division
P.O. Box 5107
Sioux Falls, SD 57117-5107
Ph: (605) 335-0174 • Fx: (605) 331-0333

Limited Warranty available at www.RavenEFD.com

Toll Free: 800-635-3456
Email: efdsales@ravenind.com
www.ravenefd.com

10/10 EFD 1125

VaporBlock[®] Plus[™]

UNDERSLAB VAPOR RETARDER / GAS BARRIER

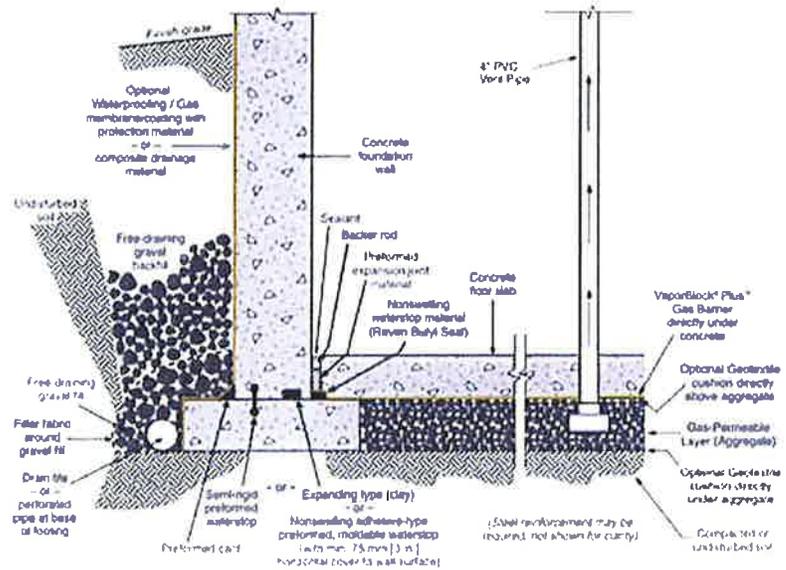
INSTALLATION GUIDELINES

Please Note: Read these instructions thoroughly before installation to ensure proper use of VaporBlock[®] Plus[™]. ASTM E 1465, ASTM E 2121 and, ASTM E 1643 also provide valuable information regarding the installation of vapor / gas barriers. When installing this product, contractors shall conform to all applicable local, state and federal regulations and laws pertaining to residential and commercial building construction.

- When VaporBlock Plus gas barrier is used as part of an active control system for radon or other gas, a ventilation system will be required.
- If designed as a passive system, it is recommended to install a ventilation system that could be converted to an active system if needed.

Materials List:

VaporBlock Plus[™] Vapor / Gas Barrier
 VaporBond Plus 4" Foil Seaming Tape
 Butyl Seal 2-Sided Tape
 VaporBoot Plus Pipe Boots 12/Box (recommended)
 VaporBoot Tape (optional)



Elements of a moisture/gas-resistant floor system. General illustration only.
 (Note: This example shows multiple options for waterstop placement.)

VAPORBLOCK[®] PLUS[™] PLACEMENT

- 1.1. Level and tamp or roll granular base as specified. A base for a gas-reduction system may require a 4" to 6" gas permeable layer of clean coarse aggregate as specified by your architectural or structural drawings after installation of the recommended gas collection system. In this situation, a cushion layer consisting of a non-woven geotextile fabric placed directly under VaporBlock[®] Plus[™] will help protect the barrier from damage due to possible sharp coarse aggregate.
- 1.2. Unroll VaporBlock Plus running the longest dimension parallel with the direction of the pour and pull open all folds to full width. (Fig. 1)
- 1.3. Lap VaporBlock Plus over the footings and seal with Raven Butyl Seal tape at the footing-wall connection. Prime concrete surfaces and assure they are dry and clean prior to applying Raven Butyl Seal Tape. Apply even and firm pressure with a rubber roller. Overlap joints a minimum of 6" and seal overlap with Raven VaporBond Tape. When used as a gas

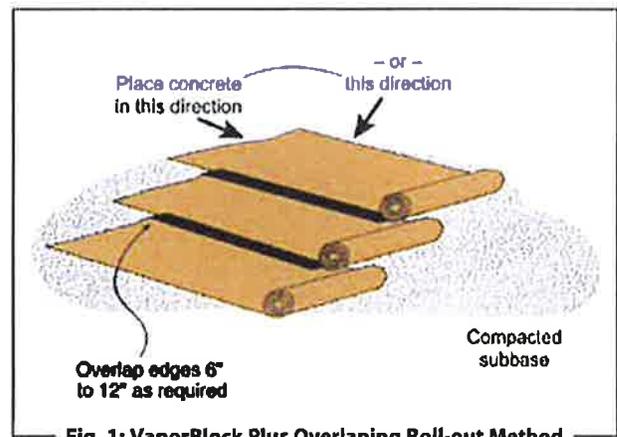


Fig. 1: VaporBlock Plus Overlapping Roll-out Method

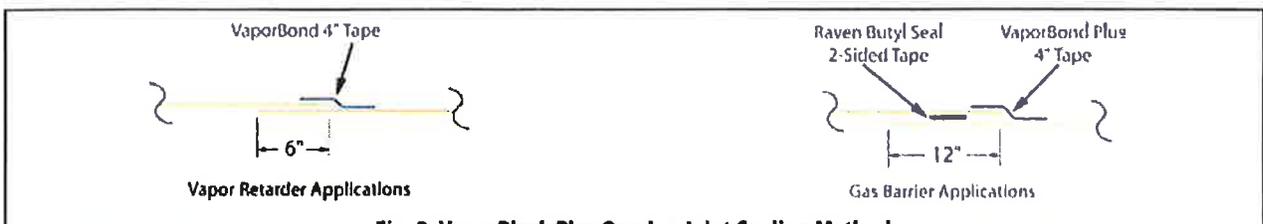


Fig. 2: VaporBlock Plus Overlap Joint Sealing Methods

SINGLE PENETRATION PIPE BOOT INSTALLATION

barrier, overlap joints a minimum of 12" and seal in-between overlap with 2-sided Raven Butyl Seal Tape. Then seal with VaporBond Plus Tape centered on the overlap seam. (Fig. 2)

- 1.4. Seal around all plumbing, conduit, support columns or other penetrations that come through the **VaporBlock Plus** membrane. Pipes four inches or smaller can be sealed with Raven VaporBoot Plus preformed pipe boots. VaporBoot Plus preformed pipe boots are formed in steps for 1", 2", 3" and 4" PVC pipe or IPS size and are sold in units of 12 per box (Fig. 3 & 5).

Pipe boots may also be fabricated from excess **VaporBlock Plus** membrane (Fig. 4 & 6) and sealed with VaporBoot Tape or VaporBond Plus Tape (sold separately).

Reminder Note: All holes or penetrations through the membrane will need a patch cut to a minimum of 12" from the opening in all directions.

To fabricate pipe boots from **VaporBlock Plus** excess material (see Fig. 4 & 6 for A-F):

- A) Cut a square large enough to overlap 12" in all directions.
- B) Mark where to cut opening on the center of the square and cut four to eight slices about 3/8" less than the diameter of the pipe.
- C) Force the square over the pipe leaving the tightly stretched cut area around the bottom of the pipe with approximately a 1/2" of the boot material running vertically up the pipe. *(no more than a 1/2" of stretched boot material is recommended)*
- D) Once boot is positioned, seal the perimeter to the membrane by applying 2-sided Raven Butyl Seal Tape in between the two layers. Secure boot down firmly over the membrane taking care not to have any large folds or creases.
- E) Use VaporBoot Tape or VaporBond Plus Tape to secure the boot to the pipe.

VaporBoot Tape (option) – fold tape in half lengthwise, remove half of the release liner and wrap around the pipe allowing 1" extra for overlap sealing. Peel off the second half of the release liner and work the tape outward gradually forming a complete seal.

VaporBond Plus Tape (option) - Tape completely around pipe overlapping the to get a tight seal against the pipe.

- F) Complete the process by taping over the boot perimeter edge with VaporBond Plus Tape to create a monolithic membrane between the surface of the slab and gas/moisture sources below and at the slab perimeter. (Fig. 4 & 6)

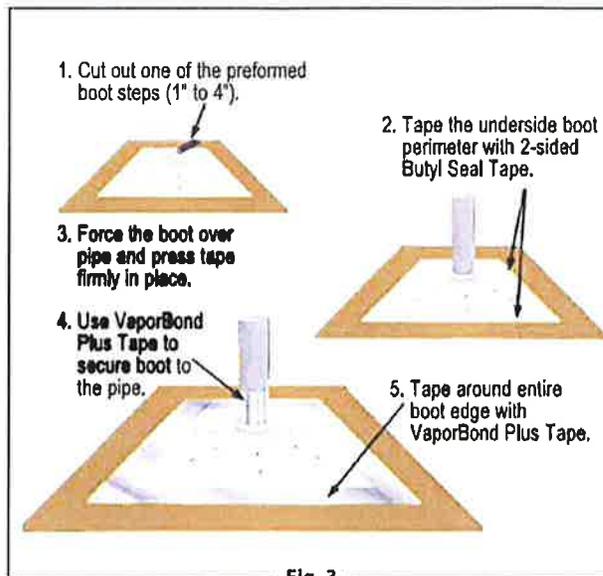


Fig. 3

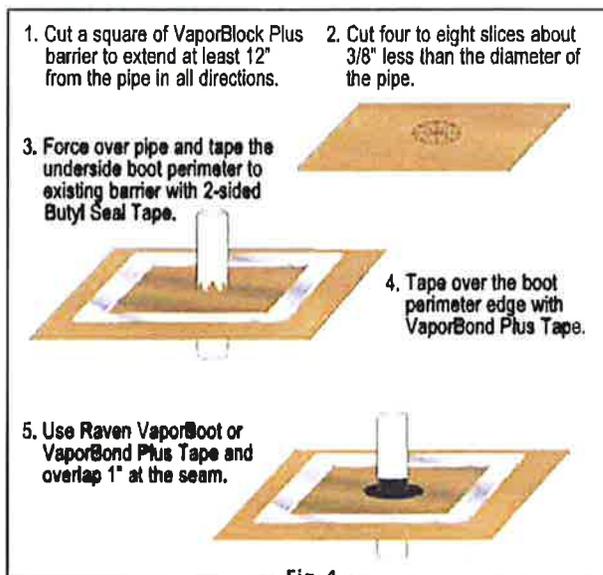


Fig. 4

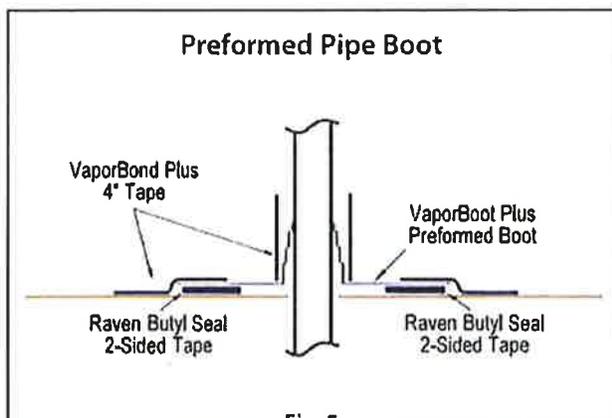


Fig. 5

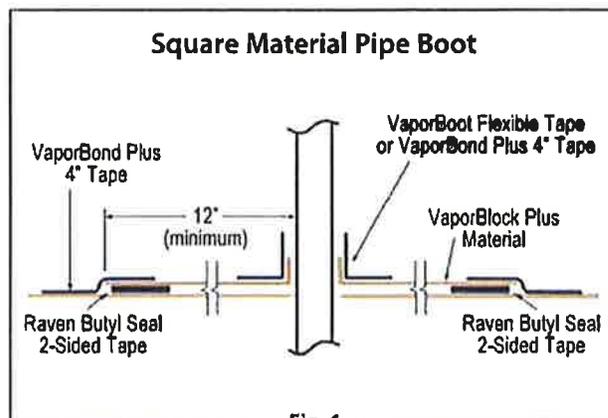


Fig. 6

MULTIPLE PENETRATION PIPE BOOT INSTALLATION

1.5. For side-by-side multiple penetrations;

- A) Cut a patch large enough to overlap 12" in all directions (Fig. 7) of penetrations.
- B) Mark where to cut openings and cut four to eight slices about 3/8" less than the diameter of the penetration for each.
- C) Slide patch material over penetration to achieve a tight fit.
- D) Once patch is positioned, seal the perimeter to the membrane by applying 2-sided Raven Butyl Seal Tape in-between the two layers. (Fig. 8)
- E) After applying Raven Butyl Seal Tape between the patch and membrane, tape around each of the penetrations and the patch with VaporBond Plus 4" foil tape. (Fig. 9) For additional protection apply an acceptable polyurethane elastomeric sealant around the penetrations. (Fig. 10)

1.6. Holes or openings through **VaporBlock Plus** are to be repaired by cutting a piece of **VaporBlock Plus** 12" larger in all directions from the opening. Seal the patch to the barrier with 2-sided Raven Butyl Seal Tape and seal the edges of the patch with VaporBond Plus Tape.

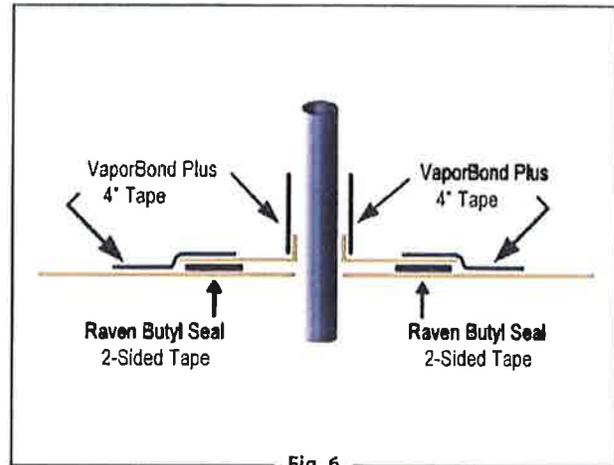


Fig. 6

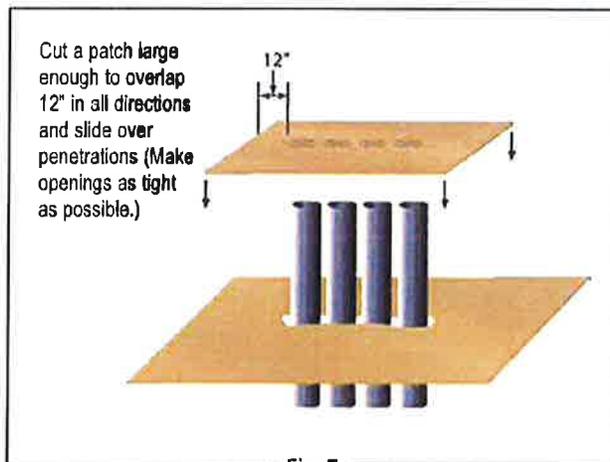


Fig. 7

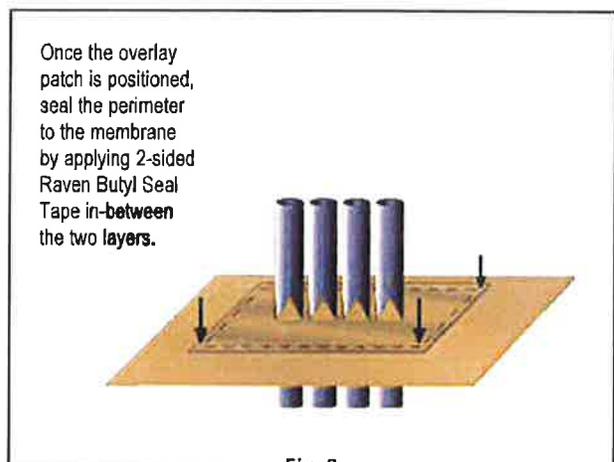


Fig. 8

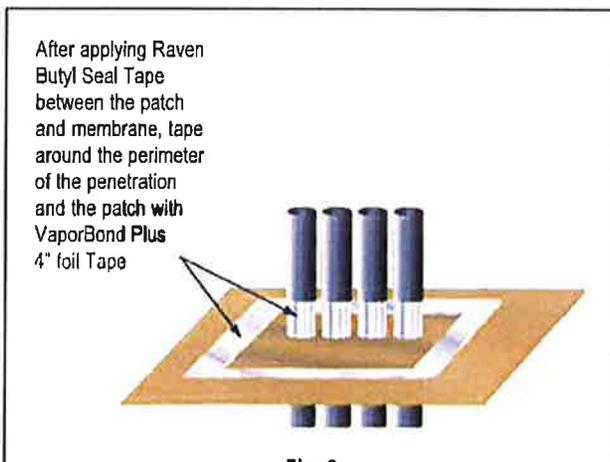


Fig. 9

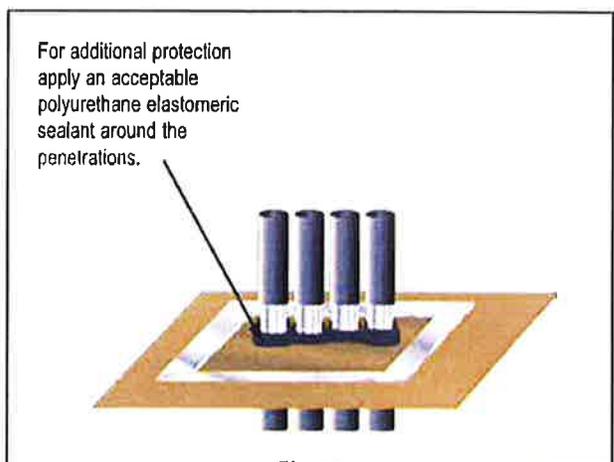
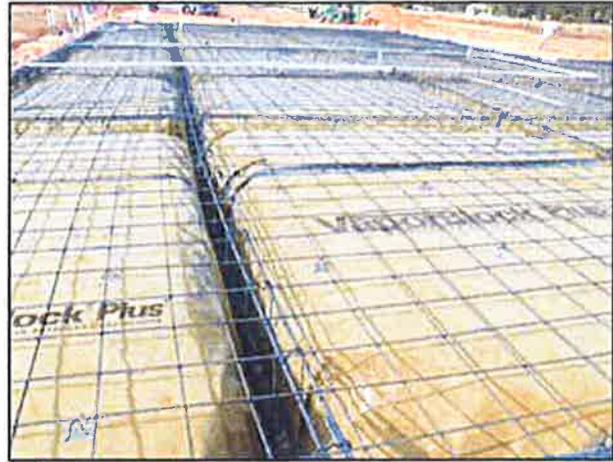


Fig. 10

VAPORBLOCK® PLUS™ PROTECTION

- 2.1. When installing reinforcing steel and utilities, in addition to the placement of concrete, take precaution to protect **VaporBlock Plus**. Carelessness during installation can damage the most puncture-resistant membrane. Sheets of plywood cushioned with geotextile fabric temporarily placed on **VaporBlock Plus** provide for additional protection in high traffic areas including concrete buggies.
- 2.2. Use only brick-type or chair-type reinforcing bar supports to protect **VaporBlock Plus** from puncture.
- 2.3. Avoid driving stakes through **VaporBlock Plus**. If this cannot be avoided, each individual hole must be repaired per section 1.6.
- 2.4. If a cushion or blotter layer is required in the design between **VaporBlock Plus** and the slab, additional care should be given if sharp crushed rock is used. Washed rock will provide less chance of damage during placement. Care must be taken to protect blotter layer from precipitation before concrete is placed.



