

550 WEST 29TH STREET

NEW YORK, NEW YORK

Remedial Action Work Plan

**546, 548, 550 West 29th Street
Block 700, Lots 59, 60, 61
OER Project Number 15EHAN008M
NYC VCP Number: 15CVCP00M**

**E-Designation E-142
CEQR Number 03DCP069M
Highline/West Chelsea Rezoning**

Prepared for:

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DECEMBER 2014

REMEDIAL ACTION WORK PLAN

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LIST OF ACRONYMS

Acronym	Definition
AOC	Area of Concern
AS/SVE	Air Sparging/Soil Vapor Extraction
BOA	Brownfield Opportunity Area
CAMP	Community Air Monitoring Plan
C/D	Construction/Demolition
COC	Certificate of Completion
CQAP	Construction Quality Assurance Plan
CSOP	Contractors Site Operation Plan
DCR	Declaration of Covenants and Restrictions
ECs/ICs	Engineering and Institutional Controls
HASP	Health and Safety Plan
IRM	Interim Remedial Measure
VCA	Voluntary Cleanup Agreement
MNA	Monitored Natural Attenuation
NOC	Notice of Completion
NYC VCP	New York City Voluntary Cleanup Program
NYC DEP	New York City Department of Environmental Protection
NYC DOHMH	New York State Department of Health and Mental Hygiene
NYCRR	New York Codes Rules and Regulations
NYC OER	New York City Office of Environmental Remediation
NYS DEC	New York State Department of Environmental Conservation
NYS DEC DER	New York State Department of Environmental Conservation Division of Environmental Remediation
NYS DOH	New York State Department of Health
NYS DOT	New York State Department of Transportation
ORC	Oxygen-Release Compound
OSHA	United States Occupational Health and Safety Administration
PE	Professional Engineer

PID	Photo Ionization Detector
QEP	Qualified Environmental Professional
QHHEA	Qualitative Human Health Exposure Assessment
RAOs	Remedial Action Objectives
RAR	Remedial Action Report
RAWP	Remedial Action Work Plan or Plan
RCA	Recycled Concrete Aggregate
RD	Remedial Design
RI	Remedial Investigation
RMZ	Residual Management Zone
SCOs	Soil Cleanup Objectives
SCG	Standards, Criteria and Guidance
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
SVOC	Semi-Volatile Organic Compound
USGS	United States Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound

CERTIFICATION

I, Arnold F. Fleming, am a Professional Engineer licensed in the State of New York. I have primary direct responsibility for implementation of the remedial action for the 550 West 29th Street Site, (NYC OER Site No. 15EHAN008M and VCP Number 15CVCP00M).

I, Daniel DiRocco, am a Qualified Environmental Professional as defined in §43-140. I have primary direct responsibility for implementation of the remedial action for the 550 West 29th Street Site, (NYC OER Site No. 15EHAN008M and VCP Number 15CVCP00M).

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.

Arnold F. Fleming

Name

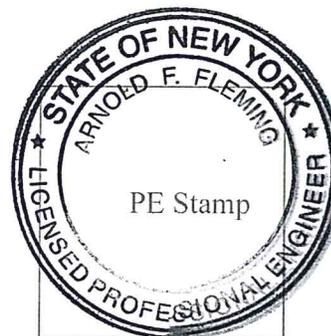
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NYS PE License Number

Signature

12/22/14

Date



Daniel DiRocco

QEP Name

QEP Signature

Date

EXECUTIVE SUMMARY

550 West 29th Street, LLC has enrolled in the New York City Voluntary Brownfield Cleanup Program (NYC VCP) to investigate and remediate a 7,500-square foot site located at 546, 548 and 550 West 29th Street, New York, 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 546, 548 and 550 West 29th Street in the Chelsea section of Manhattan, New York and is identified as Block 700 and Lot 59, 60, and 61 on the New York City Tax Map. These lots will be combined into a single tax lot as part of development. The Site location is depicted on Figure 1. The Site is 7,500-square feet and is bounded by West 29th Street to the north, a newly constructed residential building to the south and west, and a commercial warehouse to the east. A map of the site boundary with the proposed development layout is depicted in Figure 2. The Site buildings, which are all currently vacant, consist of the following: a 2-story building at 546 West 29th Street (Lot 59), a 1-story building at 548 West 29th Street (Lot 60) and a 3-story building with a cellar at 550 West 29th Street (Lot 61). The Site is registered in the NYSDEC Petroleum Bulk Storage database as Facility ID #2-611575 for one 275-gallon waste oil AST at Lot 60. This AST is no longer present at the Site. The Site is associated with closed NYSDEC Spill Case #1201778, which was assigned to Lot 60 on May 18, 2012. The Spill Case was closed by the NYSDEC case manager on June 27, 2012.

Summary of Proposed Redevelopment Plan

The Site is proposed to be redeveloped with a 12 to 13-story mixed use commercial and residential building. The layout of the proposed site development is presented in Figure 2. The current zoning designation is C6-2/West Chelsea District, which allows for mixed commercial and residential use. The first floor will contain retail space, a residential lobby and mechanical room. The remaining floors will contain 24-25 residential condominium units. The building will

be constructed with a cellar covering most of the Site that will contain mechanical equipment and residential amenities including laundry, storage and recreation space. The cellar footprint will be set back 10 feet from the eastern property boundary. The proposed excavation depth is approximately 15 feet below grade (ft. bg.) for the cellar footprint and 5 ft. bg. for the setback along the eastern property boundary. The depth-to-groundwater at the Site is approximately 9 ft. bg., so excavation below the groundwater table, with limited dewatering is anticipated. The footprint of the ground floor of the building will occupy the entire lot so there will be no grade-level open areas. The development plans are provided in Appendix B.

Summary of Environmental Findings

1. The elevation of the property is approximately 19 feet above sea level.
2. The depth to groundwater ranges from 9 to 9.5 ft. bg.
3. The groundwater flow is generally from east-northeast to west-southwest.
4. The depth to bedrock ranges from approximately 25 ft. bg. in the northeast corner of the Site to approximately 50 ft. bg. in the southwest corner of the Site.
5. The stratigraphy of the site consists of 6 to 17 feet of urban fill underlain by 8 to 11 feet of brown sand with silt underlain by gray fine silt with clay.
6. Soil/fill samples results were compared to NYSDEC 6NYCRR Part 375-6.8 Track 1 Unrestricted Use Soil Cleanup Objectives (UUSCOs) and Restricted Residential Use Soil Cleanup Objectives (RRSCO) and CP51. Soil analytical results indicated that no volatile organic compounds (VOCs) were detected in any of the soil samples at concentrations exceeding the UUSCOs. Several semi-volatile organic compounds (SVOCs) consisting of polycyclic aromatic hydrocarbons (PAHs) were detected at concentrations exceeding the RRSCO and included benzo(a)anthracene (maximum of 15.7 ppm), benzo(a)pyrene (maximum of 20.2 ppm), benzo(b)fluoranthene (maximum of 20.8 ppm), benzo(k)fluoranthene (maximum of 2.1 ppm), chrysene (maximum of 16.3 ppm), dibenzo(a,h)anthracene (maximum of 3.01 ppm) and indeno(1,2,3-cd)pyrene (maximum of 13.1 ppm). The greatest concentrations of SVOCs were detected in the shallow soil sample from soil boring SB-5 located in the southeast portion of the Site.

One pesticide, 4,4-DDT, was detected at a concentration exceeding the UUSCO. No polychlorinated biphenyls (PCBs) were detected in any of the soil samples. The concentrations of several metals including arsenic (maximum of 674 ppm), barium (maximum of 950 ppm), cadmium (maximum of 3.8 ppm), copper (maximum of 1,860 ppm), lead (maximum of 1,190 ppm), mercury (maximum of 3.7 ppm), selenium (maximum of 4.2 ppm), silver (maximum of 3.9 ppm) and zinc (maximum of 2,010 ppm) exceeded RRSCOs in both shallow and deeper soils. Overall, the presence and concentrations of SVOCs, pesticides and metals in the soil at the Site are indicative of typical urban fill.

7. The analytical results for the groundwater samples were compared to New York State TOGS 1.1.1, Class GA, Ambient Water Quality Standards and Guidance Values (TOGS). Groundwater results detected four VOCs, including 1,1-dichloroethene (7.8 ppb), benzene (1.2 ppb), methyl tert-butyl ether (36 ppb) and vinyl chloride (2.3 ppb) at concentrations slightly exceeding their TOGS. No SVOCs or PCBs were detected in any of the groundwater samples at concentrations exceeding TOGS. Several dissolved metals including arsenic (maximum of 6,290 ppb), cadmium (maximum of 13.6 ppb), iron (maximum of 36,400 ppb), manganese (maximum of 20,900 ppb) and sodium (maximum of 397,000 ppb) were detected at concentrations above their TOGS. One pesticide, 4,4-DDE was detected at a concentration of 0.28 $\mu\text{g/L}$, which is slightly exceeding TOGS.
8. Soil vapor results collected during the RI were compared to the compounds listed in Vapor Intrusion Matrices in the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion, dated October 2006. No VOCs were detected in the ambient indoor air sample at concentrations exceeding the NYSDOH Final Guidance for Evaluating Soil Vapor Intrusion. The maximum total concentration of petroleum-related VOCs (BTEX) detected in soil vapor was 76.3 $\mu\text{g/m}^3$. The VOC detected at highest concentration in soil vapor was ethanol (maximum of 279 $\mu\text{g/m}^3$). The chlorinated VOCs tetrachloroethylene (PCE) and trichloroethylene (TCE) were detected in each of the soil vapor samples at concentration of 20 $\mu\text{g/m}^3$ and 2.7 $\mu\text{g/m}^3$, respectively. Both carbon tetrachloride (detected at 1.1 $\mu\text{g/m}^3$) and 1,1,1-trichloroethane (maximum of 31 $\mu\text{g/m}^3$) were detected within three of the four soil gas samples. The

concentrations of tetrachloroethylene, trichloroethylene, carbon tetrachloride, and 1,1,1-trichloroethane were below 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; is effective in both the short-term and long-term and 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 (CPP).
2. Perform a Community Air Monitoring Program (CAMP) for particulates and volatile organic carbon compounds.
3. Establish 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. Installation of the interlocking sheet piles around the approximate Site perimeter driven vertically to top of bedrock to maintain a barrier to minimize the migration of groundwater onto the Site from surrounding offsite sources of contamination or migration of groundwater to off-Site.
6. Excavation and removal of soil/fill exceeding SCOs. Excavation for development purposes would take place to a depth of approximately 15 feet below sidewalk grade with 10 feet setback along the east side that will be excavated to five feet below grade. Excavation depth would be at or below the water table across the entirety of the Site. A

small area for elevator pits will be excavated to greater depths. Approximately 4,800 tons (3,250 cubic yards) of soil will be excavated and removed from this site.

7. Dewatering activities will be completed in accordance with a New York City Department of Environmental Protection (NYCDEP) permit. Dewatering discharge will include appropriate approvals obtained from NYC DEP for discharges to the combined sewer system, and if needed from NYS DEC. Pre-treatment of groundwater will be performed as needed for the permitted discharge.
8. Removal of underground storage tanks (if encountered during excavation) and closure of petroleum spills, if encountered, in compliance with applicable local, State and Federal laws and regulations.
9. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a photoionization detector (PID).
10. Management of excavated materials including temporarily stockpiling and segregating to prevent co-mingling of contaminated material and non-contaminated materials as described in Appendix E.
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 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 nine end-point confirmation samples to determine the performance of the remedy with respect to attainment of Site Specific 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. Construction and maintenance of an engineered composite cover consisting of the concrete foundation slab and walls to prevent human exposure to residual soil/fill remaining under the Site.
15. Installation of a waterproofing/vapor barrier system consisting of Grace Preprufe® 300R and 160R or equivalent under the cellar slab and along the exterior of the foundation walls.

16. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
17. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
18. Submission of a 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 Engineering and Institutional Controls to be implemented at the Site.
19. Submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.
20. The property will continue to be registered with an E-Designation by the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls in this RAWP and a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls 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 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.

Construction 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 will have 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 will be provided to the OER Project Manager once they have been determined.

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 includes steps to be taken if nuisances are detected. Generally, dust is managed by 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 Project Manager Daniel DiRocco or NYC Office of Environmental Remediation Project Manager Samantha Morris.

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 will typically be between 7:00 am to 5:00 pm Monday through Friday, unless otherwise noted.

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, provides project contact names and numbers, and locations of 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 Daniel DiRocco at (212) 675 - 3225, the NYC Office of Environmental Remediation Project Manager Samantha Morris at (212) 341-2082, or call 311 and mention 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 located at Muhlenberg Library located at 209 West 23rd Street, New York, New York.

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

550 West 29th Street, LLC, has applied to enroll in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a property located at 546, 548 and 550 West 29th Street in the Chelsea section of New York, 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 a remedial alternative 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 546, 548 and 550 West 29th Street in the Chelsea section of Manhattan, New York and is identified as Block 700 and Lot 59, 60, and 61 on the New York City Tax Map. These lots will be combined into a single tax lot as part of development. The Site location is depicted on Figure 1. The Site is 7,500-square feet and is bounded by West 29th Street to the north, a newly constructed residential building to the south and west, and a commercial warehouse to the east. A map of the site boundary with the proposed development layout is depicted in Figure 2. The Site buildings, which are all currently vacant, consist of the following: a 2-story building at 546 West 29th Street (Lot 59), a 1-story building at 548 West 29th Street (Lot 60) and a 3-story building with a cellar at 550 West 29th Street (Lot 61). The Site is registered in the NYSDEC Petroleum Bulk Storage database as Facility ID #2-611575 for one 275-gallon waste oil AST at Lot 60. This AST is no longer present at the Site. The Site is associated with closed NYSDEC Spill Case #1201778, which was assigned to Lot 60 on May 18, 2012. The Spill Case was closed by the NYSDEC case manager on June 27, 2012.

1.2 PROPOSED REDEVELOPMENT PLAN

The Site is proposed to be redeveloped with a 12 to 13-story mixed use commercial and residential building. The layout of the proposed site development is presented in Figure 2. The current zoning designation is C6-2/West Chelsea District, which allows for mixed commercial and residential use. The first floor will contain retail space, a residential lobby and mechanical room. The remaining floors will contain 24-25 residential condominium units. The building will be constructed with a cellar covering most of the Site that will contain mechanical equipment and residential amenities including laundry, storage and recreation space. The cellar footprint will be set back 10 feet from the eastern property boundary. The proposed excavation depth is approximately 15 feet below grade (ft. bg.) for the cellar footprint and approximately 5 ft. bg. for the setback along the eastern property boundary. The depth-to-groundwater at the Site is approximately 9 ft. bg., so excavation below the groundwater table, with limited dewatering is anticipated. The footprint of the ground floor of the building will occupy the entire lot so there will be no grade-level open areas. The development plans are provided in Appendix B.

The remedial action contemplated under this RAWP may be implemented independently of the proposed redevelopment plan.

1.3 DESCRIPTION OF SURROUNDING PROPERTY

According to the data available in OER's SPEED application, no schools, hospitals or day care facilities are located within a 500-foot radius of the Site. The Site appears on the City of New York Department of City Planning Zoning Map 8b. According to this map, the property is designated C6-2/West Chelsea District. The surrounding zoning designations include M1-6, C6-4, R8 and M1-5. The Site is located in a mixed use commercial, residential and light industrial neighborhood. The adjacent property to the south and west is a newly constructed residential high rise building. The adjacent property to the east of the Site is a 1-story commercial warehouse currently occupied by a seafood distribution company, Gotham Seafood Corp. The adjacent property to the north across West 29th Street is a 12-story commercial storage building occupied by Manhattan Mini Storage.

1.4 REMEDIAL INVESTIGATION

A remedial investigation was performed and the results are documented in a companion document called “*Remedial Investigation Report, 550 West 29th Street, New York, NY*”, dated September, 2014 (RIR).

Summary of Past Uses and Areas of Concern

According to the April 2014 Phase I prepared by IVI Assessment, Inc., the Site has been used for a mix of residential and commercial purposes since development. Lot 59 was developed between 1899 and 1911 with a residential and office building in the northern portion as well as a garage in the southern portion. Subsequent uses of Lot 59 include a coppersmith, motor freight station and taxi repair shop. Lot 60 was developed prior to 1890 with a mixed use commercial and residential building and subsequent uses include an express depot, motor freight station and auto repair facility. Lot 61 was developed prior to 1890 with a mixed commercial and residential building. Lot 61 has been historically used for waste paper storage and bailing, offices and retail.

The areas of concern identified in previous investigations include:

- The previous uses of Lots 59 and 60 as auto-repair facilities.
- An underground gasoline tank (UST) in the southern portion of Lot 60 was identified on the 1930 historic Sanborn map. Database records for NYSDEC Spill #1201778 indicate that a Hydrogeologic and Forensic Report submitted by FLS for Spill #0700587, assigned to the adjacent property to the south, identified a gasoline UST vent pipe on the roof of the building at Lot 60.
- Two inactive underground hydraulic lifts were identified in the auto repair shop at Lot 60. No closure documents or analytical results for the inactive lifts were provided for review.

Summary of Work Performed under Remedial Investigation

FLS, on behalf of 550 West 29th Street LLC, performed the following scope of work:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);

2. Installed 6 soil borings across the entire project Site, and collected 12 soil samples for laboratory analysis from the soil borings to evaluate soil quality;
3. Installed 3 temporary groundwater monitoring wells throughout the Site, and collected 3 groundwater samples for laboratory analysis to evaluate groundwater quality;
4. Installed 4 soil vapor probes around the Site and collected four soil vapor samples and one ambient air sample for laboratory analysis.

Summary of Environmental Findings

1. The elevation of the property is approximately 19 feet above sea level.
2. The depth to groundwater ranges from 9 to 9.5 ft. bg.
3. The groundwater flow is generally from east-northeast to west-southwest.
4. The depth to bedrock ranges from approximately 25 ft. bg. in the northeast corner of the Site to approximately 50 ft. bg. in the southwest corner of the Site.
5. The stratigraphy of the site consists of 6 to 17 feet of urban fill underlain by 8 to 11 feet of brown sand with silt underlain by gray fine silt with clay.
6. Soil/fill samples results were compared to NYSDEC 6NYCRR Part 375-6.8 Track 1 Unrestricted Use Soil Cleanup Objectives (UUSCOs) and Restricted Residential Use Soil Cleanup Objectives (RRSCO) and CP51. Soil analytical results indicated that no volatile organic compounds (VOCs) were detected in any of the soil samples at concentrations exceeding the UUSCOs. Several semi-volatile organic compounds (SVOCs) consisting of polycyclic aromatic hydrocarbons (PAHs) were detected at concentrations exceeding the RRSCO and included benzo(a)anthracene (maximum of 15.7 ppm), benzo(a)pyrene (maximum of 20.2 ppm), benzo(b)fluoranthene (maximum of 20.8 ppm), benzo(k)fluoranthene (maximum of 2.1 ppm), chrysene (maximum of 16.3 ppm), dibenzo(a,h)anthracene (maximum of 3.01 ppm) and indeno(1,2,3-cd)pyrene (maximum of 13.1 ppm). The greatest concentrations of SVOCs were detected in the shallow soil sample from soil boring SB-5 located in the southeast portion of the Site. One pesticide, 4,4-DDT, was detected at a concentration exceeding the UUSCO. No

polychlorinated biphenyls (PCBs) were detected in any of the soil samples. The concentrations of several metals including arsenic (maximum of 674 ppm), barium (maximum of 950 ppm), cadmium (maximum of 3.8 ppm), copper (maximum of 1,860 ppm), lead (maximum of 1,190 ppm), mercury (maximum of 3.7 ppm), selenium (maximum of 4.2 ppm), silver (maximum of 3.9 ppm) and zinc (maximum of 2,010 ppm) exceeded RRSCOs in both shallow and deeper soils. Overall, the presence and concentrations of SVOCs, pesticides and metals in the soil at the Site are indicative of typical urban fill.

7. The analytical results for the groundwater samples were compared to New York State TOGS 1.1.1, Class GA, Ambient Water Quality Standards and Guidance Values (TOGS). Groundwater results detected four VOCs, including 1,1-dichloroethene (7.8 ppb), benzene (1.2 ppb), methyl tert-butyl ether (36 ppb) and vinyl chloride (2.3 ppb) at concentrations slightly exceeding their TOGS. No SVOCs or PCBs were detected in any of the groundwater samples at concentrations exceeding TOGS. Several dissolved metals including arsenic (maximum of 6,290 ppb), cadmium (maximum of 13.6 ppb), iron (maximum of 36,400 ppb), manganese (maximum of 20,900 ppb) and sodium (maximum of 397,000 ppb) were detected at concentrations above their TOGS. One pesticide, 4,4-DDE was detected at a concentration of 0.28 µg/L, which is slightly exceeding TOGS.
8. Soil vapor results collected during the RI were compared to the compounds listed in Vapor Intrusion Matrices in the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion, dated October 2006. No VOCs were detected in the ambient indoor air sample at concentrations exceeding the NYSDOH Final Guidance for Evaluating Soil Vapor Intrusion. The maximum total concentrations of petroleum-related VOCs (BTEX) detected in soil vapor was 76.3 µg/m³. The VOC detected at highest concentration in soil vapor was ethanol (maximum of 279 µg/m³). The chlorinated VOCs tetrachloroethylene (PCE) and trichloroethylene (TCE) were detected in each of the soil vapor samples at maximum concentration of 20 µg/m³ and 2.7 µg/m³, respectively. Both carbon tetrachloride (detected at 1.1 µg/m³) and 1,1,1-trichloroethane (maximum of 31 µg/m³) were detected within three of the four soil gas samples. The concentrations of tetrachloroethylene, trichloroethylene, carbon tetrachloride, and 1,1,1-

trichloroethane were below the monitoring level ranges established within the NYSDOH Final Guidance on Soil Vapor Intrusion.

For more detailed results, consult the RIR. Based on an evaluation of the data and information from the RIR and this RAWP, disposal of significant amounts of hazardous waste is not suspected 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

- Remove contaminant sources causing impact to groundwater.
- Prevent direct exposure to contaminated groundwater.
- Prevent exposure to contaminants volatilizing from contaminated groundwater.

Soil

- Prevent direct contact with contaminated soil.
- Prevent migration of contaminants that would result in groundwater or surface water 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 purpose of the remedial alternative analysis is to evaluate and select a remedy to address the contamination identified by the RI to ensure the remedy is protective of human health and the environment taking into consideration the current, intended and reasonably anticipated future use of the property. The RAOs were developed based on contaminant-specific standards, criteria and guidance values (SCGs) and the intended use of the Site. The remedy selection process begins by establishing RAOs for media in which chemical constituents were found in exceedance of applicable SCGs. A remedy is then developed based on the following ten criteria:

- Protection of human health and the environment;
- Compliance with SCGs;
- Short-term effectiveness and impacts;
- Long-term effectiveness and permanence;
- Reduction of toxicity, mobility, or volume of contaminated material;
- Implementability;
- Cost effectiveness;
- Community Acceptance;
- Land use; and
- 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 NYSDEC 6NYCRR Part 375-6.8 Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs);

- Removal of all soil/fill exceeding Track 1 Unrestricted Use SCOs throughout the Site and confirmation that Track 1 Unrestricted Use SCOs have been achieved with post-excavation endpoint sampling. If soil/fill containing analytes at concentrations above Unrestricted Use SCOs is still present at the base of the excavation after removal of all soil required for construction of the new building's cellar level is complete, additional excavation will be performed to ensure complete removal of soil that does not meet Track 1 Unrestricted Use SCOs; and
- No Engineering or Institutional Controls are required for a Track 1 cleanup, but a composite cover consisting of concrete slab, and a vapor barrier will be installed beneath the new building as a part of development to prevent potential exposures from off-Site soil vapor.

Alternative 2 involves:

- Establishment of Site-Specific (Track 4) SCOs;
- Excavation and removal of soil associated with development and the collection of post-excavation endpoint samples to document the effect of the remedy with respect to the Track 4 SCOs. Excavation for development purposes will include excavation to approximately 15 feet beneath all areas of the Site with the exception of the 10-foot setback along the eastern site boundary. Excavation for the elevator pit will be to approximately 17 feet.
- Installation of a soil vapor/waterproof barrier beneath the new building slab and along foundation sidewalls to prevent potential exposures from soil vapor;
- Placement of a final cover over the entire building footprint to prevent exposure to remaining soil/fill;
- Establishment of use restrictions including prohibitions on the use of groundwater from the Site; and prohibitions on other 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 Engineering and Institutional Controls including the performance of periodic inspections and certification that the controls are performing as they were

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

- Continued registration as an E-designated property to memorialize the remedial action and the Engineering and Institutional Controls required by this RAWP.

The equivalent of in-situ stabilization would be implemented at the Site as part of development in the form of interlocking sheet piles installed into bedrock around the general site perimeter. The combination of the sheeting, excavation and dewatering will remove the bulk of regional impacted fill material and impacted groundwater within the Site boundary while maintaining a barrier to minimize over time the migration of groundwater onto the Site from surrounding offsite sources of contamination.

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 Engineering Controls or Institutional Controls. 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 all soil/fill with exceedances of Track 1 Unrestricted Use SCOs at the Site, thus eliminating potential for direct contact with contaminated soil/ fill once construction is complete and eliminating the risk of contamination leaching into groundwater. A vapor barrier/ waterproofing membrane would be built as part of construction.

Alternative 2 would achieve comparable protections of human health and the environment by removing soil/fill with contaminant concentrations above the Track 4 Site-specific SCOs as well as placement of engineering and institutional controls, including a composite cover system and a waterproofing/vapor barrier. The composite cover system would prevent direct contact with remaining on-Site soil/ fill. Implementing institutional controls, including continued registration as an e-designated property and implementation of a Site Management Plan 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.

For both alternatives, potential exposure to contaminated soils or groundwater during construction would be minimized by implementing an approved Soil/ Materials Management Plan (SMMP) and CAMP. Potential contact with contaminated groundwater would also be minimized by implementing an approved SMMP, and groundwater use is prevented by city laws and regulations. Potential future migration of on and off-Site soil vapors into the new buildings would be prevented by installing a waterproofing/ vapor barrier membrane. As such, both alternatives would be consistent with the RAOs and would provide overall protection of public health and the environment in consideration of current and potential future land use.

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 address the chemical-specific SCGs for soil, groundwater and soil vapor by removing all soil/fill in excess of Track 1 Unrestricted Use SCOs. Compliance with SCGs for soil vapor, including potential off-Site sources of soil vapor, would be achieved by installing a waterproofing/vapor barrier membrane as part of development.

Alternative 2 would address the 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 also be achieved by installing a waterproofing/vapor barrier. A Site Management Plan would ensure that controls remained protective for the long term. Compliance with groundwater SCGs would be achieved over the long term by excavation and removal of soil exceeding Track 4 Site-specific SCOs.

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. Both remedial alternatives comply with SCGs that involve protection of public health during the remedial action by implementing and enforcing a site-

specific Construction Health and Safety Plan (CHASP) and CAMP. OSHA requirements for on-Site construction safety will also be followed by all site contractors.

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 impacts during their respective implementations, as each requires excavation of historic fill material. Both alternatives would result in short-term dust generation associated with excavation, handling, and load out of materials. Short term impacts would be higher for Alternative 1 due to the excavation of greater amounts of historical fill material.

An additional short-term adverse impact associated with both remedial alternatives is increased truck traffic. Truck traffic would be higher with Alternative 1 since it will require more excavation. Truck traffic will be routed on the most direct course avoiding schools 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 would be worn consistent with the documented and encountered 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 engineering and institutional controls 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 Engineering Controls.

Alternative 1 would achieve long-term effectiveness and permanence related to on-Site contamination by permanently removing all impacted soil/fill and enabling unrestricted usage of the property. Removal of on-Site contaminant sources will also prevent continued and future groundwater contamination. Installation of a waterproofing/ vapor barrier membrane would prevent potential future migration of soil vapors into the new building.

Alternative 2 would provide long-term effectiveness by removing most on-Site contamination and attaining Track 4 Site-specific SCOs, establishing engineering controls including a composite cover system across the Site; establishing institutional controls to ensure long-term management including use restrictions, a SMP and continuation of the E-designation to memorialize these controls for the long term. The SMP will ensure long-term effectiveness of all engineering and institutional controls 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 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 and would address contaminated soil and eliminate or minimize any leaching to groundwater.

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 of 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 Track 1 SCOs.

Alternative 2 would greatly reduce the toxicity, mobility, and volume of contaminants from on-Site soil by excavation to approximately 15 feet across the majority of the Site and removal of soil/fill that exceeds Track 4 SCOs to the extent feasible. Alternative 1 would eliminate the total mass of contaminants on Site.

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 feasibility of implementing Alternative 1 is more challenging due to the support of excavation and adjacent structures required to remove deep fill at the Site. Because excavation beyond the required development depths would be required, extensive coordination with the project geotechnical and structural engineers would be necessary to alter the existing support of excavation design to support excavation up to the property boundaries. This remedy would consist mostly of excavation with standard bucket excavators of the targeted fill and soil. The feasibility of implementing this remedy is lower compared to Alternative 2 considering the costs and time associated with the support of excavation required to altering the support of excavation design, and underpinning/excavating near the property boundaries, which would rely on coordination with adjacent property owners.

The Alternative 2 cleanup is both feasible and implementable. It uses standard materials and services and well established technologies for the removal of an estimated 3,250 cubic yards of soil. The reliability of the remedy is also high. There are no special difficulties associated with any of the activities proposed, which utilize standard industry methods.

For implementation of both remedies, standard construction equipment utilized for the overall earthwork would be used. Qualified OSHA-trained personnel will complete all activities that include excavation and handling of impacted soils. Installation of the waterproofing/vapor barrier system will be conducted in accordance with the manufacturers specifications.

Cost effectiveness

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

The capital costs associated with the implementation of Alternative 1 cleanup will be significantly higher than that of Alternative 2. Alternative 1 will result in a greater volume of fill excavated from the Site, which will increase disposal costs. Additionally, measures would need to be designed and implemented to address potential structural concerns of the adjacent properties.

The capital costs associated with the implementation of Alternative 2 can be adequately estimated with the target development depth of approximately 15 feet below grade across the Site. This will result in a lesser volume of soil that may need to be excavated, compared to Alternative 1, and therefore lower disposal costs. However, long-term costs for Alternative 2 are likely marginally higher than Alternative 1 based on implementation of a Site Management Plan as part of Alternative 2.

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.

The overall goals of the remedial program are considered to be acceptable to the community. Both remedial actions provide for protection of public health and the environment and minimize, if not eliminate, potential future contaminant exposures. This RAWP will be subject to and undergo public review under the NYC VCP and will provide the opportunity for public input on the selected remedial actions. Any public comments related to environmental remediation will be considered by OER prior to approval of this plan.

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 Institutional Controls applicable to the site.

The implementation of Alternative 1 and Alternative 2 are consistent with the intended and reasonably anticipated use of the Site as a mixed-use commercial residential property, since following remediation, the Site will meet either Track 1 Unrestricted Use SCOs or Track 4 Site-specific SCOs. The current zoning designation is C6-4, which permits a mid-rise occupied by commercial, residential and/or community facility that may penetrate the sky exposure plane. The proposed use 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 the remedies provide comprehensive protection of public health and the environment for these uses. The Site does not lie in a Federal Emergency Management Agency (FEMA)-designated flood plain. Both alternatives are equally protective of natural resources and cultural resources. This RAWP will be subject to public review under the NYC

VCP and will provide the opportunity for detailed public input on the land use factors described in this section. Any public comment will be considered by OER prior to approval of this plan.

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 overall sustainability of Alternative 2 is higher than Alternative 1, as Alternative 2 greatly reduces the overall project energy consumption and greenhouse gas emissions associated with soil/fill excavation and trucking. A Sustainability Statement is provided in Appendix F. The development is targeted to be a Leadership in Energy and Environmental Design (LEED) - certified building under the U.S. Green Building Council.

4.0 REMEDIAL ACTION

4.1 SUMMARY OF PREFERRED REMEDIAL ACTION

The preferred remedial action alternative is Alternative 2, the Track 4 Alternative. 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 (CPP).
2. Perform a Community Air Monitoring Program (CAMP) for particulates and volatile organic carbon compounds.
3. Establish 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. Installation of the interlocking sheet piles around the approximate Site perimeter driven vertically into bedrock to maintain a barrier to minimize the migration of groundwater onto the Site from surrounding offsite sources of contamination or migration of groundwater to off-Site.
6. Excavation and removal of soil/fill exceeding SCOs. Excavation for development purposes would take place to a depth of approximately 15 feet below sidewalk grade with 10 feet setback in rear that will be excavated to five feet below grade and would be below the water table across the entirety of the Site. A small area for elevator pits will be

excavated to greater depths. Approximately 4,800 tons (3,250 cy) of soil will be excavated and removed from this site.

7. Dewatering activities will be completed in accordance with a New York City Department of Environmental Protection (NYCDEP) permit. Dewatering discharge will include appropriate approvals obtained from NYC DEP for discharges to the combined sewer system, and if needed from NYS DEC. Pre-treatment of groundwater will be performed as needed for the permitted discharge.
8. Removal of underground storage tanks (if encountered during excavation) and closure of petroleum spills, if encountered, in compliance with applicable local, State and Federal laws and regulations.
9. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a photoionization detector (PID).
10. Management of excavated materials including temporarily stockpiling and segregating to prevent co-mingling of contaminated material and non-contaminated materials as described in Appendix E.
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 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 nine end-point confirmation samples to determine the performance of the remedy with respect to attainment of Site Specific 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. Construction and maintenance of an engineered composite cover consisting of the concrete foundation slab and walls to prevent human exposure to residual soil/fill remaining under the Site.

15. Installation of a waterproofing/vapor barrier system consisting of Grace Preprufe® 300R and 160R or equivalent under the cellar slab and along the exterior of the foundation walls.
16. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
17. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
18. Submission of a 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 Engineering and Institutional Controls to be implemented at the Site.
19. Submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.
20. The property will continue to be registered with an E-Designation by the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls in this RAWP and a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls 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 Soil Cleanup Objectives (SCOs) are proposed for this project. The SCOs for this Site are listed in Table 1 and summarized below. Soil and materials management on-Site and off-Site, including excavation, handling and disposal, will be conducted in accordance with the Soil/Materials Management Plan (SMMP) in Appendix C. The location of planned excavations

is shown in Figure 4. The Track 4 SCOs will be the NYSDEC Part 375 Restricted Use – Residential SCOs with the following modifications:

<u>Contaminant</u>	<u>SCOs</u>
Arsenic	24 ppm
Lead	1,000 ppm
Mercury	2.5 ppm
Total SVOCs	250 ppm

Discrete contaminant sources (such as hotspots) identified during the remedial action will be identified by GPS or surveyed. This information will be provided in the Remedial Action Report.

Estimated Soil/Fill Removal Quantities

The entire Site will be excavated as part of development to the construction depth of approximately 15 ft. bg., with the exception of a 10 foot setback area along the eastern property boundary. This setback area will be excavated to a depth of approximately 5 ft. bg. The total quantity of soil/fill expected to be excavated and disposed off-Site is approximately 3,250 cubic yards. Disposal facilities will be reported to the OER Project Manager when they are identified and 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 endpoint soil sampling. A total of nine endpoint samples will be collected from the Site. Two endpoint samples will be collected from the setback area along the eastern Site boundary and seven will be collected from the remaining portion of the Site. The proposed endpoint sampling locations are shown in Figure 3. For comparison of confirmation endpoint sampling results to Track 1 SCOs, analytes will include VOCs, SVOCs, pesticides and PCBs, and metals according to analytical methods described below. For comparison to Track 4 SCOs, analytes will only include trigger compounds and elements established on the Track 4 SCO list.

No hot spot soil excavation is anticipated given the Site will be excavated from lot line to lot line and extend several feet in depth below the groundwater table with exception of the ten foot setback area which will not extend beyond approximately 5 feet in depth due to structural concerns of the adjacent building.

Post-remediation endpoint 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 Environmental Laboratory Approval Program (ELAP) certified labs will be used for all confirmation and endpoint sample analyses. The laboratories performing confirmation and endpoint sample analyses will be reported in the RAR. The RAR will provide a tabular and map summary of all confirmation and endpoint sample results and will include all data including non-detects and applicable standards and/or guidance values.

Soil analytical methods will include:

- Target Analyte List metals by EPA Method 6010C/7470A;
- SVOCs by EPA Method 8270D (rev. 2007);

If either LNAPL and/or DNAPL are 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

The endpoint samples will be managed in accordance with the NYSDEC Analytical Services Protocol. Quality assurance/quality control (QA/QC) samples will be collected in the field consisted of field duplicates for every 20 sets of endpoint samples. The samples will be sent to a New York State ELAP certified laboratory.

Import and Reuse of Soils

Import of soils onto the property and reuse of soils already onsite will be performed in conformance with the SMMP in Appendix C. No soil is expected to be imported into the Site and no onsite derived soil/fill is expected to be reused/relocated at the Site.

4.3 ENGINEERING CONTROLS

This property will achieve Site Specific Track 4 cleanup. Engineering Controls were employed in the remedial action to address residual contamination remaining at the site. The Site has two (2) primary Engineering Control Systems. These are:

- A composite cover system consisting of the concrete building slab and foundation walls;
- A waterproofing/vapor barrier system installed under the foundation slab and along the exterior of foundation walls.

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:

Exposure to residual soil/fill will be prevented by an engineered, composite cover system to be built on the Site. This composite cover system will consist of the concrete building slab at cellar and grade levels and foundation walls. Figure 5 shows the location of the composite cover system.

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 is disturbed after the remedial action is complete. Maintenance of this composite cover system will be described in the Site Management Plan in the RAR.

Waterproofing/Vapor Barrier

Migration of soil vapor will be mitigated with a combination of building slab and vapor barrier. The waterproofing/vapor barrier consisting of Grace Preprufe® 300R and 160R or equivalent will be installed under the cellar slab and along the exterior of the foundation walls.

The project's remedial Professional Engineer (PE) will provide oversight and monitor contractor compliance with the technical specifications during the installation of the waterproofing/vapor barrier system. As-built waterproofing/vapor barrier drawings, photographs (maximum of two photos per page) of the installation process, PE/Registered Architect certified letter (on company letterhead) from primary contractor responsible for installation oversight and field inspections, and a copy of the manufacturers certificate of warranty will be submitted with the RAR.

4.4 IN-SITU STABILIZATION

The equivalent of in-situ stabilization will be implemented at the Site as part of development in the form of interlocking sheet piles installed into bedrock around the general site perimeter. The combination of the sheeting, excavation and dewatering will remove the bulk of regional impacted fill material and impacted groundwater within the Site boundary while maintaining a barrier to minimize over time the migration of groundwater onto the Site from surrounding offsite sources of contamination. The support of excavation plans are provided in Appendix D.

4.5 INSTITUTIONAL CONTROLS

Institutional Controls (IC) have been incorporated in this remedial action to manage residual soil/fill and other media and render the Site protective of public health and the environment. Institutional Controls are listed below. Long-term employment of EC/ICs will be implemented under a site-specific Site Management Plan (SMP) that will be included in the RAR. The property will continue to be registered with an E-Designation by the NYC Buildings Department.

Institutional Controls for this remedial action are:

- The property will continue to be registered with an E-Designation by the NYC Buildings Department. This RAWP includes a description of all ECs and ICs and summarizes the

requirements of the Site Management Plan which will note that the property owner and property owner's successors and assigns must comply with the approved SMP;

- Submittal of a Site Management Plan in the RAR for approval by OER that provides procedures for appropriate operation, maintenance, monitoring, inspection, reporting and certification of ECs. 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 determine 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 residential use and will not be used for a higher level of use without prior approval by OER.

4.6 SITE MANAGEMENT PLAN

Site Management is the last phase of remediation and begins with the approval of the Remedial Action Report and issuance of the Notice of Completion (NOC) for the Remedial Action. The Site Management Plan (SMP) describes appropriate methods and procedures to ensure implementation of all ECs and ICs that are required by this RAWP. The Site Management Plan 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 Site Management Plan 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 EC's and ICs; (2) implementation of monitoring programs; (3) operation and maintenance of EC's; (4) inspection and certification of EC's; 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 Site Management Plan 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.

4.7 QUALITATIVE HUMAN HEALTH EXPOSURE ASSESSMENT

The objective of the qualitative exposure assessment is to identify potential receptors and pathways for human exposure to the contaminants of concern (COC) 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 Remedial Investigation Report (RIR) are sufficient to complete a Qualitative Human Health Exposure Assessment (QHHEA). As part of the 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

Urban fill is present at the Site from grade to approximately 18 feet below grade. Based on the results of the RIR, the contaminants of concern are as follows:

Soil:

- PAHs including: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene and indeno(1,2,3-cd)pyrene exceeding Restricted Residential Use SCOs in shallow soil.
- Pesticides; 4,4'-DDT exceeding their unrestricted use SCOs in shallow soil.
- Metals including arsenic, barium, cadmium, copper, lead, mercury, selenium, silver and zinc exceeded RRSCOs in both shallow and deeper soils.

Groundwater:

- VOCs including 1,1-dichloroethene, benzene, methyl tert-butyl ether and vinyl chloride exceeded their respective TOGS in groundwater.
- Metals including arsenic, cadmium, iron, manganese and sodium exceeding their respective TOGS in groundwater.

Soil Vapor:

- Petroleum related VOCs were detected at concentrations above the laboratory detection limits.
- Chlorinated and petroleum related VOCs are present in the soil vapor beneath the Site, but at concentrations below the monitoring level ranges established within the 2006 NYSDOH Final Guidance on Soil Vapor Intrusion.

Nature, Extent, Fate and Transport of Contaminants

Based on the RI findings, metals and PAHs were detected in shallow and deeper soils at concentrations exceeding Track 2 Restricted Residential Use SCOs throughout the Site. The distribution of metals and PAHs across the Site is consistent with the presence of urban fill. Arsenic concentrations are particularly elevated in the southern and northwest portions of the Site (as evidenced by results for soil borings SB-1, SB-3, SB-5, and SB-6).

The groundwater laboratory analytical revealed the presence of several dissolved metals at concentrations exceeding the TOGS groundwater standards, including arsenic, cadmium, iron,

manganese and sodium. The distribution of metals in the groundwater across the Site is consistent with the groundwater being in contact with urban fill material.

The laboratory analytical results for soil vapor samples detected VOCs at concentrations below NYSDOH monitoring level ranges established in the NYSDOH Soil Vapor Intrusion Guidance document.

Potential Routes of Exposure

Current Conditions: As the Site is currently capped with concrete buildings slab, there are no potential exposure pathways from soil/fill. Groundwater is not exposed at the Site and because the Site is served by the municipal NYC water supply, groundwater is not used for potable purposes at the Site. There is potential for soil vapor accumulation beneath the building slabs and subsequently, soil vapor intrusion to occur in the existing buildings.

Construction and Remediation Activities: During construction and remediation activities, on-Site exposure pathways will be complete. Workers will be exposed to soil, water and dust at the site. Exposures will be minimized by limiting access to the Site, through the implementation of the SMMP, the CAMP, and the CHASP. There will be no structures onsite during construction where soil vapor could accumulate.

Proposed Future Conditions: Under future conditions, the property will be fully capped, eliminating the possibility for direct exposure to soil and groundwater remaining. A waterproofing/vapor barrier system will prevent exposure to potential on-Site or off-Site soil vapors, and because the building foundation will be below the depth of groundwater, there will be no vadose zone where vapors would accumulate beneath the building.

Existence of Human Health Exposure

The Site is currently improved with three vacant buildings so there are no existing human health exposures. When the construction and remediation activities start, construction and remediation workers may be exposed to contaminants. Under the proposed redevelopment plan, the residents, visitors and workers in the building would possibly be exposed to vapors inside the building. This will be eliminated by the installation of the waterproofing/vapor barrier.

Receptor Populations

The Site is currently improved with three vacant buildings so there are no existing occupants. When the construction and remediation activities start, on-Site receptors will include construction and remediation workers. Under the proposed redevelopment plan, the anticipated future receptors will include residents, visitors and workers in the building.

Off-Site receptors within a ½-mile radius of the Site include residents of the adjacent residential properties, workers in the commercial buildings, construction workers and pedestrians along 29th Street.

Overall Human Health Exposure Assessment

Based upon this analysis, complete on-site exposure pathways appear to be present only during the construction/remediation phase. Under current conditions, on-Site exposure pathways exist for contractors and others that may access the Site. During the remedial action, on-site exposure pathways will be minimized by preventing access to the Site, through implementation of soils/materials management, storm water pollution prevention, dust controls, employment of a community air monitoring program, and implementation of a construction health and safety plan. This assessment takes into consideration the reasonably anticipated use of the site, which includes residential structures, an impervious surface cover cap, and a sub-surface waterproof/vapor barrier system under the new building. Potential post-construction use of groundwater is not considered an option because groundwater in this area of New York City is not used as a potable water source. Exposure pathways during remediation and construction will be mitigated and eliminated by the implementation of the SMMP, CAMP, and the CHASP. Future occupants of the new development will be protected from possible exposure pathways through the engineering and institutional controls outlined in this RAWP.

5.0 REMEDIAL ACTION MANAGEMENT

5.1 PROJECT ORGANIZATION AND OVERSIGHT

Principal personnel who will participate in the remedial action include Daniel DiRocco (Qualified Environmental Professional) and Arnold F. Fleming (Remedial Engineer). The Professional Engineer (PE) and Qualified Environmental Professionals (QEP) for this project are Arnold Fleming and Daniel DiRocco, respectively.

5.2 SITE SECURITY

Site access will be controlled by gated entrances and construction fencing.

5.3 WORK HOURS

The hours for operation of remedial construction will be from typically 7:00 am to 5:00 pm. These hours conform to the New York City Department of Buildings construction code requirements.

5.4 CONSTRUCTION HEALTH AND SAFETY PLAN

The CHASP is included in Appendix A. The Site Safety Coordinator will be assigned by the construction contractor and reported to OER prior to the start of the remedial action. Remedial work performed under this RAWP will be in full compliance with applicable health and safety laws and regulations, including Site and OSHA worker safety requirements and 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 performance of work is in compliance with the HASP and applicable laws and regulations. The HASP pertains to remedial and invasive work performed at the Site until the issuance of the Notice of Completion.

All field personnel involved in remedial activities will participate in training required under 29 CFR 1910.120, including 40-hour hazardous waste operator training and annual 8-hour refresher training. Site Safety Officer will be responsible for maintaining workers training records.

Personnel entering any exclusion zone will be trained in the provisions of the HASP and be required to sign an HASP 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 HASP. 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 volatile organic compounds (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 Community Air Monitoring Plan (CAMP) will be reported to the OER Project Manager and included in the Daily Report.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (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 parts per million (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 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), 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, excavation or other remedial activity performed under the RAWP.

Dewatering

All dewatering will be performed in accordance with New York City Department of Environmental Protection (NYCDEP) regulations and a NYC Sewer Discharge Permit will be obtained prior to the start of dewatering activities. Extracted groundwater will either be containerized for off-Site disposal or be treated as necessary to meet NYCDEP requirements and discharged to the NYCDEP sewer system.

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, 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 NYS DEC within 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. Support of 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 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 offsite areas may require characterization based on site conditions, at the discretion of OER. If onsite petroleum spills are identified, a qualified environmental

professional will determine the nature and extent of the spill and report to NYS DEC's spill hotline at DEC 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 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, site primary and alternate contact name and phone number. 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 onsite or offsite exposure pathways caused by the storm; presence of petroleum or other spills and status of spill reporting to NYS DEC; description of corrective actions; schedule for corrective actions. This report should be completed and submitted to 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 will be provided once the soil disposal facilities have been determined.

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.

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;
- Photograph of notable Site conditions and activities.

The frequency of the reporting period may be revised in consultation with 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 Remedial Action Report. 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

A Remedial Action Report (RAR) will be submitted to 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 and DUSR;
- 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 an E-Designation by the NYC Department of Buildings.

- 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, Arnold F. Fleming, am currently a professional engineer licensed by the State of New York. I had primary direct responsibility for implementation of the remedial program for the 550 West 29th Street Site (OER Project # 15EHAN008M).

I, Daniel DiRocco, am a qualified Environmental Professional. I had primary direct responsibility for implementation remedial program for the 550 West 29th Street Site (OER Project # 15EHAN008M).

*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.*

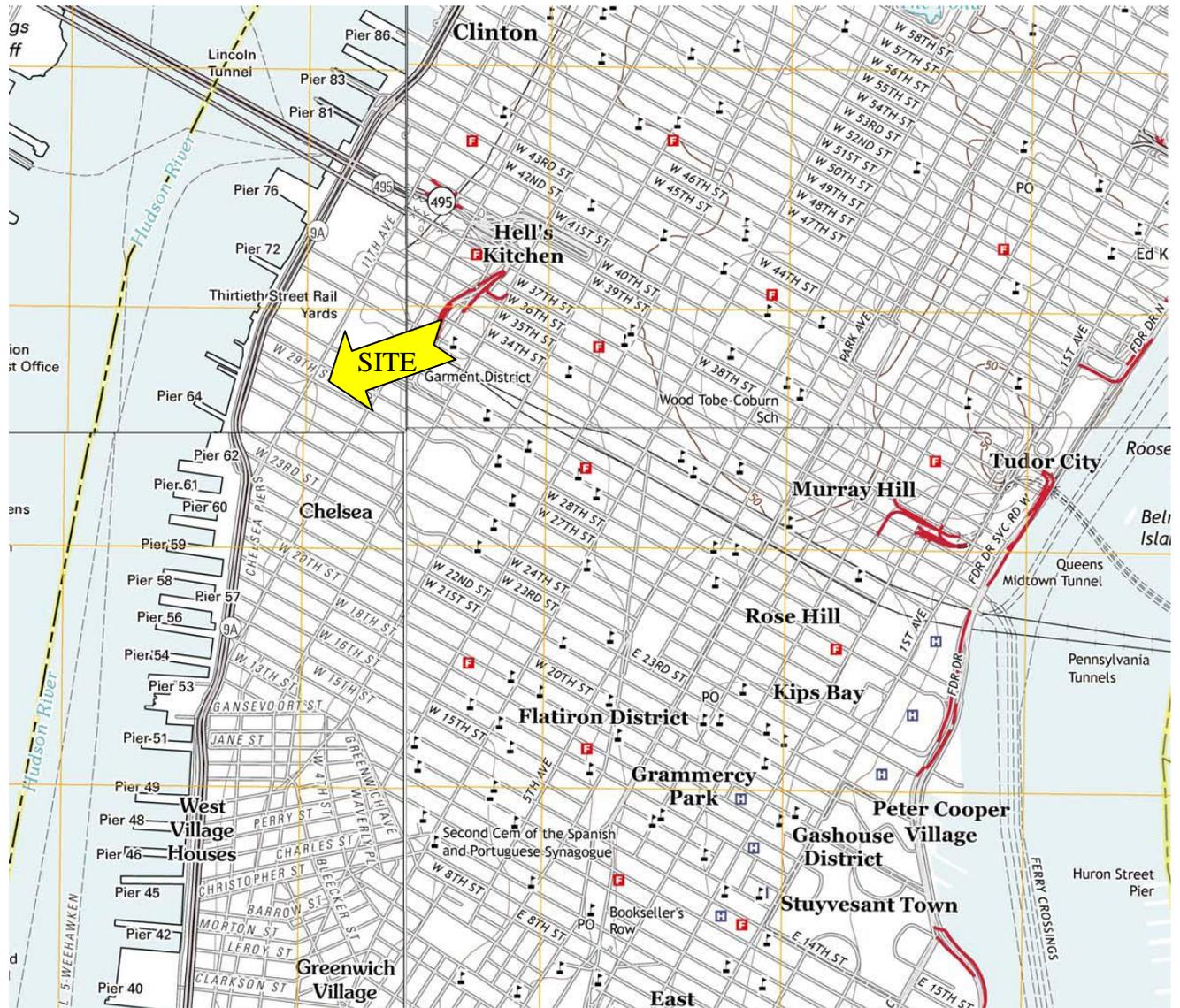
7.0 SCHEDULE

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 OER. Currently, a four month remediation period is anticipated.

<u>Schedule Milestone</u>	Weeks from Remedial Action Start	Duration (weeks)
OER Approval of this RAWP	0	-
Mobilization	0	2
Remedial Excavation	2	10
Remedial Construction	12	6
Demobilization	18	2
Submit Remedial Closure Report	24	6

FIGURES



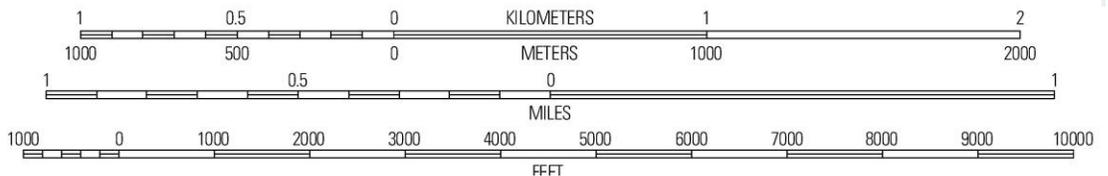


QUADRANGLE LOCATION

Paterson	Hackensack	Yonkers
Orange	Weehawken	Central Park
Elizabeth	Jersey City	Brooklyn

ADJOINING 7.5' QUADRANGLES

SCALE 1:24 000



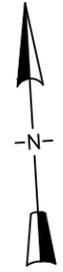
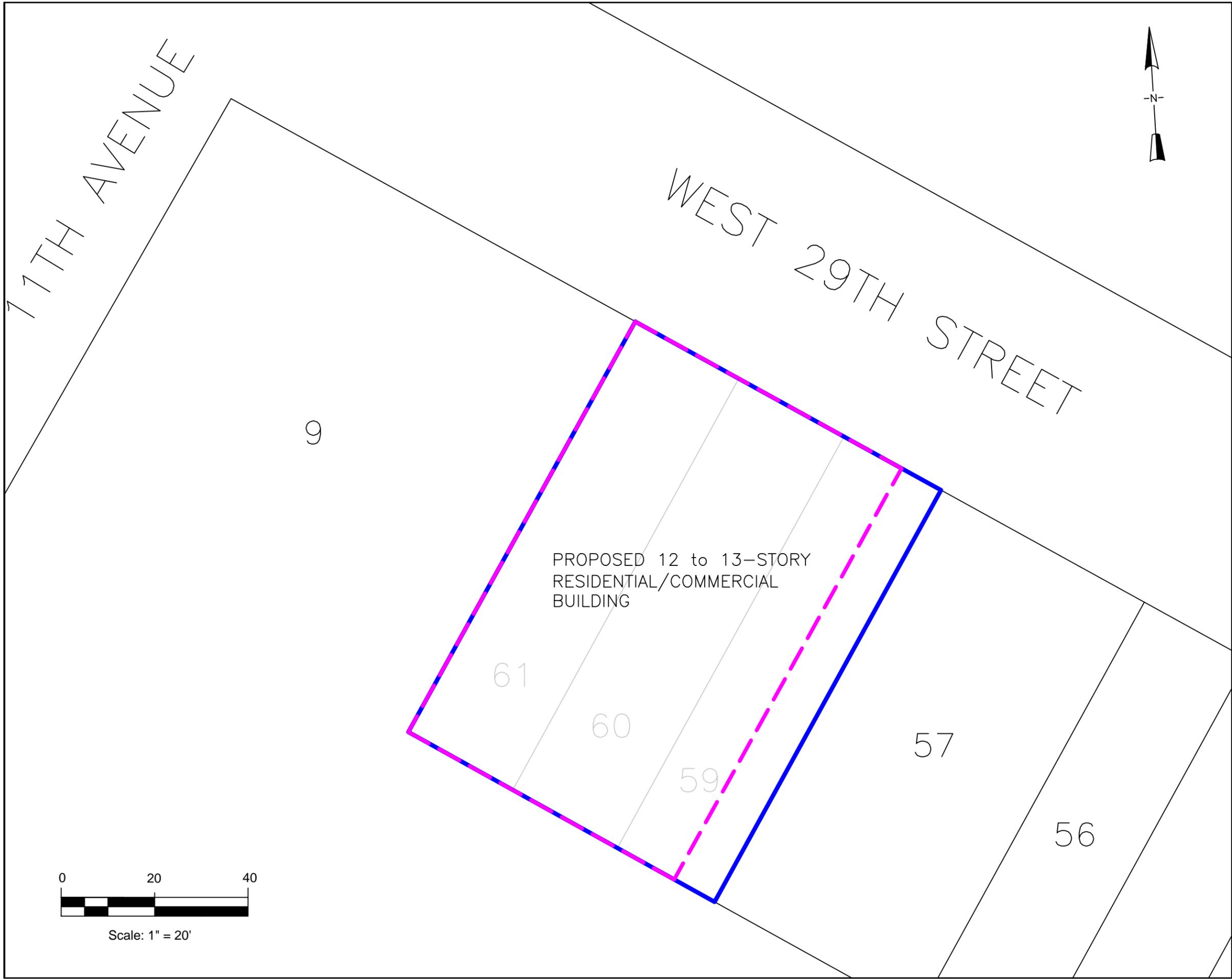
Weehawken Quadrangle, New Jersey-New York 7.5-Minute Series USGS Topographic Map. Obtained from United States Geological Survey topography compiled 2011

FIGURE 1: SITE LOCATION

**Fleming
Lee Shue**

SITE: 550 West 29th Street
New York, N.Y.

CLIENT: Tamarkin Co.



Environmental Management & Consulting
 158 West 29th Street, 9th Fl.
 New York, NY 10001

550 West 29th Street
 New York, NY

FIGURE 2

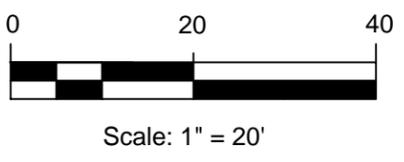
SITE LAYOUT

Date
December 2014

Project Number
10218-001-4

LEGEND

-  PROPOSED CELLAR FOOTPRINT
-  PROPOSED GROUND FLOOR FOOTPRINT/SITE BOUNDARY
-  LOT LINES



77TH AVENUE

WEST 29TH STREET

9

61

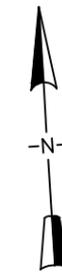
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57

56

10' CELLAR SETBACK



Environmental Management & Consulting

158 West 29th Street, 9th Fl.
New York, NY 10001

550 West 29th Street
New York, NY

FIGURE 3

PROPOSED END POINT SAMPLING PLAN

Date

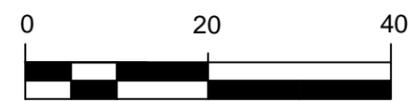
December 2014

Project Number

10218-001-4

LEGEND

-  PROJECT BOUNDARY
-  PROPOSED END POINT SAMPLING LOCATION
-  PROPOSED EXCAVATION TO APPROX. 15 FEET
-  PROPOSED EXCAVATION TO APPROX. 5 FEET



Scale: 1" = 20'

77TH AVENUE

WEST 29TH STREET

9

61

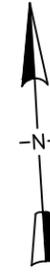
60

59

57

56

10' CELLAR SETBACK



Environmental Management & Consulting

158 West 29th Street, 9th Fl.
New York, NY 10001

550 West 29th Street
New York, NY

FIGURE 4

PROPOSED EXCAVATION PLAN

Date
December 2014

Project Number
10218-001-4

LEGEND

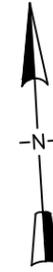
-  PROJECT BOUNDARY
-  PROPOSED EXCAVATION TO APPROX. 15 FEET
-  PROPOSED EXCAVATION TO APPROX. 5 FEET



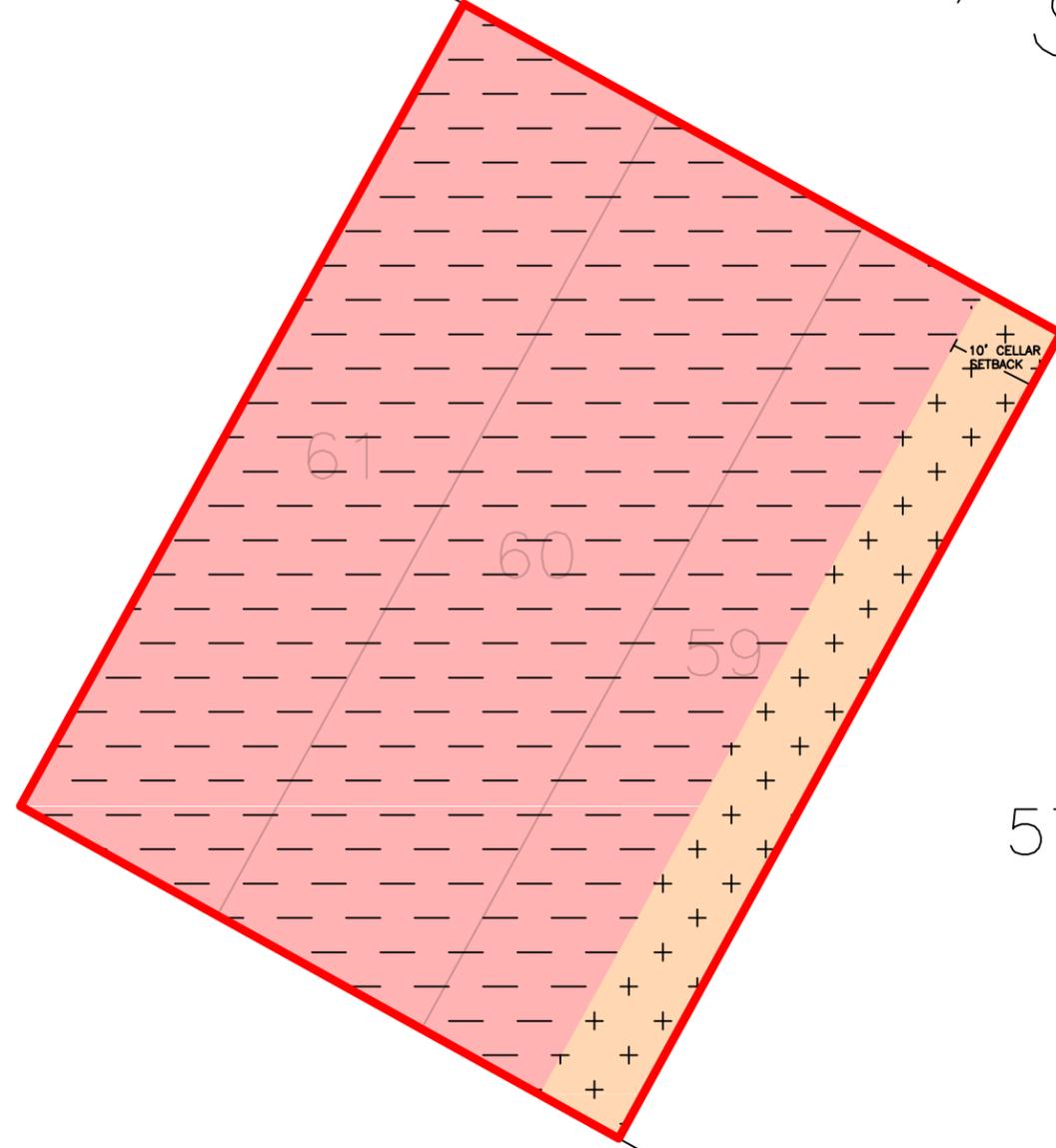
Scale: 1" = 20'

77TH AVENUE

WEST 29TH STREET



69



10' CELLAR RETRACK

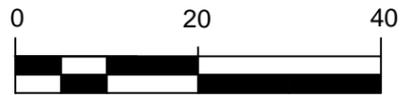
67

60

59

57

56



Scale: 1" = 20'



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New York, NY 10001

550 West 29th Street
New York, NY

FIGURE 5

COMPOSITE COVER SYSTEM

Date
December 2014

Project Number
10218-001-4

LEGEND

-  PROJECT BOUNDARY
-  PROPOSED EXCAVATION TO APPROX. 15 FEET
-  PROPOSED EXCAVATION TO APPROX. 5 FEET
-  CONCRETE CELLAR SLAB
-  CONCRETE SLAB ON GRADE

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Table 1 - Track 4 Site Specific Soil Cleanup Objectives
550 West 29th Street, New York, NY

Compound	Track 4 SCO (ppm)
Arsenic	24
Lead	1,000
Mercury	2.5
Total SVOCs	250

APPENDIX A

Construction Health and Safety Plan



**550 WEST 29TH STREET
546, 548 and 550 West 29th Street
New York, New York
Block 700, Lots 59, 60 and 61**

CONSTRUCTION HEALTH AND SAFETY PLAN

Prepared For:

550 West 29th Street, LLC
56 West 22nd Street, 5th Floor
New York, NY 10010

Submitted to:

New York City Office of Environmental Remediation
100 Gold Street, 2nd Floor
New York, NY 10038
OER Project Number 15EHAN008M

Prepared by:



*Environmental Management & Consulting
158 West 29th Street, 9th Floor
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AUGUST 2014

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III Heat Stress/Cold Stress and Related Illnesses
IV Construction Equipment Safety Rules

1.0 INTRODUCTION

Fleming-Lee Shue, Inc. (FLS) has prepared this Construction Health and Safety Plan (CHASP) on behalf of 550 West 29th Street, LLC. for the 550 West 29th Street Site (Site) located at 546, 548 and 550 West 29th Street, New York, New York. The Site is defined on the New York City Tax Map as Block 700, Lots 59, 60 and 61. A site location map is provided in Figure 1.

The purpose of this CHASP is to identify the real and potential hazards associated with environmental activities related to and conducted during the planned construction and to stipulate appropriate health and safety procedures, particularly where hazardous materials are potentially present. The procedures and guidelines contained in this document are intended to minimize exposure to chemical, physical and biological hazards that may be present in the soil, groundwater, or air and to reduce the potential for accidents and injuries.

This CHASP is based on the premise that accidents are preventable and that accident prevention is the responsibility of all individuals on the project team. Usually accidents are the result of dangerous actions, conditions and/or equipment. Therefore, the goal of this CHASP is to prevent all accidents by developing a sense of safety, health awareness, and safe work habits in field and construction personnel, and by ensuring that the safety requirements of this CHASP are fulfilled. Strict adherence to these health and safety guidelines will reduce, but not eliminate, the potential for injury on the sites.

The procedures described in this document were developed in accordance with the provisions of Occupational Safety and Health Administration (OSHA) rule 29 CFR 1910.120 and FLS' experience with similar projects. All Site workers must read and comprehend this generic CHASP before entering the construction area. The Health and Safety Officer (HSO) or designee will ensure that personnel have reviewed the CHASP and will provide an opportunity to ask health and safety questions during attendance at a pre-construction safety meeting. Field personnel will sign the acknowledgment form (Attachment I) maintained on-site at the construction office by the HSO. The recommended health and safety guidelines in this document may be modified, if warranted, by additional information obtained prior to, or during construction. The HSO will also maintain copies of pertinent health and safety records for all field personnel.

The Occupational Safety and Health Act (1970) requires:

- Employers shall furnish each employee with a place of employment free from recognized hazards that are causing or likely to cause death or serious physical harm.
- Employers must comply with occupational health and safety standards and rules, regulations and orders pursuant to the Act, that are applicable to company business and operations.
- All employees must comply with occupational health and safety standards and regulations under the Act, which are applicable to their actions and situations.
- Employees are encouraged to contact their immediate superior for information that will help them understand their responsibilities under the Act.

1.1 Site Development Plan

The Site is proposed to be redeveloped with a 12 to 13-story mixed use commercial and residential building. The layout of the proposed site development is presented in Figure 2. The current zoning designation is C6-2/West Chelsea District, which allows for mixed commercial and residential use. The first floor will contain retail space, a residential lobby and mechanical. The remaining floors will contain 24-25 residential condominium units. The building will be constructed with a cellar covering most of the Site that will contain mechanical equipment and residential amenities including laundry, storage and recreation space. The cellar footprint will be set back 10 feet from the eastern property boundary. The proposed excavation depth is approximately 15 feet below grade (ft. bg.) for the cellar footprint and 5 ft. bg. for the setback along the eastern property boundary. The depth-to-groundwater at the Site is approximately 9 ft. bg., so excavation below the groundwater table, with limited dewatering is anticipated. The footprint of the ground floor of the building will occupy the entire lot so there will be no grade-level open areas.

1.2 Site Description

The Site is located at 546, 548 and 550 West 29th Street in the Chelsea section of Manhattan, New York and is identified as Block 700 and Lot 59, 60, and 61 on the New York City Tax Map. These lots will be combined into a single tax lot as part of development. The Site location is depicted on Figure 1. The Site is 7,500-square feet and is bounded by West 29th Street to the north, a newly constructed residential building to the south and west, and a commercial warehouse to the east. A map of the site boundary with the proposed development layout is depicted in Figure 2. The Site buildings, which are all currently vacant, consist of the following: a 2-story building at 546 West 29th Street (Lot 59), a 1-story building at 548 West 29th Street (Lot 60) and a 3-story building with a cellar at 550 West 29th Street (Lot 61). The Site is registered in the NYSDEC Petroleum Bulk Storage database as Facility ID #2-611575 for one 275-gallon waste oil AST at Lot 60. This AST is no longer present at the Site. The Site is associated with closed NYSDEC Spill Case #1201778, which was assigned to Lot 60 on May 18, 2012.

1.3 Previous Site Investigation Results

The following environmental work plans and reports were developed for the Site:

- *Limited Phase I Environmental Inspection Report: 548 West 29th Street*, May 2012, prepared by Atlantic Environmental Solutions, Inc.
- *Ground Penetrating Radar Survey: 548 West 29th Street*, July 2012, prepared by Hydro Tech Environmental Contracting, Corp.
- *Phase I Environmental Site Assessment: 546 548 and 550 West 29th Street*, April 2014, prepared by IVI Assessment, Inc.

- *Geotechnical Report: 546 548 and 550 West 29th Street*, July 2014, prepared by Mueser Rutledge Consulting Engineers.
- *Remedial Investigation Work Plan, 546 548 and 550 West 29th Street*, July 2014, prepared by Fleming Lee-Shue, Inc.
- *Remedial Investigation Report, 546 548 and 550 West 29th Street*, August 2014, prepared by Fleming Lee-Shue, Inc.

The results of the August 2014 Remedial Investigation Report found that the depth to groundwater ranges from 9 to 9.5 ft. bg. The groundwater flow is generally from east-northeast to west-southwest. The depth to bedrock is ranges from approximately 25 ft. bg. in the northeast corner of the Site to approximately 50 ft. bg. in the southwest corner of the Site. The stratigraphy of the Site consists of 6 to 9 feet of urban fill underlain by 8 to 11 feet of brown sand with silt underlain by gray fine silt with clay. The laboratory analysis of the soil/fill samples identified semi-volatile organic compounds (SVOCs), pesticides and metals in both shallow and deep soil throughout the Site at concentrations that exceed the NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives (SCOs). Several SVOCs and metals were detected in the shallow and deep soil at concentrations exceeding the Restricted Residential SCOs. The presence of SVOCs, pesticides and metals in the soil at the Site are indicative of typical urban fill. The laboratory analysis of the groundwater samples identified volatile organic compounds (VOCs) and dissolved metals present in the groundwater at concentrations that exceed the NYSDEC groundwater quality standards. The VOCs that were detected were only slightly above the respective standards and are not indicative of an onsite source. The dissolved metals that were detected in the groundwater are likely related to urban fill material and historic industrial operations in the neighborhood. The laboratory analysis of the soil vapor samples identified several petroleum-related and chlorinated VOCs in the soil vapor below the building slabs. According to the matrices provided in the NYSDOH Final Guidance for Evaluating Soil Vapor Intrusion, the concentrations do not warrant monitoring or mitigation.