Note: To the best of our knowledge, these are typical installation procedures and are intended as guidelines only. Architectural or structural drawings must be reviewed and followed as well on a project basis. NO WARRANTIES ARE MADE AS TO THE FITNESS FOR A SPECIFIC USE OR MERCHANTABILITY OF PRODUCTS OR GUIDELINES REFERRED TO, no guarantee of satisfactory results from reliance upon contained information or recommendations and we disclaim all liability for resulting loss or damage.



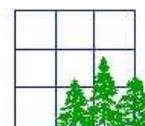
RAVEN INDUSTRIES, INC. / Engineered Films Division
P.O. Box 5107 • Sioux Falls, SD 57117-5107
Ph: (605) 335-0174 • Fx: (605) 331-0333
Toll Free: 800-635-3456



ISO 9001:2000
CERTIFIED MANAGEMENT SYSTEM

www.vaporblockplus.com

6/09 EFD 1127



APPENDIX VII

Appendix VII

CONSTRUCTION HEALTH AND SAFETY PLAN

SITE-SPECIFIC CONSTRUCTION HEALTH AND SAFETY PLAN

1825 Boston Road – Building B Portion of Block 2984, Lot 46 Bronx, New York

1.0 INTRODUCTION

This Site-Specific Construction Health and Safety Plan (CHASP) was prepared in accordance with the requirements and guidelines of the applicable Occupational Safety and Health Administration (OSHA) requirements in 29 Code of Federal Regulations (CFR) Part 1910.120. This CHASP has been prepared for the property at 1825 Boston Road – Building B, Bronx, New York. The CHASP will be available for inspection and review by site workers and regulatory personnel during work activities involving the installation of monitoring wells, soil vapor sampling and structural support work related to retaining wall repair. Site workers are required to comply with this CHASP when conducting the site activities listed in Section 2.0. Site workers will notify the Site Safety Officer of matters regarding health, safety and security.

All personnel and subcontractors must familiarize themselves with material contained herein, including special conditions and facilities located near each project as listed on the following pages. The information contained in this CHASP pertains to excavation of urban historic fill.

2.0 ENTRY OBJECTIVES

The objective of entry to the Work Area is to conduct soil excavation and site grading associated with the development of a commercial and residential building. Entrance will be gained to the property on Crotona Parkway. Work performed at the site will be done in accordance with 29 CFR 1926, Subpart P, and all other appropriate federal and state regulations.

3.0 ON-SITE ORGANIZATION AND COORDINATION

Key project personnel and their responsibilities to carry out the stated job function at the site are discussed below.

Brinkerhoff Environmental Services, Inc. (Brinkerhoff) will provide health and safety support, associated with environmental issues. The contact information for the designated person to provide Health and Safety support for this project is:

Sean Harrison, Health and Safety Officer
Brinkerhoff Environmental Services, Inc.
1805 Atlantic Avenue
Manasquan, New Jersey 08736
Phone: (732) 223-2225, Fax: (732) 223-3666

The Construction Health and Safety Officer for overall administration of this CHASP during installation of piles and footings is designated below. The Construction Health and Safety Officer's responsibilities will include overall project safety and health monitoring for the work to be performed. The Construction Health and Safety Officer will enforce and audit the effectiveness of the CHASP on a continuing basis and make changes to ensure that the intent of the CHASP is maintained.

Jovana Villanueva
Joy Construction Co.
40 Fulton Street
New York, NY 10038
Cell: (917) 312-9383 Office: 212-337-4512

4.0 ON-SITE CONTROL

The Environmental Site Safety Officer is designated to coordinate access control and security on site during soil excavation operations. A safe perimeter will be established at the subject property. Unauthorized personnel will be excluded from this area. The Environmental Consultant will conduct air monitoring during excavation operations and make determinations if dust control is required or if evidence of hazardous materials is present and/or the level of Personnel Protective Equipment (PPE) should be raised.

Excavating Precautions (Utilities)

1. A utility markout of all underground utilities will be completed prior to the inception of ground-intrusive work, in compliance with 29 CFR 1926.651. The utility markout will utilize the One Call system prior to the commencement of operations at the site. Work will commence less than 10 business days after contacting the One Call system.
2. Visually inspect all utility markout locations on site.
3. Operations in the vicinity of overhead power lines will be conducted in accordance with 29 CFR 1910.333 (c)(3).
4. Conduct all excavations and subsequent soil sampling in the vicinity of a utility with caution.
5. If a utility line is damaged, call the utility company immediately.
6. If unsure of the utility company, call NYC ONE CALL (1-800-272-4480).

Dust Prevention and Control (Track out onto Paved Public Roadways)

1. Vehicles leaving the site should be cleaned/decontaminated prior to exiting.
2. Promptly remove mud, dirt, or similar debris from the paved road.
3. Water flush and/or vacuum sweep the paved road.
4. Prepare unpaved site ingress and egress points by applying gravel to the surface to control track out and erosion.
5. The surface of the ingress and egress points must be kept adequately wet with water.

Dust Prevention and Control (General Procedures for Unpaved Areas)

1. Apply gravel to entrance, exit, and other areas of the site that are likely to see heavy vehicular traffic.
2. Limit vehicle traffic to required vehicles.
3. Limit vehicle speeds on unpaved areas of the site. Placement of signs near the site entrance that denote site speed restrictions is advised.
4. Apply sufficient water to unpaved surfaces that are likely to be disturbed to keep them adequately wet. According to 40 CFR Part 61, adequately wet means sufficiently mixed or penetrated with liquid to prevent the release of particulates. Visibly detectable dust emissions are the primary indication that the unpaved work area has not been kept adequately wet.

Dust Prevention and Control (Procedures for Grading and Excavation)

1. When soil is to be moved or stockpiled, the drop height of the soil should be reduced as much as possible.
2. Limit the height of soil stockpiles.
3. Limit the disturbance of soil stockpiles.
4. Keep the surface of stockpiles adequately wet.
5. All stockpiled soil shall be covered with plastic sheeting or other suitable cover material.
6. RECORD AND MONITOR ALL DUST PREVENTION/CONTROL ACTIVITIES. Recording this information will provide a superior method of monitoring and evaluating the success of the dust prevention and control plan.

In the event that visible dust is observed, associated work activities are to stop immediately and measures to mitigate commence as soon as possible (i.e., wetting down material with water).

5.0 HAZARD EVALUATION

The Environmental Site Safety Officer is responsible for administering the Contractor's Hazard Communication Program. OSHA HAZWOPER standards (29 CFR 1910.120 and 1926.65) require that site personnel, subcontractors, and visitors must be informed of hazards associated with the site. Additionally, the Site Safety Officer will be responsible for determining safety precautions, changes to the personal protection equipment (PPE) program, or other modifications to this CHASP that would be appropriate in response to unanticipated chemical hazards.

5.1 Environmental Hazards

At present, suspected contaminants in the subsurface soil constitutes an environmental hazard. Various chemical compounds have been identified in the soil. If encountered in the soil at higher concentrations than anticipated, exposure concerns could become a health issue. The following are known or suspected to be present at the site.

5.1.1 Volatile Organic Compounds (VOCs)

Volatile organic compounds (VOCs) such as tetrachloroethene (PCE) and trichloroethene (TCE) were detected in soil vapor samples. Should VOCs be detected during excavation, monitoring of the air using a PID will be performed. VOCs may cause chronic liver and kidney damage, and some are suspected human carcinogens. The primary route of exposure to VOCs is through inhalation; therefore, air monitoring and respiratory protection are the primary controls against exposure to VOCs.

5.1.2 Urban Historic Fill

Urban historic fill has been identified on the property. The urban historic fill is impacted with poly nuclear aromatic hydrocarbons (PAHs), metals, and one pesticide. Several PAHs and metals were detected over the New York State Department of Conservation's (NYSDEC's) Subpart 375-6 Restricted-Residential Use Soil Cleanup Objectives (SCO).

A complete list of Material Safety Data Sheets (MSDSs) for such compounds and analytes analyzed for as part of the environmental investigations conducted at the site are provided as an attachment to this CHASP.

5.2 Physical Hazards

The work to be completed at the site in conjunction with this CHASP consists of installation of wells, piles and excavation for the installation of footings. Additional physical hazards expected on site include buried utilities, slip, trip, and fall hazards, and hazards associated with heavy machinery.

6.0 HAZARD MONITORING

6.1 Air Monitoring Using a PID

Periodic air monitoring, visual, and olfactory inspection of soil during site-wide excavation, soil disposal, and well and pile installation will be conducted. A PID will be used to screen both the soil and ambient air for the presence of VOCs.

The following are the Short Term (ST) Exposure Limits on a 15-minute time weighted average and the Immediate Danger to Life and Health (IDLH) conditions for VOCs which may be present in the subsurface soil. The levels are presented in parts per million (ppm).

Compound	ST	IDLH
Benzene	5 ppm	500 ppm
Ethyl benzene	100 ppm	500 ppm
Toluene	150 ppm	500 ppm
Xylenes	150 ppm	900 ppm

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area exceeds five (5) ppm above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below five (5) ppm over background, work activities will resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of five (5) ppm over background, but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less (but in no case less than 20 feet) is below five (5) ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shut down.

All 15-minute readings will be recorded and be available review. Instantaneous readings, if any, used for decision purposes will also be recorded.

6.2 Air Monitoring Using a Dust Trak Monitor

Particulate concentrations will be monitored periodically both in the upwind and downwind directions at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time monitoring equipment such as the Dust Trak Aerosol Monitor, Model 8530, capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed $150 \text{ mcg}/\text{m}^3$ above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than $150 \text{ mcg}/\text{m}^3$ above the upwind level, work will be stopped and a reevaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within $150 \text{ mcg}/\text{m}^3$ of the upwind level and in preventing visible dust migration.

All readings will be recorded and be available for to review.

6.3 Personal Protective Equipment (PPE)

Based upon evaluation of potential hazards, the following levels of personal protection have been designated for the Work Area:

Location	Job Function	Level of Protection
Entire Site	Soil/Groundwater sampling	A B C D

If VOCs are detected which indicate a need to upgrade the PPE, the Health and Safety Officer will stop all work and evaluate the level of protection required to complete the project. A determination will be made regarding the safety of the situation and the type of PPE that will be required. *At no time will work be conducted in an environment where an IDLH condition could be present.*

The following are monitoring levels for which a change in the level of protection or evacuation of the work area would be implemented. If the work area is evacuated, procedures such as the use of ventilation would be utilized if possible to lower monitoring levels to below the threshold for raising the level of protection.

PID 150 ppm

It should be noted that the work proposed will not be performed in a level of PPE other than Level D. Procedures would have to be put in place to lower the PPE requirement to Level D, should conditions suggest an increase in the level of PPE required.

Precautions will be implemented to limit direct contact with the soil or inhalation of dust. At a minimum, nitrile gloves are to be worn when handling soil, dust control procedures used if necessary, and thorough hand washing prior to handling food.

Specific protective equipment for potential levels of protection is as follows:

6.3.1 Levels A & B

Since levels A & B are for IDLH environments, they are not applicable to this project.

6.3.2 Level C

The concentration(s) and type(s) of airborne substance(s) is (are) known and the criteria for using air-purifying respirators are met. The following constitute Level C equipment:

- National Institute for Occupational Safety and Health (NIOSH)-approved full-face or half-face air purifying respirators;
- Chemical-resistant clothing (overalls, chemical-splash suit, disposable chemical-resistant overalls);
- Gloves, outer and inner, chemical-resistant;
- Boots, outer, chemical-resistant, with steel toe and shank;
- Optional chemical resistant boot covers;
- Hard hat;
- Safety glasses with side shields;

- Face shield and safety glasses when not wearing a full face respirator; and,
- Hearing protection when working in noise hazardous areas or near operating heavy equipment.

6.3.3 Level D

A work uniform providing no respiratory protection is used only for prevention of skin contamination. The following constitute Level D equipment:

- Coveralls or other skin-protective clothing (long-sleeve shirts and long pants);
- Gloves;
- Boots or shoes, chemical-resistant, steel toe and shank;
- Optional chemical resistant boot covers;
- Safety glasses or chemical splash goggles;
- Hard hat;
- Hearing protection when working in noise-hazardous areas or near operating heavy equipment; and,
- High-visibility safety vest.

NO CHANGES TO THE SPECIFIED LEVELS OF PROTECTION SHALL BE MADE WITHOUT THE APPROVAL OF THE CONSTRUCTION SITE SAFETY OFFICER.

7.0 COMMUNICATION PROCEDURES

The following standard hand signals will be used in case of emergency:

<u>Message</u>	<u>Interpretation(s)</u>
Hands gripping throat	Out of air; can't breathe.
Grip partner's wrist.....	Leave area immediately.
Hands on top of head	Need assistance.
Thumbs up	OK; I am all right; I understand.
Thumbs down.....	No; Negative.

8.0 DECONTAMINATION PROCEDURES

Should hazardous materials be encountered, a decontamination procedure will be implemented. Generated waste, such as disposable PPE, will be disposed of in accordance with applicable local, state, and federal regulations. The decontamination protocol shall be used with the following decontamination stations:

- (1) Equipment drop;
- (2) Detergent and Water Rinse (optional); and,
- (3) Remove PPE (if utilized) and place in waste container

Decontamination of equipment is not anticipated to be required for this project.

9.0 MEDICAL MONITORING

As per 29 CFR 1910.120 (b)(4)(ii)(D) and in accordance with 29 CFR 1910.120 (f), persons engaging in on-site activities during which they are or may be exposed to hazardous substances or health hazards at or above the permissible exposure limits or published exposure levels for 30 days or more a year are included in a Medical Surveillance Program.

The timing and location of this project may be such that heat/cold stress could pose a threat to the health and safety of site personnel. Work/rest regimens will be employed as deemed necessary by the Site Safety Officer so site workers do not suffer adverse effects from heat/cold stress. Special clothing and an appropriate diet and fluid intake will be recommended to all on-site personnel to further reduce these temperature-related hazards. Site workers should stop work and notify the Site Safety Officer when they observe symptoms of heat/cold stress in themselves or co-workers.

9.1 Heat Stress Monitoring

Heat stress monitoring of personnel wearing protective clothing (i.e., impermeable fabric) should be considered when the ambient temperature is 70 degrees Fahrenheit or above. To monitor the worker, one of the following methods should be employed:

- Heart rate should be measured by the radial pulse for a 30-second period as early as possible in the rest period. If the heart rate exceeds 110 beats per minute, shorten the next work cycle by one-third (0.3) and keep the rest period the same. If the heart rate still exceeds 110 beats per minute at the next rest period, shorten the following cycle by one-third (0.3).
- Oral temperature should be measured at the end of the work period (before drinking). If oral temperature exceeds 99.6 degrees Fahrenheit, shorten the next work cycle by one-third (0.3) without changing the rest period. If the oral temperature still exceeds 99.6 degrees Fahrenheit at the beginning of the next rest period, shorten the next work cycle by one-third (0.3). Do not permit a worker to wear a semipermeable or impermeable garment when his/her oral temperature exceeds 100.6 degrees Fahrenheit.

9.2 Cold Stress Monitoring

Work/rest schedules must be altered to minimize the potential for cold stress. Cold stress is defined as a decrease in core body temperature to 96.8 degrees Fahrenheit and/or cold injury to body extremities. Decreases in core body temperature are associated with reduced mental alertness, reduction in rational decision-making, or loss of consciousness in severe cases. Symptoms of cold stress include pain in extremities (i.e., hands and feet) and severe shivering.

10.0 MEDICAL EMERGENCIES

10.1 Emergency Medical Care

- First Aid & Rescue Squad (Call 911).
- Metro Community Health Center, Bronx, Phone: (718) 665-7565.

10.2 Directions to Metro Community Health Center

The Metro Community Health Center is located at 979 Cross Bronx Expy, and is 0.1 miles northeast of the site. See Attachment II for turn by turn driving directions and map.

10.3 List of Emergency Phone Numbers

Agency/Facility	Phone Number
All Services	911
Police	911
Fire Emergency	911
Metro Community Health Center	(718) 665-7565

10.4 First Aid Equipment

First aid equipment is available on site at the following locations:

Equipment	Location
First Aid Kit	Field Vehicle
Fire Extinguisher	Field Vehicle

11.0 EMERGENCY PROCEDURES

On-site personnel will use the following standard emergency procedures. The Construction Health and Safety Officer shall be notified of on-site emergencies and be responsible for ensuring that the appropriate procedures are followed.

11.1 Personnel Injury in the Work Area

Upon notification of an injury in the Work Area, the Construction Health and Site Safety Officer will assess the nature of the injury. For a true emergency, 911 shall be called and local

emergency services personnel shall initiate the appropriate first aid and contact the designated medical facility, if required.

If the cause of the injury or loss of the injured person does not affect the performance of site personnel, operations may continue with the local emergency services personnel initiating the appropriate first aid and necessary follow-up, as stated above. If the injury increases the risk to others, the designated emergency signal shall be sounded and all site personnel shall move to the site entrance for further instructions. Activities on site will stop until the added risk is removed or minimized. No persons shall reenter the Work Area until the cause of the symptoms or injury is determined by the Construction Health and Safety Officer.

11.2 Fire/Explosion

Upon notification of a fire or explosion on site, the designated emergency signal (three [3] horn blasts) shall be sounded, and all site personnel shall be assembled at the site entrance. The fire department shall be alerted, and all personnel shall be moved to a safe distance from the involved area.

11.3 PPE Failure

If utilization of PPE is necessitated by conditions in the Work Area and a site worker experiences a failure or alteration of protective equipment which affects the protection factor, that person shall immediately leave the Work Area. Reentry shall not be permitted until the equipment has been repaired or replaced.

11.4 Other Equipment Failure

If other equipment on site fails to operate properly, the Construction Health and Safety Officer shall be notified and then determine the effect of this failure on continuing operations. If the failure affects the safety of personnel or prevents completion of the planned tasks, all personnel shall leave the Work Area until the situation is evaluated and appropriate actions taken.

In all situations, when an on-site emergency results in evacuation of the Work Area, personnel shall not reenter until:

1. The conditions resulting in the emergency have been corrected.
2. The hazards have been reassessed.
3. The CHASP has been revised.
4. Site personnel have been briefed regarding changes in the CHASP.

Attachment I

Volatile Organic Compounds - VOCs

What are VOCs?

Volatile Organic Compounds (VOCs) are chemicals that evaporate easily at room temperature. The term "organic" indicates that the compounds contain carbon. VOC exposures are often associated with an odor while other times there is no odor. Both can be harmful. There are thousands of different VOCs produced and used in our daily lives. Some examples are:

- Benzene
- Toluene
- Methylene Chloride
- Formaldehyde
- Xylene
- Ethylene glycol
- Texanol
- 1,3-butadiene

Where do VOCs come from?

Many products emit or "off-gas" VOCs. Some examples of VOC emission sources are:

- Paints
- Varnishes
- Moth balls
- Solvents
- Gasoline
- Newspaper
- Cooking
- Cleaning Chemicals
- Vinyl floors
- Carpets
- Photocopying
- Upholstery Fabrics
- Adhesives
- Sealing Caulks
- Cosmetics
- Air Fresheners
- Fuel Oil
- Vehicle Exhaust
- Pressed wood furniture
- Environmental Tobacco Smoke (Secondhand smoke)

What levels of VOC are typical in the home?

As of July, 2003 neither Minnesota nor the federal government have set standards for VOC levels in non-occupational settings. However, some guidelines are available. MDH has established Health Risk Values (HRVs) for some contaminants in air for several different exposure situations. For more information on these HRVs go to MDH Health Risk Values Website.

Many studies have shown VOC levels are higher in indoor air than outdoor air. The U.S. Environmental Protection Agency (EPA) Total Exposure Assessment Methodology (TEAM) studies have found indoor VOC levels that were 2 to 5 times higher than outdoors.

Levels of VOC exposure in indoor air vary widely depending on:

- the volume of air in the room/building
- the rate at which the VOC is off-gassed
- the building ventilation rate
- outdoor concentrations

Along with the concentration of VOCs in a given environment, the time an individual spends in that environment is important in determining exposure.

What are the health effects of VOC exposure?

Acute

- Eye irritation / watering
- Nose irritation
- Throat irritation
- Headaches
- Nausea / Vomiting
- Dizziness
- Asthma exacerbation

Chronic

- Cancer
- Liver damage
- Kidney damage
- Central Nervous System damage.



Indoor Air Unit
 P.O. Box 64975
 St. Paul, MN, 55164-0975
 651-201-4601 or 800-798-9050
www.health.state.mn.us/divs/eh/air

Volatile Organic Compounds - VOCs - page 2

Most studies to date have been conducted on single chemicals. Less is known about the health effects of combined chemical exposure. The best health protection measure is to limit your exposure to products and materials that contain VOCs when possible. If you think you may be having health problems caused by VOC exposure consult an occupational/environmental health physician who specializes in this area

Are some people at greater risk from VOC exposure than others?

Persons with respiratory problems such as asthma, young children, elderly, and persons with heightened sensitivity to chemicals may be more susceptible to illness from VOC exposure.

How can I tell what levels of VOC are in my home?

Some home screening kits are available to measure total volatile organic compound (TVOC) levels, and some individual VOCs. These home sampling kits should be viewed as providing "ballpark" amount of VOCs in the indoor air. Conditions such as ventilation, temperature and humidity can cause VOC concentrations to fluctuate daily

Prior to testing conduct an inspection of your home for some common sources of VOCs such as:

- New carpeting
- New furniture
- Idling automobile in attached garage
- Recent painting
- Chemicals stored in the home
- Recently applied adhesives
- New plastic or electronic devices

Once you determine the probable source of VOCs, steps can be taken to reduce your exposure. If you are unable to determine the source, a professional indoor air quality investigator / industrial hygienist can be consulted. MDEH has a service provider list along with recommendations on selection. MDH also has a guidance document that can be used for investigating possible VOC contamination entitled "Indoor Air Sampling at VOC contaminated sites"

How do I reduce the levels of VOCs in my home?

Most products containing VOCs will off-gas within a short period of time although some will continue to give off trace amounts of VOCs for a long period of time. The best means of reducing VOC exposure is to eliminate products containing VOCs or use low emitting VOC products.

Some steps you can take to reduce your exposure to VOC in the home are:

- Source control
 - eliminate products from home that have high levels of VOCs
 - purchase new products that contain low or no VOCs (environmentally preferable purchasing)
- Ventilation - open doors and windows, use fans.
- Control climate - as temperature and humidity increase some chemicals will off gas more.
- Treat the source - airtight sealers can be used to coat over some products. However, caution is advised in choosing the coating product as this could introduce new VOCs into the air while controlling for others.
- Air cleaners - look for ones with activated charcoal filtration designed to remove chemicals from the air.
- Remove unused chemicals from the home. Check with city or county for household hazardous waste collection sites.
- Perform renovations when home is unoccupied.

For more information on VOCs or other Indoor Air Quality Issues Contact:

**The Minnesota Department of Health
Indoor Air Unit**

625 Robert Street North, PO Box 64975

St. Paul, MN 55164-0975

651/201-4601 or 800/798-9050

View the Air Quality web page at:

www.health.state.mn.us/divs/eh/air

To require this document in another form contact:
Call 651/201-4601. TTY: 651/201-5797 or Minnesota Relay
Service TTY: 1-800/627-3529.

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**SEMI-VOLATILE ORGANIC COMPOUNDS
(SVOCs)**



U.S. Environmental Protection Agency

Mid-Atlantic Brownfields

Serving: Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, and West Virginia

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This Fact Sheet is presented by the U. S. Environmental Protection Agency, Region III (EPA) to assist in the selection of analytical parameters and the associated Quality Assurance and Quality Control (QA/QC) procedures to be utilized in Phase II Environmental Assessments under the U.S. Environmental Protection Agency (EPA) Brownfields initiative. This fact sheet is presented for informational purposes only, and should not be construed as a federal policy or directive. The Brownfields Coordinator for this region may be reached at 215-814-5000.

A semivolatile organic compound is an organic compound which has a boiling point higher than water and which may vaporize when exposed to temperatures above room temperature. Semivolatile organic compounds include phenols and polynuclear aromatic hydrocarbons (PAH).

LIST OF SEMIVOLATILE ORGANIC COMPOUNDS *

- Phenol
- Bis(2-chloroethyl)ether
- 2-Chlorophenol
- 1,3-Dichlorobenzene
- 1,4-Dichlorobenzene
- 1,2-Dichlorobenzene
- 2-Methylphenol
- Bis(2-chloroisopropyl)ether
- 4-Methylphenol
- n-Nitroso-di-n-propylamine
- Hexachloroethane
- Nitrobenzene
- Isophorone
- 2-Nitrophenol
- 2,4-Dimethylphenol
- Bis(2-chloroethoxy)methane
- 2,4-Dichlorophenol
- 1,2,4-Trichlorobenzene
- Naphthalene
- 4-Chloroaniline
- Hexachlorobutadiene
- 4-Chloro-3-methylphenol
- 2-Methylnaphthalene
- Hexachlorocyclopentadiene
- 2,4,6-Trichlorophenol
- 2,4,5-Trichlorophenol
- 2-Chloronaphthalene
- 2-Nitroaniline
- Dimethylphthalate
- Acenaphthylene
- 2,6-Dinitrotoluene

- 3-Nitroaniline
- Acenaphthene
- 2,4-Dinitrophenol
- 4-Nitrophenol
- 4-Bromophenyl-phenylether
- Hexachlorobenzene
- Pentachlorophenol
- Phenanthrene
- Anthracene
- Carbazole
- Di-n-butylphthalate
- Fluoranthene
- Pyrene
- Butylbenzylphthalate
- 3,3'-Dichlorobenzidine
- Benzo(a)anthracene
- Chrysene
- Bis(2-ethylhexyl)phthalate
- Di-n-octylphthalate
- Benzo(b)fluoranthene
- Benzo(k)fluoranthene
- Benzo(a)pyrene
- Indeno(1,2,3-cd)pyrene
- Dibenz(a,h)anthracene
- Benzo(g,h,i)perylene

* Please note: The list above corresponds to the EPA Contract Laboratory Program (CLP) semivolatile organic list, and is not a complete list of all toxic semivolatile organic compounds. If the site history suggests a semivolatile organic compound may be present which is not on this list, the compound should be included in the requested analysis.

ANALYSIS METHODS

Please note that the methods listed below are EPA approved and the most commonly used by EPA and their contractors. However, they are not the only methods for the analysis of semivolatile organic compounds. In addition, these are not drinking water test methods.

METHOD	APPLICABLE MATRICES
EPA 625 or 1625 (1)	Aqueous
EPA SW-846 3010 or 3020/8250 or 8270 (2)	Aqueous
EPA SW-846 3500 or 3550/8250 or 8270 (2)	Soil/Sediment & Waste
EPA CLP Statement of Work 3/90	Aqueous & Soil/Sediment
EPA SW-846 8100 or 8310 (2) 610 (1)	Water and Soil/Sediment for PAH
EPA SW-846 8040 (2) or 604 (1)	Water and Soil/Sediment for Phenols

1. U.S. Environmental Protection Agency (EPA). 1992. *Test Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater*. Washington, D.C. July.
2. EPA. 1986. *Test Methods for Evaluating Solid Waste*. SW-846. Washington, D.C. September.

COLLECTION MEDIA/VOLUME

Listed below are the EPA-recommended preservation and holding times as well as suggested glassware.

MATRIX	GLASSWARE	VOLUME	PRESERVATIVE	HOLDING TIME
Soil/Sediment	8-oz wide mouthed jar	1 8-oz jar	ice to 4° C	14 days
Aqueous	32-oz amber bottle	2 amber bottles	ice to 4° C	7 days
Waste	8-oz wide mouth jar	1 8-oz jar	none required (ice preferred)	none (try not to exceed 14 days)

MINIMUM LABORATORY QUALITY CONTROL MEASURES

The laboratory should have Standard Operating Procedures available for review for the semivolatile organic compound analyses and for all associated methods needed to complete the semivolatile analysis, such as total solids, instrument maintenance, sample handling, and sample documentation procedures. In addition, the laboratory should have a Laboratory Quality Assurance/Quality Control Statement available for review which includes all key personnel qualifications.

QC TYPE	FREQUENCY OF ANALYSIS	ACCEPTABLE LIMITS
Gas Chromatograph/Mass Spectrometer (GC/MS) Tuning	Once per day or more frequently if required by method	See method criteria for acceptable limits
Initial Calibration	Prior to analysis of samples (minimum three concentration levels for every compound and an instrument blank)	% Relative Standard Deviation of Response Factors of ≤ 30 (see method for any allowable variations), and a minimum Response Factor of ≥ 0.05 (see method for calculation)
Continuing Calibration	Once per day (mid-level standard containing all compounds) or more frequently if required by method	% Difference for Response Factor of ≤ 25 (see method for any allowable variations), and a minimum Response Factor of ≥ 0.05 (see method for calculation)
Method Blank	Once per extraction batch	See method for allowable limits
Internal Standards	Six per sample (see method for suggested internal standard compounds)	-50% to + 100% of Daily standard area and retention time shift (limits depend if packed or capillary column, see method)

Matrix Spike/Matrix Spike Duplicate	One set of MS/MSD per 20 samples or analysis set	See method for allowable limits
Surrogate Spikes	Added to each sample (see method for suggested surrogate compounds)	Report recovery

MINIMUM DATA PACKAGE REQUIREMENTS

- Sample results in a tabular form (if soil or sediment) reported on a dry weight basis.
- Report % moisture or % solids for all soil and sediment samples.
- Report sample volumes or weights, as well as any dilution factors, for each sample analysis.
- Return copy of the chain of custody form sent with the samples with laboratory receipt acknowledgment, and the internal or laboratory chain of custody forms.
- Method blank results.
- GC/MS tuning data summary.
- GC/MS initial and continuing calibration data summary forms.
- GC/MS internal standard data for samples and associated daily standard.
- Surrogate spike recoveries, either on a separate table or with the results, including laboratory QC limits.
- Matrix spike recovery tables, including laboratory recovery and relative percent difference QC limits.
- Date samples were analyzed, on a separate sheet, tune sheet, or results page.
- Optional: sample, standard and blank chromatograms, quantitation sheets, mass spectra, instrument run logs, and total solids logs.

Note: The optional QC must be maintained by laboratory for at least one year for possible future QC audits.

[[Region 3 HSCD](#) | [Region 3](#) | [EPA Superfund](#)]

United States Environmental Protection Agency, 1650 Arch Street, Philadelphia, PA 19103-2029
Phone: (800) 438-2474

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Last updated on Wednesday, September 28th, 2005
URL: <http://www.epa.gov/reg3hwmd/bfs/regional/analytical/semi-volatile.htm>

This fact sheet answers the most frequently asked health questions (FAQs) about polycyclic aromatic hydrocarbons (PAHs). For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

What are polycyclic aromatic hydrocarbons?

(Pronounced pōlī-sī/kōk ēr'ō-mātīk hī'drō-kar/benz)

Polycyclic aromatic hydrocarbons (PAHs) are a group of over 100 different chemicals that are formed during the incomplete burning of coal, oil and gas, garbage, or other organic substances like tobacco or charbroiled meat. PAHs are usually found as a mixture containing two or more of these compounds, such as soot.

Some PAHs are manufactured. These pure PAHs usually exist as colorless, white, or pale yellow-green solids. PAHs are found in coal tar, crude oil, creosote, and roofing tar, but a few are used in medicines or to make dyes, plastics, and pesticides.

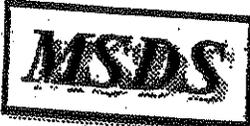
What happens to PAHs when they enter the environment?

- PAHs enter the air mostly as releases from volcanoes, forest fires, burning coal, and automobile exhaust.
- PAHs can occur in air attached to dust particles.
- Some PAH particles can readily evaporate into the air from soil or surface waters.
- PAHs can break down by reacting with sunlight and other chemicals in the air, over a period of days to weeks.

- PAHs enter water through discharges from industrial and wastewater treatment plants.
- Most PAHs do not dissolve easily in water. They stick to solid particles and settle to the bottoms of lakes or rivers.
- Microorganisms can break down PAHs in soil or water after a period of weeks to months.
- In soils, PAHs are most likely to stick tightly to particles; certain PAHs move through soil to contaminate underground water.
- PAH contents of plants and animals may be much higher than PAH contents of soil or water in which they live.

How might I be exposed to PAHs?