2.0 POTENTIAL CHEMICAL AND PHYSICAL HAZARDS

2.1 Potential Chemical Hazards

This CHASP focuses on the following chemicals of concern:

- SVOCs
 - PAHs
- Metals
 - Arsenic
 - Barium
 - Cadmium
 - Copper
 - Lead
 - Mercury
 - Silver
 - Zinc
- Pesticides
 - 4,4'-DDT

Attachment II lists the Recognized and Suspected Health Hazards and permissible exposure limits for the chemicals known to be present at the Site. Material Safety Data Sheets (MSDS) for these chemicals are also included in Attachment II. The chemical hazards will be minimized by limiting exposure of personnel to hazardous conditions and by the use of personnel protective equipment (PPE).

2.2 Physical Hazards

Physical hazards potentially present at the site include, but are not limited to, the following:

- Slips, trips, and falls (uneven terrain, excavations, and slippery surfaces) hazards;
- Environmental (heat/cold) stress;
- Noise hazards; and
- Use of heavy equipment

Physical hazards associated with lockout/tag-out, scaffolds, confined spaces and other construction equipment are addressed in Sections 3.9 and 4 of this CHASP. A discussion of heat stress and cold stress and related illnesses is provided in Attachment III.

2.3 Biological Hazards

General biological hazards present at the site include, but are not limited to, the following:

- Bites or stings from insects (particularly ticks) resulting in skin inflammation, disease, or allergic response; and

- Allergens and toxins from plants and animals, producing dermatitis, rhinitis, or asthma.

3.0 HEALTH AND SAFETY PROTOCOL

3.1 Site/Work Hazard Evaluation

Upon review of contaminant levels, physical and biological hazards, exposure routes and the nature of the construction tasks, it has been determined that Level D protection will be used during construction activities. Personal protection levels are described in more detail in Section 3.6 and air monitoring is discussed in Section 5.

3.2 Project Team Organization

All personnel who participate in field activities will be required to attend a Health and Safety meeting prior to the commencement of field activities. The project team organization is shown on Table 1, and the roles are described below.

Health and Safety Officer (HSO)

- Administers all aspects of the occupational health and safety program;
- Develops programs and technical guidance to identify and remove physical, chemical, and biological hazards from facilities, operations, and sites;
- Assists management and supervisors in the health and safety training of employees;
- Conducts inspections to identify unhealthy or unsafe conditions or work practices;
- Investigates all accidents and takes action to eliminate accident causes;
- Monitors to determine the degree of hazard;
- Determines the protection levels and equipment required to ensure the safety of personnel;
- Evaluates on-site conditions (i.e., weather and chemical hazard information) and recommending to the project manager and/or the field coordinator, modifications to the work plan and personnel protection levels;
- Monitors performance of all personnel to ensure compliance with the required safety procedures;
- Ensures that all personnel have been trained in proper site-safety procedures including the use of PPE, and have read and signed the Acknowledgment Form (Attachment I);
- Conducts daily briefings as necessary;
- Halts work if necessary;
- Ensures strict adherence to the Site CHASP; and

- Reviews personnel medical monitoring participation.

Project Manager

- Familiar with health and safety regulations related to area of responsibility.
- Directs and coordinates health and safety activities within area of responsibility.
- Ensures arrangements for prompt medical attention in case of serious injury
- Requires all employees supervised to use individual protective equipment and safety devices.
- Ensures that safety equipment is available, maintained, used, and stored correctly.
- Instructs and trains all persons within area of responsibility in health and safety requirements.
- Conducts frequent and regular health and safety inspections of work area. Directs correction of unsafe conditions.
- Conducts weekly safety briefings with all supervisors and/or workers.
- Requires all subcontractors and subcontractor personnel to comply with health and safety regulations.

All Employees

The minimum personnel qualifications for each individual participating in field activities are:

- OSHA-specific medicals including, but not limited to, audiometric testing under the hearing conservation program and medical approval for the use of respirators;
- Participation in the FLS Occupational Health Monitoring Program;
- Successful completion of the 40-hour OSHA health and safety training for hazardous material sites (29 CFR 1910.120[e][3][i]) and valid/up-to-date 8-hour refresher training (29 CFR 1910.120[e][4]);
- Additionally, it is strongly recommended that all field personnel be trained in first aid and Cardio-Pulmonary Resuscitation (CPR);
- Be familiar with and comply with proper health and safety practices;
- Use the required safety devices and proper personal protective safety equipment; and
- Notify HSO/supervisor immediately of unsafe conditions/acts, accidents, and injuries.

3.3 Training

Knowledge of the safety rules supplemented by compliance is essential to safety. New employees will be provided orientation training and will be furnished information and literature covering the company health and safety policies, rules, and procedures. This orientation training must be provided prior to the employee's visit to the Site.

All employees will have successfully completed the 40-hour OSHA health and safety training for hazardous material sites (29 CFR 1910.120[e][3][i]) and valid/up-to-date 8- hour refresher training (29 CFR 1910.120[e][4]).

Employees must read the CHASP and project-specific Work Plan, which contains the applicable regulations/standards for their job.

Prior to beginning work on-Site, and weekly thereafter, the HSO will lead safety training sessions and/or "tailgate" training meetings. These meetings will be conducted to provide information and training on new equipment, new procedures, new chemicals, refresher/remedial training in specific areas, or meet annual requirements. Such training may be held in conjunction with the safety briefings/meetings addressed elsewhere in this program.

If necessary, the HSO will ensure that employees are scheduled and provided specialized training as required. Examples of specified training include (but are not limited to):

- Safe handling/use of flammables, poisons, or toxics;
- Respirator care/use;
- Hazard communication (hazardous chemicals);
- Slip, trip and fall hazards and fall protection;
- Blood-borne Pathogens (Non-Medical).

Specialized training will be documented in the employees' personnel records and/or in a master training record.

3.4 Subcontractor Compliance

The provisions of these health and safety responsibilities apply to subcontractors and their employees working for FLS. Failure to fulfill this requirement is a failure to meet the conditions of the contract.

3.5 Personal Hygiene

Eating, drinking and the use of tobacco products in the work area are prohibited. The use by site personnel of alcohol or other non-prescription drugs that could impair the ability to function at the work site is prohibited. The use of some prescription drugs may impair the ability to function and can create safety problems on-site. Field personnel taking prescription medication should alert the HSO in case of an emergency. Beards or facial hair that could interfere with the use of a respirator are not permitted. Dermal contact with groundwater should be avoided. This includes avoiding walking through puddles, pools, and mud, sitting

or leaning on or against drums, equipment, or on the ground. Field personnel should wash their hands before eating, smoking, using the toilet, etc. Field personnel should wash their hands and face and shower (daily) as soon as possible after leaving the site.

3.6 Levels of Personal Protection

Personal protective equipment (PPE) must be worn as required for each job in all operations where there is an exposure to hazardous conditions.

3.6.1 Level D

Level D applies to work in areas where the possibility of contact with potentially contaminated groundwater and soil exists. The protective equipment required for Level D includes, but is not limited to, the following:

- Work clothes or coveralls;
- Safety boots, with steel toe;
- Safety glasses;
- Hard hat;
- Reflective vest;
- Disposable latex gloves;
- Hearing protection, to be used as needed

3.6.2 Level C

Level C is selected only when the type of material and the concentration are known, and pose a moderate level of respiratory risk to the site worker. Level C is required when PID readings indicate a consistent level of 5 ppm or above of total volatile organics in the worker breathing zone. Level C protection will include, but is not limited to, the following:

- Protective clothing and other equipment required for Level D;
- Full-face air purifying respirator (APR) with high efficiency particulate/organic vapor cartridges (ultra-twin with GMCH cartridges);
- Saranex-coated disposable coveralls with hoods; and
- Boot covers.

3.7 General Workplace Safety Rules

- Report unsafe conditions, accidents, injuries, or incidents to the HSO and Project Manager.
- Use eye and/or face protection where there is danger from flying objects or particles, (such as when grinding, chipping, burning and welding, etc.) or from hazardous chemical splashes.
- Dress properly. Loose clothing and jewelry shall not be worn.

- Keep all equipment in safe working condition. Never use defective tools or equipment.
- Report any defective tools or equipment to immediate supervisor.
- Properly care for and be responsible for all PPE.
- Do not leave materials in aisles, walkways, stairways, work areas, roadways, or other points of egress.
- Practice good housekeeping at all times.
- Training on equipment is required prior to unsupervised operation.
- During work, pause every few minutes and assess surrounding conditions.
- Crossing highways and major roadways is not recommended. Expect movement of cars and buses at any time along any roadway, regardless of traffic signals, stop signs, yield signs, etc.
- When walking on right-of-ways or road-shoulders, keep a sharp lookout in both directions.
- For personal safety, be cognizant of your surroundings and ensure that equipment is properly secured.

3.8 Housekeeping

- Proper housekeeping is the foundation for a safe work environment. It definitely helps prevent accidents and fires, as well as creating a professional appearance in the work area.
- Material will be piled or stored in a stable manner so that it will not be subject to falling.
- Combustible scrap, debris, and garbage shall be removed from the work area at frequent and regular intervals.
- Stairways, walkways, exit doors, in front of electrical panels, or access to fire fighting equipment will be kept clear of materials, supplies, trash, and debris.

3.9 Fire Prevention

- All firefighting equipment shall be conspicuously located, accessible, and inspected periodically, and maintained in operating condition. An annual service check and monthly visual inspections are required for fire extinguisher.
- All employees must know the location of firefighting equipment in the work area and have knowledge of its use and application.

3.10 Industrial Hygiene and Occupational Health

- Toilet facilities shall be provided as required for the number of workers.
- A first aid kit and portable eyewash station shall be kept on site.
- An adequate supply of potable water shall be provided.
- The use of a common drinking cup is prohibited.
- When no medical facility is reasonably accessible (time and distance) to the worksite, a person who has a valid certificate of first aid training will be available at the worksite to render first aid.
- Employees must be protected against exposure to hazardous noise levels by controlling exposure or by use of proper PPE.

3.11 Construction Equipment Safety Rules

A discussion of health and safety issues related FLS employees performing work in the vicinity of common construction elements, such as electrical; compressed gas cylinders; ladders; aerial lifts; cranes; welding and brazing; tools; safety railings and other fall protection; scaffolds; excavations and trenches; motor vehicles and mechanized equipment, is provided in Attachment IV.

4.0 INDIVIDUAL HEALTH AND SAFETY PROGRAMS LISTINGS

OSHA standards specify various individual programs that may be applicable to work performed on construction sites. Highlights of these programs are provided below, and specific written programs or procedures may be included into this written program, attached, or developed separately.

4.1 Hazard Communication Program

If employees are exposed to or work with hazardous chemicals at the job site, this program is required. Important elements of the written program are required to include a master listing of chemicals; maintaining material safety data sheets on each chemical; and training of employees on the program, the chemicals exposed to, and material safety data sheets.

4.2 Confined Space Entry Program

If employees enter a confined space that contains or has the potential to contain an atmospheric or physical hazard, this program is required. Either the ANSI Z117.1-1989 Safety Requirements for Confined Spaces program or the OSHA General Industry Permit Require Confined Spaces program must be used as guidance to develop the company's program. Primary elements of the program are identification of applicable confined spaces, testing/monitoring, control or elimination of hazards, protective equipment, entry authorization, attendants, training, and rescue. No FLS employee is authorized to enter a confined space without the above training and notification to the project manager or HSO.

4.3 Respiratory Protection Program

If employees are exposed to hazardous/toxic chemical, paint or other gases, vapors, fumes, dusts, or mists above the permissible exposure limit, and/or employees wear respirators, this program is required. Program elements are written program for the selection, maintenance, care, and use of respirators; fit testing, training, and employee evaluation for use.

4.4 Occupational Noise Exposure/Hearing Conservation Program

If employees are exposed to noise levels above the permissible noise exposures, protection against the effects of noise and an effective hearing conservation program are required. Such a program would include elements such as written program, noise monitoring, hearing evaluations and follow-on testing, personal protective equipment (hearing protection), and maintenance of medical records.

4.5 Emergency Response Plan

If employees are engaged in emergency response to a hazardous substance/chemical release, an emergency response plan must be developed and implemented to handle anticipated emergencies. Program elements include a written response plan, identification and training of responding employees, medical surveillance and consultation, and post response operations.

4.6 Asbestos Control Program

If employees are exposed to asbestos fibers during construction activities, then an initial monitoring for asbestos exposure must be made. If the monitoring results are above the permissible exposure limit (PEL), this program is required. Program elements include regulated areas, exposure monitoring, medical surveillance and records maintenance, engineering controls, personnel protective equipment, and training.

4.7 Lead Exposure Program

If employees are exposed to lead during construction activities, then an initial monitoring for lead exposure must be made. If the monitoring results are above the permissible exposure limit (PEL), this program is required. Program elements include regulated areas, exposure monitoring, medical surveillance and records maintenance, engineering controls, personnel protective equipment, and training.

4.8 Dust Suppression Plan

The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

1. Applying water on haul roads.
2. Wetting equipment and excavation faces.
3. Spraying water on buckets during excavation and dumping.
4. Hauling materials in properly sealed or watertight containers.
5. Restricting vehicle speeds to 10 mph.
6. Covering excavated areas and material after excavation activity ceases.

7. Reducing the excavation size and/or number of excavations.
8. Applying a dust suppressant, such as calcium chloride, in high vehicle traffic areas.

To evaluate the effectiveness of the dust suppression measures, air monitoring utilizing real-time dust-monitoring equipment will be performed. The requirements for air monitoring during post-remediation soil disturbance activities are presented in Section 5.

5.0 WORK AREA AIR MONITORING

In addition to the worker breathing zone air monitoring described in Section 3.1, air quality at the work area will also be monitored. During soil excavation, particulate monitoring will be performed using a real-time particulate monitor that will monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

Object to be measured: Dust, Mists, Aerosols

Size range: <0.1 to 10 microns

Sensitivity: 0.001 mg/m³

Range: 0.001 to 10 mg/m³

Overall Accuracy: ±10% as compared to gravimetric analysis of stearic acid or reference dust. Particulate levels will be monitored immediately downwind at the working site and integrated over a period not to exceed 15 minutes. The action level will be established at 150 ug/m³ over the integrated period not to exceed 15 minutes.

6.0 DECONTAMINATION

6.1 Site/Work Area Organization

A typical site work area will consist of an exclusion zone where the actual field activity will take place; a decontamination zone; and a command post located outside the decontamination area and exclusion zones.

Levels of personal protection in the exclusion zone will vary depending on air monitoring data, and will be specified by the Site HSO.

6.2 Personnel Decontamination

Decontamination (decon) of personnel consists of physically removing soil or contaminants using the correct procedures for washing and removal of PPE. Decon will take place in the designated decontamination zone using the following steps, if applicable:

- Soap and potable water wash and potable water rinse of gloves;
- Tyvek removal;
- Glove removal; and
- Field washes of hands and face.

7.0 EMERGENCY AND CONTINGENCY PLAN

Emergency communications will be maintained during all on-site field activities. The emergency route to the hospital is depicted on Figure 2 and emergency contacts and their phone numbers are presented in Table 2.

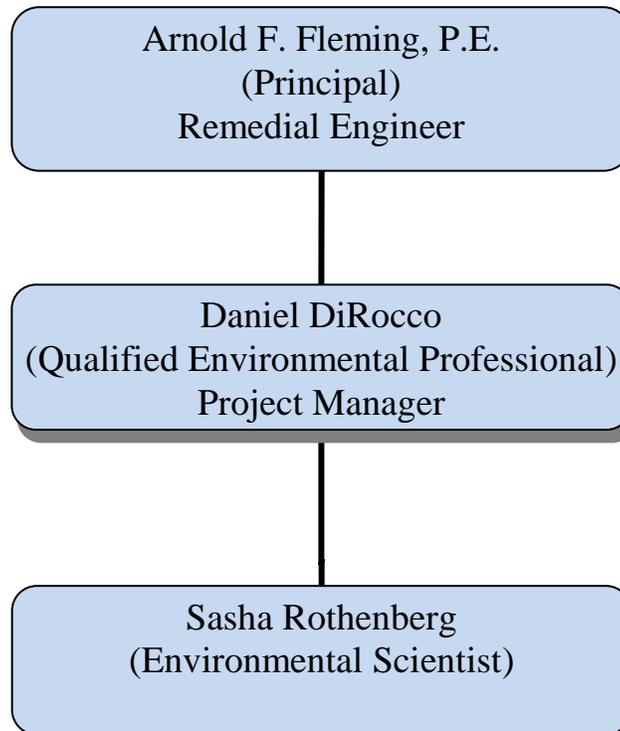
A first aid kit will be available on-site at all times for any minor on-site injuries. Emergency medical assistance or ambulance can be reached by calling 911 for more severe injuries.

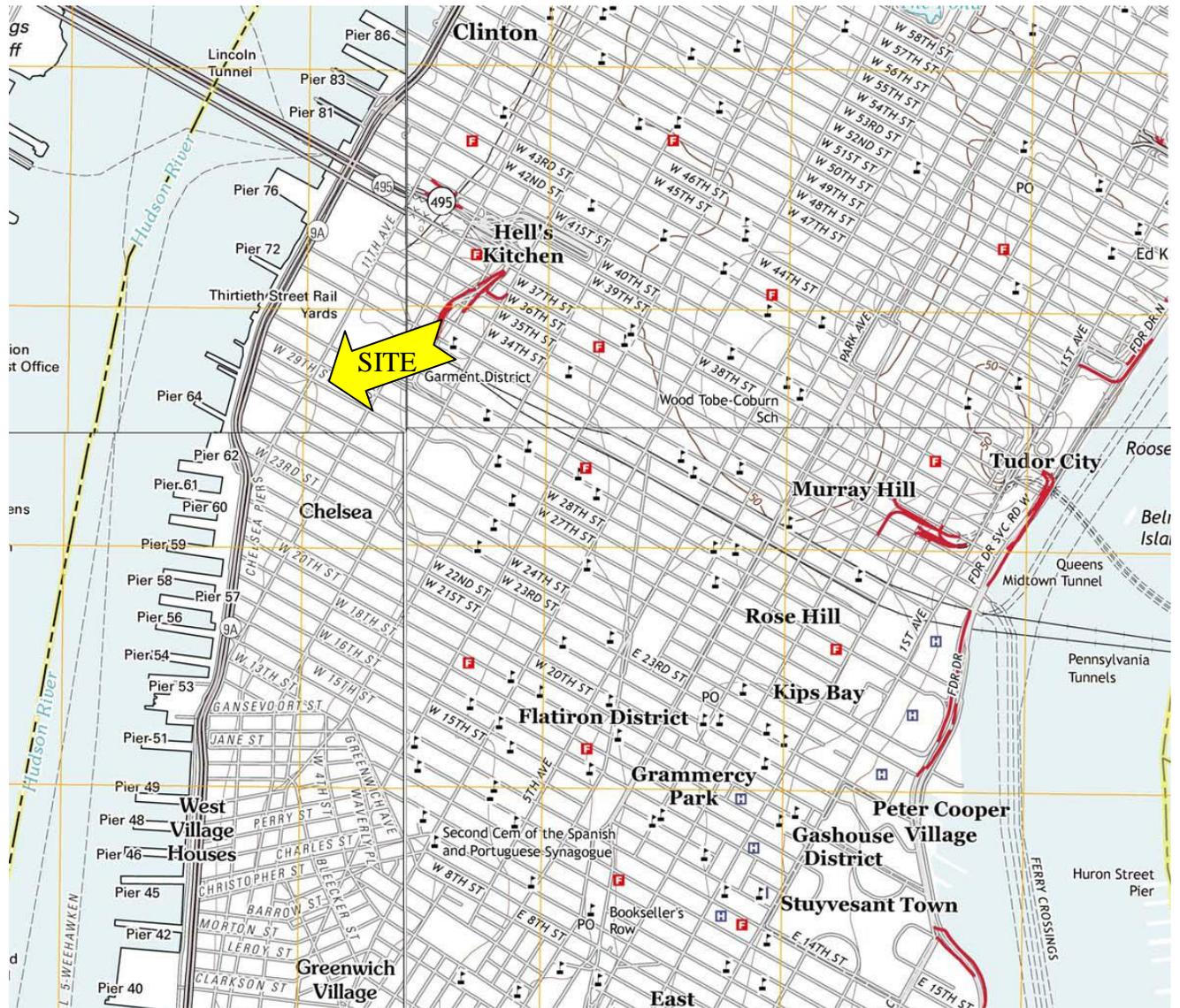
All OSHA recordable injuries and illnesses will be reported using OSHA Form 301 (Attachment V).

TABLE 1: EMERGENCY CONTACTS

Company	Individual Name	Title	Contact Number
FLS	Peter Helseth	Director SS Officer	(212) 675-3225 (office) (914) 329-6449 (cell)
550 West 29 th Street LLC	Lan My Do	Client	(212) 930-9431 (office)
NYC OER	Samantha Morris	Project Manager	(212) 788-3220 (office)
Ambulance, Fire, & Police Department			911
Spill Hotline			(800) 457-7362

TABLE 2: PROJECT TEAM ORGANIZATION



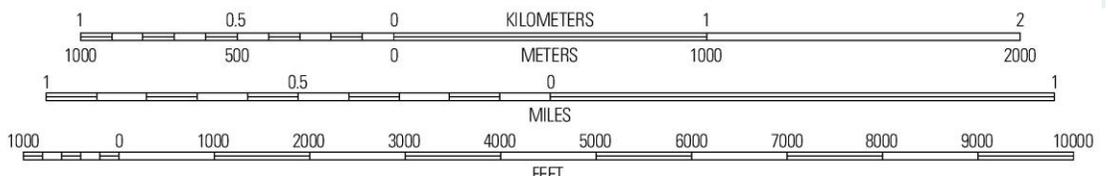


QUADRANGLE LOCATION

Paterson	Hackensack	Yonkers
Orange	Weehawken	Central Park
Elizabeth	Jersey City	Brooklyn

ADJOINING 7.5' QUADRANGLES

SCALE 1:24 000



Weehawken Quadrangle, New Jersey-New York 7.5-Minute Series USGS Topographic Map. Obtained from United States Geological Survey topography compiled 2011

FIGURE 1: SITE LOCATION

**Fleming
Lee Shue**

SITE: 550 West 29th Street
New York, N.Y.

CLIENT: Tamarkin Co.

St. Luke's Roosevelt Hospital
1000 Tenth Avenue
New York, NY 10019



1. Head northwest on West 29th Street toward 11th Avenue
2. Take the first left onto 11th Avenue
3. Take the first left onto West 28th Street
4. Take the first left onto 10th Avenue
5. Continue 1.5 miles and hospital will be on the right

Total time to destination, about 7 mins. (approximately 1.8 miles)



FIGURE 2: ROUTE TO THE ST. LUKE'S ROOSEVELT HOSPITAL

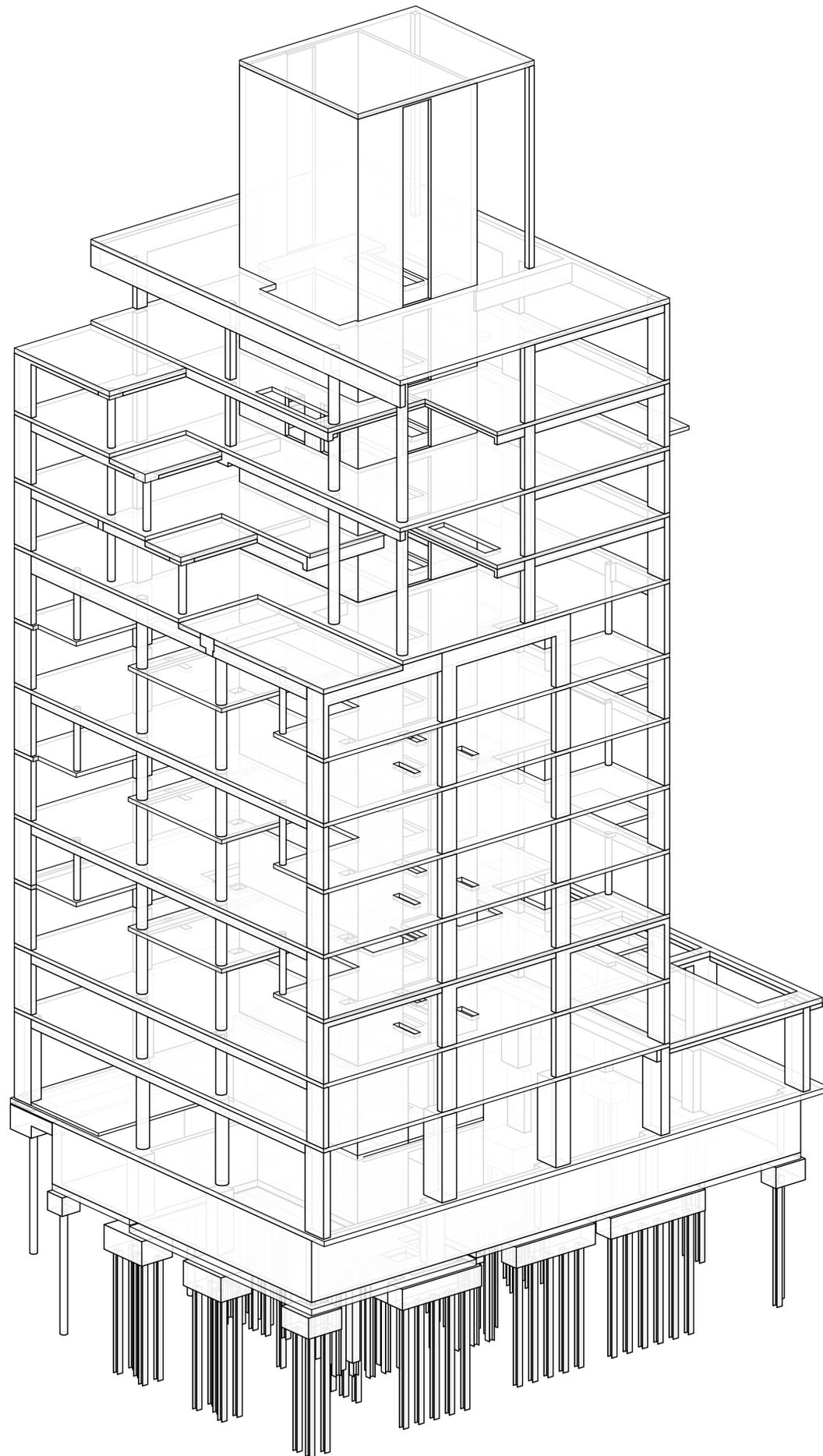
SITE: 550 West 29th Street, New York, NY
CLIENT: Tamarkin Co.

Environmental Management & Consulting, 158 West 29th Street, New York, NY 10001

APPENDIX B

Proposed Development Plans

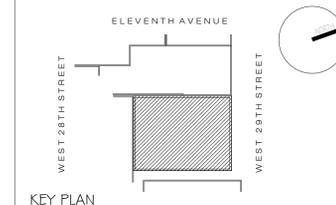




Sheet Number	Sheet Name
S-000	COVER SHEET
S-001	GENERAL NOTES
S-002	GENERAL NOTES
FO-000	SITE PLAN
FO-100	FOUNDATION PLAN
FO-200	TYPICAL PILE AND CAISSON CAP DETAILS
FO-201	SPECIAL PILE CAP DETAILS
FO-202	TYPICAL CAISSON DETAILS
FO-203	TYPICAL FOUNDATION DETAILS
FO-204	TYPICAL GRADE BEAM DETAILS
FO-210	REINF DEVELOPMENT AND SPLICE TABLES
FO-300	FOUNDATION SECTIONS
FO-301	FOUNDATION SECTIONS
FO-302	FOUNDATION SECTIONS
FO-303	FOUNDATION SECTIONS
S-010	1ST FLOOR FRAMING PLAN
S-020	2ND FLOOR FRAMING PLAN
S-030	3RD FLOOR FRAMING PLAN
S-040	4TH, 6TH, AND 8TH FLOORS FRAMING PLAN
S-050	5TH AND 7TH FLOORS FRAMING PLAN
S-090	9TH FLOOR FRAMING PLAN
S-100	10TH FLOOR FRAMING PLAN
S-110	11TH FLOOR FRAMING PLAN
S-120	12TH FLOOR FRAMING PLAN
S-130	MAIN ROOF FRAMING PLAN
S-140	BULKHEAD FRAMING PLAN
S-910	COLUMN SCHEDULE
S-915	TYPICAL COLUMN DETAILS
S-916	TYPICAL COLUMN DETAILS
S-930	TYPICAL SHEAR WALL & LINK BEAM DETAILS
S-931	TYPICAL SHEAR WALL & LINK BEAM DETAILS
S-932	TYPICAL SHEAR WALL & LINK BEAM DETAILS
S-933	SHEAR WALL REINF DETAILS
S-940	TYPICAL CONCRETE DETAILS
S-941	TYPICAL CONCRETE DETAILS
S-942	TYPICAL CONCRETE DETAILS
S-943	TYPICAL CONCRETE DETAILS
S-980	TYPICAL STAIR DETAILS

NOTES

No.	Date	Revision
0	10-03-14	NYCTA REVIEW



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PROJECT
550W 29TH
 550 WEST 29TH STREET
 New York, NY

COVER SHEET

SEAL & SIG.	DATE: 10-03-2014
	PROJECT No.: 14082.00
	SCALE:
	DWG NO.:
	S-000.00
	CADD FILE NO.:
	XX

GENERAL NOTES:

- All work shall conform to the requirements of the 2014 New York City Building Code.
- The Contractor shall verify all dimensions and conditions in the field prior to commencing work. Where dimensions and elevations of existing construction could affect the new construction, it is the Contractor's responsibility to make field measurements in time for their incorporation in the Shop Drawings. The Architect and Engineer shall be notified of any discrepancies that may exist. See architectural drawings for floor elevations, slopes, locations of depressed floor areas, and floor openings. The Contractor shall compare the structural drawings with the architectural drawings and report any discrepancy to the Architect and Engineer prior to construction.
- Principal openings through the framing are shown on these drawings. The General Contractor shall examine the structural, architectural and mechanical drawings for the required openings and shall verify size and location of all openings with the Mechanical Contractor. Providing all openings required by the Mechanical, Electrical, or Plumbing trades shall be a part of the General Contract, whether or not shown in the structural drawings. Any deviation from the openings shown on the structural drawings shall be brought to the Engineer's attention for review.
- Furnish and place all supports, temporary and permanent, whether shoring, bracing, needling, underpinning, or sheet piling, necessary to brace existing walls or framing to remain, so that no horizontal or vertical settlement occurs to the existing structures. Temporary supports shall be maintained in place until permanent supports are installed. Design of these supports shall be by a registered Structural Engineer in the state of New York in the employ of the Contractor.
- Alternate connection details may be approved if such details are submitted to the Engineer for review and acceptance is granted. However, the Engineer shall be the sole judge of acceptability and the Contractor's bid shall anticipate the use of those specific details shown on the drawings. The Contractor shall retain a registered Structural Engineer to be responsible for the design of any alternate details which he proposes.
- Work not indicated on a part of the drawings but reasonably implied to be similar to that shown at corresponding places, shall be included in the Contractor's work.
- The Contractor shall be completely responsible for the safety of adjacent structures, property, his workmen, and the public, as affected by the construction of this project.
- All Contractors are required to examine the drawings and specifications carefully, visit the site and fully inform themselves as to all existing conditions and limitations, prior to agreeing to perform the work. Failure to visit the site and familiarize themselves with the existing conditions and limitations will in no way relieve the Contractor from furnishing any materials or performing any work in accordance with drawings and specifications without additional cost to the Owner.
- Structural drawings may represent construction with a reference scale. Due to the inherent process of drawing development and presentation not all work may be shown "exact" in that scale. Do not "scale" drawings to obtain any missing information or to interpret any information not specifically dimensioned for "exact" detailing or construction purposes.
- The Contract Documents represent final conditions. Stability of the structure during construction and means and methods that impose temporary loading conditions on the incomplete structure is the sole responsibility of the General Contractor. This responsibility includes, but is not limited to, the design and furnish of any temporary supports, shoring, and/or bracing required for the safety and stability of the structure during construction.

DESIGN LOADS:

1.ASCE 7-10 AND ASCE 7-05 Occupancy category: II

2.Uniform Superimposed Dead Loads and Live Loads:

Loading Schedule (PSF)		
Occupancy	Superimposed Dead Load (Partitions, finishes, fill, ceiling, etc)	Live Load
Roof - Bulkhead	35	40
Roof - Mechanical	35	75 or actual weight of Mech Equip
Roof - Amenity	50	100
Parking	15	100
Amenity - Public Spaces	35	100
Residential	16	40
Retail	30	100
Lobby	30	100

3.Concentrated Live Loads:
Floors have been designed to support the uniformly distributed live loads prescribed in (2) above, or the following concentrated loads, whichever produces the greater stress. All concentrated loads above have been assumed to be non-concurrent with uniform live loads.

LOCATION **CONCENTRATED LOAD**

Elevator machine room gratings (on 2.0 inches square)	300 lbs.
Floor areas and roofs with concrete (on 30 inches square)	2000 lbs.
Hatches, skylight ribs, and accessible ceilings (on 1.0 inch square)	200 lbs.
Stair treads (on 2.0 inches square)	300 lbs.
Roofs w/o concrete (on 6 inches square)	300 lbs.

4. Live Load Reduction:
For design live loads of 100 psf or less: Except for places of public assembly, floors of passenger car garages, and roofs, a structural member having a tributary area of K A that is greater than 400 square feet, may be designed for a reduced live load, L, as follows:

$$L = L_0(0.25 + \sqrt{15/K_A})$$

where
 L_0 = basic design live load
 A_T = loaded area tributary to the member, square feet
 K_A = live load element factor as follows:
 K_A = 4 for interior columns and exterior columns without cantilever slabs
 K_A = 3 for edge columns with cantilever slabs
 K_A = 2 for corner columns with cantilever slabs, edge beams without cantilever slabs, and interior beams
 K_A = 1 for all others

L shall not be less than 0.50L for members supporting one floor and not less than 0.40L for members supporting two or more floors.

Places of public assembly, passenger car garages, and design live loads greater than 100 psf: for members supporting load from more than one floor may be designed for a reduced live load equal to 0.80L but shall not be less than L as calculated above.

5. Wind Loads:
Basic Wind Speed (3-Second gust) = 93 mph (MRI = 50 years)
Wind Importance factor, I_w = 1.0
Wind Exposure = C
Design wind pressures for main wind force resisting system in accordance with ASCE 7-05 Section 6

6. Earthquake Loads:
Seismic importance factor, I = 1.0
Spectral response acceleration at short periods, S_s = 0.281
Spectral response acceleration at 1-second period, S_1 = 0.073
Long-Period Transitional Period, T = 6sec.
Site class = E
Design spectral response acceleration at short periods, S_{ds} = 0.450
Design spectral response acceleration at 1-second period, S_{d1} = 0.170
Seismic design category = C
Basic Seismic force resisting system = Ordinary Reinforced Concrete Shear Walls (N-S AND E-W DIRECTION)
Seismic Base Shear = 386k (E-W direction)
= 259k (N-S direction)
Seismic response coefficient, C = 0.0276 (E-W direction)
= 0.0184 (N-S direction)
Response Modification Coefficient = 5 (X direction)
= 5 (Y direction)
Analysis procedure = Modal Response Spectrum

MASONRY:

- All masonry work shall conform to the Building Code Requirements of Masonry Structures' ACI 530-08.
- The compressive strength of the masonry, f_m , shall be at least 1800 psi. Unless otherwise approved by the Structural Engineer on the basis of prism testing the components of the masonry shall have compressive strengths as given below: 2000psi.
- All concrete masonry units (CMU) shall conform to ASTM C90, grade N-1, with an individual compressive strength of 2400 psi.
- Mortar for block wall construction shall be Type M or S conforming to ASTM C270.
- Grout for piers and block walls shall conform to ASTM C476 with a minimum compressive strength of 1800psi determined in accordance with the provisions of ASTM C1019.
- Reinforcing bars shall conform to ASTM A615, Grade 60, except bars to be welded shall conform to ASTM A706.
- Wire for joint reinforcing shall conform to ASTM A82, yield point = 70 ksi (min.).
- Unless noted otherwise provide minimum reinforcing per the Minimum Reinforcing Table.
- Provide bond beams with (2)-#5 continuous, at the top of parapets, at each floor level, and where shown on the drawings.
- Unless noted otherwise on plans, provide the following additional vertical reinforcement in the cell immediately adjacent to each side of a masonry opening and in the cell of discontinuous walls. These bars are to extend full height of the wall or in the case of masonry openings at multi-story walls, from story to level above to story level below the opening. For 6" and 8" CMU Walls provide (2)-#5. For 10" and 12" CMU Walls provide (2)-#6.
- Extend additional reinforcement a minimum of 36 bar diameters beyond the opening.
- The minimum length of lap for reinforcing bars embedded in grout is 48 bar diameters, unless shown otherwise on the drawings.
- Place reinforcing bars before grouting. Place grout in lifts not exceeding 5 feet. Consolidate each lift by mechanical vibration. The next lift of the pour may be made after the initial water loss and reconsolidation of the prior lift, while it is still plastic.
- Properly secure reinforcing bars to maintain the positions indicated on the drawings. Bars to be located in center of cells unless otherwise noted.
- All CMU shall be braced during construction for the governing code lateral design loads until permanent restraints have been installed.
- The following steps are to be followed when laying masonry in the temperatures stated below:

MINIMUM REINFORCING MASONRY TABLE

VERTICAL			HORIZONTAL
6" and 8" CMU: <8' High #4@24"	8'-12' High #4@32"	>12' High #5@48"	6" and 8" CMU: #9 Dur-o-wall Ladur ((2)-W1.7 wires) @16"o.c.
10" and 12" CMU: <8' High #4@24"	8'-12' High #5@32"	>12' High #6@32"	10" and 12" CMU: 3/16" Dur-o-wall Ladur ((2)-W1.7 wires) @16"o.c.

Cold Weather Masonry Construction	
Mean daily air temperature	Instructions
40° - 32° F	Heat mixing water or aggregate to 70° F. Protect masonry from rain or snow for 24 hours.
32° - 20° F	Heat mixing water and aggregate to 70° F. Provide wind breaks for wind velocity in excess of 15 m.p.h. Cover masonry with insulating blankets for 24 hours and provide heat sources on both sides of masonry construction.
Below 20° F	Heat mixing water and aggregate to 70° F. Provide enclosures and heat to maintain 40° minimum temperature. Temperature of masonry units must be 40° F minimum when laid. Maintain masonry above 40° F for 24 hours by enclosures and supplemental heat.

FOUNDATIONS:

- The foundation design is based on recommendations contained in the Geotechnical Report by the Mueser Rutledge Consulting Engineers dated July 28, 2014. This report is available to bidding Contractors for their information, however their attention is directed to the limitations of the report described therein.
- Individual pile plan locations to submit to the Structural Engineer for review prior to fabrication of reinforcing for pile caps. Pile caps with piles driven out of plan tolerance will require adjustment to cap size and reinforcing. Adjustments may also be required at adjacent tie beams and grade beams. Plan dimensions shown for pile caps on represent minimum requirements. structural drawings.
- No concrete shall be placed in water or on frozen ground.
- All finished foundation excavations shall be inspected and approved by the Geotechnical Engineer or his designate before any concrete is placed.
- Unless otherwise noted, all foundations and buttresses shall be centered under supported members.
- Carefully follow the requirements of the specifications for back fill under or adjacent to any portion of the building.
- Where foundation elements are to have fill on both sides, each side shall be filled simultaneously, maintaining a common elevation.
- Coordinate under floor drain requirements with architectural and mechanical drawings and the requirements of the Geotechnical Engineer.
- Contractor shall provide continuous control of surface and underground water as required during construction such that the work is done in the dry. However, the Contractor shall insure that ground water levels under adjacent structures are not lowered by his construction techniques. Additionally, if so directed by notes in the plans, the Contractor will continue to maintain a condition of no hydrostatic pressure until sufficient building weight is in place to prevent flotation of any part of the structure.
- Building walls retaining earth rely on the completed floor slabs for lateral support. If required by the construction sequence, the Contractor shall temporarily brace all building walls against which back fill is to be placed until all floor slabs supporting the walls are in place and have attained at least 75% of their specified design strength. Design of temporary braces shall be by a registered Structural Engineer in the state of New York in the employ of the Contractor.

CAISSON AND PILE NOTES:

- The caisson and pile design is based on recommendations contained in the Geotechnical Report by the Mueser Rutledge Consulting Engineers dated July 28, 2014.
- The design and installation of caissons, pile, pile caps, and related construction is to conform to the requirements set forth in the New York City Building Code and the specifications.
- All caisson properties shall be verified by caisson inspection
- See specification for caisson installation operations & caisson details on drawing FO-20X series drawings.
- Drilled caisson shafts shall be inspected and approved by the geotechnical engineer prior to concrete placement. Each rock socket must be inspected by TV camera to confirm quality of rock.
- Concrete shall be placed in shafts using tremie placement, concrete must not be allowed to free fall into the shaft. Refer to the specifications for additional requirements.
- All piles, caissons, and caisson & pile caps to be concentric with columns above unless noted otherwise on plan.
- Records of penetration and behavior of every caisson during installation shall be submitted to the engineer of record.
- Estimated caisson length is approximately 40 to 60 feet. Caisson length could vary due to actual elevation of class 1c rock.

CAISSON AND PILE CAPACITY SCHEDULE				
CAISSON OR PILE TYPE	COMP. (TONS)	TENSION (TONS)	LATERAL (TONS)	COMMENTS
450 TON CAISSON	450	--	3	
100 TON CAISSON	100	35	3	
PILE HP12x53	100	3	3	ASTM A252 GR 50 STEEL

REINFORCING:

- Detailing of concrete reinforcement and accessories shall be in accordance with ACI 315 - "Manual of Standard Practice for Detailing Reinforced Concrete Structures," latest edition.
- Reinforcement shall be continuous through all construction joints unless otherwise noted on drawings.
- Provide and schedule with the shop drawings, all necessary accessories to hold reinforcing securely in position. Minimum requirements shall be: High chairs...4'-0" OC. Slab bolsters...4'-0" OC. Support bars for high chairs shall be #5 min.
- All continuous reinforcement shall have a minimum lap as required for a Class B splice (ACI 318) unless noted otherwise.
- W.W.F. shall be provided in flat sheets. All laps in W.W.F. shall be one mesh plus two inches at splices.
- Concrete protection for reinforcement including W.W.F. shall be provided as follows unless otherwise shown on the drawings:
- All hooks shown on drawings shall be standard hooks unless noted otherwise.
- Where continuous bars are called for, they shall run continuously around corners and be lapped at necessary splices, or hooked at discontinuous ends. Lap lengths shall be as given in the splice and development table. Lap beam top bars at mid-span and beam bottom bars at supports, unless otherwise noted.

CONCRETE:

- All concrete work shall conform to the 2008 edition of the ACI Building Code Requirements for Reinforced Concrete (ACI 318) and the 2014 New York City Building Code. In case of conflict, the New York City Building Code shall govern.
- All concrete shall be controlled concrete, mixed and placed under the supervision of an approved concrete testing agency.
- Concrete shall be normal weight concrete unless otherwise noted with sand and gravel aggregate, Type I or Type II Portland Cement and minimum compressive strength (f'c) in 28 days as specified in the Concrete Strength Table.
- All concrete exposed to the weather or possible freeze/thaw action shall contain an air entrainment admixture. Air content to be 6% ± 1 1/2%.
- All concrete shall be placed without horizontal construction joints, except where specifically noted. Vertical construction joints and stops in shored concrete work shall be made at midspan. Horizontal reinforcement shall be continuous through vertical construction joints.
- Construction joint locations other than shown on the drawings are permitted subject to prior approval of the Engineer. Expansion joint and control joint locations are mandatory as shown. Contractor shall submit drawings showing intended placing sequences and locations of construction joints to the Engineer for approval.
- Pipes or conduits placed in slabs on grade shall not be placed closer than 3 diameters on centers and shall have an outside diameter less than 1/3 of the slab thickness and be positioned so that they do not interfere with slab reinforcement. Aluminum conduits shall not be placed in concrete. No conduits or pipes shall be placed in composite slabs on metal deck.
- All keys shall be 2" x 4" (nominal) unless otherwise shown on the drawings.
- Concrete cast on sloped surfaces shall begin at the lowest elevation and continue monolithically toward the higher elevations until the intended pour is completed.
- No concrete shall be cast before review and approval of the reinforcing and embedded items have been obtained from the Special Inspector.
- All exposed edges of concrete members shall be chamfered 3/4" unless shown otherwise on architectural drawings.
- Concrete must reach the following percentages of its 28-day compressive strength (f'c) before forms or shores may be removed: Pile caps...20%, Walls and beam sides...20%, Columns...40% (1500psi min), Beam bottoms (if shored)...70%, Floor systems...85%
- Refer to architectural drawings for concrete finishes. Where finish is not specified, conform to requirements of ACI 301 - "Specifications for Structural Concrete for Buildings."
- See architectural drawings for door and window openings, drips, washes, reglets, concrete finishes, masonry anchors, and for miscellaneous embedded plates, bolts, anchors, angles, etc.
- The placement of sleeves, outlet boxes, box-outs, anchors, etc., for the mechanical, electrical and plumbing trades is the responsibility of the trade involved. However, any box-outs not covered by typical details in the structural drawings shall be submitted for approval.

CONCRETE STRENGTH TABLE		
Intended use	28 day strength, F'c (psi)	Other Requirements & Admixtures
Pile caps	4000	
Grade beams	4000	
Foundation strap beams	4000	
Foundation Walls	4000	
Slabs on grade	7000	
Exposed parking floors, driveways, ramps, sidewalks	5000	a)1.5lbs/YD³ Fiber Mesh b) Silica Fume (10% Maxi c)DCI or equal or all top bars to be epoxy coated* on non-metallic chairs d) Max water - cement ratio 0.4
Columns and shear walls	See Col. Schedule	
All (other) foundation concrete	4000	
Framed slabs and beams	5000	
Fill concrete	4000	
Mud mats	3500	

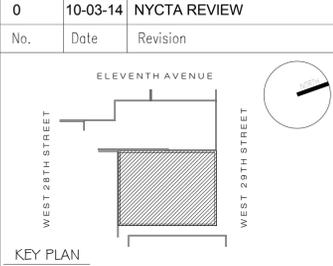
* If contractor selects epoxy coated bars instead of DCI, bar lengths and lap splices shall be increased by a factor of 1.20.

REINFORCING MATERIAL TABLE			
Reinforcing element	ASTM	Grade, Fy(ksi)	Comments
Reinforcing bars less than #11	A615	60	
In middle of concrete fill for stairs (2x2 - W1.4 x W1.4)	A185	65	Fibermesh at 1 1/2"/cu. yd. may be substituted for WWF in stairs.

CONCRETE COVER TABLE (U.O.I.)		
Condition	Cover	
Surfaces cast against earth	3 inches	
Formed surfaces exposed to earth or weather:	#6 - #18	2 inches
	#5 bars and smaller	1 1/2 inches
Formed surfaces not exposed to earth or weather. Slabs, walls, joists:	#11 bars and smaller	3/4 inches
	#14 - #18	1 1/2 inches
	beams, columns	1 1/2 inches
Slabs on grade (from top of slab)	1 1/2 inches	
Slabs on metal deck	Top	3/4 inches
	Bottom	3/4 inches
Slabs on metal deck (Parking Levels or Parking Ramps	Top	1 1/2 inches
	Bottom	3/4 inches

NOTES

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GENERAL NOTES

SEAL & SIG.	DATE: 10-03-2014
	PROJECT No.: 14082.00
	SCALE:
	DWG NO.:
	S-001.00
CADD FILE NO.:	
KX	OF 10

Special Inspection	
Special Inspections	Code/Section
Concrete - Cast-In-Place	BC 1704.4
Masonry	BC 1704.5
Soils - Fill placement & In-Place Density	BC 1704.7.2, BC 1704.7.3
Soils - Investigations (Borings/Test Pits)	(TR 4) BC 1704.7.4
Pile Foundations & Drilled Pier Installation	(TR 5) BC 1704.8
Underpinning	BC 1704.9
Excavation - Sheeting, Shoring, and Bracing	BC 1704.19, BC 3304.4.1
Concrete Test Cylinders	(TR 2) BC 1905.6
Concrete Design Mix	(TR 3) BC 1905.3

SPECIAL INSPECTION - CONCRETE:

- Concrete inspection and testing will be made in accordance with building code requirements, Contract Documents, and will include the following:
 - Testing concrete for strength, slump, air content, temperature, and unit weight.
 - Marking and testing concrete cylinders, including furnishing cylinder containers for specimens.
 - Transporting and storing of all specimens involved in testing and inspection. Test cylinders are to be transported to laboratory not later than 24 hours after casting, not earlier than 16 hours after casting.
 - Inspection of mixing and placing of concrete at the site, including recording of: amount and location of concrete placement, method of placing concrete, and any other pertinent information.

- The Testing laboratory will take specimens as follows: At least one set of four cylinders for each 50 cubic yards or fraction thereof of each class of concrete, but not less than one set for any one day's operations.

- For concrete placed by pumping, test specimens and concrete used for determination of slump, air content, and weight are to be taken at the point of placement of concrete into the forms.
- Samples will be obtained in accordance with ASTM C172.
- Marking, curing and subsequent handling of test cylinders, except as modified herein, shall be in accordance with ASTM C31. Testing shall be in accordance with ASTM C39.
- The cylinders shall be placed in laboratory storage under moist curing conditions at approximately 70 degrees F within 24 hours after molding, and maintain therein until tested. Tests will be as follows:

- Marking, curing and subsequent handling of test cylinders, except as modified herein, shall be in accordance with ASTM C31. Testing shall be in accordance with ASTM C39.
- Two cylinders shall be tested at 28 days for acceptance. The acceptance test results shall be the average strength of these two cylinders.
- One cylinder shall be kept for eventual testing at 56 days to verify any marginal results of 28-day tests. If not required to be tested, cylinder will be discarded after 28 days.

- Test Reports: Reports of cylinder tests shall be submitted as specified herein within five days of laboratory testing. Test reports shall, as a minimum, include:

- Results of field testing at time of sampling including date and time of sampling, amount of water added at site prior to sampling, ambient air temperature and concrete temperature, concrete slump and air content, and concrete wet unit weight.
- For concrete placed by pumping, test specimens and concrete used for determination of slump, air content, and weight are to be taken at the point of placement of concrete into the forms.
- Results of laboratory testing including date test specimens were transported to laboratory, date compressive strength of tested cylinders, and specified design strength of concrete represented by the test.

- Additional Testing: Contractor shall bear the cost of testing and inspection resulting as a consequence of the following:

- Work not in compliance with the Contract Documents.
- Testing requested by the Contractor or Subcontractor such as additional cylinders for early breaks, etc.
- Testing to verify the adequacy of work done without prior notice, without proper supervision, or contrary to standard construction practice.

- Reinforcing Steel Inspection: Concrete reinforcing shall be inspected prior to closing of concrete form work or placing of concrete. Inspector to verify size, spacing, quantity of reinforcing per latest contract documents.

SPECIAL INSPECTION - POST INSTALLED INSERTS:

- The Testing Agency shall inspect self-expanding, drilled-in inserts shown on the structural drawings as follows:
 - Self-Expanding Inserts: Prior to installation, the Testing Agency shall determine that the installing contractor has the proper materials and equipment for drilling holes in the receiving surface of required diameter and length.
 - Epoxy-Bonded Inserts: The Testing Agency shall be present at the site to observe the installation of the first 10 inserts placed. Such observation shall be to ensure that drilled holes are of required diameter and depth, holes are properly cleaned prior to the installation of the insert, and that holes are completely filled with properly mixed epoxy after installation.
- All inserts shall be visually inspected after installation to ensure that they been installed perpendicular to the receiving surface and to proper depth.
- Inspect 10% of all inserts at each level for a tension load of 150% of the manufacturer's recommended allowable working loads in tension. If at any time the number of rejectable inserts exceeds 10% of the number of inserts tested at that level, all inserts in that group shall be tested by the same method and this 100% testing rate shall be continued until 10% or less of the inserts tested in a group are found to be rejectable. Cost of additional testing required by this paragraph shall be borne by the contractor.

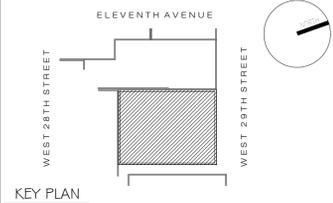
SUBMITTALS:

- Submit substantiating data for each concrete mix design contemplated for use to the Structural Engineer not less than six weeks prior to first concrete placement. Data for each mix shall, as a minimum, include the following:
 - Mix identification designation (unique for each mix submitted).
 - Statement of intended use for mix.
 - Mix proportions, including all admixtures used.
 - Manufacturer's data and/or certifications verifying conformance of all mix materials, including admixtures, with specified requirements.
 - Wet and dry unit weight.
 - Entrained air content.
 - Design slump.
 - Required average strength qualification data per ACI 301 4.2.3.3 and 4.2.3.4. Submit separate qualification data for each production facility which will supply concrete to the project.
- Submit shop drawings for fabrication, bending and placement of concrete reinforcement. Comply with ACI Detailing Manual (SP 66). Provide 1/4" scale elevations of all walls with reinforcing shown.
- Submit Structural Steel shop drawings. Clearly indicate profiles, sizes, spacing and locations of structural members, connections, attachments, anchorages, framed openings, size and type of fasteners, cambers, and clearances. Indicate welded connections using standard AWS welding symbols. Clearly indicate net weld lengths, sizes, and welding sequences. Clearly identify all high strength bolts not required to be tensioned (installed "snug tight" and identified by AISC).
- Submit Metal Deck shop drawings. Indicate decking plan, deck profile, dimensions, gage, anchorage, supports, projections, openings and reinforcement, finishes, applicable details and accessories, type, locations and size of welds.
- Furnish wood truss shop drawings. Indicate truss framing plans, pitch, span and spacing of trusses, gauge thickness, nominal sizes and location of connectors at joints, bearing and anchored details, framed openings, permanent bracing and bridging and all related items. Submit Manufacturer's instructions on lateral bracing with shop drawings. Submit calculations performed by [Massachusetts] professional engineer.
- Submit light gage steel framing shop drawings. Clearly indicate profiles, sizes, spacing and locations of members, connections, attachments, anchorages, framed openings, size and type of fasteners. Indicate welded connections using standard AWS welding symbols.

NOTES

0	10-03-14	NYCTA REVIEW
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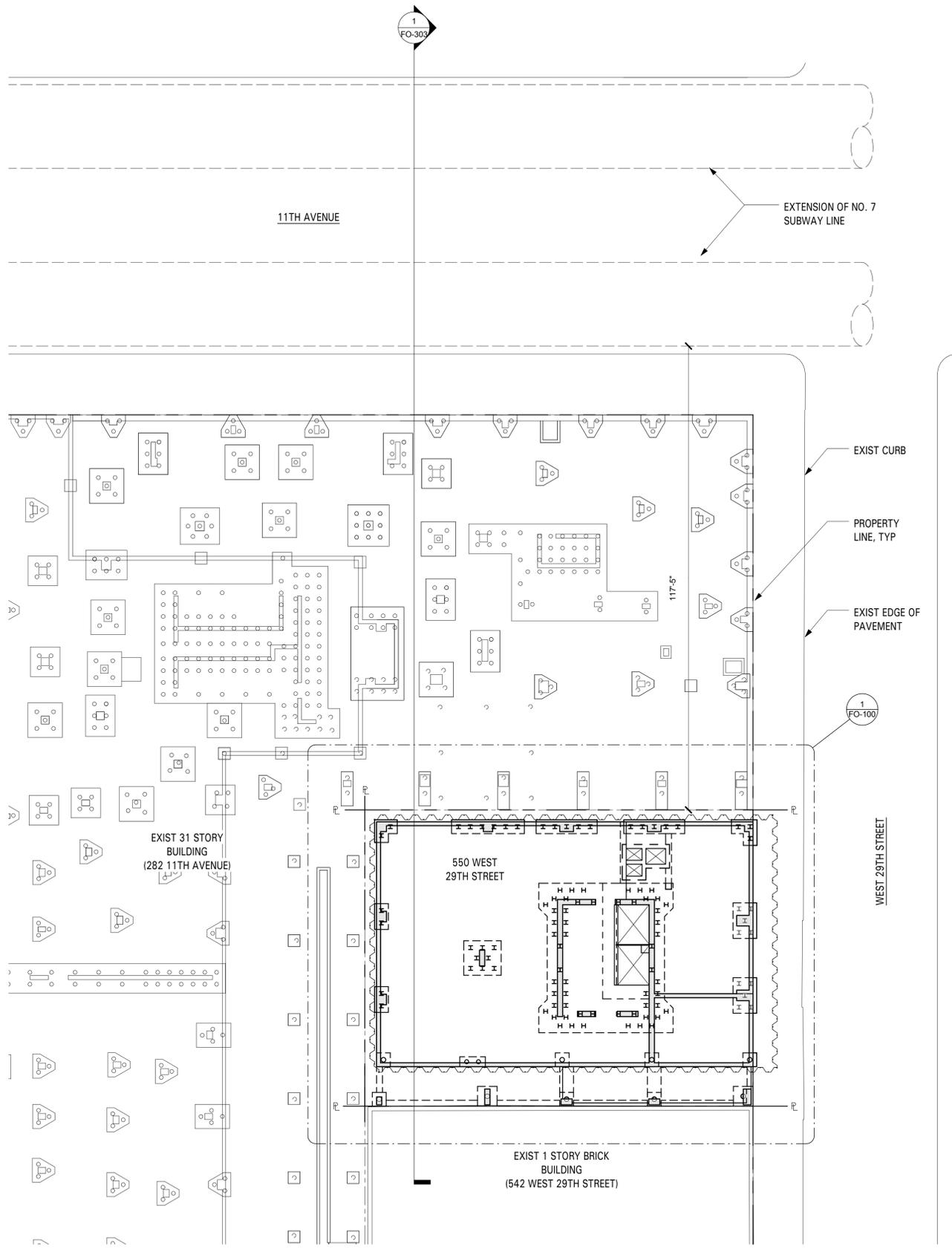
McNamara/Salvia, Inc.
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PROJECT
550W 29TH
550 WEST 29TH STREET
New York, NY

GENERAL NOTES

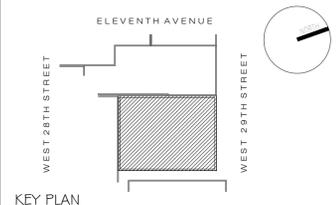
SEAL & SIG.	DATE: 10-03-2014
	PROJECT No.: 14082.00
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	S-002.00
CADD FILE NO.:	OF 10
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1 SITE PLAN
SCALE: 1/16" = 1'-0"

NOTES

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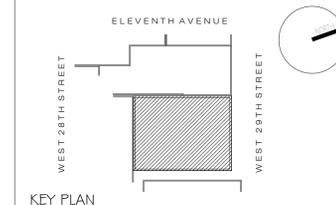
PROJECT
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 New York, NY

SITE PLAN

SEAL & SIG.	DATE: 10-03-2014
	PROJECT No.: 14082.00
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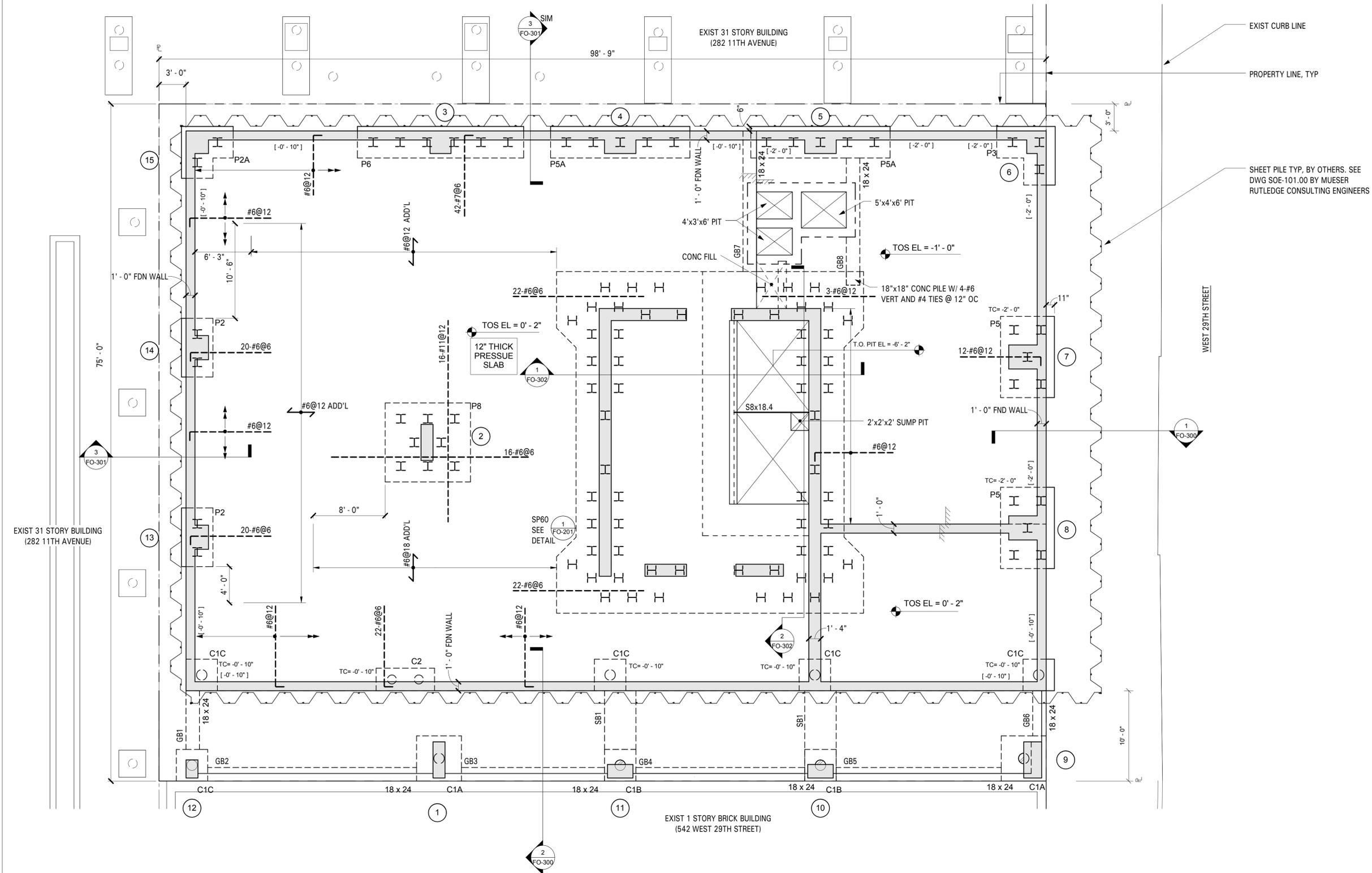
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FOUNDATION PLAN

SEAL & SIG. DATE: 10-03-2014
 PROJECT No.: 14082.00
 SCALE:
 DWG NO.:
FO-100.00
 CADD FILE NO.:
 XX OF 10



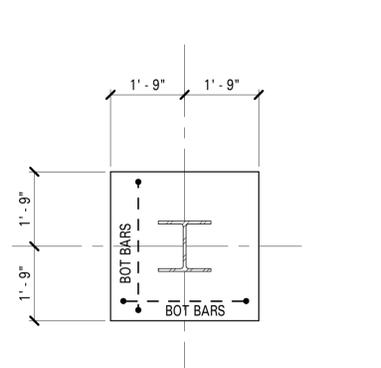
1 FOUNDATION PLAN
 FO-000 SCALE: 3/16" = 1'-0"

- NOTES:
- TOP OF SLAB ELEVATION = +0'-2", U.N.O..
 - SLAB ON GRADE SHALL BE 12" REINFORCED CONCRETE SLAB
 $f'_c = 7000\text{psi}$
 #7 @ 12" TOP AND BOTTOM MINIMUM REINFORCING, EACH WAY
 1" COVER TOP AND BOTTOM PLACED OVER 2" MUD SLAB
 SEE ARCHITECTURAL DRAWINGS FOR WATERPROOFING REQUIREMENTS
 SEE GEOTECHNICAL DRAWINGS FOR SUBGRADE PREPARATION REQUIREMENTS
 - SEE FO-20X SERIES DRAWINGS FOR TYPICAL FOUNDATION DETAILS
 - SEE FO-20X SERIES DRAWINGS FOR SLAB REINFORCING AT CMU WALLS, CONCRETE CURBS AND HOUSEKEEPING PADS. COORDINATE WITH ARCHITECTURAL AND MEP DRAWINGS FOR LOCATIONS
 - SEE FO-30X SERIES DRAWINGS FOR FOUNDATION SECTIONS
 - SEE S-91X SERIES DRAWINGS FOR COLUMN AND BUTTRESS SCHEDULE AND DETAILS
 - SEE S-93X SERIES DRAWINGS FOR SHEAR WALL REINFORCING AND DETAILS
 - CENTERLINE OF PILES SHALL MATCH CENTERLINE OF COLUMNS AND PIERS, U.N.O.

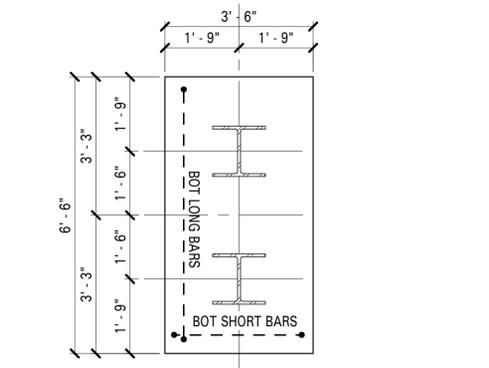
- GRADE BEAMS AND STRAP BEAMS SHALL BE PLACED MONOLITHICALLY WITH PILE CAPS
- FOUNDATION WALL HORIZONTAL REINFORCING SHALL RUN CONTINUOUSLY THRU BUTTRESSES, U.N.O.
- ⊙ INDICATES COLUMN NUMBER
- PX INDICATES PILECAP TYPE, SEE DWG FO-200
- SBX INDICATES STRAP BEAMS, SEE SCHEDULE ON THIS DRAWING AND DETAIL ON FO-20X SERIES DWGS
- < X > INDICATES TOP OF FOUNDATION WALL
 [X] INDICATES BOTTOM OF FOUNDATION WALL
 (X) INDICATES TOP OF PILE CAP AS MEASURED FROM TOP OF SLAB. LOCATE 1'-0" BELOW TOP OF SLAB U.N.O.
- INDICATES ADDITIONAL TOP REINFORCING
 - - - INDICATES ADDITIONAL BOTTOM REINFORCING

CONCRETE GRADE BEAM SCHEDULE								
MARK	SIZE (WxD)	REINFORCING			STIRRUPS			REMARKS
		BOTTOM	CONTINUOUS TOP	ADDITIONAL TOP	SIZE	TYPE	SPACING (in)	
GB1	18x24	3#7	3#7	-	#3	Type 2	4	
GB2	18x24	4#7	4#7	-	#3	Type 2	10	
GB3	18x24	4#7	4#7	-	#3	Type 2	10	
GB4	18x24	4#7	4#7	-	#3	Type 2	10	
GB5	18x24	4#7	4#7	-	#3	Type 2	10	
GB6	18x24	3#7	3#7	-	#3	Type 2	4	
GB7	18x24	4#11	4#11	-	#4	Type 4	4	
GB8	18x24	4#11	4#11	-	#4	Type 4	4	

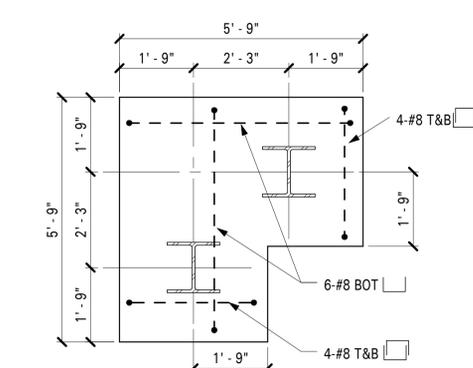
CONCRETE STRAP BEAM SCHEDULE								
MARK	SIZE (WxD)	REINFORCING			STIRRUPS			REMARKS
		BOTTOM	CONTINUOUS TOP	ADDITIONAL TOP	SIZE	TYPE	SPACING (in)	
SB1	42x48	8#8	8#9	-	#6	Type 8	4	



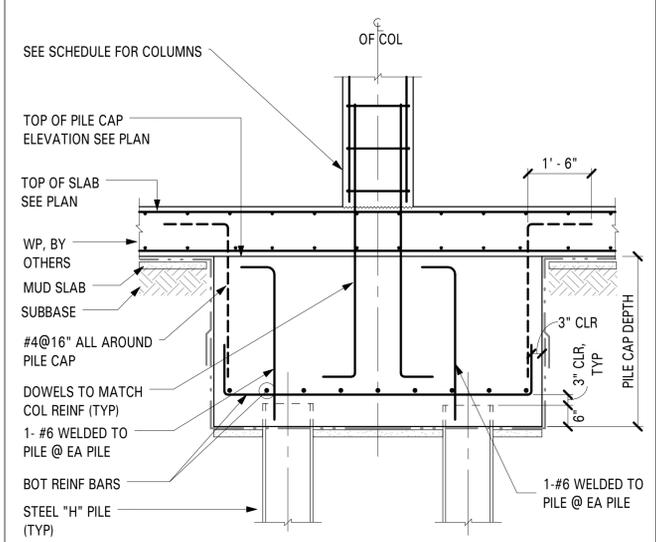
MARK	PILE CAPACITY	DEPTH	REINFORCING BARS	
			LONG	SHORT
P1	100 TONS	36"	3-#6	



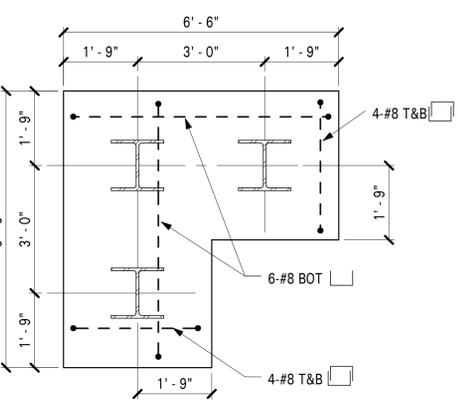
MARK	PILE CAPACITY	DEPTH	REINFORCING BARS	
			LONG	SHORT
P2	100 TONS	41"	6-#8	5-#8