- Breathing air containing PAHs in the workplace of coking, coal-tar, and asphalt production plants; smokehouses; and municipal trash incineration facilities.
- Breathing air containing PAHs from cigarette smoke, wood smoke, vehicle exhausts, asphalt roads, or agricultural burn smoke.
- Coming in contact with air, water, or soil near hazardous waste sites.
- Eating grilled or charred meats; contaminated cereals, flour, bread, vegetables, fruits, meats; and processed or pickled foods.
- Drinking contaminated water or cow's milk.



Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08855



24 Hour Emergency Telephone: 800-833-2151
CHEMTREC: 1-800-424-9300
National Response in Canada
CANUTEC: 813-896-8888
Outside U.S. And Canada
CHEMTREC: 800-424-9300

All non-emergency questions should be directed to Customer Service (1-800-833-2151) for assistance.

ANTHRACENE

1. Product Identification

Synonyms: Paranaphthalene; Green Oil; Anthracene 90-95%
CAS No.: 120-12-7
Molecular Weight: 178.23
Chemical Formula: (C6H4CH)2
Product Codes: B490

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	H
Anthracene	120-12-7	99 - 100%	-

3. Hazards Identification

Emergency Overview

WARNING! MAY CAUSE IRRITATION TO SKIN, EYES, AND

unconscious person. Get medical attention.

Skin Contact:

Remove any contaminated clothing. Wash skin with soap or mild detergent and water for at least 15 minutes. Get medical attention if irritation develops or persists.

Eye Contact:

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Call a physician if irritation persists.

5. Fire Fighting Measures

Fire:

Flash point: 121C (250F) CC

Low fire hazard when exposed to heat or flames.

Explosion:

Above the flash point, explosive vapor-air mixtures may be formed. Will burst into flame on contact with chromic acid.

Fire Extinguishing Media:

Water spray, dry chemical, alcohol foam, or carbon dioxide.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from incompatible substances. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

Material Safety Data Sheet

Pyrene, 98+%(gc)

ACC# 27452

Section 1 - Chemical Product and Company Identification

MSDS Name: Pyrene, 98+%(gc)

Catalog Numbers: AC180830000, AC180830250, AC180831000, AC180832500

Synonyms: Benzo[def]phenanthrene

Company Identification:

Acros Organics N.V.

One Reagent Lane

Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01

For emergencies in the US, call CHEMTREC: 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
129-00-0	Pyrene, ca	96.0	204-927-3

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: yellow powder.

Danger! Cancer hazard. May be fatal if inhaled. Causes respiratory tract irritation. May be harmful if swallowed. Causes skin irritation. May cause eye irritation. May cause cancer based on animal studies. The toxicological properties of this material have not been fully investigated.

Target Organs: None known.

Potential Health Effects

Eye: May cause eye irritation.

Skin: Causes skin irritation. Prolonged and/or repeated contact may cause irritation and/or dermatitis. Dermal applications may cause hyperemia (an excess of blood in a part), weight loss, and hematopoietic changes.

Ingestion: May cause digestive tract disturbances. The toxicological properties of this substance have not been fully investigated. May be harmful if swallowed.

Inhalation: May be fatal if inhaled. Causes respiratory tract irritation. Inhalation of dust may cause respiratory tract irritation.

Chronic: May cause cancer according to animal studies. Chronic effects may include leukocytosis and lengthened chronaxy of the leg muscle flexors.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Pyrene, ca	0.2 mg/m ³ TWA (as benzene soluble aerosol) (listed under Coal tar pitches).	0.1 mg/m ³ TWA (cyclohexane-extractable fraction) (listed under Coal tar pitches). 80 mg/m ³ IDLH (listed under Coal tar pitches).	0.2 mg/m ³ TWA (as benzene soluble fraction) (listed under Coal tar pitches).

OSHA Vacated PELs: Pyrene, ca: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

Section 9 - Physical and Chemical Properties

Physical State: Powder

Appearance: yellow

Odor: None reported.

pH: Not available.

Vapor Pressure: < 1 mm Hg @20C

Vapor Density: Not available.

Evaporation Rate: Not available.

Viscosity: Not available.

Boiling Point: 404 deg C @ 760.00mmHg

Freezing/Melting Point: 156 deg C

Decomposition Temperature: Not available.

Solubility: 1.271

Specific Gravity/Density: Not available.

Molecular Formula: C₁₆H₁₀

Molecular Weight: 202.25

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.

Physical: No information available.

Other: Reported BCF: rainbow trout, 72); goldfish, 457; fathead minnow, 600-970.
Based on these values, minimal to moderate bioconcentration of pyrene in aquatic organisms would be expected.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	DOT regulated - small quantity provisions apply (see 49CFR173.4)	No information available.
Hazard Class:		
UN Number:		
Packing Group:		

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 129-00-0 is listed on the TSCA inventory.

Health & Safety Reporting List

CAS# 129-00-0: Effective 6/1/87, Sunset 6/1/97

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

CAS# 129-00-0: 5000 lb final RQ; 2270 kg final RQ

SARA Section 302 Extremely Hazardous Substances

CAS# 129-00-0: 1000 lb TPQ (lower threshold); 10000 lb TPQ (upper threshold)

SARA Codes

CAS # 129-00-0: acute, chronic.

Section 313

No chemicals are reportable under Section 313.

Clean Air Act:

International Chemical Safety Cards

BENZ(a)ANTHRACENE

ICSC: 0385

BENZ(a)ANTHRACENE

1,2-Benzoanthracene

Benzo(a)anthracene

2,3-Benzphenanthrene

Naphthanthracene



Molecular mass: 228.3

CAS # 56-55-3

RTECS # CV9275000

ICSC # 0385

EC # 601-033-00-9

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible.		Water spray, powder. In case of fire in the surroundings: all extinguishing agents allowed.
EXPLOSION	Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE		AVOID ALL CONTACT!	
• INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
• SKIN		Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
• EYES		Safety goggles, face shield, or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
• INGESTION		Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth.
SPILLAGE DISPOSAL		STORAGE	PACKAGING & LABELLING

**ENVIRONMENTAL
DATA**

In the food chain important to humans, bioaccumulation takes place, specifically in seafood.

NOTES

This substance is one of many polycyclic aromatic hydrocarbons - standards are usually established for them as mixtures, e.g., coal tar pitch volatiles. However, it may be encountered as a laboratory chemical in its pure form. Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken. Do NOT take working clothes home. Tetraphene is a common name.

ADDITIONAL INFORMATION

ICSC: 0385

© IPCS, CEC, 1993

BENZ(a)ANTHRACENE

**IMPORTANT
LEGAL
NOTICE:**

Neither the CEC or the IPCS nor any person acting on behalf of the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use.

Skin: Get medical aid. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

Ingestion: Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. This material in sufficient quantity and reduced particle size is capable of creating a dust explosion.

Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or chemical foam.

Flash Point: Not applicable.

Autoignition Temperature: Not available.

Explosion Limits, Lower: Not available.

Upper: Not available.

NFPA Rating: (estimated) Health: ; Flammability: 1; Instability:

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Wear a self contained breathing apparatus and appropriate personal protection. (See Exposure Controls, Personal Protection section). Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Wash hands before eating. Avoid contact with eyes, skin, and clothing. Use only with adequate ventilation. Avoid breathing dust.

Storage: Store in a tightly closed container. Store in a cool, dry area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Conditions to Avoid: Dust generation.

Incompatibilities with Other Materials: Strong oxidizing agents.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.

Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:

CAS# 218-01-9: GC0700000

LD50/LC50:

Not available.

Carcinogenicity:

CAS# 218-01-9:

- **ACGIH:** A3 - Confirmed animal carcinogen with unknown relevance to humans
- **California:** carcinogen, initial date 1/1/90
- **NTP:** Suspect carcinogen (listed as Polycyclic aromatic hydrocarbons).
- **IARC:** Group 1 carcinogen (listed as Coal tar pitches).

Epidemiology: No information available.

Teratogenicity: No information available.

Reproductive Effects: No information available.

Neurotoxicity: No information available.

Mutagenicity: Chrysene was mutagenic to *S. Typhimurium* in the presence of an exogenous metabolic system.

Other Studies: Genotoxicity : *Salmonella typhimurium* TA97,TA98,TA100 with metabolic activation positive (Sakai.M.et al *Mutat.Res*1985); *Saccharomyces cerevisiae* (Miotic recombination) D3 strain 330mg/kg negative.

Section 12 - Ecological Information

Ecotoxicity: Water flea LC50 = 1.9 mg/L; 2 Hr.; Unspecified Fish toxicity : LC50 (96hr) *Neaethes arenacedentata* >1ppm.(Rossi,S.S. et al *Marine Pollut. Bull.* 1978)
Invertebrate toxicity : lethal treshold concentration (24hr) *Daphnia Magna* 0,7æg/l.(* Newsted,J.L. et al *Environ. Toxicol. Chem.* 1987) Bioaccumulation : 24hr *Daphnia Magna* log bioconcentration factor 3.7845 (*)

Environmental: Degradation studies : biodegradated by white rot fungus (Proc.Annu.Meet.Am.Wood-Preserv.Assoc.1989) May be utilised by axenic cultures of microorganisms e.g. *Pseudomonas pancimobilis* EPA505, which may have novel degradative systems(Mueller,J.G. et al *ppl.Environ.Microbiol.*1990; Mueller, J.G. et al *Environ.Sci.Technol.*1991).

Physical: Not found.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA. CAS# 218-01-9 is listed as a Priority Pollutant under the Clean Water Act. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 218-01-9 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

California Prop 65

The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act:

WARNING: This product contains Chrysene, a chemical known to the state of California to cause cancer.

California No Significant Risk Level: CAS# 218-01-9: 0.35 μ g/day NSRL (oral)

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

T

Risk Phrases:

R 45 May cause cancer.

R 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Phrases:

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S 53 Avoid exposure - obtain special instructions before use.

S 60 This material and its container must be disposed of as hazardous waste.

S 61 Avoid release to the environment. Refer to special instructions/safety data sheets.

WGK (Water Danger/Protection)

CAS# 218-01-9: No information available.

Canada - DSL/NDSL

CAS# 218-01-9 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of D2A.

Canadian Ingredient Disclosure List

CAS# 218-01-9 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 6/30/1999

Material Safety Data Sheet

Benzo[a]pyrene, 98%

ACC# 37175

Section 1 - Chemical Product and Company Identification

MSDS Name: Benzo[a]pyrene, 98%

Catalog Numbers: AC105600000, AC105600010, AC105601000, AC377200000, AC377200010, AC377201000 AC377201000

Synonyms: 3,4-Benzopyrene; 3,4-Benzpyrene; Benzo[def]chrysene.

Company Identification:

Acros Organics N.V.

One Reagent Lane

Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01

For emergencies in the US, call CHEMTREC: 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	ETNECS/ELINCS
50-32-8	Benzo[a]pyrene	>96	200-028-5

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: yellow to brown powder.

Danger! May cause heritable genetic damage. Cancer hazard. May cause harm to the unborn child. May impair fertility. May cause eye, skin, and respiratory tract irritation. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Target Organs: Reproductive system.

Potential Health Effects

Eye: May cause eye irritation.

Skin: May cause skin irritation. May be harmful if absorbed through the skin.

Ingestion: May cause irritation of the digestive tract. The toxicological properties of this substance have not been fully investigated. May be harmful if swallowed.

Inhalation: May cause respiratory tract irritation. The toxicological properties of this substance have not been fully investigated. May be harmful if inhaled.

Chronic: May cause cancer in humans. May cause reproductive and fetal effects. Laboratory experiments have resulted in mutagenic effects.

Storage: Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Benzo[a]pyrene	0.2 mg/m ³ TWA (as benzene soluble aerosol) (listed under Coal tar pitches).	0.1 mg/m ³ TWA (cyclohexane-extractable fraction) (listed under Coal tar pitches). 80 mg/m ³ IDLH (listed under Coal tar pitches).	0.2 mg/m ³ TWA (as benzene soluble fraction) (listed under Coal tar pitches).

OSHA Vacated PELs: Benzo[a]pyrene: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant a respirator's use.

Section 9 - Physical and Chemical Properties

Physical State: Powder

Appearance: yellow to brown

Odor: faint aromatic odor

pH: Not available.

Vapor Pressure: Not available.

Vapor Density: Not available.

Evaporation Rate: Not available.

Viscosity: Not available.

Boiling Point: 495 deg C @ 760 mm Hg

Freezing/Melting Point: 175 - 179 deg C

Decomposition Temperature: Not available.

Solubility: 1.60x10⁻³ mg/l @25°C

Specific Gravity/Density: Not available.

Molecular Formula: C₂₀H₁₂

Molecular Weight: 252.31

RCRA U-Series:

CAS# 50-32-8: waste number U022.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOL (Benzo{a} pyrene)	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOL (Benzo{a} pyrene)
Hazard Class:	9	9
UN Number:	UN3077	UN3077
Packing Group:	III	III

Section 15 - Regulatory Information

US FEDERAL

TSCA

CAS# 50-32-8 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs

CAS# 50-32-8: 1 lb final RQ; 0.454 kg final RQ

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 50-32-8: acute, chronic.

Section 313

This material contains Benzo[a]pyrene (CAS# 50-32-8, >96%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR

Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

CAS# 50-32-8 is listed as a Priority Pollutant under the Clean Water Act.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

STATE

CAS# 50-32-8 can be found on the following state right to know lists: California,

shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.

WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. MAY CAUSE ALLERGIC SKIN REACTION. MAY AFFECT LIVER, KIDNEY, BLOOD AND CENTRAL NERVOUS SYSTEM. COMBUSTIBLE.

J.T. Baker SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate
Flammability Rating: 2 - Moderate
Reactivity Rating: 0 - None
Contact Rating: 2 - Moderate
Lab Protective Equip: GOGGLES; LAB COAT
Storage Color Code: Red (Flammable)

Potential Health Effects

Inhalation:

Inhalation of dust or vapors can cause headache, nausea, vomiting, extensive sweating, and disorientation. The predominant reaction is delayed intravascular hemolysis with symptoms of anemia, fever, jaundice, and kidney or liver damage.

Ingestion:

Toxic. Can cause headache, profuse perspiration, listlessness, dark urine, nausea, vomiting and disorientation. Intravascular hemolysis may also occur with symptoms similar to those noted for inhalation. Severe cases may produce coma with or without convulsions. Death may result from renal failure.

Skin Contact:

Can irritate the skin and, on prolonged contact, may cause rashes and allergy. "Sensitized" individuals may suffer a severe dermatitis.

Eye Contact:

Vapors and solid causes irritation, redness and pain. Very high exposures can damage the nerves of the eye.

Chronic Exposure:

Has led to cataract formation in eyes. May cause skin allergy.

Aggravation of Pre-existing Conditions:

Persons with pre-existing skin, blood or vascular disorders or impaired respiratory function may be more susceptible to the effects of the substance. Particularly susceptible individuals are found in the general population, most commonly in dark skinned races.

manner that does not disperse dust into the air. Use non-sparking tools and equipment. Reduce airborne dust and prevent scattering by moistening with water. Pick up spill for recovery or disposal and place in a closed container. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from any source of heat or ignition. Keep away from moisture and oxidizers. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

- OSHA Permissible Exposure Limit (PEL):
10 ppm, 50 mg/m³.

- ACGIH Threshold Limit Value (TLV):

TWA= 10 ppm, 52 mg/m³

STEL= 15 ppm, 79 mg/m³.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded, a half-face respirator with an organic vapor cartridge and particulate filter (NIOSH type P95 or R95 filter) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece respirator with an organic vapor cartridge and particulate filter (NIOSH P100 or R100 filter) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. Please note that N series filters are not recommended for this material. For emergencies or instances where the exposure levels are not known, use

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Strong oxidizers, strong alkalis and strong mineral acids, mixtures of aluminum trichloride and benzoyl chloride. Reacts violently with chromic anhydride. Melted naphthalene will attack some forms of plastics, rubber, and coatings.

Conditions to Avoid:

Avoid heat, sparks, flames and other ignition sources and incompatibles.

11. Toxicological Information

Oral rat LD50: 490 mg/kg;

Inhalation rat LC50: 340 mg/m³, 1 hour;

Skin rabbit LD50: > 20 g/kg;

Irritation data: skin (open Draize) rabbit 495 mg, mild; eye (standard Draize) rabbit 100 mg, mild;

Investigated as a tumorigen, mutagen and reproductive effector.

----- \Cancer Lists\ -----

Ingredient

---NTP Carcinogen---

Known

Anticipated

IARC Categ

Naphthalene (91-20-3)

No

No

None

12. Ecological Information

Environmental Fate:

When released into the soil, this material may biodegrade to a moderate extent.

When released into the soil, this material is expected to leach into groundwater.

When released into the soil, this material is expected to quickly evaporate. When released into water, this material is expected to quickly evaporate. When released into the

water, this material may biodegrade to a moderate extent. When released into the water, this material is expected to have a half-life between 1 and 10 days. This

material may bioaccumulate to some extent. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced

hydroxyl radicals. When released into the air, this material is expected to have a half-life of less than 1 day.

Environmental Toxicity:

No information found.

Ingredient

Naphthalene (91-20-3)

	--Canada--		
Korea	DSL	NDSL	Phil.
Yes	Yes	No	Yes

Federal, State & International Regulations - Part 1 \

Ingredient

Naphthalene (91-20-3)

-SARA 302-		-SARA 313-	
RO	TPQ	List	Chemical C
No	No	Yes	No

Federal, State & International Regulations - Part 2 \

Ingredient

Naphthalene (91-20-3)

CERCLA	-RCRA-	-TSCA-
100	261.33	8(d)
	U165	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
 SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: No
 Reactivity: No (Pure / Solid)

Australian Hazchem Code: 2Z

Poison Schedule: S6

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 2 Flammability: 2 Reactivity: 0

Label Hazard Warning:

WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. MAY CAUSE ALLERGIC SKIN REACTION. MAY AFFECT LIVER, KIDNEY, BLOOD AND CENTRAL NERVOUS SYSTEM. COMBUSTIBLE.