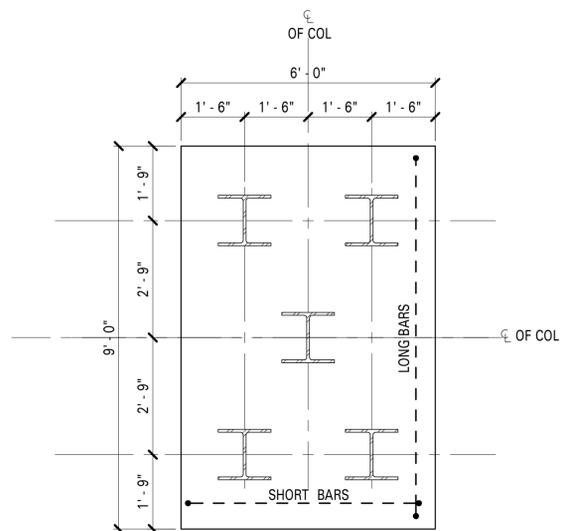
MARK	PILE CAPACITY	DEPTH	REINFORCING BARS	
			LONG	SHORT
P2A	100 TONS	41"	SEE DETAIL	



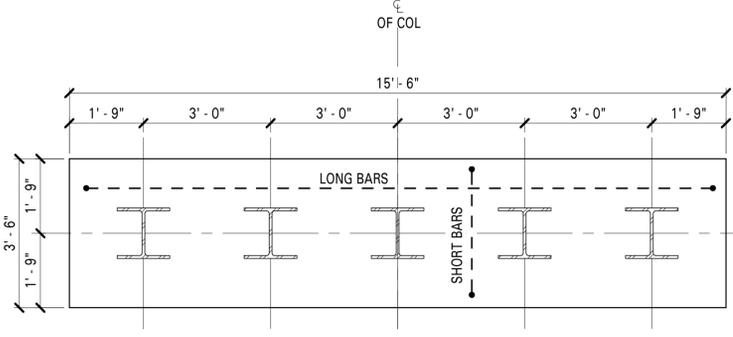
2 TYPICAL "H" PILE CAP SECTION



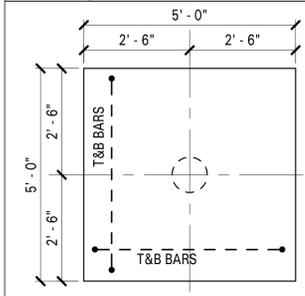
MARK	PILE CAPACITY	DEPTH	REINFORCING BARS	
			LONG	SHORT
P3	100 TONS	48"	SEE DETAIL	



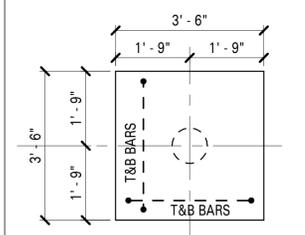
MARK	PILE CAPACITY	DEPTH	REINFORCING BARS	
			LONG	SHORT
P5	100 TONS	48"	13-#11 BOT	16-#8 BOT



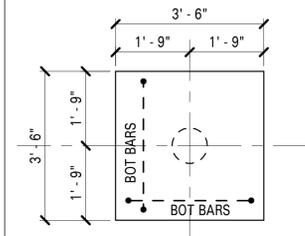
MARK	PILE CAPACITY	DEPTH	REINFORCING BARS	
			LONG	SHORT
P5A	100 TONS	58"	7-#11 BOT	8-#6 T&B



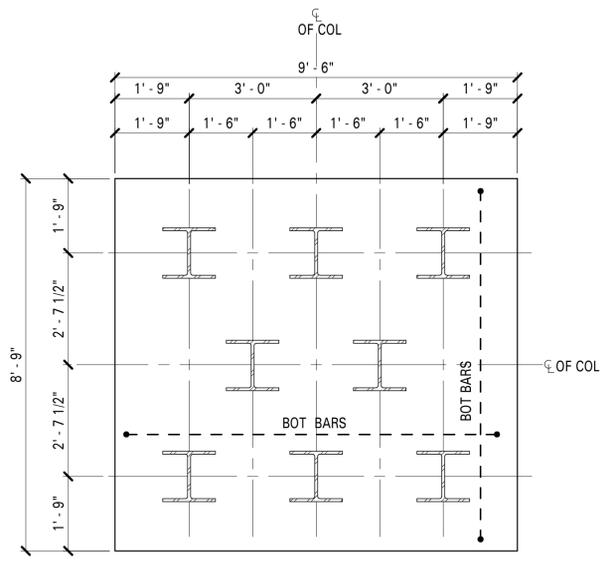
MARK	CAISSON CAPACITY	DEPTH	REINFORCING BARS	
			LONG	SHORT
C1A	450 TONS	48"	6-#9 T&B	



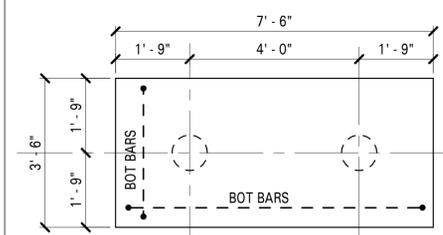
MARK	CAISSON CAPACITY	DEPTH	REINFORCING BARS	
			LONG	SHORT
C1B	450 TONS	48"	6-#9 T&B	



MARK	CAISSON CAPACITY	DEPTH	REINFORCING BARS	
			LONG	SHORT
C1C	100 TONS	36"	3-#6	

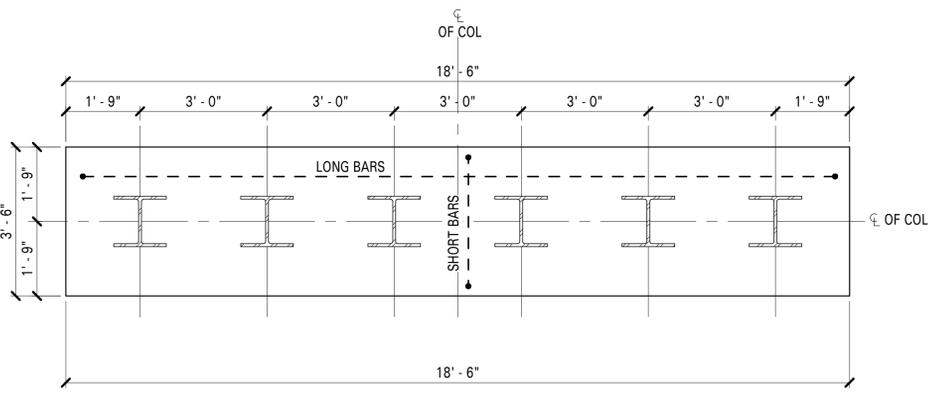


MARK	PILE CAPACITY	DEPTH	REINFORCING BARS	
			LONG	SHORT
P6	100 TONS	50"	14-#9	15-#9



MARK	CAISSON CAPACITY	DEPTH	REINFORCING BARS	
			LONG	SHORT
C2	100 TONS	48"	6-#11 BOT	8-#8 BOT

3 TYP CAISSON CAP DETAILS

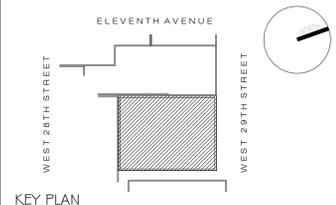


MARK	PILE CAPACITY	DEPTH	REINFORCING BARS	
			LONG	SHORT
P6	100 TONS	59"	9-#11 BOT	8-#6 T&B

1 TYPICAL 100 TON H-PILE CAP DETAILS

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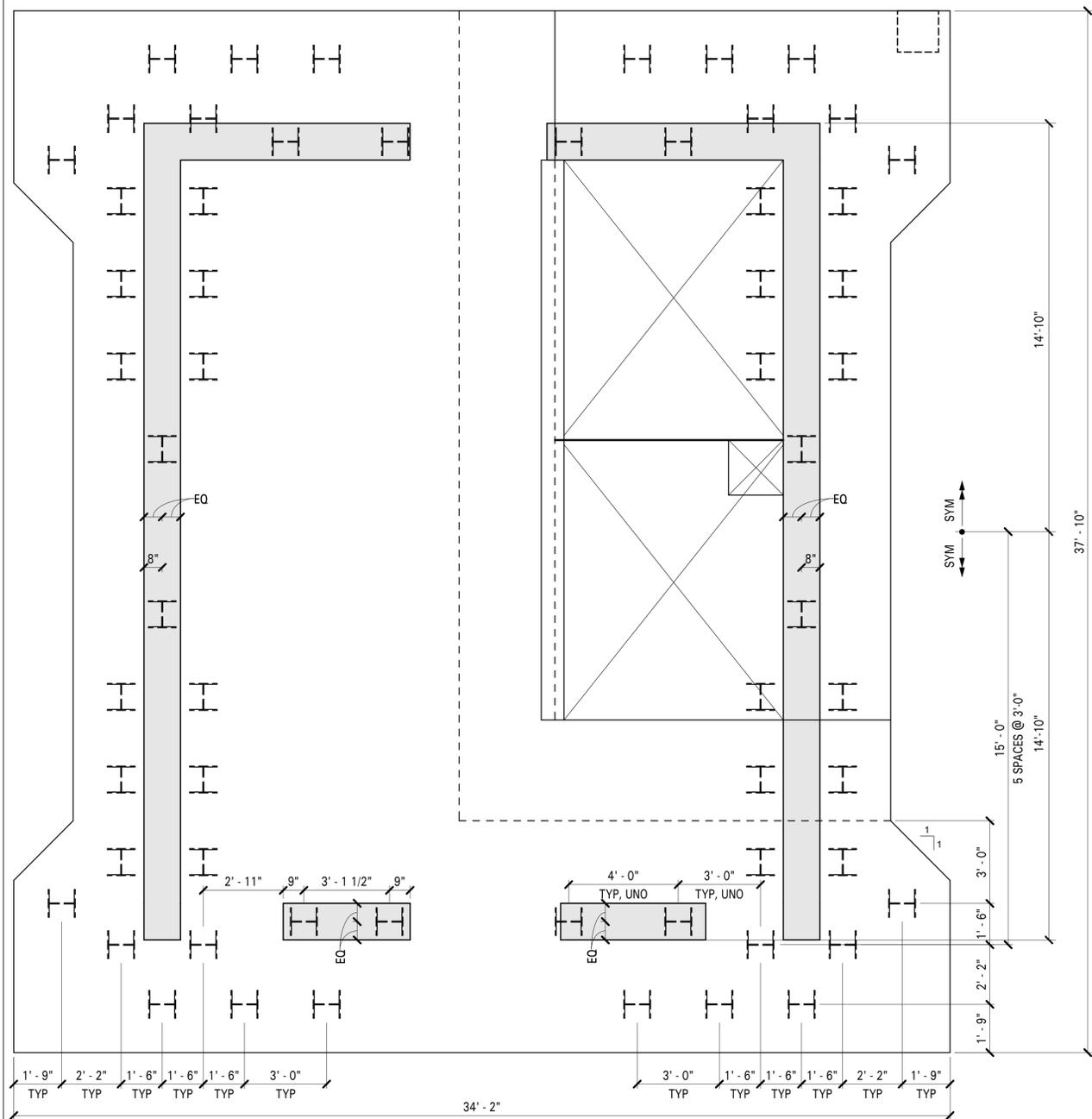
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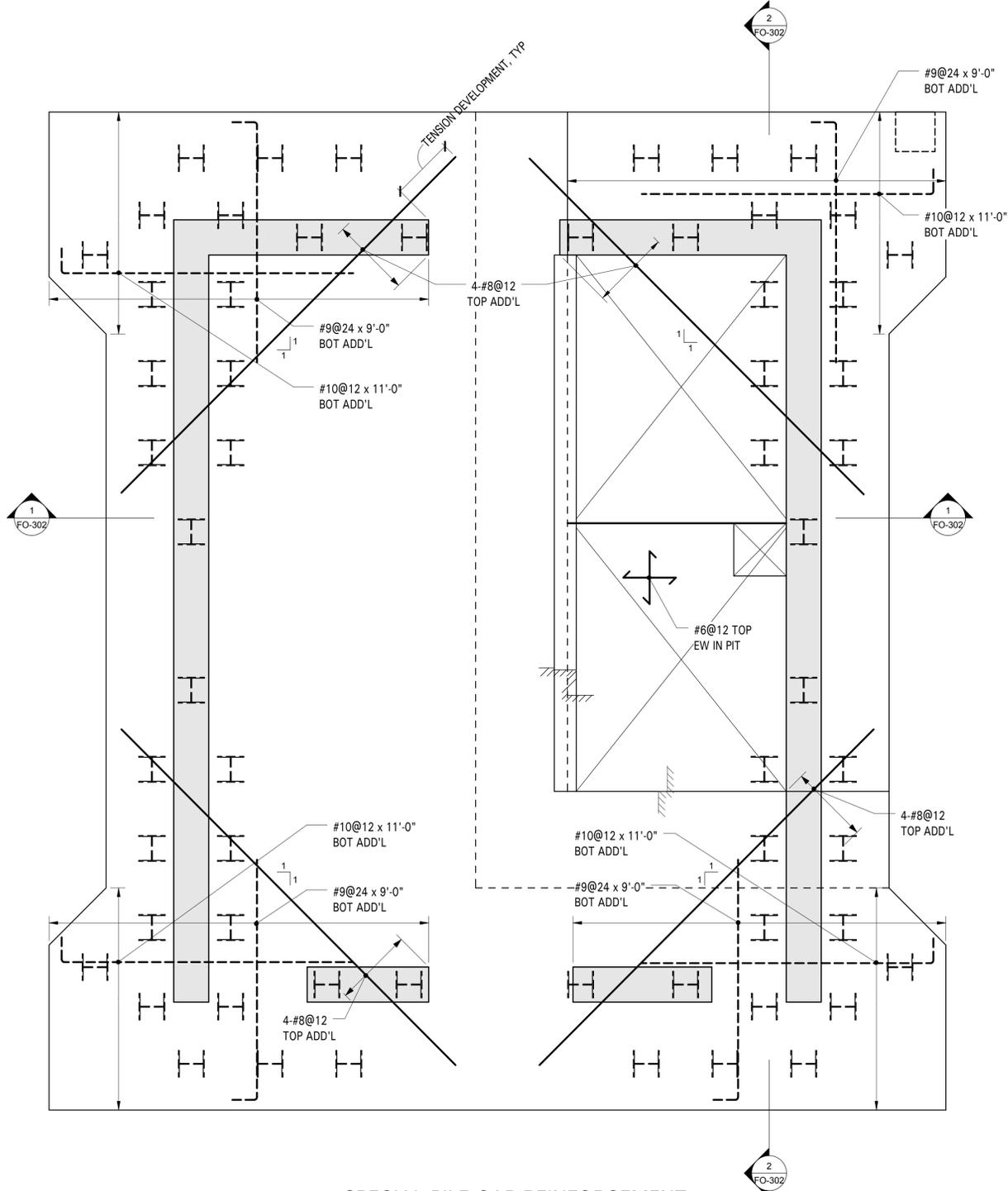
TYPICAL PILE AND CAISSON CAP DETAILS

DATE	PROJECT No.	SCALE	DWG NO.	CADD FILE NO.	OF 10



SPECIAL PILE CAP LAYOUT

MARK	PILE CAPACITY	DEPTH	REINFORCING BARS
SP60	100 TONS	44"	#9@12 BOT EW, TYP

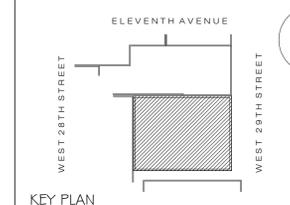


SPECIAL PILE CAP REINFORCEMENT

1 SPECIAL PILE CAP (SP60) LAYOUT AND REINFORCING
FO-100 SCALE: 3/8" = 1'-0"

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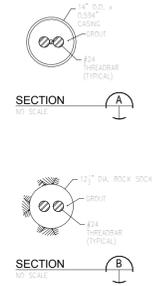
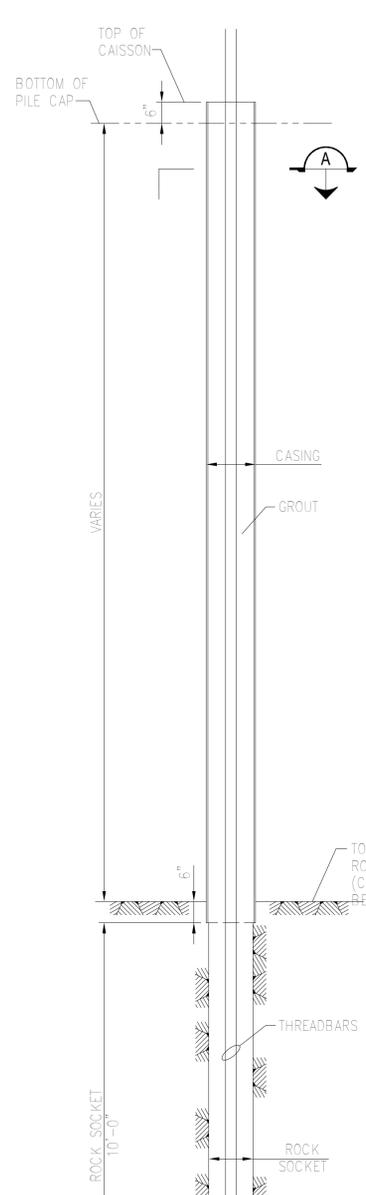
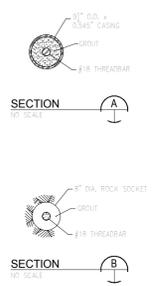
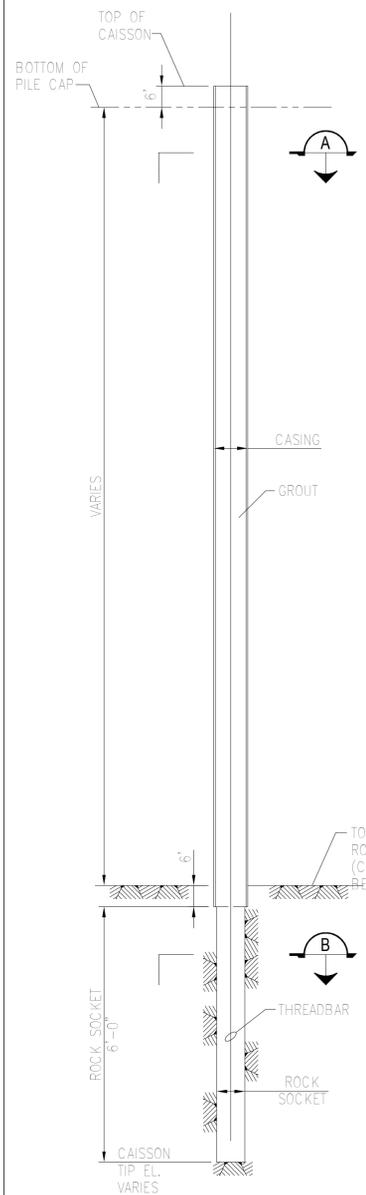
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SPECIAL PILE CAP DETAILS

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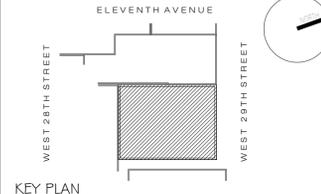


**TYPICAL CAISSON DETAIL - ELEVATION
(100 TON COMPRESSIVE CAPACITY)**
NO SCALE

**TYPICAL CAISSON DETAIL - ELEVATION
(450 TON COMPRESSIVE CAPACITY)**
NO SCALE

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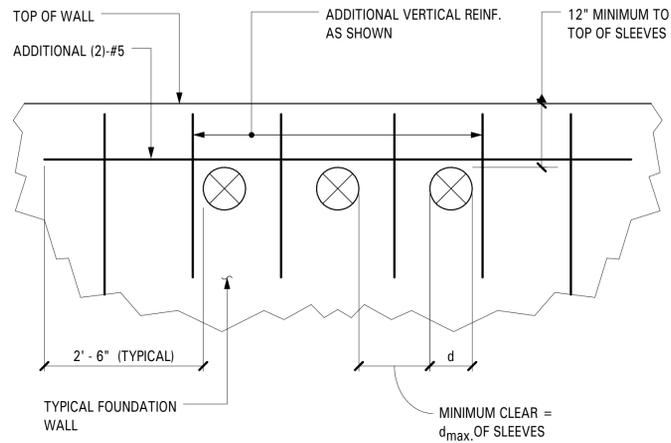
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TYPICAL CAISSON DETAILS

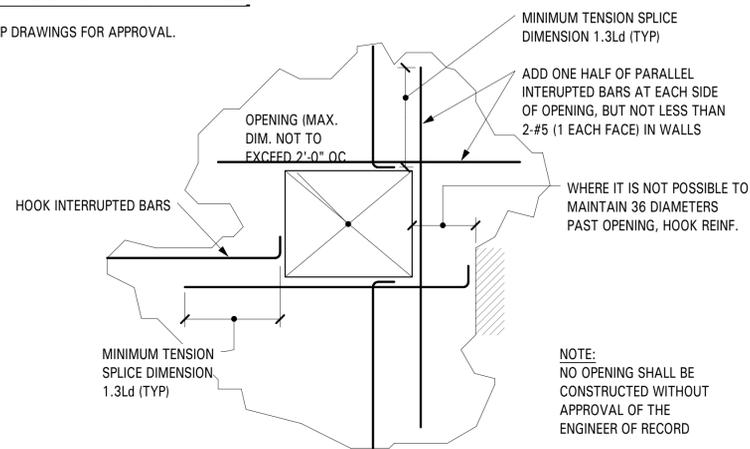
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	OF 10



USE FOR 3 OR MORE SLEEVES

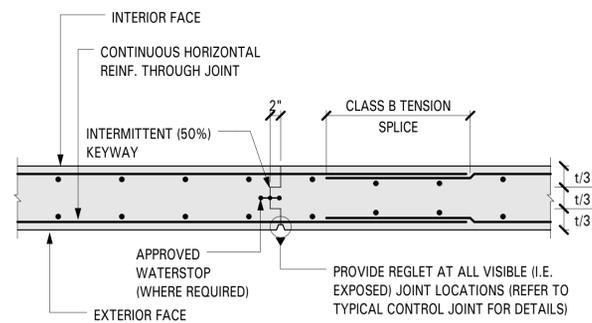
TYPICAL MULTI-SLEEVE DETAIL AT FOUNDATION WALL

NOTE: ALL SLEEVES SHALL BE CLEARLY SHOWN ON SHOP DRAWINGS FOR APPROVAL.



TYPICAL REINFORCING AT OPENINGS IN REINFORCED CONCRETE WALLS

1 TYP. REINFORCING AT OPENINGS IN REINFORCED CONCRETE WALLS

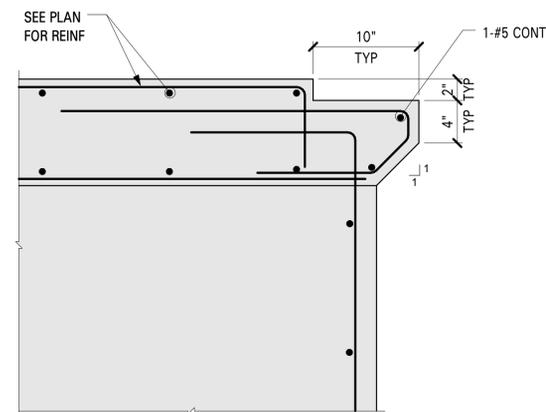


**TYPICAL CONSTRUCTION JOINT
DETAIL AT VERTICAL WALL**

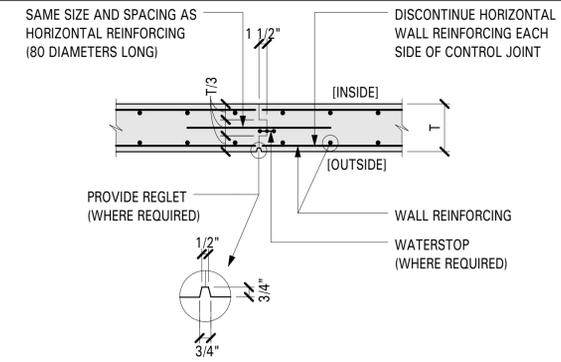
NOTES:

1. SPACE CONTROL JOINTS AT 30xTHICKNESS OF THE WALL, 3xHEIGHT OF THE WALL, OR 30FT. MAXIMUM, WHICHEVER IS LESS. COORDINATE SPACING WITH ARCHITECTURAL DRAWINGS.
2. DOUBLE-SIDED CONTROL JOINTS ARE PREFERRED AT WALLS WHERE BOTH SIDES OF WALL ARE EXPOSED TO VIEW. COORDINATE LOCATIONS WITH ARCHITECTURAL DRAWINGS.
3. COORDINATE REGLET GEOMETRY WITH ARCHITECTURAL DRAWINGS. DEPTH AND REGLET BOTTOM WIDTH IN DETAILS ARE REQUIRED; CHAMFER(S) ARE OPTIONAL BASED ON ARCHITECTURAL REQUIREMENTS. CHAMFERS ARE RECOMMENDED WHEN REGLET FORMS ARE TO BE REMOVED.
4. CONTROL JOINTS MAY ALSO SERVE AS CONSTRUCTION JOINTS. COORDINATE WITH ARCHITECTURAL DRAWINGS.
5. WATERSTOP IS OPTIONAL. COORDINATE WITH GEOTECHNICAL ENGINEER.
6. ALL CONTROL AND CONSTRUCTION JOINTS ARE TO BE CLEARLY SHOWN ON SHOP DRAWINGS FOR REVIEW AND APPROVAL BY BOTH THE ARCHITECT AND ENGINEER OF RECORD.

2 TYP CONSTRUCTION & CONTROL JOINTS



3 TYP ELEVATOR SILL DETAIL @ PIT

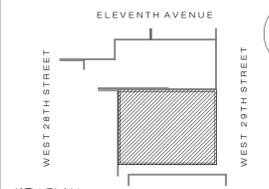


TYPICAL VERTICAL WALL CONTROL JOINT

NOTES

0 10-03-14 NYCTA REVIEW

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KEY PLAN

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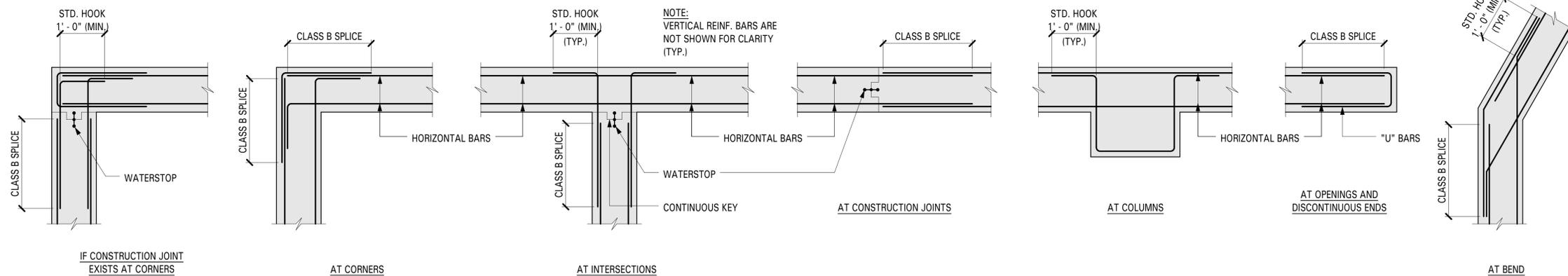
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**TYPICAL FOUNDATION
DETAILS**

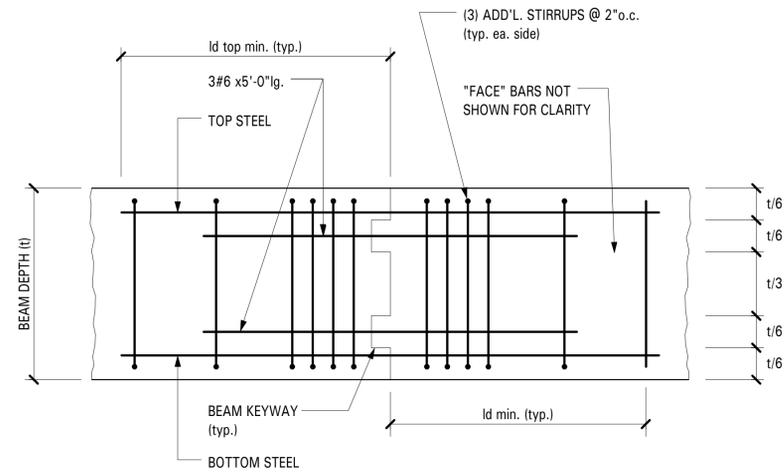
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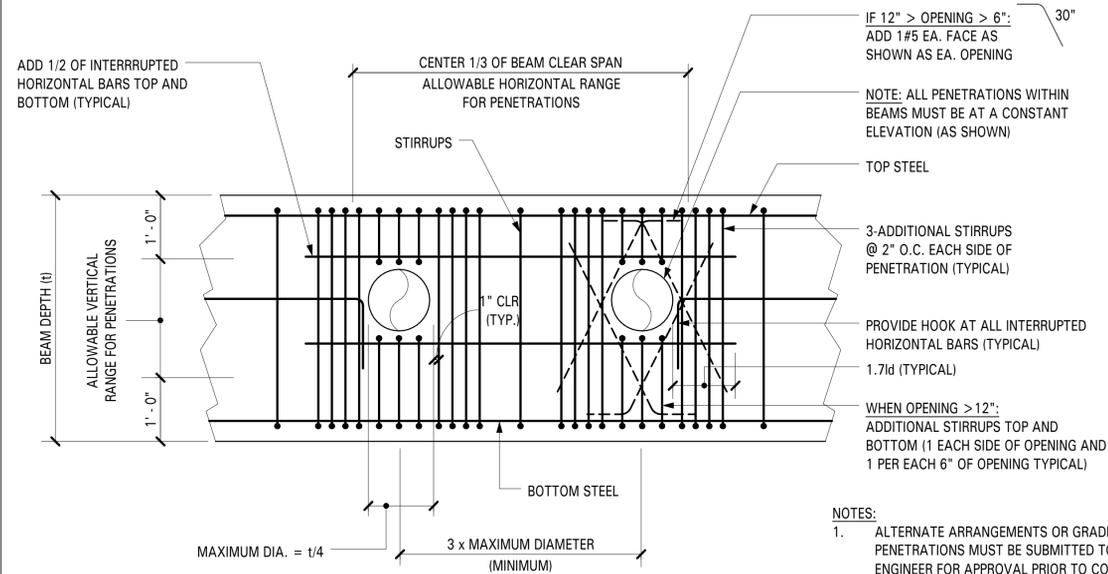
TYPICAL PLAN OF HORIZONTAL WALL REINFORCING

NO SCALE

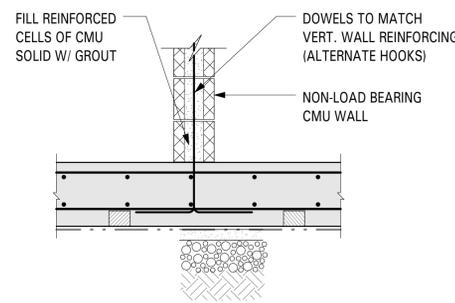
4 TYP. PLAN OF HORIZONTAL WALL REINFORCING



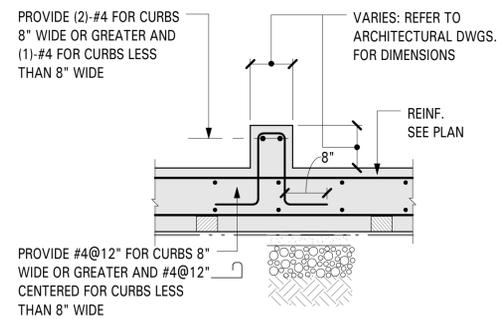
1 TYP. CONSTRUCTION JOINT DETAIL AT CONCRETE GRADE BEAMS (GB) AND STRAP BEAMS (SB)



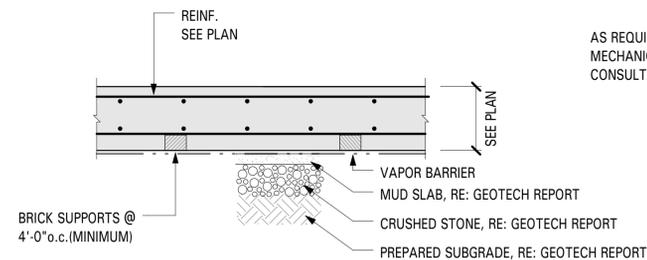
2 TYP. DETAIL AT GRADE BEAM AND STRAP BEAM PENETRATIONS



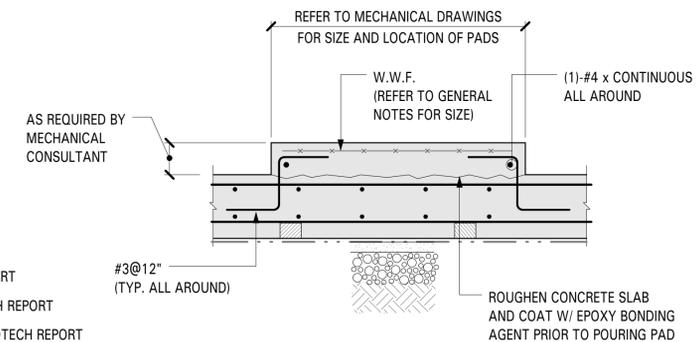
TYPICAL SLAB AT CMU WALLS



TYPICAL CONCRETE CURB
NOTE:
USE SIMILAR DETAIL AT FRAMED STRUCTURAL SLABS, U.N.O.



TYPICAL STRUCTURED SLAB



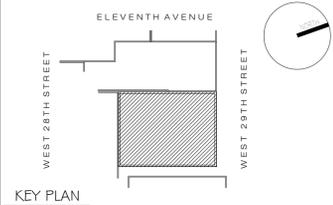
HOUSEKEEPING PAD & PARKING GARAGE ISLAND CURBS

NOTE:
USE SIMILAR DETAIL AT FRAMED STRUCTURAL SLABS, U.N.O.