Label Precautions:

- Avoid contact with eyes, skin and clothing.
- Avoid prolonged or repeated contact with skin.
- Avoid breathing dust.
- Avoid breathing vapor.
- Keep container closed.
- Use only with adequate ventilation.
- Wash thoroughly after handling.

This information was last updated on July 15, 2004. We have tried to make it as accurate and useful as possible, but can take no responsibility for its use, misuse, or accuracy. We have not verified this information, and cannot guarantee that it is up-to-date.

given here.)

ORL-RAT LDLO 1500 mg kg⁻¹

IPR-RAT LDLO 250 mg kg⁻¹

ITR-RAT LDLO 25 mg kg⁻¹

IPR-MUS LDLO 100 mg kg⁻¹

Transport information

(The meaning of any UN hazard codes which appear in this section is given here.)

Hazard class 4.1. Packing group III. UN No 1325.

Personal protection

Safety glasses and gloves. Good ventilation and an inert atmosphere if working with powdered material.

[Return to [Physical & Theoretical Chemistry Lab. Safety home page](#).]

This information was last updated on September 17, 2003. We have tried to make it as accurate and useful as possible, but can take no responsibility for its use, misuse, or accuracy. We have not verified this information, and cannot guarantee that it is up-to-date.

given here.)

IPR-MUS LD50 3.5 mg kg⁻¹

Risk phrases

(The meaning of any risk phrases which appear in this section is given here.)

R11 R36 R37 R38 (all for the powdered material only).

Transport information

(The meaning of any UN hazard codes which appear in this section is given here.)

UN Nos: 3089 (very fine powder), 3077 (fine powder); otherwise considered non-hazardous for air, sea and road freight.

Personal protection

Suitable ventilation if handling powder.

[Return to [Physical & Theoretical Chemistry Lab. Safety home page.](#)]

This information was last updated on November 16, 2004. Although we have tried to make it as accurate and useful as possible, we can take no responsibility for its use or misuse.

spontaneously. May react violently with titanium, ammonium nitrate, potassium perchlorate, hydrazoic acid. Incompatible with acids, oxidizing agents, sulfur.

Toxicology

Carcinogen. Toxic by all routes of entry. May cause sensitization by skin contact. Typical TLV 0.05 mg/m³

Toxicity data

(The meaning of any toxicological abbreviations which appear in this section is given here.)

IPR-RAT LD50 250 mg kg⁻¹

Risk phrases

(The meaning of any risk phrases which appear in this section is given here.)

R10 R17 R36 R37 R38 R40 R42 R43.

Transport information

(The meaning of any UN hazard codes which appear in this section is given here.)

UN No 3089. Packing group II. Hazard class 4.1.

Personal protection

Good ventilation. Wear gloves and safety glasses when handling the powder.

Safety phrases

(The meaning of any safety phrases which appear in this section is given here.)

S16 S22 S26 S36.

PESTICIDES AND PCBs



Health & Safety
Specific Chemicals
Regulatory Actions

U.S. Environmental Protection Agency

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Assessing Health Risks from Pesticides

January 1999
735-F-99-002

The Federal Government, in cooperation with the States, carefully regulates pesticides to ensure that they do not pose unreasonable risks to human health or the environment. As part of that effort, the Environmental Protection Agency (EPA) requires extensive test data from pesticide producers that demonstrate pesticide products can be used without posing harm to human health and the environment. EPA scientists and analysts carefully review these data to determine whether to register (license) a pesticide product or a use and whether specific restrictions are necessary. This fact sheet is a brief overview of EPA's process for assessing potential risks to human health when evaluating pesticide products.

Background

There are more than 865 active ingredients registered as pesticides, which are formulated into thousands of pesticide products that are available in the marketplace. About 350 pesticides are used on the foods we eat, and to protect our homes and pets.

EPA plays a critical role in evaluating these chemicals prior to registration, and in reevaluating older pesticides already on the market, to ensure that they can be used with a reasonable certainty of no harm. The process EPA uses for evaluating the health impacts of a pesticide is called risk assessment.

EPA uses the National Research Council's four-step process for human health risk assessment:

- Step One:** Hazard Identification
- Step Two:** Dose-Response Assessment
- Step Three:** Exposure Assessment
- Step Four:** Risk Characterization

Step One: Hazard Identification (Toxicology)

The first step in the risk assessment process is to identify potential health effects that may occur from different types of pesticide exposure. EPA considers the full spectrum of a pesticide's potential health effects.

Generally, for human health risk assessments, many toxicity studies are conducted on animals by pesticide companies in independent laboratories and evaluated for acceptability by EPA scientists. EPA evaluates pesticides for a wide range of adverse effects, from eye and skin irritation to cancer and birth defects in laboratory animals. EPA may also consult the public literature or other sources of supporting information on any aspect of the chemical.

Step Two: Dose-Response Assessment

Paracelsus, the Swiss physician and alchemist, the "father" of modern toxicology (1493-1541) said,

"The dose makes the poison."

In other words, the amount of a substance a person is exposed to is as important as how toxic the chemical might be. For example, small doses of aspirin can be beneficial to people, but at very high doses, this common medicine can be deadly. In some individuals, even at very low doses, aspirin may be deadly.

Dose-response assessment involves considering the dose levels at which adverse effects were observed in test animals, and using these dose levels to calculate an equal dose in humans.

Step Three: Exposure Assessment

People can be exposed to pesticides in three ways:

1. Inhaling pesticides (inhalation exposure),
2. Absorbing pesticides through the skin (dermal exposure), and
3. Getting pesticides in their mouth or digestive tract (oral exposure).

Depending on the situation, pesticides could enter the body by any one or all of these routes. Typical sources of pesticide exposure include:

- **Food**
Most of the foods we eat have been grown with the use of pesticides. Therefore, pesticide residues may be present inside or on the surfaces of these foods.

- **Home and Personal Use Pesticides**
You might use pesticides in and around your home to control insects.

EPA: Pesticides - Assessing Health Risks from Pesticides

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Step Two: Dose-Response Assessment

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Dose-response assessment involves considering the dose levels at which adverse effects were observed in test animals, and using these dose levels to calculate an equal dose in humans.

Step Three: Exposure Assessment

People can be exposed to pesticides in three ways:

considered, and broad conclusions are made. EPA's role is to evaluate both toxicity and exposure and to determine the risk associated with use of the pesticide.

Simply put,

$$\text{RISK} = \text{TOXICITY} \times \text{EXPOSURE.}$$

This means that the risk to human health from pesticide exposure depends on both the toxicity of the pesticide and the likelihood of people coming into contact with it. At least *some* exposure and *some* toxicity are required to result in a risk. For example, if the pesticide is very poisonous, but no people are exposed, there is no risk. Likewise, if there is ample exposure but the chemical is non-toxic, there is no risk. However, usually when pesticides are used, there is some toxicity and exposure, which results in a potential risk.

EPA recognizes that effects vary between animals of different species and from person to person. To account for this variability, *uncertainty factors* are built into the risk assessment. These uncertainty factors create an additional margin of safety for protecting people who may be exposed to the pesticides. FQPA requires EPA to use an extra 10-fold safety factor, if necessary, to protect infants and children from effects of the pesticide.

Types of Toxicity Tests EPA Requires for Human Health Risk Assessments

EPA evaluates studies conducted over different periods of time and that measure specific types of effects. These tests are evaluated to screen for potential health effects in infants, children and adults.

Acute Testing: Short-term exposure; a single exposure (dose).

- Oral, dermal (skin), and inhalation exposure
- Eye irritation
- Skin irritation
- Skin sensitization
- Neurotoxicity

Sub-chronic Testing: Intermediate exposure; repeated exposure over a longer period of time (i.e., 30-90 days).

- Oral, dermal (skin), and inhalation
- Neurotoxicity (nerve system damage)

Chronic Toxicity Testing: Long-term exposure; repeated exposure lasting for most of the test animal's life span. Intended to determine the effects of a pesticide after prolonged and repeated exposures.

- Chronic effects (non-cancer)
- Carcinogenicity (cancer)

Developmental and Reproductive Testing: Identify effects in the fetus of an exposed pregnant female (birth defects) and how pesticide exposure affects the ability of a test animal to successfully reproduce.

Mutagenicity Testing: Assess a pesticide's potential to affect the cell's genetic components.

Hormone Disruption: Measure effects for their potential to disrupt the endocrine system. The endocrine system consists of a set of glands and the hormones they produce that help guide the development, growth, reproduction, and behavior of animals including humans.

Risk Management

Once EPA completes the risk assessment process for a pesticide, we use this information to determine if (when used according to label directions), there is a reasonable certainty that the pesticide will not harm a person's health.

Using the conclusions of a risk assessment, EPA can then make a more informed decision regarding whether to approve a pesticide chemical or use, as proposed, or whether additional protective measures are necessary to limit occupational or non-occupational exposure to a pesticide. For example, EPA may prohibit a pesticide from being used on certain crops because consuming too much food treated with the pesticide may result in an unacceptable risk to consumers. Another example of protective measures is requiring workers to wear personal protective equipment (PPE) such as a respirator or chemical resistant gloves, or not allowing workers to enter treated crop fields until a specific period of time has passed.

If, after considering all appropriate risk reduction measures, the pesticide still does not meet EPA's safety standard, the Agency will not allow the proposed chemical or use. Regardless of the specific measures enforced, EPA's primary goal is to ensure that legal uses of the pesticide are protective of human health, especially the health of children, and the environment.

Human Health Risk Assessment and the Law

Federal law requires detailed evaluation of pesticides to protect human health and the environment. In 1996, Congress made significant changes to strengthen pesticide laws through the Food Quality Protection Act (FQPA). Many of these changes are key elements of the current risk assessment process. FQPA required that EPA consider:

- **A New Safety Standard:** FQPA strengthened the safety standard that pesticides must meet before being approved for use. EPA must ensure with a reasonable certainty that no harm will result from the legal uses of the pesticide.
- **Exposure from All Sources:** In evaluating a pesticide, EPA must estimate the combined risk from that pesticide from all non-occupational sources, such as:
 - Food Sources
 - Drinking Water Sources
 - Residential Sources
- **Cumulative Risk:** EPA is required to evaluate pesticides in light of similar toxic effects that different pesticides may share, or "a common mechanism of toxicity." At this time, EPA is developing a methodology for this type of assessment.
- **Special Sensitivity of Children to Pesticides:** EPA must ascertain whether there is an increased susceptibility from exposure to the pesticide to infants and children. EPA must build an additional 10-fold safety factor into risk assessments to ensure the protection of infants and children, unless it is determined that a lesser margin of safety will be safe for infants and children.

For More Information

<http://www.epa.gov/pesticides/factsheets/riskassess.htm>

1/30/2006

If you would like more information about EPA's pesticide programs, contact the Communication Service Branch at (703) 305-5017 or visit the [Pesticides Web site](#).

For more information on specific pesticides, or to inquire about the symptoms of pesticide poisoning, call the National Pesticide Information Center (NPIC), a toll-free hotline information at 1-800-858-7378, or visit their [Web site](#) [\[Disclaimer\]](#)

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Last updated on Monday, May 19th, 2003
URL: <http://www.epa.gov/pesticides/factsheets/riskassess.htm>

What is a Pesticide?

A pesticide is any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest. Pests can be insects, mice and other animals, unwanted plants (weeds), fungi, or microorganisms like bacteria and viruses. Though often misunderstood to refer only to *insecticides*, the term pesticide also applies to herbicides, fungicides, and various other substances used to control pests. Under United States law, a pesticide is also any substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant.

Many household products are pesticides. Did you know that all of these common products are considered pesticides?

- Cockroach sprays and baits
- Insect repellents for personal use.
- Rat and other rodent poisons.
- Flea and tick sprays, powders, and pet collars.
- Kitchen, laundry, and bath disinfectants and sanitizers.
- Products that kill mold and mildew.
- Some lawn and garden products, such as weed killers.
- Some swimming pool chemicals.

By their very nature, most pesticides create some risk of harm to humans, animals, or the environment because they are designed to kill or otherwise adversely affect living organisms. At the same time, pesticides are useful to society because of their ability to kill potential disease-causing organisms and control insects, weeds, and other pests. In the United States, the Office of Pesticide Programs of the Environmental Protection Agency is chiefly responsible for regulating pesticides. Biologically-based pesticides, such as pheromones and microbial pesticides, are becoming increasingly popular and often are safer than traditional chemical pesticides.

Here are some common kinds of pesticides and their function:

Algicides

Control algae in lakes, canals, swimming pools, water tanks, and other sites.

Antifouling agents

Kill or repel organisms that attach to underwater surfaces, such as boat bottoms.

Antimicrobials

Kill microorganisms (such as bacteria and viruses).

Attractants

Attract pests (for example, to lure an insect or rodent to a trap). (However, food is not considered a pesticide when used as an attractant.)

Biocides

Kill microorganisms.

Disinfectants and sanitizers

Kill or inactivate disease-producing microorganisms on inanimate objects.

Fungicides

Kill fungi (including blights, mildews, molds, and rusts).

Fumigants

Produce gas or vapor intended to destroy pests in buildings or soil.

This fact sheet answers the most frequently asked health questions (FAQs) about polychlorinated biphenyls. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substances depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

What are polychlorinated biphenyls?

Polychlorinated biphenyls are mixtures of up to 209 individual chlorinated compounds (known as congeners). There are no known natural sources of PCBs. PCBs are either oily liquids or solids that are colorless to light yellow. Some PCBs can exist as a vapor in air. PCBs have no known smell or taste. Many commercial PCB mixtures are known in the U.S. by the trade name Aroclor.

PCBs have been used as coolants and lubricants in transformers, capacitors, and other electrical equipment because they don't burn easily and are good insulators. The manufacture of PCBs was stopped in the U.S. in 1977 because of evidence they build up in the environment and can cause harmful health effects. Products made before 1977 that may contain PCBs include old fluorescent lighting fixtures and electrical devices containing PCB capacitors, and old microscope and hydraulic oils.

What happens to PCBs when they enter the environment?

- PCBs entered the air, water, and soil during their manufacture, use, and disposal; from accidental spills and leaks during their transport; and from leaks or fires in products containing PCBs.
- PCBs can still be released to the environment from hazardous waste sites; illegal or improper disposal of industrial wastes and consumer products; leaks from old electrical transformers containing PCBs; and burning of some wastes in incinerators.
- PCBs do not readily break down in the environment and thus may remain there for very long periods of time. PCBs can travel long distances in the air and be deposited in areas far away from where they were released. In water, a small amount of PCBs may remain dissolved, but most stick to organic particles and bottom sediments. PCBs also bind strongly to soil.
- PCBs are taken up by small organisms and fish in water. They are also taken up by other animals that eat these

aquatic animals as food. PCBs accumulate in fish and marine mammals, reaching levels that may be many thousands of times higher than in water.

How might I be exposed to PCBs?

- Using old fluorescent lighting fixtures and electrical devices and appliances, such as television sets and refrigerators, that were made 30 or more years ago. These items may leak small amounts of PCBs into the air when they get hot during operation, and could be a source of skin exposure.
- Eating contaminated food. The main dietary sources of PCBs are fish (especially sportfish caught in contaminated lakes or rivers), meat, and dairy products.
- Breathing air near hazardous waste sites and drinking contaminated well water.
- In the workplace during repair and maintenance of PCB transformers; accidents, fires or spills involving transformers, fluorescent lights, and other old electrical devices; and disposal of PCB materials.

How can PCBs affect my health?

The most commonly observed health effects in people exposed to large amounts of PCBs are skin conditions such as acne and rashes. Studies in exposed workers have shown changes in blood and urine that may indicate liver damage. PCB exposures in the general population are not likely to result in skin and liver effects. Most of the studies of health effects of PCBs in the general population examined children of mothers who were exposed to PCBs.

Animals that ate food containing large amounts of PCBs for short periods of time had mild liver damage and some died. Animals that ate smaller amounts of PCBs in food over several weeks or months developed various kinds of health effects, including anemia; acne-like skin conditions; and liver, stomach, and thyroid gland injuries. Other effects

POLYCHLORINATED BIPHENYLS

ToxFAQs™ Internet address is <http://www.atsdr.cdc.gov/toxfaq.html>

of PCBs in animals include changes in the immune system, behavioral alterations, and impaired reproduction. PCBs are not known to cause birth defects.

How likely are PCBs to cause cancer?

Few studies of workers indicate that PCBs were associated with certain kinds of cancer in humans, such as cancer of the liver and biliary tract. Rats that ate food containing high levels of PCBs for two years developed liver cancer. The Department of Health and Human Services (DHHS) has concluded that PCBs may reasonably be anticipated to be carcinogens. The EPA and the International Agency for Research on Cancer (IARC) have determined that PCBs are probably carcinogenic to humans.

How can PCBs affect children?