3 TYP. STRUCTURED SLAB ON GRADE DETAILS

NOTES

No.	Date	Revision
0	10-03-14	NYCTA REVIEW



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Tel (212) 687-9888 Fax (646) 487-5501

PROJECT
550W 29TH
550 WEST 29TH STREET
New York, NY

TYPICAL GRADE BEAM DETAILS

SEAL & SIG.	DATE: 10-03-2014
	PROJECT No.: 14082.00
	SCALE:
	DWG NO.:
	FO-204.00
CADD FILE NO.:	
XX	OF 10

TENSION DEVELOPMENT LENGTH (Lap Class A) AND LAP SPLICE LENGTHS (Lap Class B) FOR GRADE 60 DEFORMED REINFORCING BARS (inches) (UNLESS SHOWN OTHERWISE ON DRAWINGS)																					
f'c = 4000 PSI, NORMAL WEIGHT CONCRETE																					
BAR SIZE	LAP CLASS	CONCRETE COVER >= 0.75 in. CLEAR BAR SPACING >= 1.5 in.				CONCRETE COVER >= 1.00 in. CLEAR BAR SPACING >= 2.0 in.				CONCRETE COVER >= 1.50 in. CLEAR BAR SPACING >= 3.0 in.				CONCRETE COVER >= 2.00 in. CLEAR BAR SPACING >= 4.0 in.				CONCRETE COVER >= 3.00 in. CLEAR BAR SPACING >= 6.0 in.			
		UNCOATED		EPOXY-COATED		UNCOATED		EPOXY-COATED		UNCOATED		EPOXY-COATED		UNCOATED		EPOXY-COATED		UNCOATED		EPOXY-COATED	
		TOP ¹	OTHER	TOP ¹	OTHER	TOP ¹	OTHER	TOP ¹	OTHER	TOP ¹	OTHER	TOP ¹	OTHER	TOP ¹	OTHER	TOP ¹	OTHER	TOP ¹	OTHER	TOP ¹	OTHER
#3	A	12	12	15	13	12	12	15	13	12	12	14	12	12	12	12	12	12	14	12	
	B	16	16	19	17	16	16	19	17	16	16	18	16	16	16	16	16	16	16	18	16
#4	A	19	15	24	22	15	12	20	17	15	12	18	14	15	12	18	14	15	12	18	14
	B	24	19	32	28	20	16	25	22	20	16	23	18	20	16	23	18	20	16	23	18
#5	A	28	21	36	32	22	17	29	26	19	15	24	22	19	15	22	17	19	15	22	17
	B	36	28	47	41	29	22	38	33	24	19	32	28	24	19	29	22	24	19	29	22
#6	A	37	29	49	43	31	24	40	35	22	17	29	26	22	17	29	26	22	17	27	21
	B	48	37	63	56	40	31	52	46	29	22	38	34	29	22	38	34	29	22	35	27
#7	A	60	46	78	69	50	38	65	57	37	28	48	42	33	25	43	38	33	25	39	30
	B	78	60	102	90	64	50	84	74	48	37	62	55	42	33	55	49	42	33	51	39
#8	A	74	57	97	86	62	48	81	71	47	36	61	54	37	29	49	43	37	29	45	34
	B	96	74	126	111	80	62	105	93	60	47	79	70	48	37	63	56	48	37	58	45
#9	A	90	69	117	104	76	58	99	87	57	44	75	66	46	36	60	53	42	32	55	48
	B	117	90	153	135	98	76	128	113	74	57	97	86	60	46	78	69	55	42	71	63
#10	A	108	83	141	125	92	70	120	106	70	54	92	81	57	44	74	66	47	36	62	55
	B	140	108	183	162	119	92	155	137	91	70	119	105	74	57	97	85	61	47	80	71
#11	A	127	98	166	146	108	83	141	125	84	64	109	97	68	53	89	79	52	40	69	60
	B	165	127	215	190	141	108	184	162	109	84	142	125	89	68	116	102	68	52	89	79

TENSION DEVELOPMENT LENGTH (Lap Class A) AND LAP SPLICE LENGTHS (Lap Class B) FOR GRADE 60 DEFORMED REINFORCING BARS (inches) (UNLESS SHOWN OTHERWISE ON DRAWINGS)																					
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		UNCOATED		EPOXY-COATED		UNCOATED		EPOXY-COATED		UNCOATED		EPOXY-COATED		UNCOATED		EPOXY-COATED		UNCOATED		EPOXY-COATED	
		TOP ¹	OTHER	TOP ¹	OTHER	TOP ¹	OTHER	TOP ¹	OTHER	TOP ¹	OTHER	TOP ¹	OTHER	TOP ¹	OTHER	TOP ¹	OTHER	TOP ¹	OTHER	TOP ¹	OTHER
#3	A	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	B	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
#4	A	15	12	20	18	12	12	16	14	12	12	15	12	12	12	12	12	12	12	15	12
	B	20	16	26	23	16	16	21	18	16	16	19	16	16	16	16	16	16	16	19	16
#5	A	23	17	29	26	18	14	26	21	15	12	20	18	15	12	18	14	15	12	18	14
	B	29	23	38	34	24	18	31	27	20	16	26	23	20	16	24	18	20	16	24	18
#6	A	31	24	40	35	25	19	33	29	18	14	24	21	18	14	24	21	18	14	22	17
	B	40	31	52	46	32	25	42	37	24	18	31	27	24	18	31	27	24	18	29	22
#7	A	49	38	64	56	41	31	53	47	30	23	39	35	27	21	35	31	27	21	32	25
	B	64	49	83	73	53	41	69	61	39	30	51	45	35	27	45	40	35	27	42	32
#8	A	61	47	79	70	51	39	66	58	38	29	50	44	31	24	40	35	31	24	37	28
	B	79	61	103	91	66	51	86	76	49	38	64	57	40	31	52	46	40	31	47	37
#9	A	73	57	96	85	62	48	81	71	47	36	61	54	38	29	49	44	34	27	45	40
	B	95	73	125	110	80	62	105	92	61	47	79	70	49	38	64	57	45	34	58	51
#10	A	88	68	115	102	75	58	98	86	57	44	75	66	47	36	61	54	39	30	50	45
	B	115	88	150	132	97	75	127	112	74	57	97	86	60	47	79	70	50	39	66	58
#11	A	103	80	135	119	88	68	115	102	68	53	89	79	56	43	73	64	43	33	56	64
	B	134	103	176	155	115	88	150	132	89	68	116	102	72	56	95	84	56	43	73	64

TENSION DEVELOPMENT LENGTH (Lap Class A) AND LAP SPLICE LENGTHS (Lap Class B) FOR GRADE 60 DEFORMED REINFORCING BARS (inches) (UNLESS SHOWN OTHERWISE ON DRAWINGS)																					
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		UNCOATED		EPOXY-COATED		UNCOATED		EPOXY-COATED		UNCOATED		EPOXY-COATED		UNCOATED		EPOXY-COATED		UNCOATED		EPOXY-COATED	
		TOP ¹	OTHER	TOP ¹	OTHER	TOP ¹	OTHER	TOP ¹	OTHER	TOP ¹	OTHER	TOP ¹	OTHER	TOP ¹	OTHER	TOP ¹	OTHER	TOP ¹	OTHER	TOP ¹	OTHER
#3	A	12	12	13	12	12	12	13	12	12	12	12	12	12	12	12	12	12	12	12	12
	B	16	16	17	16	16	16	17	16	16	16	16	16	16	16	16	16	16	16	16	16
#4	A	17	13	22	19	14	12	18	16	14	12	16	13	14	12	18	13	14	12	16	13
	B	22	17	28	25	18	16	23	20	18	16	21	16	18	16	21	16	18	16	21	16
#5	A	25	19	32	28	20	15	26	23	17	13	22	19	17	13	20	16	17	13	20	16
	B	32	25	42	37	26	20	34	30	22	17	28	25	22	17	26	20	22	17	26	20
#6	A	33	26	44	38	27	21	36	32	20	16	26	23	20	16	26	23	20	16	24	19
	B	43	33	57	50	35	27	46	41	26	20	34	30	26	20	34	30	26	20	31	24
#7	A	54	41	70	62	44	34	58	51	33	25	43	38	29	23	38	34	29	23	35	27
	B	70	54	91	80	58	44	75	66	43	33	56	49	38	29	50	44	38	29	45	35
#8	A	66	51	87	77	55	43	72	64	42	32	54	48	33	26	44	38	33	26	40	31
	B	86	66	113	100	72	55	94	83	54	42	71	62	43	33	57	50	43	33	52	40
#9	A	80	62	105	93	68	52	88	78	51	40	67	59	41	32	54	48	38	29	49	43
	B	104	80	136	120	88	68	115	101	67	51	87	77	54	41	70	62	49	38	64	56
#10	A	97	74	126	111	82	63	107	94	63	48	82	72	51	39	67	59	42	33	55	49
	B	126	97	164	145	106	82	139	123	82	63	107	94	66	51	86	76	55	42	72	63
#11	A	113	87	148	131	97	75	126	112	75	58	98	86	61	47	80	70	47	36	61	54
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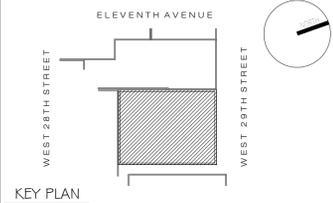
TYPICAL REINFORCING BAR DEVELOPMENT LENGTH/LAP SPLICE LENGTH SCHEDULES, U.N.O.

NOTES:

- TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 INCHES OF CONCRETE CAST BELOW THE BARS.
- CLEAR BAR SPACING = CENTER TO CENTER SPACING - BAR DIAMETER.
- AVOID SPLICES IN REGIONS OF MAXIMUM MOMENT. IF THIS IS NOT POSSIBLE, STAGGER SPLICES SO THAT SPLICES DO NOT REQUIRE MORE THAN 50% OF THE BARS ARE SPLICED WITHIN A REQUIRED SPLICE LENGTH OTHERWISE INCREASE SPLICE LENGTH BY 30%.
- FOR GRADE 75, REINFORCING BARS LENGTHS SHOWN ABOVE SHALL BE INCREASED BY A FACTOR = 1.25.

NOTES

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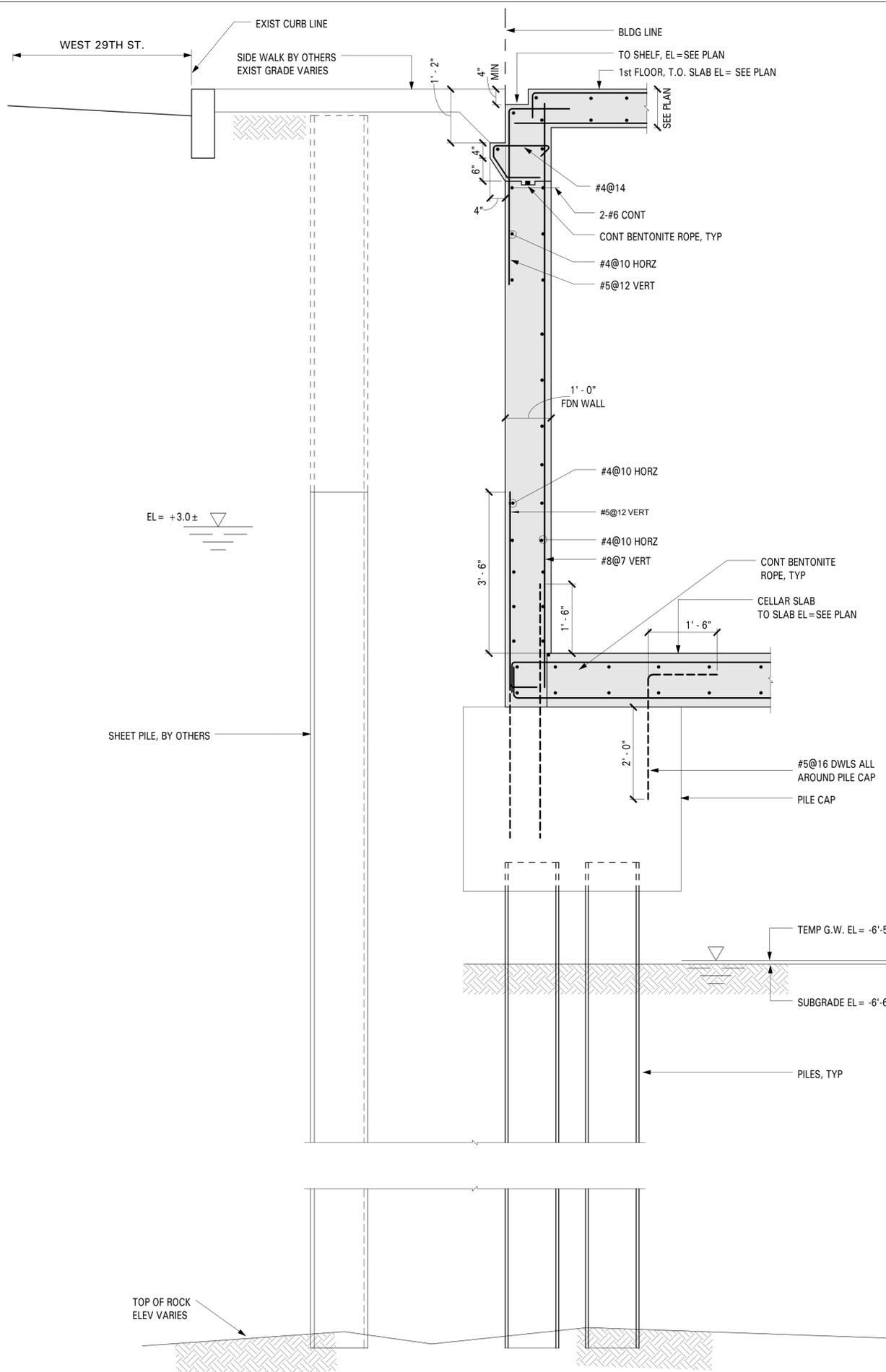
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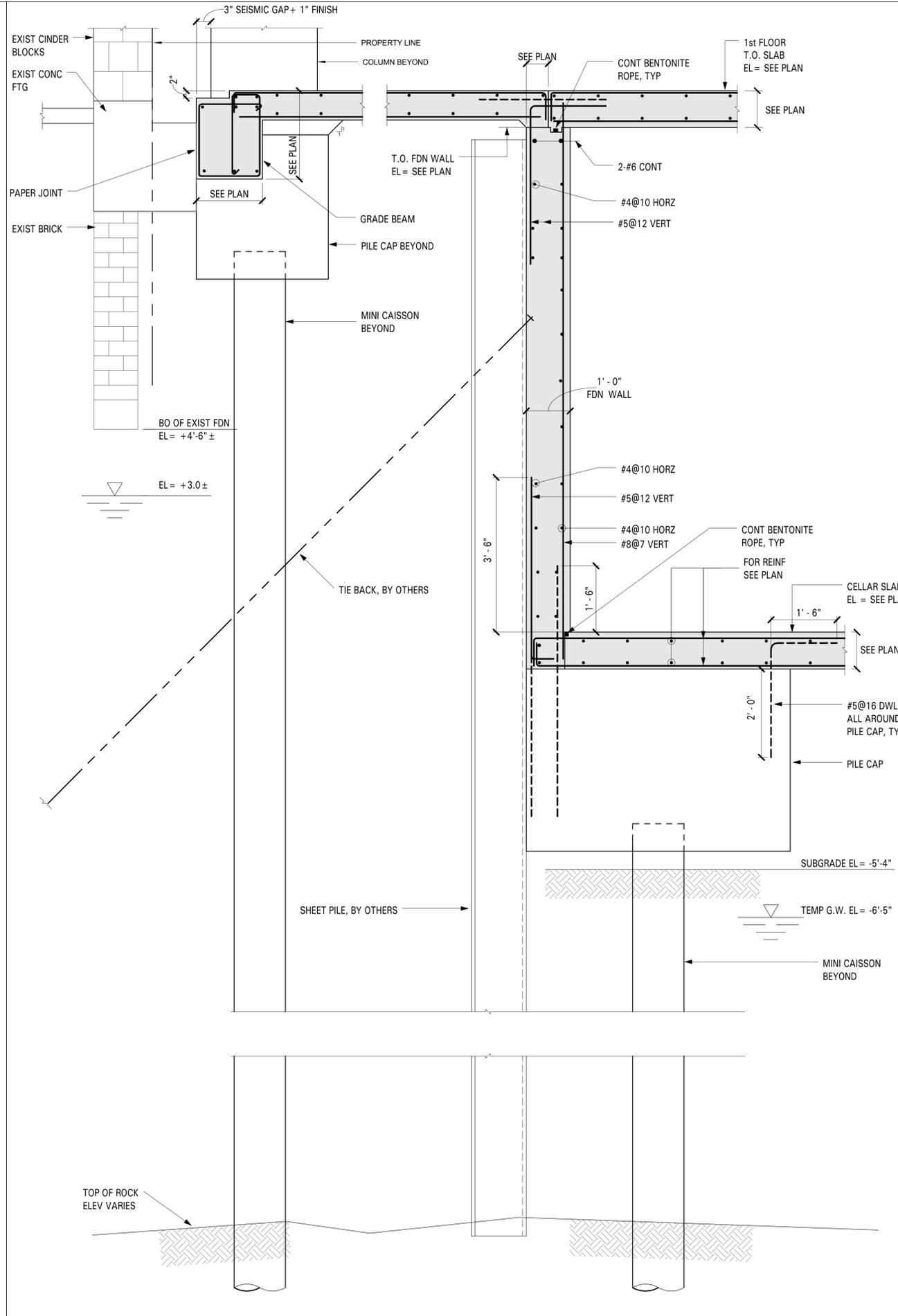
PROJECT
550W 29TH
 550 WEST 29TH STREET
 New York, NY

REINF DEVELOPMENT AND SPLICE TABLES

SEAL & SIG.	DATE: 10-03-2014
	PROJECT No.: 14082.00
	SCALE:
	DWG NO.:
	FO-210.00
CADD FILE NO.:	
XX	OF 10



1 SECTION
FO-100 SCALE: 3/4" = 1'-0"



2 SECTION
FO-100 SCALE: 3/4" = 1'-0"

NOTES

0	10-03-14	NYCTA REVIEW
No.	Date	Revision

KEY PLAN

Client: **TAMARKIN CO.**
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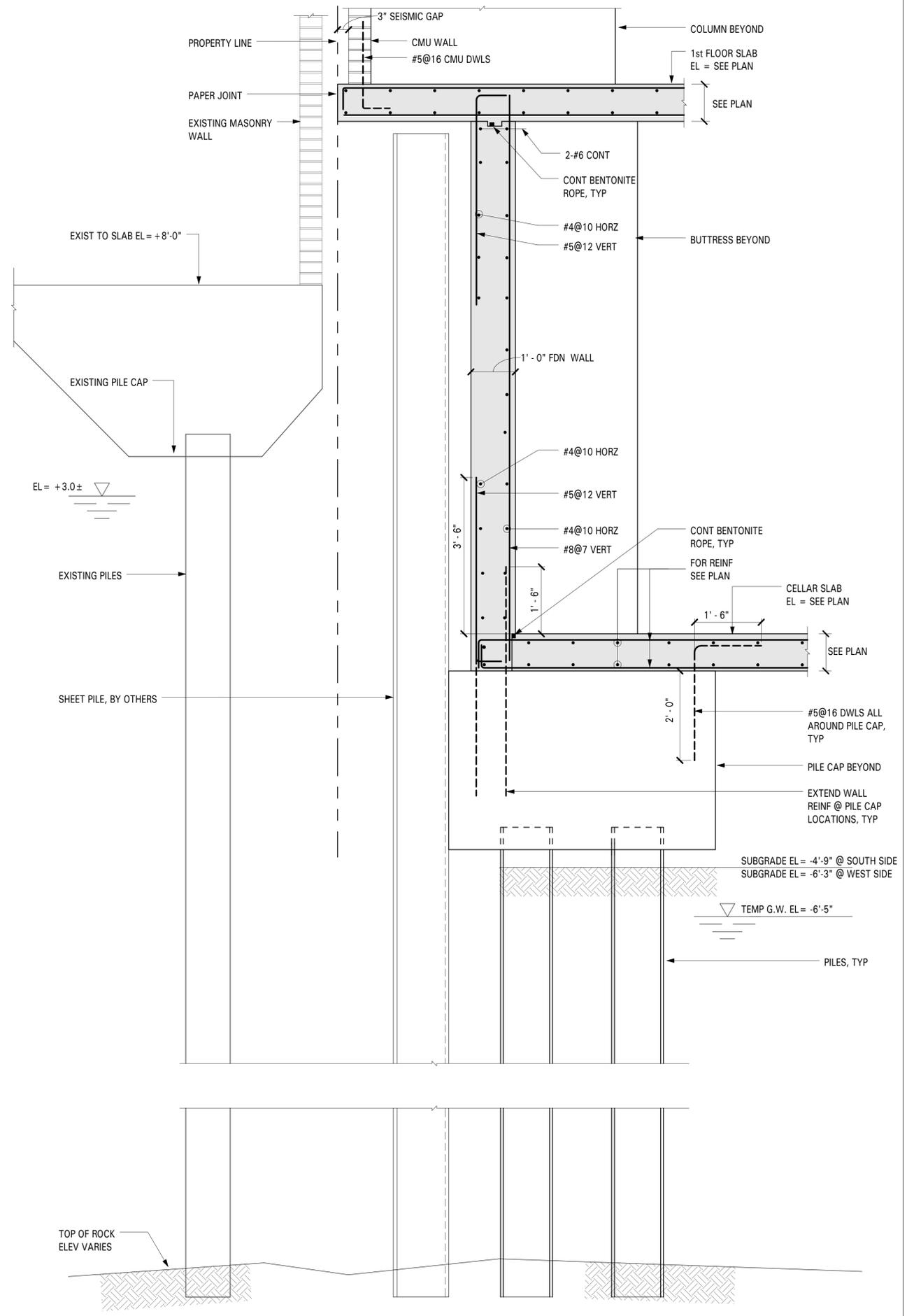
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512 th Avenue, New York, NY 10018
Tel (212) 687-9888 Fax (646) 487-5501

PROJECT
550W 29TH
550 WEST 29TH STREET
New York, NY

FOUNDATION SECTIONS

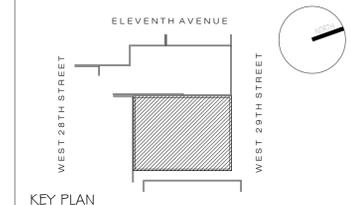
SEAL & SIG.	DATE: 10-03-2014
	PROJECT No.: 14082.00
	SCALE:
	DWG NO.:
	FO-300.00
CADD FILE NO.:	
XX	OF 10



3 FDN WALL SECTION 3
 FO-100 SCALE: 3/4" = 1'-0"

NOTES

No.	Date	Revision
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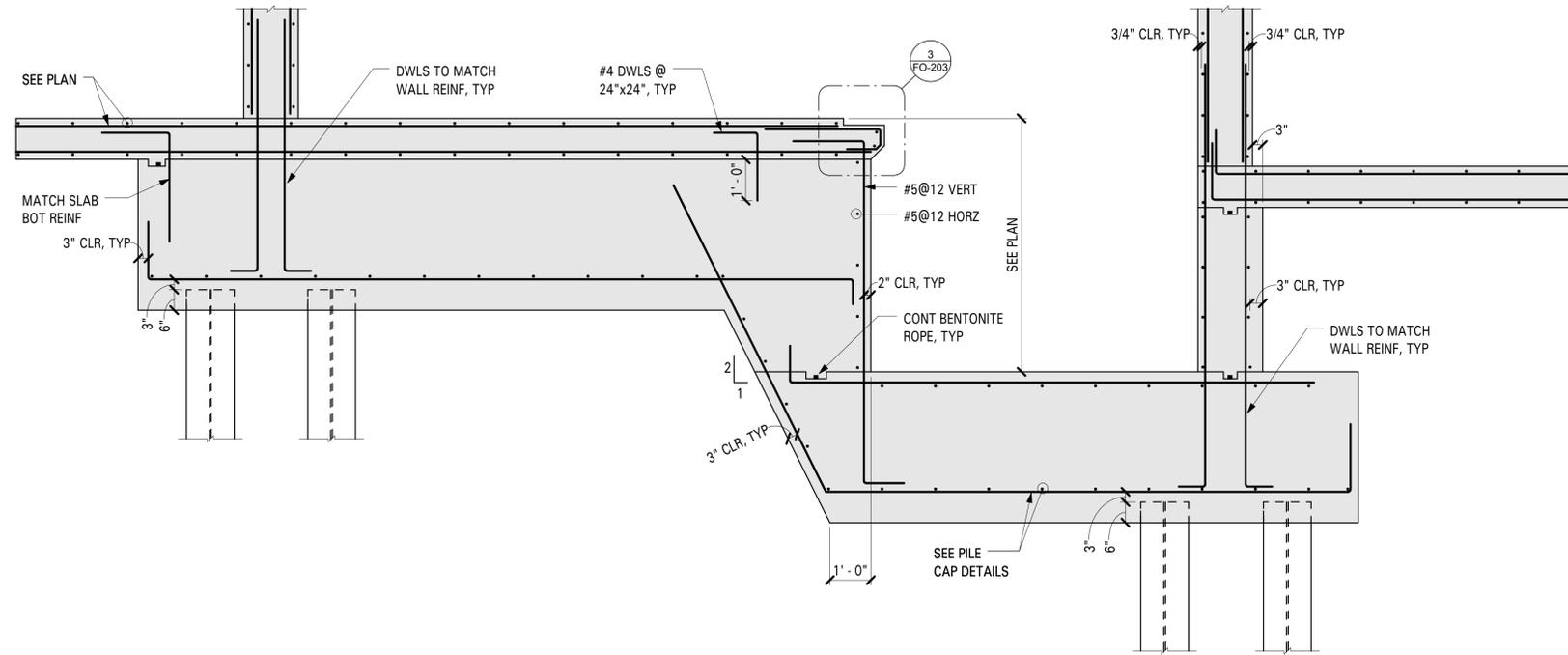
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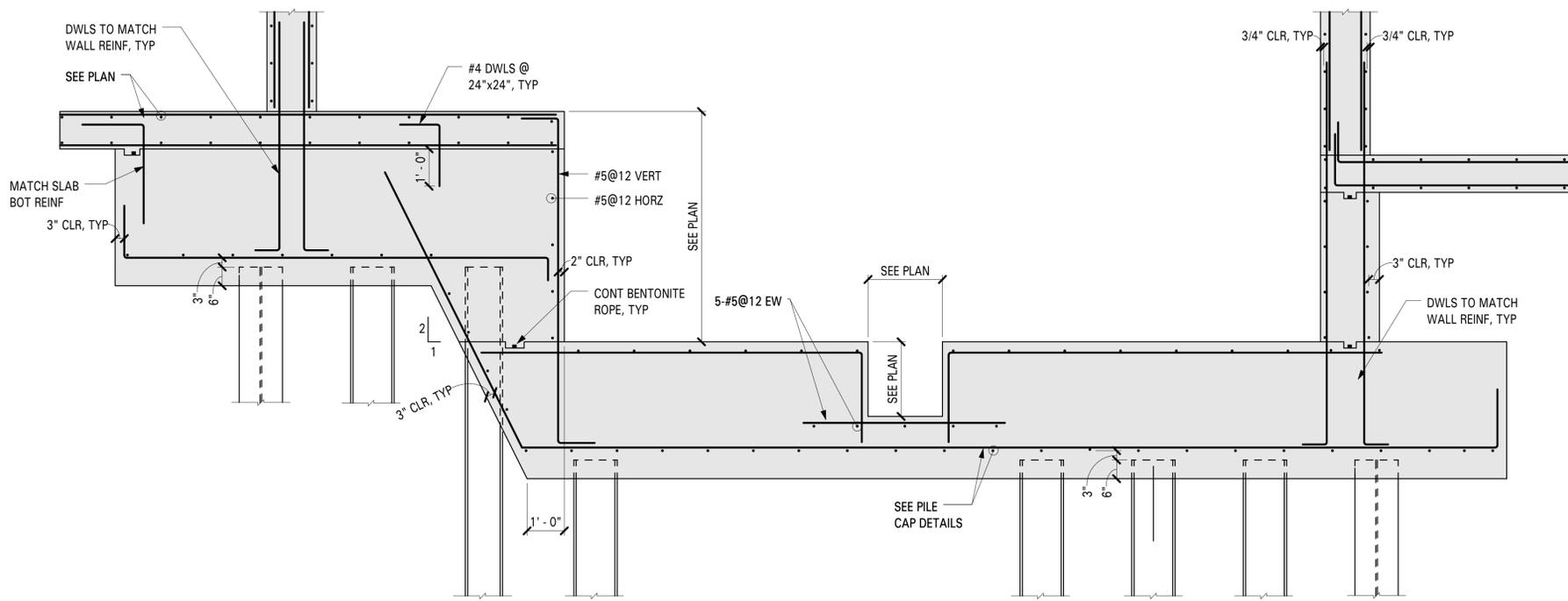
PROJECT
550W 29TH
 550 WEST 29TH STREET
 New York, NY

FOUNDATION SECTIONS

SEAL & SIG.	DATE: 10-03-2014
	PROJECT No.: 14082.00
	SCALE:
	DWG NO.:
	FO-301.00
CADD FILE NO.:	XX
	OF 10



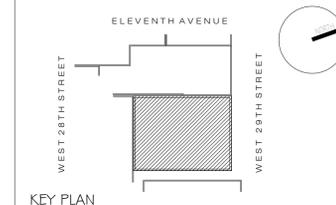
1 ELEVATOR PIT SECTION
FO-100 SCALE: 1/2" = 1'-0"



2 ELEVATOR PIT SECTION
FO-100 SCALE: 1/2" = 1'-0"

NOTES

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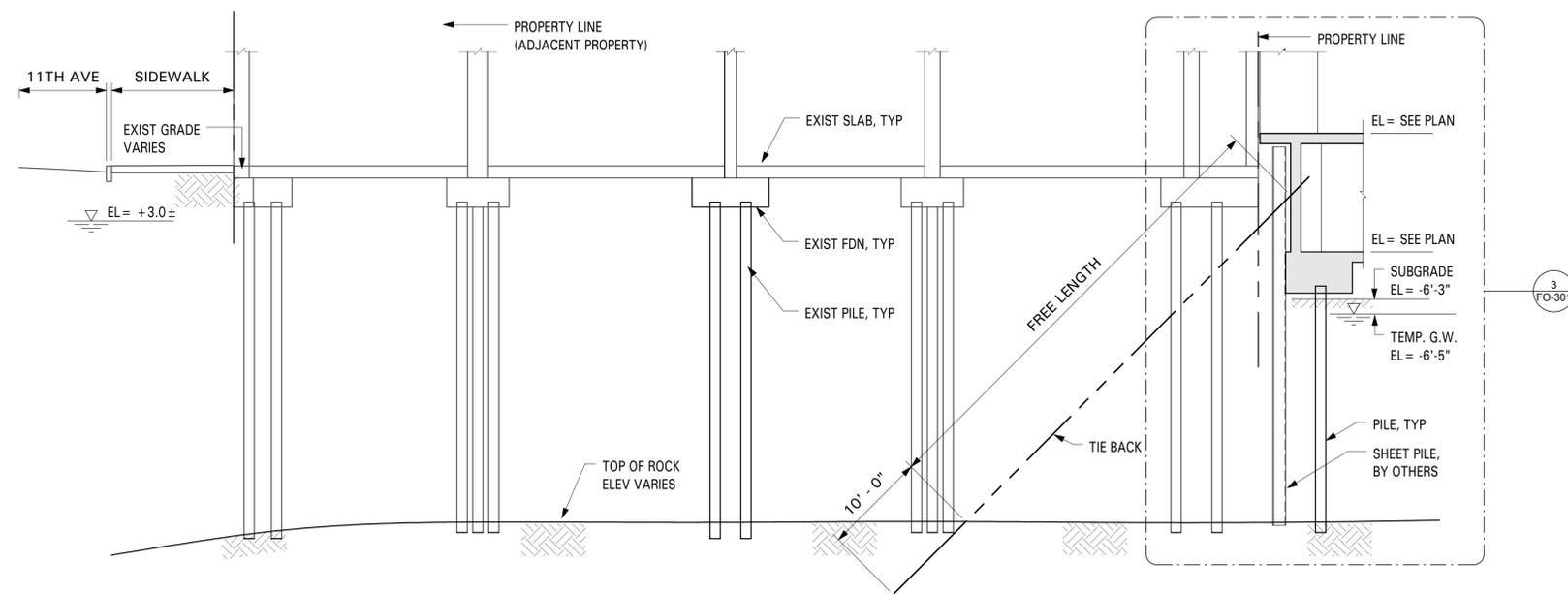
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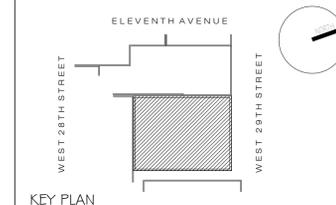
PROJECT
550W 29TH
 550 WEST 29TH STREET
 New York, NY

FOUNDATION SECTIONS

SEAL & SIG.	DATE: 10-03-2014
	PROJECT No.: 14082.00
	SCALE:
	DWG NO.:
	FO-302.00
CADD FILE NO.:	XX
	OF 10



0	10-03-14	NYCTA REVIEW
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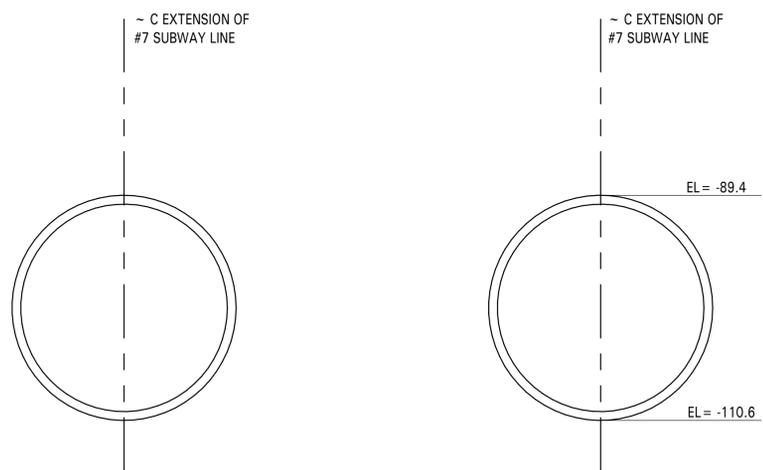
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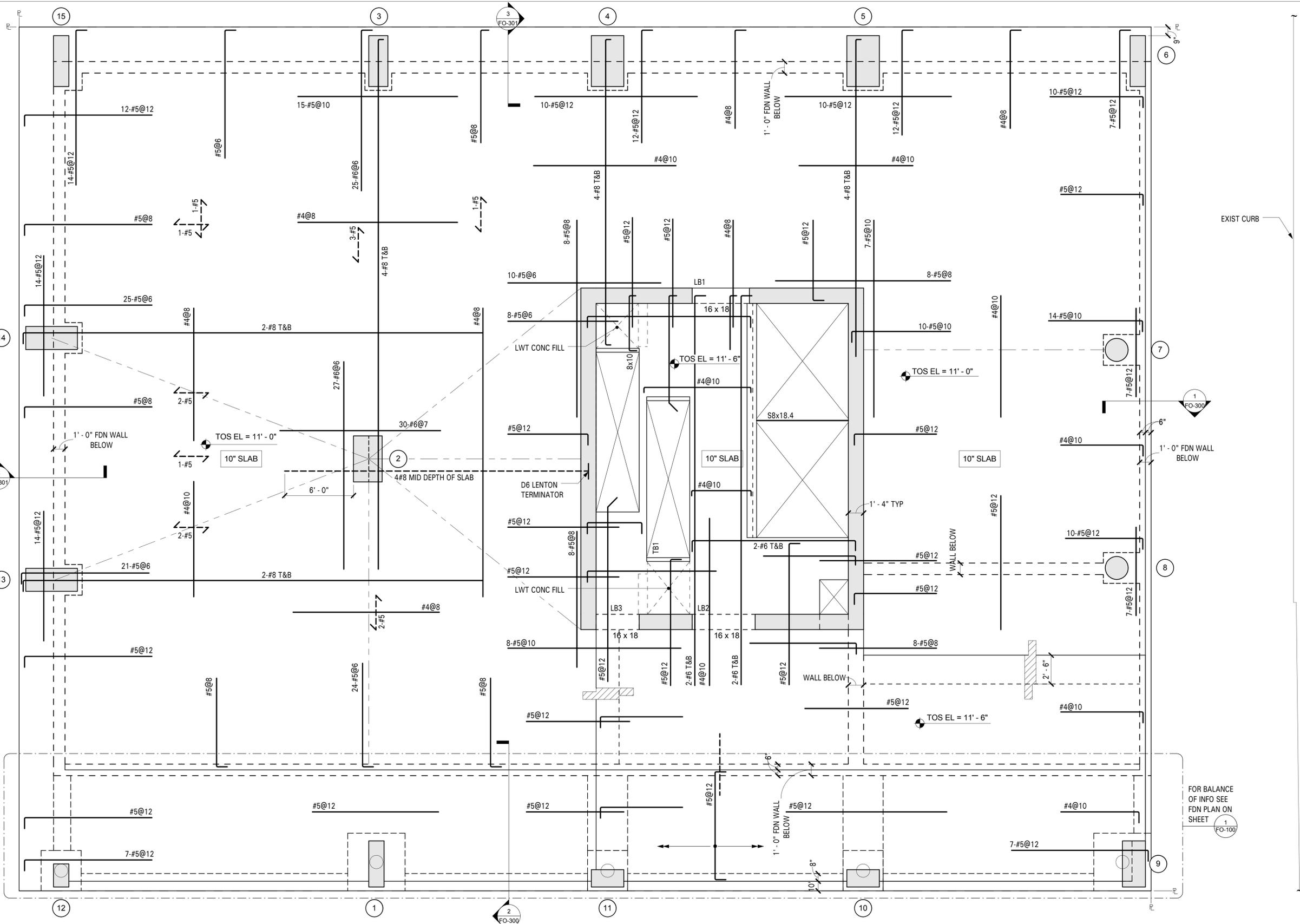
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PROJECT
550W 29TH
 850 WEST 29TH STREET
 New York, NY

FOUNDATION SECTIONS

SEAL & SIG.	DATE: 10-03-2014
	PROJECT No.: 14082.00
	SCALE:
	DWG NO.:
	FO-303.00
CADD FILE NO.:	OF 10





WEST 29TH STREET

EXIST CURB

WEST 28TH STREET

ELEVEN AVENUE

WEST 28TH STREET

WEST 29TH STREET

FOR BALANCE OF INFO SEE FDN PLAN ON SHEET 1 FO-100

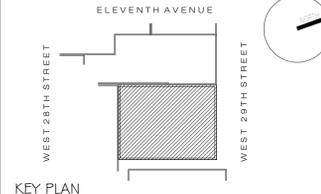
1ST FLOOR FRAMING PLAN
SCALE: 1/4" = 1'-0"

- NOTES:
- TOP OF SLAB ELEVATION "XX'-X\"", UNO
 - SLAB THICKNESS SHALL BE 8", UNO ON PLAN
 - BOTTOM REINFORCEMENT TO BE #4@12 CONT EACH WAY FOR 8" SLAB, UNO ON PLAN
 - BOTTOM REINFORCEMENT TO BE #4@10 CONT EACH WAY FOR 10" SLAB, UNO ON PLAN
 - **INDICATES EPOXY-COATED BARS
 - SEE FO-30X SERIES DRAWINGS FOR SECTIONS AT FOUNDATION WALL
 - SEE S-91X SERIES DRAWINGS FOR COLUMN AND BUTTRESS SCHEDULE AND DETAILS

- SEE S-93X SERIES DRAWINGS FOR SHEAR WALL AND LINK BEAM REINFORCING AND DETAILS
- SEE S-94X SERIES DRAWINGS FOR TYPICAL CONCRETE DETAILS
- SEE S-98X SERIES DRAWING FOR STAIR DETAILS AND SECTIONS
- ⊙ INDICATES COLUMN NUMBER
- ⊙ INDICATES ADDITIONAL TOP REINFORCING, SEE TYPICAL SLAB DETAILS FOR BAR LENGTHS, U.NO.
- ⊙ INDICATES ADDITIONAL BOTTOM REINFORCING, SEE TYPICAL SLAB DETAILS FOR BAR LENGTHS, U.NO.
- SEE S-001 SERIES DRAWINGS FOR GENERAL NOTES AND REQUIREMENTS, LEGEND AND ABBREVIATIONS

NOTES

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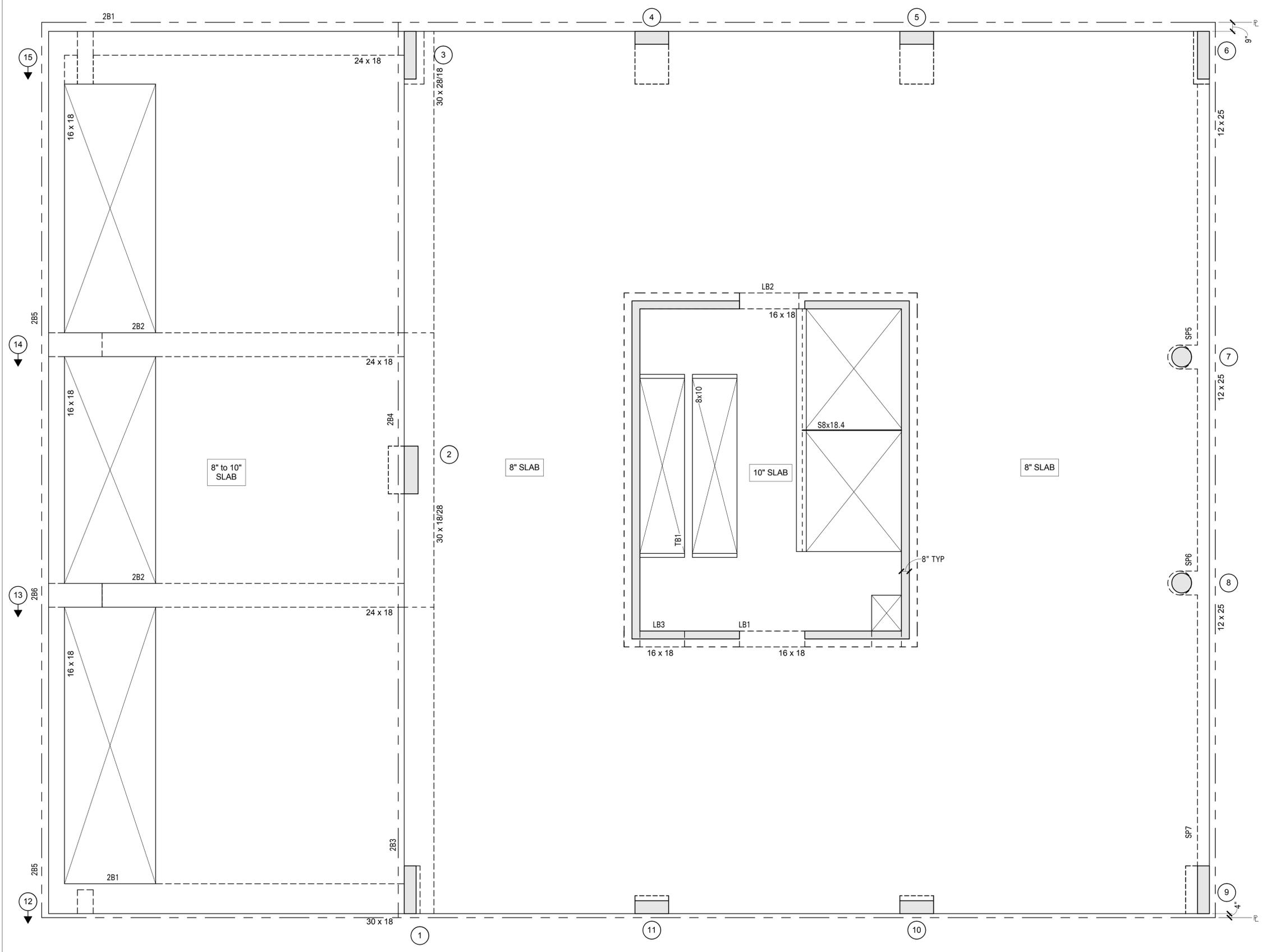
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PROJECT
550W 29TH
550 WEST 29TH STREET
New York, NY

1ST FLOOR FRAMING PLAN

SEAL & SIG.	DATE: 10-03-2014
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	S-010.00
CADD FILE NO.:	
XX	OF 10

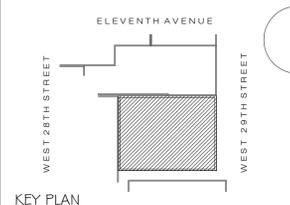


2ND FLOOR FRAMING PLAN
SCALE: 1/4" = 1'-0"

- NOTES:
1. SLAB THICKNESS SHALL BE 8" U.N.O. ON PLAN.
 2. BOTTOM REINFORCEMENT TO BE #4@12 CONT EACH WAY FOR 8" SLAB U.N.O. ON PLAN.
 3. BOTTOM REINFORCEMENT TO BE #4@10 CONT EACH WAY FOR 10" SLAB U.N.O. ON PLAN.
 4. **INDICATES EPOXY-COATED BARS.
 5. FOR BALANCE OF NOTES SEE SHEET S-010.

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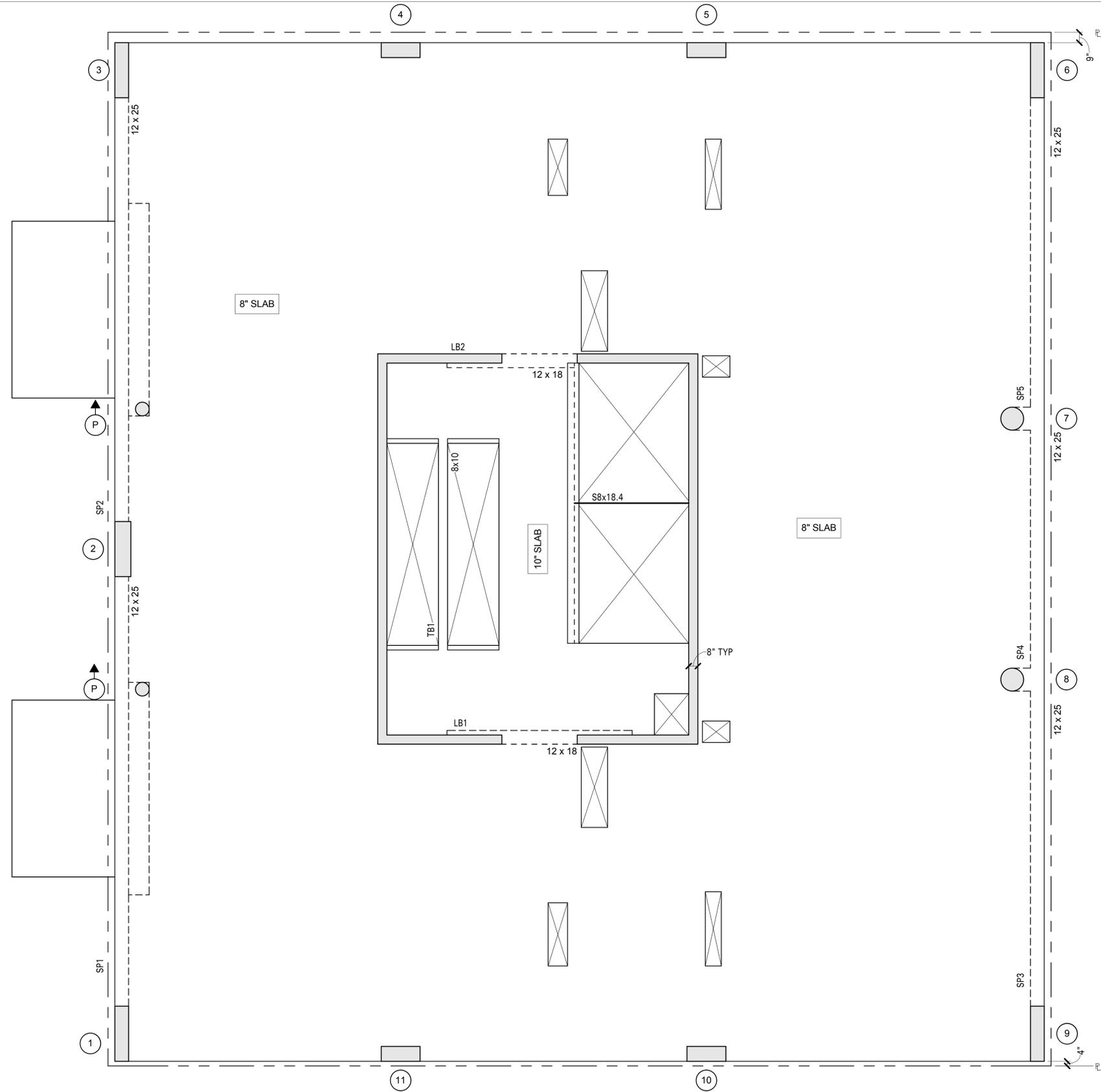
McNamara/Salvia, Inc.
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PROJECT
550W 29TH
 550 WEST 29TH STREET
 New York, NY

2ND FLOOR FRAMING PLAN

SEAL & SIG.	DATE: 10-03-2014
	PROJECT No.: 14082.00
	SCALE:
	DWG NO.:
	S-020.00
CADD FILE NO.:	XX
	OF 10



3RD FLOOR FRAMING PLAN

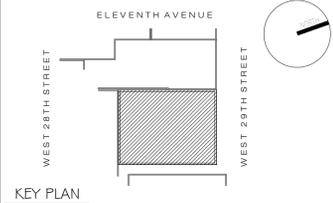
SCALE: 1/4" = 1'-0"

NOTES:

1. SLAB THICKNESS SHALL BE 8" U.N.O. ON PLAN.
2. BOTTOM REINFORCEMENT TO BE #4@12 CONT EACH WAY FOR 8" SLAB U.N.O. ON PLAN.
3. BOTTOM REINFORCEMENT TO BE #4@10 CONT EACH WAY FOR 10" SLAB U.N.O. ON PLAN.
4. **INDICATES EPOXY-COATED BARS.
5. FOR BALANCE OF NOTES SEE SHEET S-010.
6. (P) INDICATES 12"Ø CONC POST REINF W/ 5-#7 VERT AND #4@12 CIRCULAR TIES
7. (H) INDICATES 12"Ø CONC HANGER, REINF W/ 5-#7 VERT GR 75 (BY DYWIDAG OR SIMILAR) W/ TOP & BOT D6 LENTON TERMINATORS AT EACH END OF BAR. HORZ REINF TO BE #4@12 CIRCULAR TIES. NO LAP SPLICES WILL BE ALLOWED. TIES ONLY WHERE SPLICES ARE PERMISSIBLE.

NOTES

No.	Date	Revision
0	10-03-14	NYCTA REVIEW



Client
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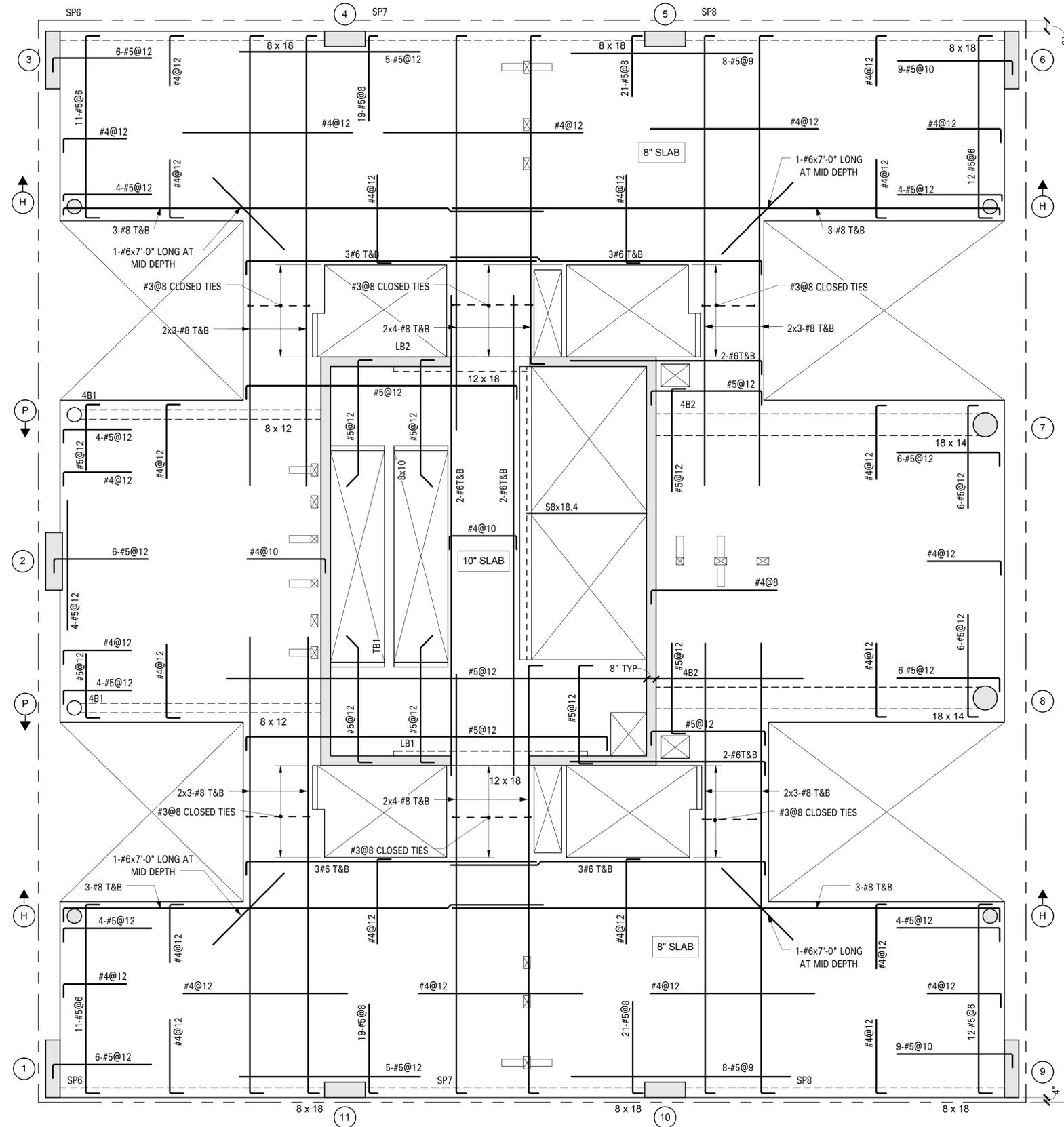
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PROJECT
550W 29TH
 550 WEST 29TH STREET
 New York, NY

3RD FLOOR FRAMING PLAN

SEAL & SIG.	DATE: 10-03-2014
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4TH, 6TH, AND 8TH FLOORS FRAMING PLAN

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

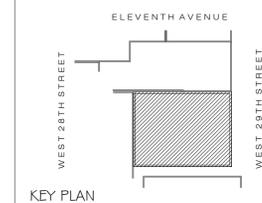
NOTES:

1. SLAB THICKNESS SHALL BE 8" (f'c = 6000 PSI) U.N.O. ON PLAN.
2. BOTTOM REINFORCEMENT TO BE #4@12 CONT EACH WAY FOR 8" SLAB U.N.O. ON PLAN.
3. BOTTOM REINFORCEMENT TO BE #4@10 CONT EACH WAY FOR 10" SLAB U.N.O. ON PLAN.
4. ** INDICATES EPOXY-COATED BARS.
5. FOR BALANCE OF NOTES SEE SHEET S-010.
6. @ INDICATES 12" Ø CONC POST REINF W/ 5-#7 VERT AND #4@12 CIRCULAR TIES
7. ⊕ INDICATES 12" Ø CONC HANGER, REINF W/ 5-#7 VERT GR 75 (BY DWIDAG OR SIMILAR) W/ TOP & BOT D6 LENTON TERMINATORS AT EACH END OF BAR. HORZ REINF TO BE #4@12 CIRCULAR TIES. NO LAP SPLICES WILL BE ALLOWED. TIES ONLY WHERE SPLICES ARE PERMISSIBLE.

MARK	SIZE (WxD)	REINFORCING			STIRRUPS			REMARKS
		CONTINUOUS BOTTOM	CONTINUOUS TOP	ADDITIONAL TOP	SIZE	TYPE	SPACING (in)	
4B1	8x12	2#8	2#6	-	#4	Type 2	4	
4B2	18x14	4#8	2#8	-	#4	Type 2	5	

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KEY PLAN

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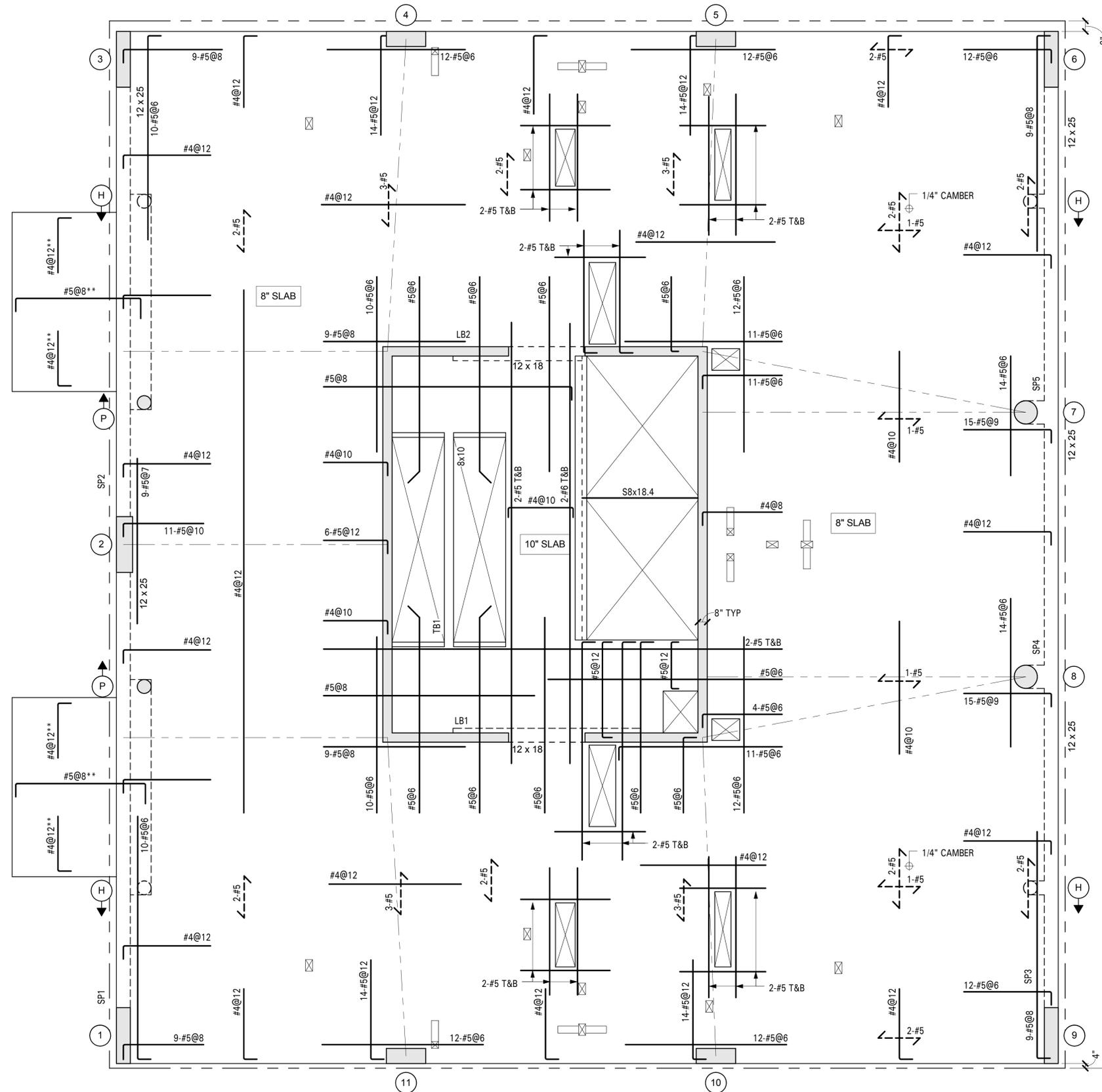
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PROJECT
550W 29TH
 550 WEST 29TH STREET
 New York, NY

4TH, 6TH, AND 8TH FLOORS FRAMING PLAN

SEAL & SIG.

DATE: 10-03-2014
 PROJECT No.: 14082.00
 SCALE:
 DWG NO.:
S-040.00
 CADD FILE NO.:
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5TH AND 7TH FLOORS FRAMING PLAN

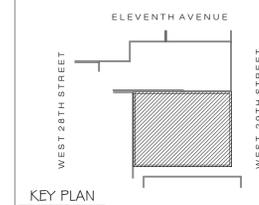
SCALE: 1/4" = 1'-0"

NOTES:

1. SLAB THICKNESS SHALL BE 8" U.N.O. ON PLAN.
2. BOTTOM REINFORCEMENT TO BE #4@12 CONT EACH WAY FOR 8" SLAB U.N.O. ON PLAN.
3. BOTTOM REINFORCEMENT TO BE #4@10 CONT EACH WAY FOR 10" SLAB U.N.O. ON PLAN.
4. **INDICATES EPOXY-COATED BARS.
5. FOR BALANCE OF NOTES SEE SHEET S-010.
6. ⊙ INDICATES 12"Ø CONC POST REINF W/ 5-#7 VERT AND #4@12 CIRCULAR TIES
7. ⊙ INDICATES 12"Ø CONC HANGER, REINF W/ 5-#7 VERT GR 75 (BY DYWIDAG OR SIMILAR) W/ TOP & BOT D6 LENTON TERMINATORS AT EACH END OF BAR. HORZ REINF TO BE #4@12 CIRCULAR TIES. NO LAP SPLICES WILL BE ALLOWED. TIES ONLY WHERE SPLICES ARE PERMISSIBLE.

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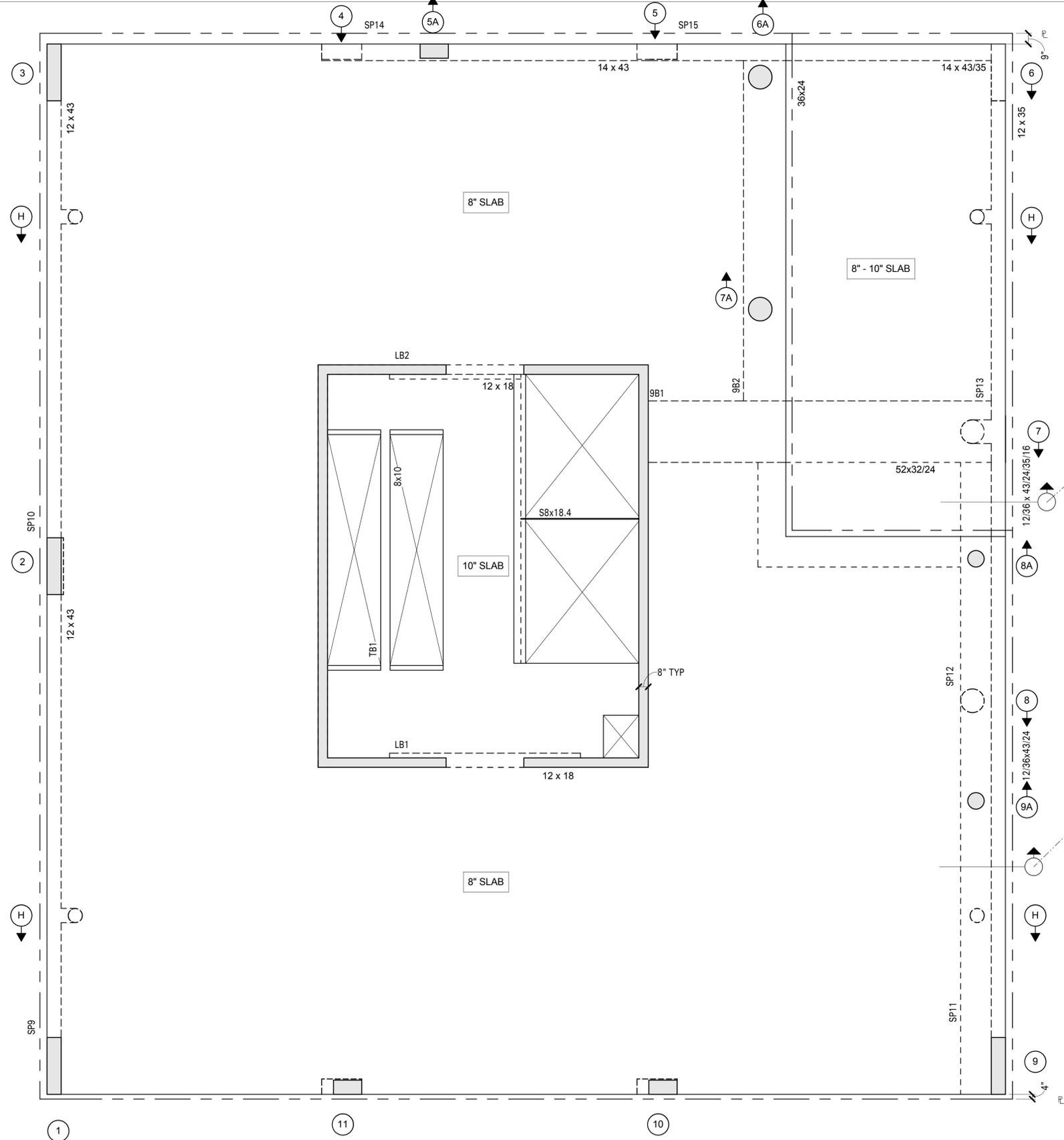
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PROJECT
550W 29TH
 550 WEST 29TH STREET
 New York, NY

**5TH AND 7TH FLOORS
 FRAMING PLAN**

SEAL & SIG.	DATE: 10-03-2014
	PROJECT No.: 14082.00
	SCALE:
	DWG NO.:
	S-050.00
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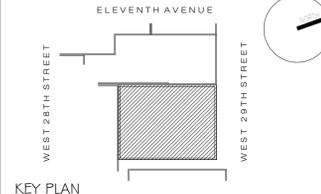


9TH FLOOR FRAMING PLAN
SCALE: 1/4" = 1'-0"

- NOTES:**
1. SLAB THICKNESS SHALL BE 8" U.N.O. ON PLAN.
 2. BOTTOM REINFORCEMENT TO BE #4@12 CONT EACH WAY FOR 8" SLAB U.N.O. ON PLAN.
 3. BOTTOM REINFORCEMENT TO BE #4@10 CONT EACH WAY FOR 10" SLAB U.N.O. ON PLAN.
 4. **INDICATES EPOXY-COATED BARS.
 5. FOR BALANCE OF NOTES SEE SHEET S-010.

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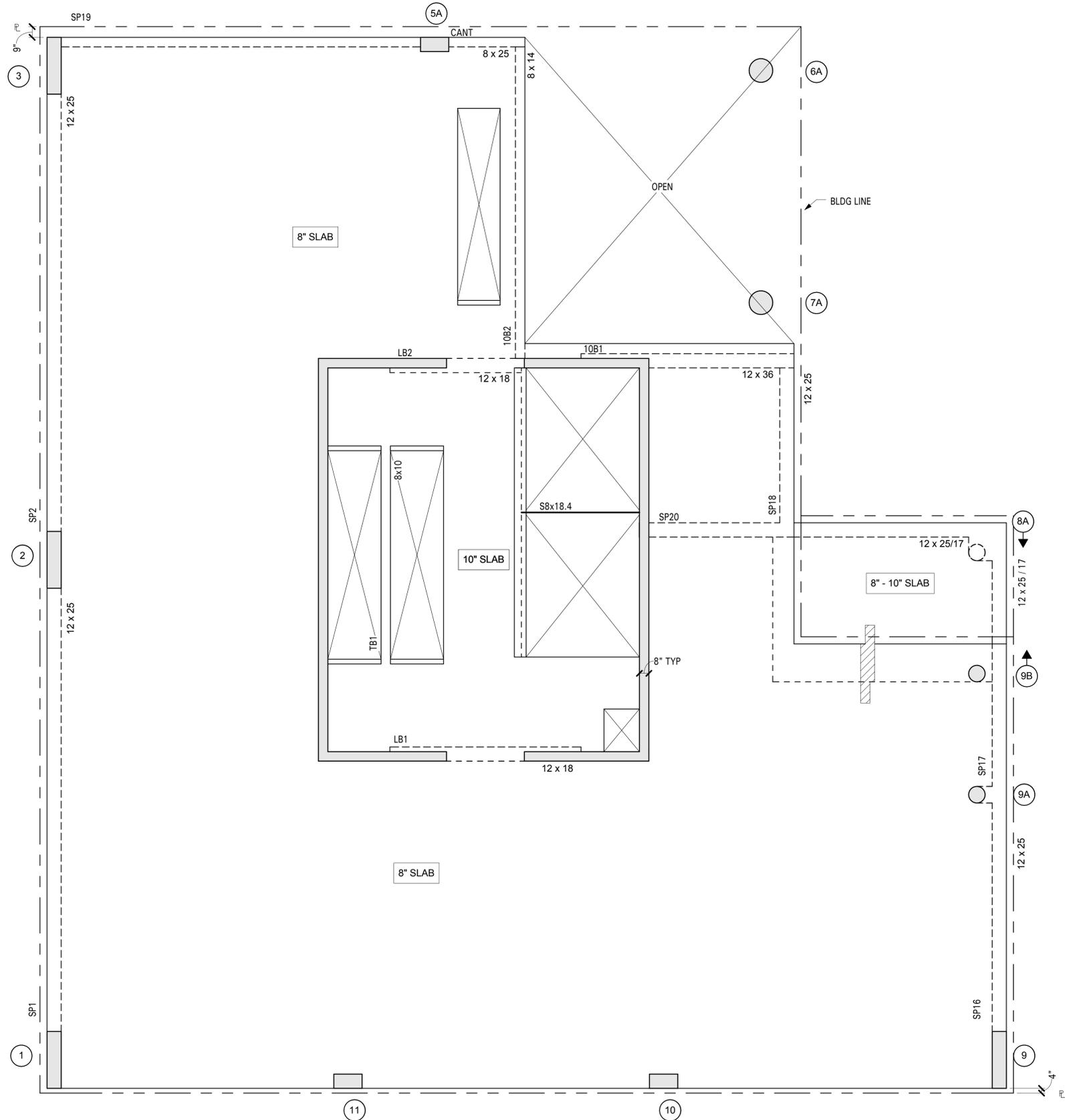
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PROJECT
550W 29TH
 550 WEST 29TH STREET
 New York, NY

9TH FLOOR FRAMING PLAN

SEAL & SIG.	DATE: 10-03-2014
	PROJECT No.: 14082.00
	SCALE:
	DWG NO.:
	S-090.00
CADD FILE NO.:	OF 10

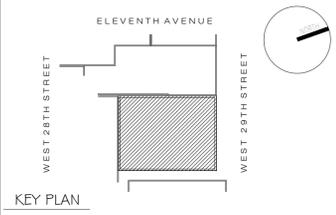


10TH FLOOR FRAMING PLAN
 SCALE: 1/4" = 1'-0"

- NOTES:
1. SLAB THICKNESS SHALL BE 8" U.N.O. ON PLAN.
 2. BOTTOM REINFORCEMENT TO BE #4@12 CONT EACH WAY FOR 8" SLAB U.N.O. ON PLAN.
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 4. **INDICATES EPOXY-COATED BARS.
 5. FOR BALANCE OF NOTES SEE SHEET S-010.