Women who were exposed to relatively high levels of PCBs in the workplace or ate large amounts of fish contaminated with PCBs had babies that weighed slightly less than babies from women who did not have these exposures. Babies born to women who ate PCB-contaminated fish also showed abnormal responses in tests of infant behavior. Some of these behaviors, such as problems with motor skills and a decrease in short-term memory, lasted for several years. Other studies suggest that the immune system was affected in children born to and nursed by mothers exposed to increased levels of PCBs. There are no reports of structural birth defects caused by exposure to PCBs or of health effects of PCBs in older children. The most likely way infants will be exposed to PCBs is from breast milk. Transplacental transfers of PCBs were also reported. In most cases, the benefits of breastfeeding outweigh any risks from exposure to PCBs in mother's milk.

How can families reduce the risk of exposure to PCBs?

- You and your children may be exposed to PCBs by eating fish or wildlife caught from contaminated locations. Certain states, Native American tribes, and U.S. territories have issued advisories to warn people about PCB-contaminated fish and fish-eating wildlife. You can reduce your family's exposure to PCBs by obeying these advisories.
- Children should be told not play with old appliances,

electrical equipment, or transformers, since they may contain PCBs.

- Children should be discouraged from playing in the dirt near hazardous waste sites and in areas where there was a transformer fire. Children should also be discouraged from eating dirt and putting dirty hands, toys or other objects in their mouths, and should wash hands frequently.
- If you are exposed to PCBs in the workplace it is possible to carry them home on your clothes, body, or tools. If this is the case, you should shower and change clothing before leaving work, and your work clothes should be kept separate from other clothes and laundered separately.

Is there a medical test to show whether I've been exposed to PCBs?

Tests exist to measure levels of PCBs in your blood, body fat, and breast milk, but these are not routinely conducted. Most people normally have low levels of PCBs in their body because nearly everyone has been environmentally exposed to PCBs. The tests can show if your PCB levels are elevated, which would indicate past exposure to above-normal levels of PCBs, but cannot determine when or how long you were exposed or whether you will develop health effects.

Has the federal government made recommendations to protect human health?

The EPA has set a limit of 0.0005 milligrams of PCBs per liter of drinking water (0.0005 mg/L). Discharges, spills or accidental releases of 1 pound or more of PCBs into the environment must be reported to the EPA. The Food and Drug Administration (FDA) requires that infant foods, eggs, milk and other dairy products, fish and shellfish, poultry and red meat contain no more than 0.2-3 parts of PCBs per million parts (0.2-3 ppm) of food. Many states have established fish and wildlife consumption advisories for PCBs.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2000. Toxicological profile for polychlorinated biphenyls (PCBs). Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop E-29, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 404-498-0093. ToxFAQs™ Internet address is <http://www.atsdr.cdc.gov/toxfaq.html>. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.



METALS

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Heavy Metals**Contact****Ads by Google**[Heavy Metals Analysis](#)[Arsenic Poisoning](#)[Soil Contamination](#)[Environment](#)[Environment Health and Safety](#)**Introduction**

The **term heavy metal** refers to any metallic chemical element that is toxic or poisonous at low concentrations. Examples of heavy metals are mercury (Hg), cadmium (Cd), arsenic (As), chromium (Cr), thallium (Tl), and lead (Pb).

Heavy metals are natural components of the Earth's crust. They cannot be degraded or destroyed. They enter our bodies via food, drinking water and air. As trace elements, some heavy metals (e.g. copper) are essential to maintain the metabolism of the human body. However, at higher concentrations they can cause metal poisoning could result, for instance, from drinking-water contamination (e.g. lead pipes), high concentrations near emission sources, or intake via the food chain.

Heavy metals are dangerous because they tend to **bioaccumulate**. Bioaccumulation means an increase of a chemical in a biological organism over time, compared to the chemical's concentration in the environment. Heavy metals accumulate in living things any time they are taken up and stored faster than they are broken down and excreted.

Heavy metals can enter a water supply by industrial and consumer waste, or even from acidic rain that releases heavy metals into streams, lakes, rivers, and groundwater.

Environmental and health risks.

Now we are going to describe the effects of the heavy metals in the environment. The three most prominent are Lead, Cadmium, and Mercury.

Effects of Antimony on the environment

Antimony is a metal used in the compound antimony trioxide, a flame retardant. It can also be found in pigments, dyes, and ceramics and glass. Exposure to high levels of antimony for short periods of time causes nausea and vomiting. There is little information on the effects of long-term antimony exposure, but it is a suspected human carcinogen. Antimony compounds do not bioaccumulate in aquatic life.

Effects of Cadmium on the environment

Cadmium derives its toxicological properties from its chemical similarity to zinc an essential micronutrient for humans. Cadmium is biopersistent and, once absorbed by an organism, remains resident for months (for humans) although it is eventually excreted.

In humans, long-term exposure is associated with renal dysfunction. High exposure can lead to obstructive lung disease, which has been linked to lung cancer, although data concerning the latter are difficult to interpret due to confounding factors. Cadmium may also produce bone defects (*osteomalacia*, *osteoporosis*) in humans and animals. In animals, it is linked to increased blood pressure and effects on the myocardium in animals, although most human findings are inconclusive.

The average daily intake for humans is estimated as 0.15µg from air and 1µg from water. Smoking can lead to the inhalation of around 2-4µg of cadmium, but levels may vary widely.

In what form is emitted Cadmium?

Cadmium is produced as an inevitable by-product of zinc (or occasionally lead) refining, since these within the raw ore. However, once collected the cadmium is relatively easy to recycle.

The most significant use of cadmium is in nickel/cadmium batteries, as rechargeable or secondary p high output, long life, low maintenance and high tolerance to physical and electrical stress. Cadmium corrosion resistance, particularly in high stress environments such as marine and aerospace applications, reliability is required; the coating is preferentially corroded if damaged. Other uses of cadmium are PVC, in alloys and electronic compounds. Cadmium is also present as an impurity in several product fertilisers, detergents and refined petroleum products.

In the general, non-smoking population the major exposure pathway is through food, via the addition of agricultural soil from various sources (atmospheric deposition and fertiliser application) and uptake. Additional exposure to humans arises through cadmium in ambient air and drinking water.

Effects of Chromium on the environment

Chromium is used in metal alloys and pigments for paints, cement, paper, rubber, and other materials. Chromium can irritate the skin and cause ulceration. Long-term exposure can cause kidney and liver damage, circulatory and nerve tissue. Chromium often accumulates in aquatic life, adding to the danger of e been exposed to high levels of chromium.

Effects of Copper on the environment

Copper is an essential substance to human life, but in high doses it can cause anemia, liver and kidney and intestinal irritation. People with Wilson's disease are at greater risk for health effects from overexposure. Copper normally occurs in drinking water from copper pipes, as well as from additives designed to c

Effects of Lead on the environment

In humans exposure to lead can result in a wide range of biological effects depending on the level and duration. Various effects occur over a broad range of doses, with the developing foetus and infant being more vulnerable. High levels of exposure may result in toxic biochemical effects in humans which in turn cause problems such as anaemia, effects on the kidneys, gastrointestinal tract, joints and reproductive system, and acute lead poisoning of the nervous system.

Lead poisoning, which is so severe as to cause evident illness, is now very rare indeed. At intermediate levels, however, there is persuasive evidence that lead can have small, subtle, subclinical effects, particularly on the development of children. Some studies suggest that there may be a loss of up to 2 IQ points for a child with a blood lead level of 10 to 20µg/dl in young children.

Average daily lead intake for adults in the UK is estimated at 1.6µg from air, 20µg from drinking water. Although most people receive the bulk of their lead intake from food, in specific populations other sources are important, such as water in areas with lead piping and plumbo-solvent water, air near point of source, lead paint flakes in old houses or contaminated land. Lead in the air contributes to lead levels in food through deposition and rain containing the metal, on crops and the soil. For the majority of people in the UK, however, the intake is well below the provisional tolerable weekly intake recommended by the UN Food and Agriculture Organisation.

In what form is emitted lead?

Lead in the environment arises from both natural and anthropogenic sources. Exposure can occur through food, air, soil and dust from old paint containing lead. In the general non-smoking, adult population the major pathway is from food and water. Food, air, water and dust/soil are the major potential exposure pathways for young children. For infants up to 4 or 5 months of age, air, milk formulae and water are the significant sources.

Lead is among the most recycled non-ferrous metals and its secondary production has therefore grown despite declining lead prices. Its physical and chemical properties are applied in the manufacturing, construction and other industries. It is easily shaped and is malleable and ductile. There are eight broad categories of use: (no longer allowed in the EU), rolled and extruded products, alloys, pigments and compounds, cable and ammunition.

Effects of Mercury on the environment

Mercury is a toxic substance which has no known function in human biochemistry or physiology and is highly toxic in living organisms. Inorganic mercury poisoning is associated with tremors, gingivitis and/or minor neurological effects together with spontaneous abortion and congenital malformation.

Monomethylmercury causes damage to the brain and the central nervous system, while foetal and perinatal exposure given rise to abortion, congenital malformation and development changes in young children.

In what form is emitted Mercury?

Mercury is a global pollutant with complex and unusual chemical and physical properties. The major source is the degassing of the Earth's crust, emissions from volcanoes and evaporation from natural bodies of water.

World-wide mining of the metal leads to indirect discharges into the atmosphere. The usage of mercury in industrial processes and in various products (e.g. batteries, lamps and thermometers). It is also used in dental amalgam for fillings and by the pharmaceutical industry. Concern over mercury in the environment has led to the development of toxic forms in which mercury can occur.

Mercury is mostly present in the atmosphere in a relatively unreactive form as a gaseous element. The short lifetime (of the order of 1 year) of its gaseous form means the emission, transport and deposition of mercury is a global phenomenon.

Natural biological processes can cause methylated forms of mercury to form which bioaccumulate and concentrate in living organisms, especially fish. These forms of mercury: monomethylmercury and dimethylmercury are highly toxic, causing neurotoxicological disorders. The main pathway for mercury to humans is through the inhalation of gaseous mercury and the consumption of contaminated fish.

The main sources of mercury emissions in the UK are from the manufacture of chlorine in mercury cell production, coal combustion and crematoria. UK emissions of mercury are uncertain and it is estimated to be between 13 to 36 tonnes per year (DERA). Emissions are estimated to have declined by around 75% between 1990 and 1995 due to improved controls on mercury cells and their replacement, and the fall in coal use.

Whilst there has been a decline in the level of European emissions of mercury, emissions from outside the EU are increasing - increasing the level of ambient concentrations in the continent.

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Heavy Metal Chelation
Edta treatment with self-diagnosis Safe, affordable
www.detoxamin.com

Ads by Google

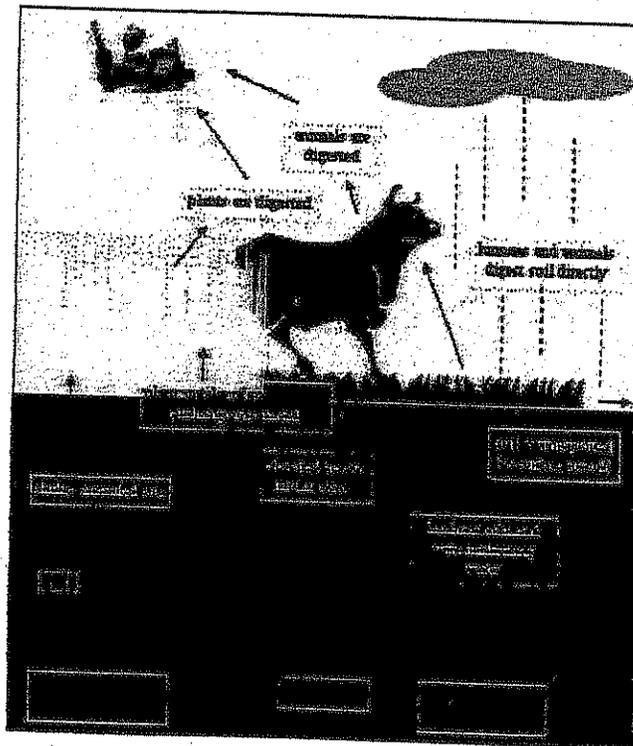
effects of Nickel on the environment

Small amounts of Nickel are needed by the human body to produce red blood cells, however, in excess become mildly toxic. Short-term overexposure to nickel is not known to cause any health problems, can cause decreased body weight, heart and liver damage, and skin irritation. The EPA does not cur levels in drinking water. Nickel can accumulate in aquatic life, but its presence is not magnified along

Effects of Selenium on the environment

Selenium is needed by humans and other animals in small amounts, but in larger amounts can cause system, fatigue, and irritability. Selenium accumulates in living tissue, causing high selenium content organisms, and causing greater health problems in human over a lifetime of overexposure. These include and fingernail loss, damage to kidney and liver tissue, damage to circulatory tissue, and more severe system.

Heavy Metals adsorption process:



In the picture we can observe the way that follows the heavy metals from the first step of the pollution human body by means the food.

The most important disasters with heavy metals:

1932

Minamata
Sewage containing mercury is released by Chisso's chemicals works into Minimata Bay in Japan. The mercury accumulates in sea creatures, leading eventually to mercury poisoning in the population.
1952
Minamata Syndrome
In 1952, the first incidents of mercury poisoning appear in the population of Minimata Bay in Japan, caused by consumption of fish polluted with mercury, bringing over 500 fatalities. Since then, Japan has had the strictest environmental laws in the industrialised world.
1986-11-01
Sandoz
Water used to extinguish a major fire carries c. 30 t fungicide containing mercury into the Upper Rhine. Fish are killed over a stretch of 100 km. The shock drives many FEA projects forwards. See also "Pollution of the Rhine at Basel / Sandoz".
1998-04
Spanish nature reserve contaminated after environmental disaster
Toxic chemicals in water from a burst dam belonging to a mine contaminate the Coto de Donana nature reserve in southern Spain. C. 5 million m ³ of mud containing sulphur, lead, copper, zinc and cadmium flow down the Rio Guadimar. Experts estimate that Europe's largest bird sanctuary, as well as Spain's agriculture and fisheries, will suffer permanent damage from the pollution.

Suggested reading for Heavy Metals

Heavy Metal Analysis Test
 Hair Analysis Reveals Toxic Metals Full
 Equipped Med. Lab Order Today
www.graceful-earth.com

ID Heavy Metals In Soil
 Real-time, In-Situ Characterization No
 sampling, no waiting for results
www.austinai.com

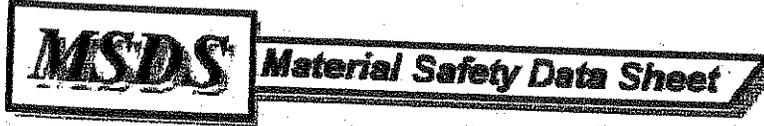
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 e-mail: info@lenntech.com

MSDS Number: A7441 * * * * * Effective Date: 11/12/03 * * * * * Supercedes: 02/23/01



From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08855



24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-8866

Outside U.S. And Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC, and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, explosion, or other incident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-900-582-2537) for assistance.

ARSENIC, 1,000 UG/ML OR 10,000 UG/ML

1. Product Identification

- Synonyms: None
- CAS No.: Not applicable to mixtures.
- Molecular Weight: Not applicable to mixtures.
- Chemical Formula: Not applicable to mixtures.
- Product Codes: 5704, 5718, 6442

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Arsenic	7440-38-2	0.1 - 1%	Yes
Nitric Acid	7697-37-2	< 4%	Yes
Water	7732-18-5	> 95%	No

3. Hazards Identification

Emergency Overview

DANGER! CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED OR INHALED. AFFECTS LIVER, KIDNEYS, LUNGS AND TEETH. CANCER HAZARD. CONTAINS INORGANIC ARSENIC WHICH CAN CAUSE CANCER. Risk of cancer depends on duration and level of exposure.

J.T. Baker SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 4 - Extreme (Cancer Causing)

Flammability Rating: 0 - None

Reactivity Rating: 1 - Slight

Contact Rating: 3 - Severe (Corrosive)

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES

Storage Color Code: White (Corrosive)

Potential Health Effects

Nitric acid is extremely hazardous; it is corrosive, reactive, an oxidizer, and a poison. The health effects from exposure to diluted forms of this chemical are not well documented. They are expected to be less severe than those for concentrated forms which are referenced in the descriptions below.

Inhalation:

Corrosive! Inhalation of vapors can cause breathing difficulties and lead to pneumonia and pulmonary edema, which may be fatal. Other symptoms may include coughing, choking, and irritation of the nose, throat, and respiratory tract. Arsenic may cause inflammation of the mucous membranes with cough and foamy sputum, restlessness, dyspnea, cyanosis, and rales. Symptoms like those from ingestion exposure may follow. May cause pulmonary edema.

Ingestion:

Corrosive! Swallowing nitric acid can cause immediate pain and burns of the mouth, throat, esophagus and gastrointestinal tract. Arsenic is highly toxic! May cause burning in esophagus, vomiting, and bloody diarrhea. Symptoms of cold and clammy skin, low blood pressure, weakness, headache, cramps, convulsions, and coma may follow. May cause damage to liver and kidneys. A suspected fetal toxin. Death may occur from circulatory failure. Estimated lethal dose 120 milligrams.

Skin Contact:

Corrosive! Can cause redness, pain, and severe skin burns. Concentrated solutions cause deep ulcers and stain skin a yellow or yellow-brown color.

Eye Contact:

Corrosive! Vapors are irritating and may cause damage to the eyes. Contact may cause severe burns and permanent eye damage.

Chronic Exposure:

Long-term exposure to concentrated vapors may cause erosion of teeth and lung damage. Long-term exposures seldom occur due to the corrosive properties of the acid. Arsenic on repeated or prolonged skin contact may cause bronzing of the skin, edema, dermatitis, and lesions. Repeated or prolonged inhalation of dust may cause damage to the nasal septum. Chronic exposure from inhalation or ingestion may cause hair and weight loss, a garlic odor

to the breath and perspiration, excessive salivation and perspiration, central nervous system damage, hepatitis, gastrointestinal disturbances, cardiovascular damage, and kidney and liver damage. Arsenic compounds are known human carcinogens and may be teratogenic based on effects in laboratory animals.

Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders, eye disease, or cardiopulmonary diseases may be more susceptible to the effects of this substance.

4. First Aid Measures

Immediate first aid treatment reduces the health effects of this substance. First aid procedures given apply to concentrated solutions. Exposures to dilute solutions may not require these extensive first aid procedures.

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion:

If swallowed, give large quantities of water to drink and get medical attention immediately. Never give anything by mouth to an unconscious person.

Skin Contact:

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately. Contaminated work clothes should be laundered by individuals who have been informed of the hazards of exposure to this substance.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Note to Physician:

If emesis is unsuccessful after two doses of Ipecac, consider gastric lavage. Monitor urine arsenic level. Alkalinization of urine may help prevent disposition of red cell breakdown products in renal tubular cells. If acute exposure is significant, maintain high urine output and monitor volume status, preferably with central venous pressure line. Abdominal X-rays should be done routinely for all ingestions. Chelation therapy with BAL, followed by n-penicillamine is recommended, but specific dosing guidelines are not clearly established.

5. Fire Fighting Measures

Fire:

Not combustible, but concentrated material is a strong oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition.

Explosion:

Concentrated material reacts explosively with combustible organic or readily oxidizable materials such as: alcohols, turpentine, charcoal, organic refuse, metal powder, hydrogen sulfide, etc. Reacts with most metals to release hydrogen gas which can form explosive

mixtures with air.

Fire Extinguishing Media:

If involved in a fire, use water spray.

Special Information:

Increases the flammability of combustible, organic and readily oxidizable materials. In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Neutralize with alkaline material (soda ash, lime), then absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

J. T. Baker NEUTRASORB® or TEAM® Low Na⁺ acid neutralizers are recommended for spills of this product.

7. Handling and Storage

Store in a cool, dry, ventilated storage area with acid resistant floors and good drainage. Protect from physical damage. Keep out of direct sunlight and away from heat, water, and incompatible materials. Do not wash out container and use it for other purposes. When diluting, the acid should always be added slowly to water and in small amounts. Never use hot water and never add water to the acid. Water added to acid can cause uncontrolled boiling and splashing. Wear special protective equipment (Sec. 8) for maintenance break-in or where exposures may exceed established exposure levels. Wash hands, face, forearms and neck when exiting restricted areas. Shower, dispose of outer clothing, change to clean garments at the end of the day. Avoid cross-contamination of street clothes. Wash hands before eating and do not eat, drink, or smoke in workplace. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

For Nitric Acid:

OSHA Permissible Exposure Limit (PEL):

2 ppm (TWA)

ACGIH Threshold Limit Value (TLV):

2 ppm (TWA); 4 ppm (STEL)

For Inorganic Arsenic compounds (as As):

- OSHA Permissible Exposure Limit (PEL):

10 ug/m³ (TWA), 5 ug/m³ (Action Level), cancer hazard.

- ACGIH Threshold Limit Value (TLV):

0.01 mg/m³ (TWA), A1, confirmed human carcinogen.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded, wear a supplied air, full-facepiece respirator, airtight hood, or full-facepiece self-contained breathing apparatus. Canister-type respirators using sorbents are ineffective.

Skin Protection:

Rubber or neoprene gloves and additional protection including impervious boots, apron, or coveralls, as needed in areas of unusual exposure to prevent skin contact.

Eye Protection:

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Other Control Measures:

Any area where inorganic arsenic is stored, handled, used, etc., must be established as a 'Regulated Area' with controlled access, limited to authorized persons. Containers of inorganic arsenic and Regulated Areas must be labeled to show a **CANCER SUSPECT AGENT** is present. Eating, drinking, and smoking should not be permitted in areas where solids or liquids containing arsenic or lead compounds are handled, processed, or stored. See OSHA substance-specific standard for more information on personal protective equipment, engineering and work practice controls, medical surveillance, record keeping, and reporting requirements. (arsenic: 29 CFR 1910.1018; lead: 29 CFR 1910.1025).

9. Physical and Chemical Properties

Appearance:

Clear, colorless liquid.

Odor:

Odorless.

Solubility:

Infinitely soluble.

Specific Gravity:

No information found.

pH:

No information found.

% Volatiles by volume @ 21C (70F):

> 99

Boiling Point:

No information found.

Melting Point:

No information found.

Vapor Density (Air=1):

No information found.

Vapor Pressure (mm Hg):

No information found.

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage. Containers may burst when heated.

Hazardous Decomposition Products:

When heated to decomposition, emits toxic nitrogen oxides fumes and hydrogen nitrate. Emits toxic fumes of arsenic when heated to decomposition.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

A dangerously powerful oxidizing agent, concentrated nitric acid is incompatible with most substances, especially strong bases, metallic powders, carbides, hydrogen sulfide, turpentine, and combustible organics.

Conditions to Avoid:

Heat, incompatibles.

11. Toxicological Information

Toxicological Data:

For arsenic: oral rat LD50: 763 mg/kg. Investigated as a tumorigen, mutagen, reproductive effector. For Nitric Acid: Investigated as a mutagen and reproductive effector.

Carcinogenicity:

For arsenic and inorganic arsenic compounds:

Regulated by OSHA as a carcinogen.

EPA / IRIS classification: Group A - Known human carcinogen.

-----\Cancer Lists\-----

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Arsenic (7440-38-2)	Yes	No	1
Nitric Acid (7697-37-2)	No	No	None
Water (7732-18-5)	No	No	None

12. Ecological Information

Environmental Fate:

No information found.

Environmental Toxicity:

No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.
(NITRIC ACID)

Hazard Class: 8

UN/NA: UN3264

Packing Group: III

Information reported for product/size: 500ML

International (Water, L.M.O.)

Proper Shipping Name: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.
(NITRIC ACID)

Hazard Class: 8

UN/NA: UN3264

Packing Group: III

Information reported for product/size: 500ML

International (Air, I.C.A.O.)

Proper Shipping Name: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.
(NITRIC ACID)

Hazard Class: 8

UN/NA: UN3264

Packing Group: III

Information reported for product/size: 500ML

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----

Ingredient	TSCA	EC	Japan	Australia
Arsenic (7440-38-2)	Yes	Yes	No	Yes
Nitric Acid (7697-37-2)	Yes	Yes	Yes	Yes
Water (7732-18-5)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----

Ingredient	--Canada--			
	Korea	DSL	NDSL	Phil.
Arsenic (7440-38-2)	Yes	Yes	No	Yes
Nitric Acid (7697-37-2)	Yes	Yes	No	Yes
Water (7732-18-5)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----

Ingredient	-SARA 302-		-SARA 313-	
	RQ	TPQ	List	Chemical Catg.
Arsenic (7440-38-2)	No	No	Yes	Arsenic comp
Nitric Acid (7697-37-2)	1000	1000	Yes	No
Water (7732-18-5)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----

Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8(d)
Arsenic (7440-38-2)	1	No	No
Nitric Acid (7697-37-2)	1000	No	No
Water (7732-18-5)	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
 SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No
 Reactivity: No (Mixture / Liquid)

WARNING:

THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

Australian Hazchem Code: None allocated.

Poison Schedule: S6

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 3 Flammability: 0 Reactivity: 0

Label Hazard Warning:

DANGER! CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO ALL

BODY TISSUE. MAY BE FATAL IF SWALLOWED OR INHALED. AFFECTS LIVER, KIDNEYS, LUNGS AND TEETH. CANCER HAZARD. CONTAINS INORGANIC ARSENIC WHICH CAN CAUSE CANCER. Risk of cancer depends on duration and level of exposure.

Label Precautions:

Do not get in eyes, on skin, or on clothing.

Do not breathe vapor or mist.

Use only with adequate ventilation.

Wash thoroughly after handling.

Keep container closed.

Label First Aid:

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. If swallowed, give large amounts of water to drink. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In all cases get medical attention immediately.

Product Use:

Laboratory Reagent.

Revision Information:

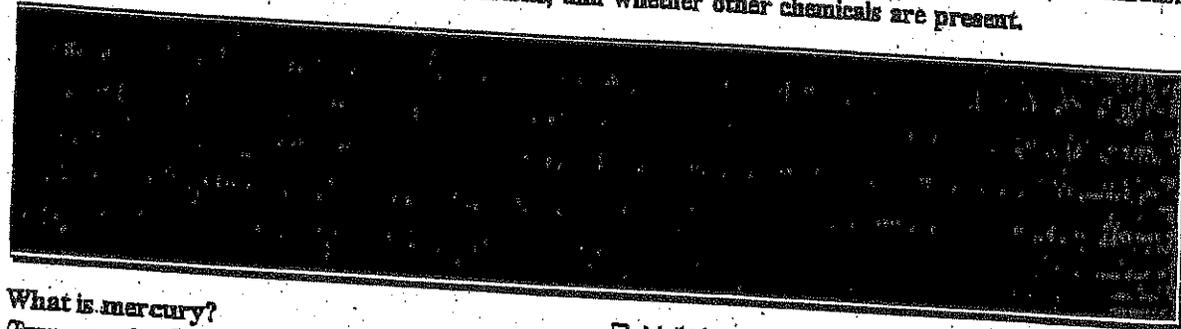
No Changes.

Disclaimer:

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Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)

This fact sheet answers the most frequently asked health questions (FAQs) about mercury. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.



What is mercury?

(Pronounced mĕr'kyū-rĭs)

Mercury is a naturally occurring metal which has several forms. The metallic mercury is a shiny, silver-white, odorless liquid. If heated, it is a colorless, odorless gas.

Mercury combines with other elements, such as chlorine, sulfur, or oxygen, to form inorganic mercury compounds or "salts," which are usually white powders or crystals. Mercury also combines with carbon to make organic mercury compounds. The most common one, methylmercury, is produced mainly by microscopic organisms in the water and soil. More mercury in the environment can increase the amounts of methylmercury that these small organisms make.

Metallic mercury is used to produce chlorine gas and caustic soda, and is also used in thermometers, dental fillings, and batteries. Mercury salts are sometimes used in skin lightening creams and as antiseptic creams and ointments.

What happens to mercury when it enters the environment?

- Inorganic mercury (metallic mercury and inorganic mercury compounds) enters the air from mining ore deposits, burning coal and waste, and from manufacturing plants.
- It enters the water or soil from natural deposits, disposal of wastes, and volcanic activity.

- Methylmercury may be formed in water and soil by small organisms called bacteria.
- Methylmercury builds up in the tissues of fish. Larger and older fish tend to have the highest levels of mercury.

How might I be exposed to mercury?

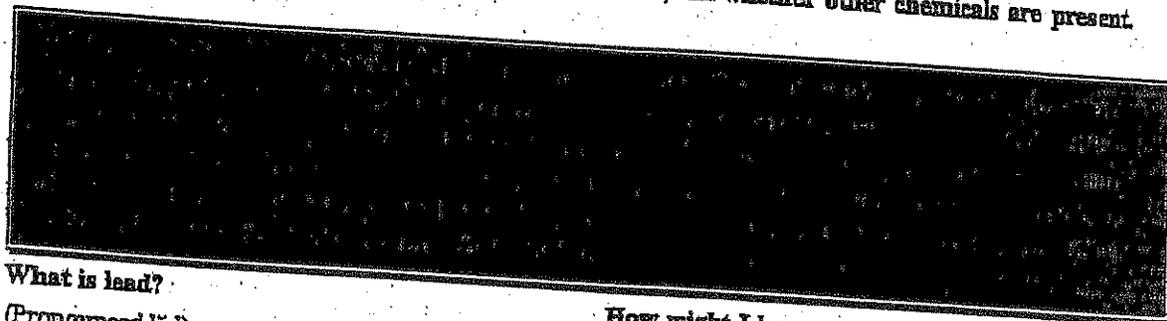
- Eating fish or shellfish contaminated with methylmercury.
- Breathing vapors in air from spills, incinerators, and industries that burn mercury-containing fuels.
- Release of mercury from dental work and medical treatments.
- Breathing contaminated workplace air or skin contact during use in the workplace (dental, health services, chemical, and other industries that use mercury).
- Practicing rituals that include mercury.

How can mercury affect my health?

The nervous system is very sensitive to all forms of mercury. Methylmercury and metallic mercury vapors are more harmful than other forms, because more mercury in these forms reaches the brain. Exposure to high levels of metallic, inorganic, or organic mercury can permanently damage the brain, kidneys, and developing fetus. Effects on brain functioning may result in irritability, shyness, tremors, changes in vision or hearing, and memory problems.

Short-term exposure to high levels of metallic mercury vapors may cause effects including lung damage, nausea,

This fact sheet answers the most frequently asked health questions (FAQs) about lead. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.



What is lead?

(Pronounced lēd)

Lead is a naturally occurring bluish-gray metal found in small amounts in the earth's crust. Lead can be found in all parts of our environment. Much of it comes from human activities including burning fossil fuels, mining, and manufacturing.

Lead has many different uses. It is used in the production of batteries, ammunition, metal products (solder and pipes), and devices to shield X-rays.

Because of health concerns, lead from gasoline, paints and ceramic products, caulking, and pipe solder has been dramatically reduced in recent years.

What happens to lead when it enters the environment?

- Lead itself does not break down, but lead compounds are changed by sunlight, air, and water.
- When lead is released to the air, it may travel long distances before settling to the ground.
- Once lead falls onto soil, it usually sticks to soil particles.
- Movement of lead from soil into groundwater will depend on the type of lead compound and the characteristics of the soil.
- Much of the lead in inner-city soils comes from old houses painted with lead-based paint.

How might I be exposed to lead?

- Eating food or drinking water that contains lead.
- Spending time in areas where lead-based paints have been used and are deteriorating.
- Working in a job where lead is used.
- Using health-care products or folk remedies that contain lead.
- Engaging in certain hobbies in which lead is used (for example, stained glass).

How can lead affect my health?

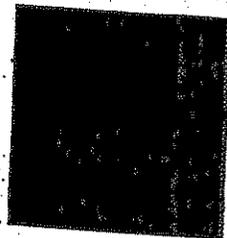
Lead can affect almost every organ and system in your body. The most sensitive is the central nervous system, particularly in children. Lead also damages kidneys and the reproductive system. The effects are the same whether it is breathed or swallowed.

At high levels, lead may decrease reaction time, cause weakness in fingers, wrists, or ankles, and possibly affect the memory. Lead may cause anemia, a disorder of the blood. It can also damage the male reproductive system. The connection between these effects and exposure to low levels of lead is uncertain.

How likely is lead to cause cancer?

The Department of Health and Human Services has determined that lead acetate and lead phosphate may reasonably

Safety (MSDS) data for beryllium



General

Synonyms: glucinium

Molecular formula: Be

CAS No: 7440-41-7

EINECS No: 231-150-7

EU No: 004-001-00-7

Physical data

Appearance: silvery solid or grey foil

Melting point: 1278 C

Boiling point: 2970 C

Vapour density:

Vapour pressure:

Density (g cm^{-3}): 1.85

Flash point:

Explosion limits:

Autoignition temperature:

Water solubility: insoluble

Stability

Stable. Incompatible with acids, bases, oxidizing agents, halogen

pH:

No information found.

% Volatiles by volume @ 21C (70F):

0

Boiling Point:

340C (644F)

Melting Point:

217C (423F)

Vapor Density (Air=1):

6.15

Vapor Pressure (mm Hg):

1 @ 145C (293F) (sublimes)

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage. Darkens on exposure to light.

Hazardous Decomposition Products:

Carbon dioxide and carbon monoxide may form when heated to decomposition.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Fluorine, chromic acid, oxidizing agents.

Conditions to Avoid:

No information found.

11. Toxicological Information

Oral mouse LD: > 17,000 mg/kg. Irritation skin, Draize mouse: 118 ug mild.
Investigated as a tumorigen and mutagen. IARC 3.

-----\Cancer Lists\-----

Ingredient

---NTP Carcinogen---
Known Anticipated

IARC Categ

Anthracene (120-12-7)

No

No

3

12. Ecological Information

Anthracene (120-12-7)

No No Yes No

----- \ Federal, State & International Regulations - Part 2 \ -----

Ingredient	CERCLA	-RCRA-	-TSCA-
Anthracene (120-12-7)	5000	261.33	8(d)
		No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
 SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No
 Reactivity: No (Pure / Solid)

Australian Hazchem Code: None allocated.

Poison Schedule: None allocated.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 1 Flammability: 1 Reactivity: 0

Label Hazard Warning:

WARNING! MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT. MAY CAUSE ALLERGIC SKIN REACTION.

Label Precautions:

- Keep container closed.
- Use with adequate ventilation.
- Avoid breathing dust.
- Wash thoroughly after handling.
- Avoid contact with eyes, skin and clothing.

Label First Aid:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician. In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes. Call a physician if irritation develops or persists.

Product Use:

Laboratory Reagent

Revision Information:

No Changes.

Disclaimer:

Safety (MSDS) data for zinc

Click here for data on zinc in student-friendly format from the HSci project

General

Synonyms: zinc dust, zinc powder, blue powder, granular zinc, zinc foil, LS 2, LS 6, merrillite, zinc metal

Molecular formula: Zn

CAS No: 7440-66-6

EINECS No: 231-175-3

EC number: 030-001-00-1

Physical data

Appearance: silver or blueish-white foil or powder

Melting point: 420 C

Boiling point: 908 C

Vapour density:

Vapour pressure:

Density (g cm^{-3}): 7.14

Flash point:

Explosion limits:

Autoignition temperature:

Water solubility:

Stability

Stable. Incompatible with amines, cadmium, sulfur, chlorinated solvents, strong acids, strong bases. Air and moisture sensitive. **Powder or dust is very flammable.**

Abbreviations used in Toxicity data

The table below gives the main abbreviations which will be found in the toxicity data for chemicals listed on these (and many other) web pages.

asn	Aspergillus nidulans
ast	Ascites tumor
bcs	Bacillus subtilis
bfa	body fluid assay
bmr	bone marrow
brd	bird (domestic or lab)
bwd	wild bird species
chd	child
ckn	chicken
CL	ceiling concentration
clr	Chlamydomonas reinhardi
ctl	cattle
cyt	cytogenetic analysis
D	day
dck	duck
dlt	cominant lethal test
dmg	Drosophila melanogaster
dnd	DNA damage
dni	DNA inhibition
dnr	nNA repair
dns	unscheduled DNA synthesis
dom	domestic animal (goat, sheep)
dpo	Drosophila pseudo-obscura
emb	embryo
esc	Escherichia cold
eug	Euglena gracilis

itt	intratesticular
iu	international unit
iut	intrauterine
ivg	intravaginal
ivn	intravenous
kdy	kidney
kg	kilogram
kfp	Klebsiella pneumoniae
L	liter
LC50	lethal concentration 50 percent kill
LCLo	lowest published lethal concentration
LD50	lethal dose 50 percent kill
LDlo	lowest published lethal dose
leu	leukocyte
Liq	liquid
lng	lung
lvr	liver
lym	lymphocyte
M	minute
m3	cubic meter
mam	mammal (species unspecified)
man	man
ug	microgram
umol	micromole
mg	milligram
mky	monkey
mL	milliliter
MLD	mild irritation effects
mma	microsomal mutagenicity assay
mmo	mutation in microorganisms
mmol	millimole
mmr	mammary gland
mnt	miconucleus test
MOD	moderate irritation effects

ppt	parts per trillion (v/v)
preg	pregnant
qal	quail
rat	rat
rbt	rabbit
rec	rectal
rns	rinsed with water
S	second
sal	salmon
sat	<i>Salmonella typhimurium</i>
sce	sister chromatic exchange
scu	subcutaneous
SEV	severe irritation effects
skn	administration onto skin
sln	sex chromosome loss and nondisjunction
sit	specific locus test
slw	silkworm
smc	<i>Saccharomyces cerevisiae</i>
spm	sperm morphology
spr	sperm
sql	squirrel
smm	<i>Serratia marcescens</i>
ssp	<i>Schizosaccharomyces pombe</i>
STEL	short term exposure limit
TC	toxic concentration (other than lowest concentration)
TCLo	lowest published toxic concentration
TD	toxic dose (other than lowest toxic dose)
TDL0	lowest published toxic dose
tes	testis
TLV	Threshold Limit Value
tod	toad
trk	turkey
tn	heritable translocation test
TWA	time weighted average

Risk Phrases

Chemical data sheets available in many countries now contain codes for certain "risk phrases", shown as R23, R45 etc. These risk phrase codes have the following meanings:

- R1 Explosive when dry.
- R2 Risk of explosion by shock, friction, fire or other source of ignition.
- R3 Extreme risk of explosion by shock, friction, fire or other sources of ignition.
- R4 Forms very sensitive explosive metallic compounds.
- R5 Heating may cause an explosion.
- R6 Explosive with or without contact with air.
- R7 May cause fire.
- R8 Contact with combustible material may cause fire.
- R9 Explosive when mixed with combustible material.
- R10 Flammable.
- R11 Highly flammable.
- R12 Extremely flammable.
- R13 Extremely flammable liquefied gas
- R14 Reacts violently with water.
- R15 Contact with water liberates extremely flammable gases.
- R16 Explosive when mixed with oxidizing substances.
- R17 Spontaneously flammable in air.
- R18 In use, may form inflammable/explosive vapour-air mixture.
- R19 May form explosive peroxides.
- R20 Harmful by inhalation.
- R21 Harmful in contact with skin.
- R22 Harmful if swallowed.
- R23 Toxic by inhalation.
- R24 Toxic in contact with skin.
- R25 Toxic if swallowed.

- R61 May cause harm to the unborn child.
 - R62 Risk of impaired fertility.
 - R63 Possible risk of harm to the unborn child.
 - R64 May cause harm to breastfed babies.
 - R65 Harmful: may cause lung damage if swallowed.
 - R66 Repeated exposure may cause skin dryness or cracking.
 - R67 Vapours may cause drowsiness and dizziness.
 - R68 Possible risk of irreversible effects.
-

It is current safety policy at Oxford University that a written COSHH assessment **must** be provided when a substance to be used has been assigned any of the risk phrases R42, R43, R45, R46, R48, R49, R60 or R61. Other hazards may also dictate the preparation of a suitable COSHH assessment.

[Return to [Physical & Theoretical Chemistry Lab. Safety home page.](#)]

This information was last updated on October 28, 2003. We have tried to make it as accurate and useful as possible, but can take no responsibility for its use, misuse, or accuracy. We have not verified this information, and cannot guarantee that it is up-to-date.

- [Class 8 Corrosive substances](#)
- [Class 9 Miscellaneous dangerous substances](#)

See also [Packing Group](#).

For further details on the transport of dangerous goods, see the [OECD Directorate web site](#).

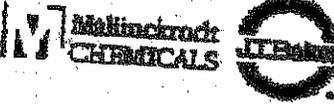
Return to the [Safety Glossary](#).

Return to the [Safety home page](#) of the Physical and Theoretical Chemistry Laboratory, Oxford University.

- S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- S27 Take off immediately all contaminated clothing.
- S28 After contact with skin, wash immediately with plenty of soap-suds.
- S29 Do not empty into drains.
- S30 Never add water to this product.
- S33 Take precautionary measures against static discharges.
- S35 This material and its container must be disposed of in a safe way.
- S36 Wear suitable protective clothing.
- S37 Wear suitable gloves.
- S38 In case of insufficient ventilation, wear suitable respiratory equipment.
- S39 Wear eye / face protection.
- S40 To clean the floor and all objects contaminated by this material, use (there follows suitable cleaning material).
- S41 In case of fire and / or explosion do not breathe fumes.
- S42 During fumigation / spraying wear suitable respiratory equipment.
- S43 In case of fire use ... (there follows the type of fire-fighting equipment to be used.)
- S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label whenever possible.)
- S46 If swallowed, seek medical advice immediately and show this container or label.
- S47 Keep at temperature not exceeding...
- S48 To be kept wet with (there follows a material name).
- S49 Keep only in the original container.
- S50 Do not mix with ...
- S51 Use only in well ventilated areas.
- S52 Not recommended for interior use on large surface areas

MSDS Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
228 First School Lane
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 800-420-0104
QUANTIFIED: 1-800-420-0900

National Response to Chemical
DISASTERS: 800-420-0900

Outside U.S. and Canada
Telephone: 709-420-5907

NOTE: CHEMICAL, HAZARDOUS and National
Response Center emergency numbers to be
used only in the event of chemical emergency:
leaking spill, fire, explosion or accident
involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-520-0527) for assistance.

COPPER METAL

MSDS Number: C5170 — Effective Date: 05/17/01

1. Product Identification

Synonyms: C.I. 77400; Arwood Copper
CAS No.: 7440-50-8
Molecular Weight: 63.546
Chemical Formula: Cu
Product Codes:
J.T. Baker: 1714, 1720, 1732, 1736
Mallinckrodt: 1733, 4649

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Copper	7440-50-8	90 - 100%	Yes

3. Hazards Identification

Emergency Overview

WARNING: HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS THE LIVER AND KIDNEYS. CHRONIC EXPOSURE MAY CAUSE TISSUE DAMAGE.

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:

Not considered to be a fire hazard since the bulk solid does not burn, but very finely divided particles (ultra-fine powder) may burn in air.

Explosion:

Not considered to be an explosion hazard. Reactions with incompatibles may pose an explosion hazard. Liquid copper explodes on contact with water. High concentrations of finely divided copper particles in the air may present an explosion hazard.

Fire Extinguishing Media:

Use any means suitable for extinguishing surrounding fire.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8: Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Avoid exposure to air and moisture. Isolate from incompatible substances. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

Copper Dust and Mists, as Cu:

- OSHA Permissible Exposure Limit (PEL) -

1 mg/m³ (TWA)

- ACGIH Threshold Limit Value (TLV) -

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage. Copper becomes dull when exposed to air; on exposure to moist air it gradually converts to the carbonate. On long standing, a white, highly explosive peroxide deposit may form.

Hazardous Decomposition Products:

No information found.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Copper is incompatible with oxidizers, alkalis, acetylene, chlorine plus oxygen difluoride, phosphorus, nitric acid, potassium peroxide, 1-bromo-2-propyne, sulfur plus chlorates. Reacts violently with ammonium nitrate, bromates, iodates, chlorates, ethylene oxide, hydrozoic acid, potassium oxide, dimethyl sulfoxide plus trichloroacetic acid, hydrogen peroxide, sodium peroxide, sodium azide, sulfuric acid, hydrogen sulfide plus air, and lead azide. A potentially explosive reaction occurs with acetylenic compounds. Copper ignites on contact with chlorine, fluorine (above 121C), chlorine trifluoride, and hydrazinum nitrate (above 70C). An incandescent reaction occurs with potassium dioxide.

Conditions to Avoid:

Incompatibles and prolonged exposure to air and moisture.

11. Toxicological Information

No LD50/LC50 information found relating to normal routes of occupational exposure. Investigated as a tumorigen and a reproductive effector.

-----\Cancer Lists\-----

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Copper (7440-50-8)	No	No	None

12. Ecological Information

Environmental Fate:

No information found.

Environmental Toxicity:

No information found.

13. Disposal Considerations

or use of this information to any person or for use in any situation.

Section 1 - Product and Company Identification
CHROMIUM

Product Identification: CHROMIUM
Date of MSDS: 11/01/1993 **Technical Review Date:** 11/10/1995
FSC: 6810 **NEIN:** LIIN: 00N066370
Submitter: N EN
Status Code: C
MFN: 01
Article: N
Kit Part: N

Manufacturer's Information

Manufacturer's Name: HIGH-PURITY STANDARDS
Post Office Box: 30188
Manufacturer's Address1:
Manufacturer's Address2: CHARLESTON, SC 29417
Manufacturer's Country: US
General Information Telephone: 803-556-3411
Emergency Telephone: 803-556-3411
Emergency Telephone: 803-556-3411
MSDS Preparer's Name: N/P
Proprietary: N
Reviewed: N
Published: Y
CAGE: 0YZE5
Special Project Code: N

Contractor Information

Contractor's Name: HIGH-PURITY STANDARDS INC
Post Office Box: 30180
Contractor's Address1: 2040 SAVAGE RD
Contractor's Address2: CHARLESTON, SC 29417
Contractor's Telephone: 803-556-3411
Contractor's CAGE: 0YZE5

Section 2 - Composition/Information on Ingredients
CHROMIUM

METALS, HYDROXIDES, CARBONATES, CYANIDES.

Hazardous Decomposition Products:

NO, NO*2.

Hazardous Polymerization Indicator: NO

Conditions to Avoid Polymerization:

NOT RELEVANT

Section 11 - Toxicological Information
CHROMIUM

Toxicological Information:

N/P

Section 12 - Ecological Information
CHROMIUM

Ecological Information:

N/P

Section 13 - Disposal Considerations
CHROMIUM

Waste Disposal Methods:

FOLLOW FEDERAL, STATE AND LOCAL REGULATIONS FOR ACID WASTE.

Section 14 - MSDS Transport Information
CHROMIUM

Transport Information:

N/P

Section 15 - Regulatory Information
CHROMIUM

SARA Title III Information:

N/P

Federal Regulatory Information:

N/P

State Regulatory Information:

N/P

Section 16 - Other Information
CHROMIUM

Other Information:

N/P

HAZCOM Label Information

Product Identification: CHROMIUM

CAGE: 0YZE5

Assigned Individual: N

Company Name: HIGH-PURITY STANDARDS INC

Company PO Box: 30180

Company Street Address1: 2040 SAVAGE RD

Company Street Address2: CHARLESTON, SC 29417 US

Health Emergency Telephone: 803-556-3411

Label Required Indicator: Y

Date Label Reviewed: 11/10/1995

Status Code: C

Manufacturer's Label Number:

Date of Label: 11/10/1995

Year Procured: N/K

Organization Code: G

Chronic Hazard Indicator: N

Eye Protection Indicator: YES

Skin Protection Indicator: YES

Respiratory Protection Indicator: YES

Signal Word: CAUTION

Health Hazard: Slight

Contact Hazard: Slight

Fire Hazard: None

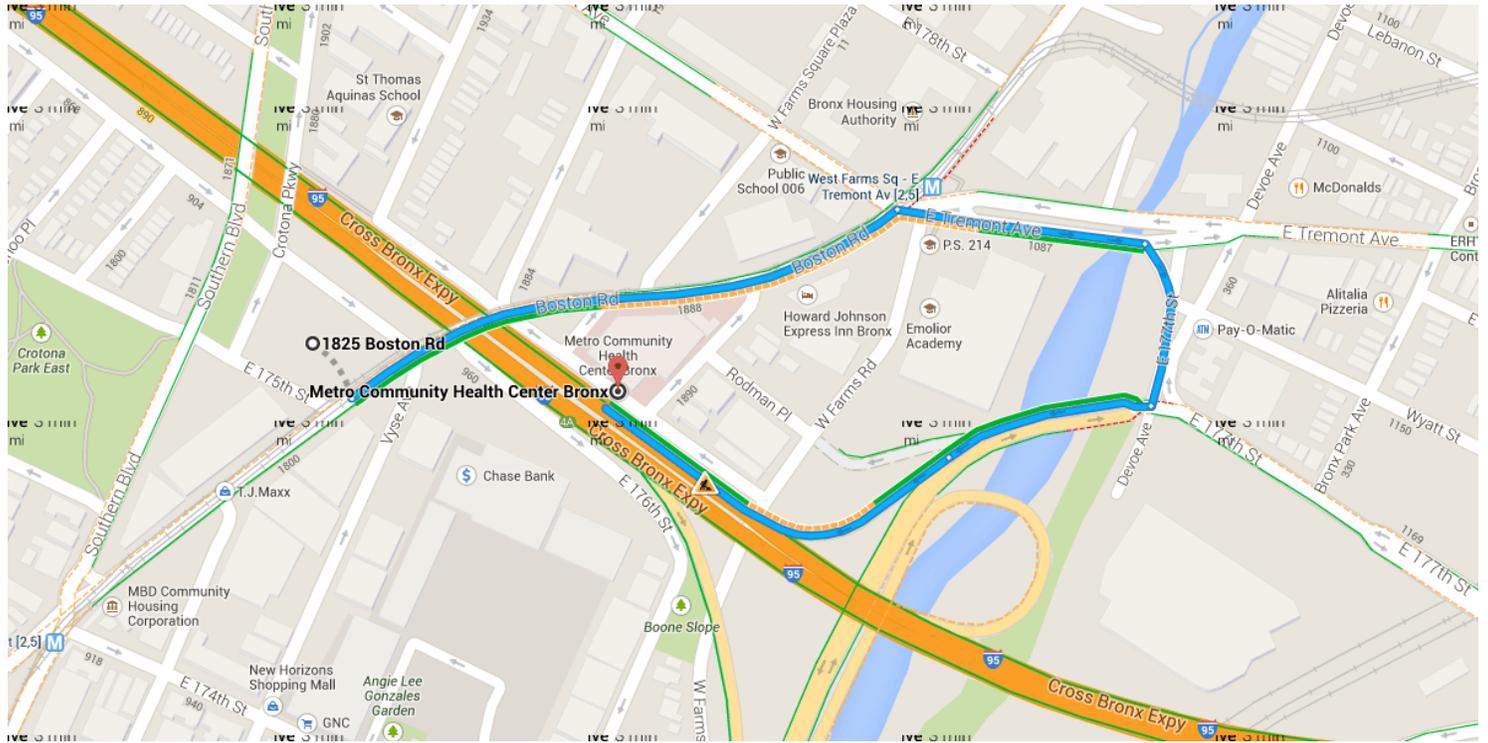
Reactivity Hazard: None

8/9/2002 9:23:55 AM

Attachment II



Directions from 1825 Boston Rd to Metro Community Health Center Bronx



○ 1825 Boston Rd

Bronx, NY 10460



- 1. Head **northeast** on **Boston Rd** toward **E 176th St**

_____ 0.3 mi



- 2. Turn **right** onto **E Tremont Ave**

_____ 0.1 mi



- 3. Turn **right** onto **E 177th St**

_____ 413 ft



- 4. Turn **right** onto the ramp to **Interstate 895 S/Interstate 95 S**

_____ 0.1 mi



5. Keep **right** at the fork, follow signs for **I-95 S/Cross Bronx Expy/George Washington Bridge** and merge onto **I-95 S/Cross Bronx Expy**

 Destination will be on the right

0.2 mi

Metro Community Health Center Bronx

979 Cross Bronx Expy, New York, NY 10460

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Map data ©2013 Google