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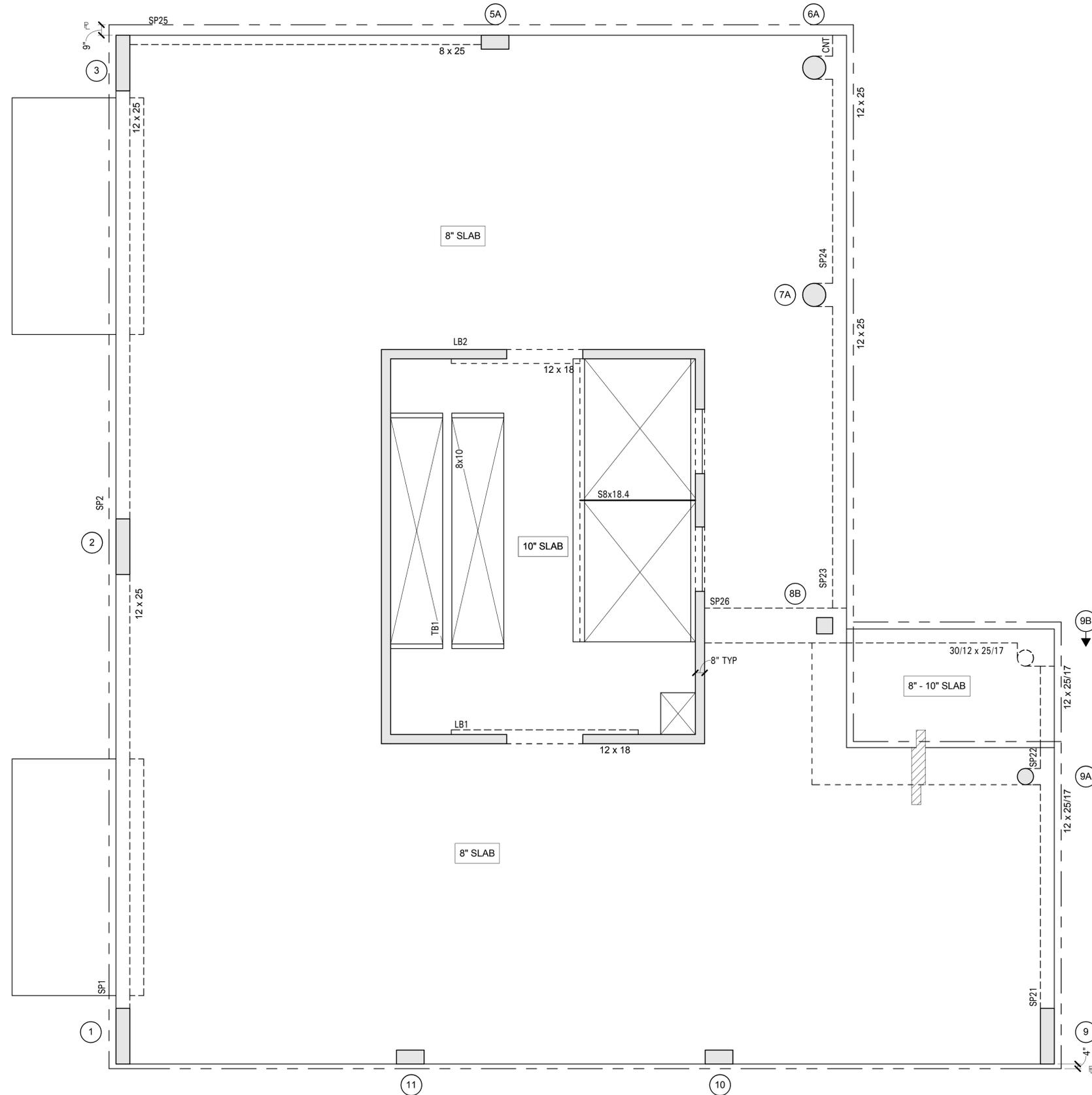
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PROJECT
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10TH FLOOR FRAMING PLAN

SEAL & SIG.	DATE: 10-03-2014
	PROJECT No.: 14082.00
	SCALE:
	DWG NO.:
	S-100.00
CADD FILE NO.:	XX
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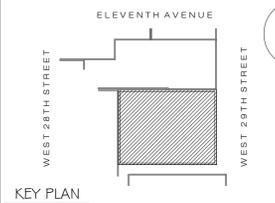
11TH FLOOR FRAMING PLAN
SCALE: 1/4" = 1'-0"

NOTES:

1. SLAB THICKNESS SHALL BE 8" U.N.O. ON PLAN.
2. BOTTOM REINFORCEMENT TO BE #4@12 CONT EACH WAY FOR 8" SLAB U.N.O. ON PLAN.
3. BOTTOM REINFORCEMENT TO BE #4@10 CONT EACH WAY FOR 10" SLAB U.N.O. ON PLAN.
4. **INDICATES EPOXY-COATED BARS.
5. FOR BALANCE OF NOTES SEE SHEET S-010.

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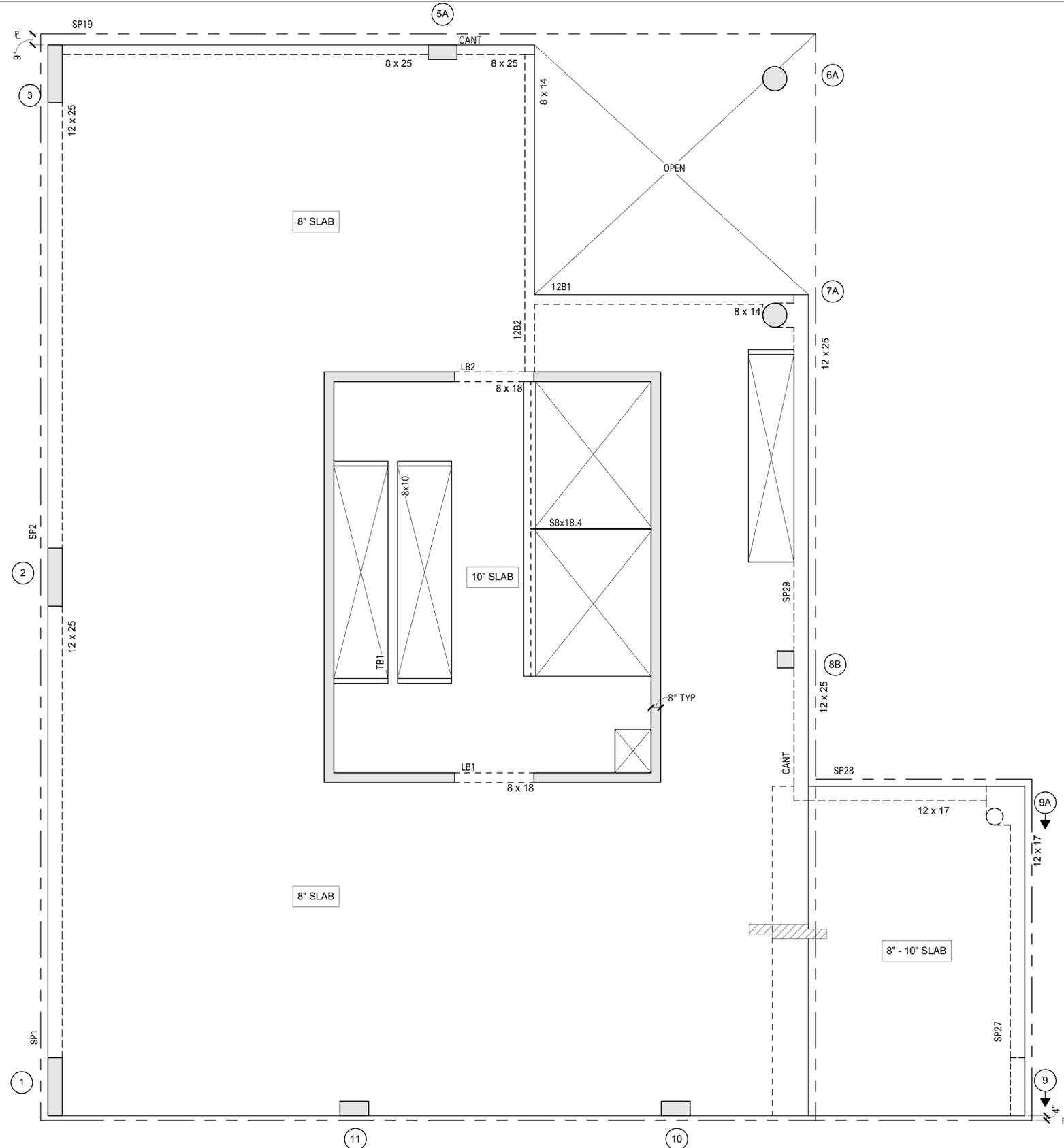
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PROJECT
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11TH FLOOR FRAMING PLAN

SEAL & SIG.	DATE: 10-03-2014
	PROJECT No.: 14082.00
	SCALE:
	DWG NO.:
	S-110.00
CADD FILE NO.:	OF 10
XX	



12TH FLOOR FRAMING PLAN

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

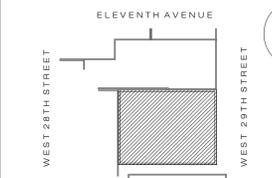
NOTES:

1. SLAB THICKNESS SHALL BE 8" U.N.O. ON PLAN.
2. BOTTOM REINFORCEMENT TO BE #4@12 CONT EACH WAY FOR 8" SLAB U.N.O. ON PLAN.
3. BOTTOM REINFORCEMENT TO BE #4@10 CONT EACH WAY FOR 10" SLAB U.N.O. ON PLAN.
4. **INDICATES EPOXY-COATED BARS.
5. FOR BALANCE OF NOTES SEE SHEET S-010.

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No.	Date	Revision
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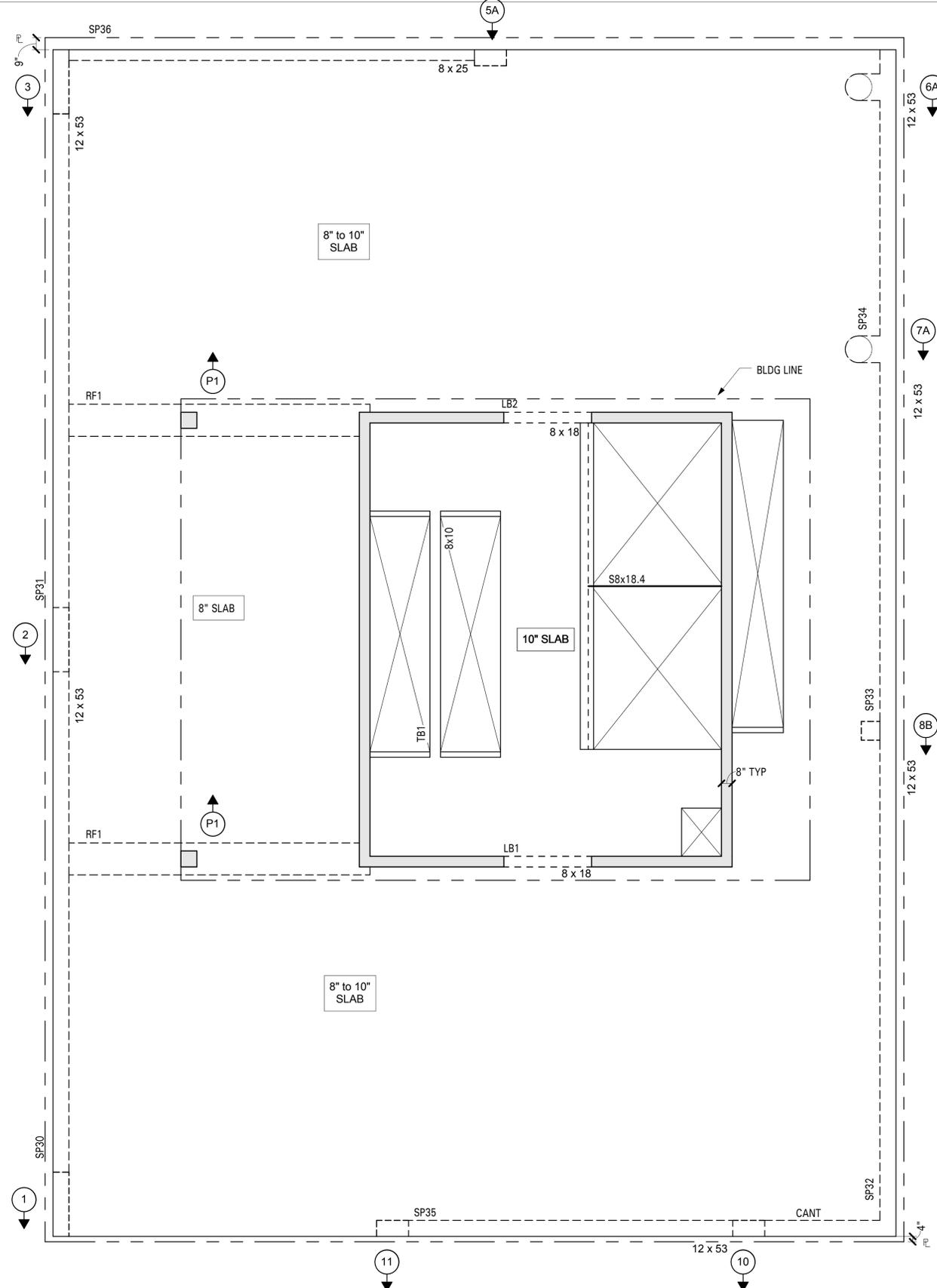
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PROJECT
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 New York, NY

12TH FLOOR FRAMING PLAN

SEAL & SIG.	DATE: 10-03-2014
	PROJECT No.: 14082.00
	SCALE:
	DWG NO.:
	S-120.00
CADD FILE NO.:	OF 10



MAIN ROOF FRAMING PLAN

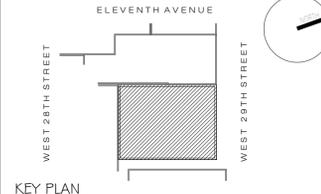
SCALE: 1/4" = 1'-0"

NOTES:

1. SLAB THICKNESS SHALL BE 8" U.N.O. ON PLAN.
2. BOTTOM REINFORCEMENT TO BE #4@12 CONT EACH WAY FOR 8" SLAB U.N.O. ON PLAN.
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5. FOR BALANCE OF NOTES SEE SHEET S-010.

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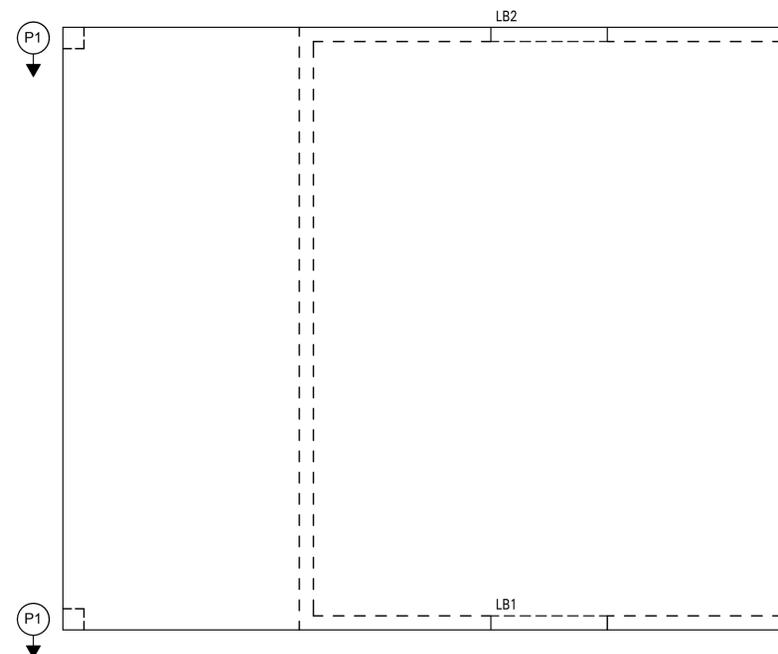
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PROJECT
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MAIN ROOF FRAMING PLAN

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BULKHEAD FRAMING PLAN

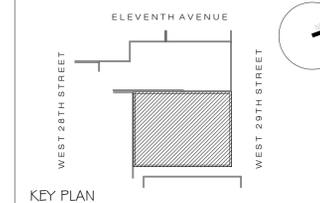
SCALE: 1/4" = 1'-0"

NOTES:

1. SLAB THICKNESS SHALL BE 8" U.N.O. ON PLAN.
2. BOTTOM REINFORCEMENT TO BE #4@12 CONT EACH WAY FOR 8" SLAB U.N.O. ON PLAN.
3. BOTTOM REINFORCEMENT TO BE #4@10 CONT EACH WAY FOR 10" SLAB U.N.O. ON PLAN.
4. **INDICATES EPOXY-COATED BARS.
5. FOR BALANCE OF NOTES SEE SHEET S-010.

0	10-03-14	NYCTA REVIEW
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No.	Date	Revision
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BULKHEAD FRAMING PLAN

SEAL & SIG.	DATE: 10-03-2014
	PROJECT No.: 14082.00
	SCALE:
	DWG NO.:
	S-140.00
CADD FILE NO.:	XX
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COLUMN SCHEDULE

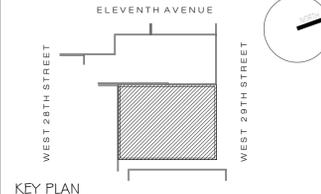
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Main Roof	f _c (psi) Height	4000 13'-2"	4000 13'-2"	4000 13'-2"																			
12th		200 12 x 48 8-#7	338 12 x 48 8-#7	207 12 x 48 8-#7			154 24 x 12 4-#8		140		136 Ø20 5-#8			145 14 x 14 4-#7				198 24 x 12 4-#9	155 24 x 12 4-#8				
11th		261 10'-10"	428 10'-10"	273 10'-10"			215 4-#8		Ø20 5-#9		166 5-#8			124 12 x 48 8-#7	91 Ø14 5-#7			274 4-#9	214 4-#8				
10th		326 10'-10"	517 10'-10"	346 10'-10"			278 4-#11		192		222			168 14 x 14 4-#7	134 Ø14 5-#7	104 Ø14 5-#6		340 6-#10	272 4-#10				
9th		393 10'-10"	606 12 x 48 8-#9	418 8-#7			339 24 x 12 4-#11		Ø20 5-#10		Ø20 6-#11		171 Ø14 5-#7		241 Ø14 6-#9			406 24 x 12 6-#10	331 24 x 12 4-#10				
8th		492 12'-0"	730 14 x 48 8-#8	523 8-#8	495 34 x 13 6-#10	381 34 x 13 6-#10	207 12 x 48 8-#7		370 Ø20 5-#7		474 Ø20 5-#7			358 Ø14 5-#7				478 34 x 13 6-#10	396 34 x 13 6-#10				
7th		519 10'-6"	757 8-#8	550 8-#8	558 6-#7	444 6-#7		235		407 5-#7		511 5-#7			389			543 6-#7	456 6-#7				
6th		636 10'-6"	921 8-#9	667 8-#9	624 6-#7	509 6-#7		285		493 5-#8		596 5-#8			465			610	518				
5th		663 10'-6"	949 8-#9	694 8-#9	687 6-#7	573 6-#7		313		530		633			496			676	578				
4th		780 10'-6"	1113 8-#10	811 8-#10	753 8-#9	638 8-#9		363		615 5-#8		719 5-#8			573 8-#7			743	640				
3rd		807 10'-6"	1141 8-#10	838 8-#10	816 8-#9	701 8-#9		391 8-#8		652 5-#9		756 5-#9			603 8-#9			808	701				
2nd		890 10'-6"	1285 14 x 48 8-#11	921 12 x 48 8-#11	881 34 x 13 6-#7	766 34 x 13 6-#7		446 12 x 48 8-#8		724 Ø20 5-#9		828 Ø20 5-#9			656 12 x 48 8-#9			876 34 x 13 6-#7	762 34 x 13 6-#7				
1st		1086 16 x 48 8-#11	1592 30 x 48 2/S-916 10-#11	1120 20 x 53 1/S-916	982 34 x 53 1/S-916	873 34 x 53 1/S-916		510 16 x 53 1/S-916 10-#11		803 Ø24 5-#11		907 Ø24 5-#11			715 24 x 48 8-#9			955 34 x 18 6-#9	835 34 x 18 6-#9	180 16 x 24 4-#8	181 54 x 24 1/S-916 10-#8	187 54 x 24 1/S-916 10-#8	190 16 x 53 1/S-916 10-#8
Cellar		1815 16 x 48 8-#11	1329 B28 x 30 8-#11	1115 B42 x 30 10-#9	1019 B42 x 30 10-#9		643 B26 x 30 8-#11		950 B46 x 32 10-#11		1034 B46 x 32 10-#11				618			796	702	188	354	400	354
FND(Service)		894	1594	1152	971	903		558		858		904											
FLOOR	COL NO.	1	2	3	4	5	5A	6	6A	7	7A	8	8A	8B	9	9A	9B	10	11	12	13	14	15

COLUMN NOTES:

- FIRST COLUMN DIMENSION SHOWN IN SCHEDULE IS IN THE NORTH-SOUTH DIRECTION.
- LOADS SHOWN ARE GIVEN IN KIPS, AND ARE ULTIMATE LOADS U.O.N.
- LOADS SHOWN FOR FOUNDATIONS ARE SERVICE LOADS.
- SEE COLUMN SCHEDULE FOR CONCRETE COMPRESSIVE STRENGTH, f_c.
- COLUMN SIZES AND REINFORCING ARE ONLY SHOWN WHERE SIZES START AND STOP. SIZES AND REINFORCING REMAIN CONSTANT OVER BLANK SPACES BETWEEN START AND STOP.
- HEAVY LINE INDICATES TOP OF COLUMN.
- "B" INDICATES BUTTRESS.
- * INDICATES TENSION SPLICE
- INDICATES COLUMN BEING TRANSFERRED
- INDICATES ADDITIONAL LOAD FROM TRANSFER
- INDICATES CHANGE IN HOLD POINT OF COLUMN
- FOR GENERAL NOTES SEE S-001.
- FOR COLUMN DETAILS SEE DRAWING S-915 AND S-916

NOTES

0	10-03-14	NYCTA REVIEW
No.	Date	Revision



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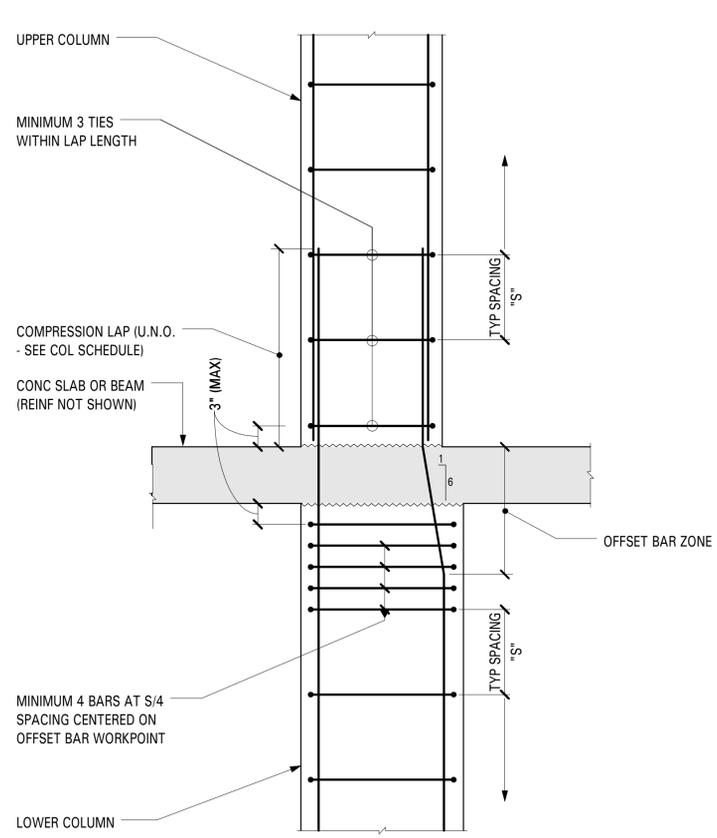
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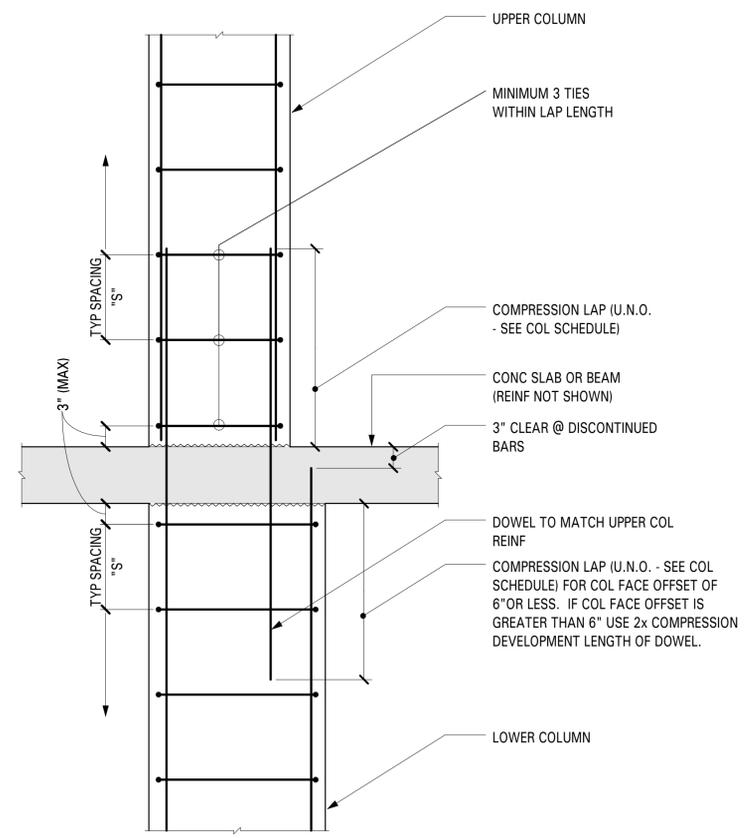
PROJECT
550W 29TH
 550 WEST 29TH STREET
 New York, NY

COLUMN SCHEDULE

SEAL & SIG.	DATE: 10-03-2014
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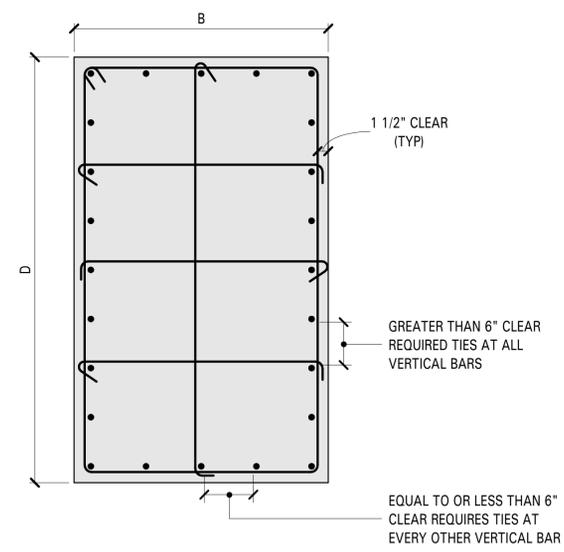
COLUMN FACE OFFSET LESS THAN 3 INCHES



COLUMN FACE OFFSET 3 INCHES OR MORE

NOTE:

1. IF UPPER COLUMN VERTICAL REINFORCING EXCEEDS THAT OF LOWER COLUMN VERTICAL REINF, ADD DOWELS AS NEEDED TO MATCH UPPER COL REINF
2. IF LOWER COLUMN VERTICAL REINFORCING EXCEEDS THAT OF THE UPPER COLUMN VERTICAL REINFORCING, IT IS ONLY REQUIRED TO EXTEND LOWER BARS AT SPLICE TO MATCH UPPER COLUMN REINF
3. SEE SCHEDULE FOR TYPICAL TIE SIZE AND SPACING "S"



TYPICAL COLUMN REINFORCING DETAIL

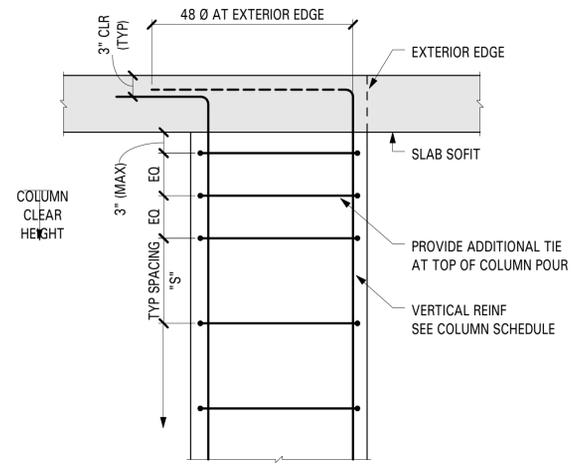
VERTICAL BAR SIZE	MINIMUM TIES (SEE NOTES FOR ADDN'L REQUIREMENTS)
#5	#3 @ 10" OC
#6	#3 @ 12" OC
#7	#3 @ 14" OC
#8	#3 @ 16" OC
#9	#3 @ 18" OC
#10	#3 @ 18" OC
#11	#4 @ 20" OC
#14	#4 @ 20" OC
#18	#4 @ 20" OC

NOTE:
TIES SPACING SHALL NOT EXCEED LEAST COLUMN DIMENSION

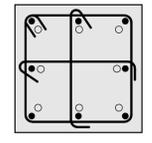
NOTE:

1. DIMENSION D IS GREATER THAN OR EQUAL TO B.
2. PLACE BARS EQUALLY SPACED AROUND ENTIRE COLUMN UNLESS NOTED OTHERWISE
3. ARRANGE TIES SUCH THAT EVERY CORNER AND ALTERNATE LONGITUDINAL BAR ARE TIED WHERE BAR CLEAR SPACING IS LESS THAN OR EQUAL TO 6". TIE ALL BARS WHERE BAR CLEAR SPACING EXCEEDS 6".
4. ALTERNATE 90° AND 135° HOOK ENDS ON ADJACENT CROSS-TIES

B	MAX BARS INCLUDING CORNERS
16" ≥ 12"	3
20" ≥ 16"	4
24" ≥ 20"	5
30" ≥ 24"	6

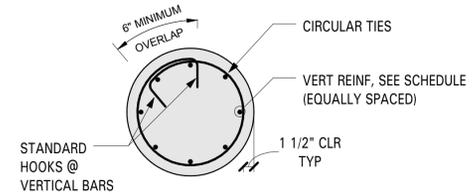


TYPICAL DETAIL AT TOP OF COLUMN



- INDICATES VERTICAL BAR ABOVE
- INDICATES OFFSET VERTICAL BAR BELOW

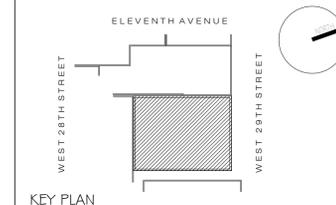
TYPICAL COLUMN VERTICAL OFFSETS AT SPLICES



TYPICAL CIRCULAR COLUMN

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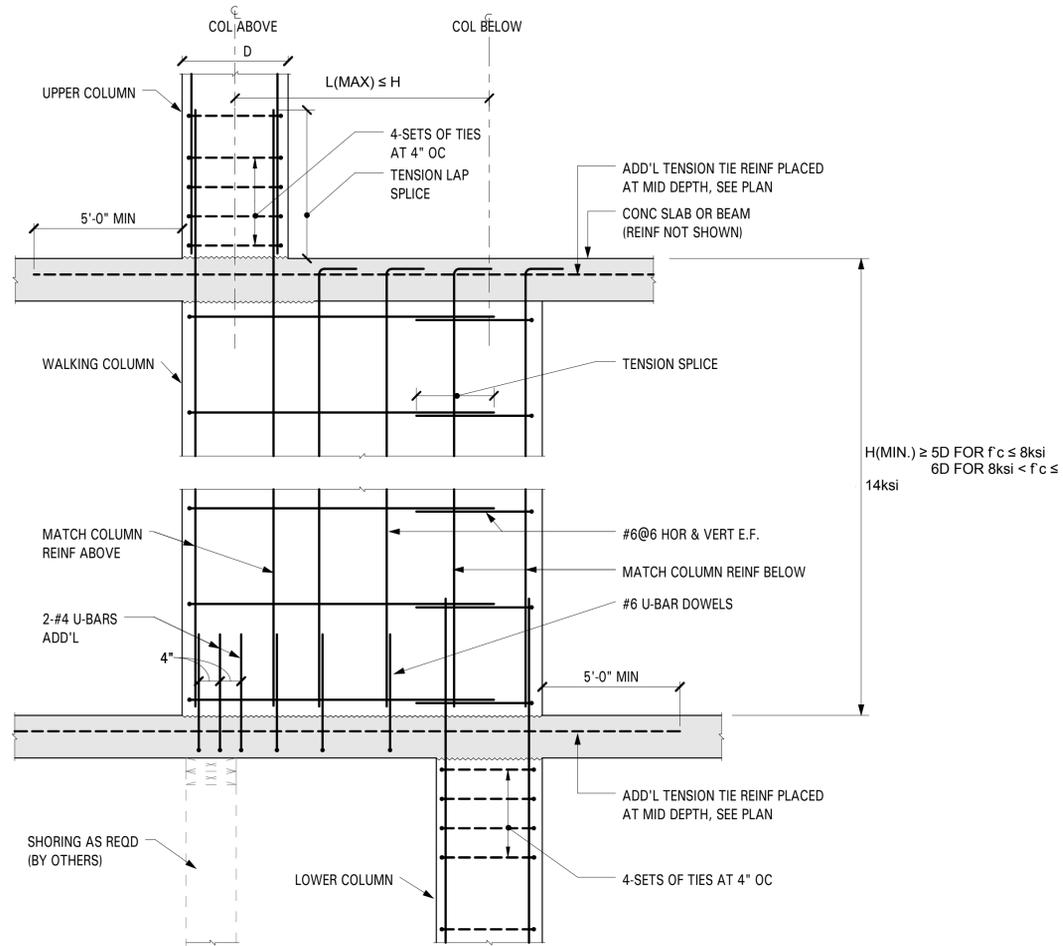
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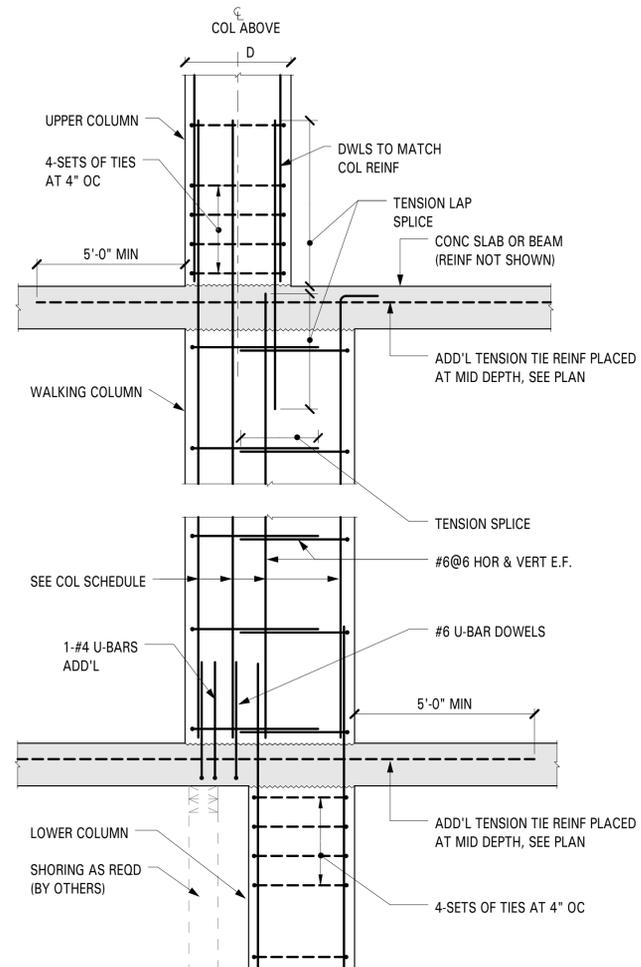
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TYPICAL COLUMN DETAILS

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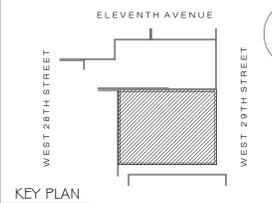
1 WALKING COLUMN WITHOUT OVERLAP



2 WALKING COLUMN WITH OVERLAP

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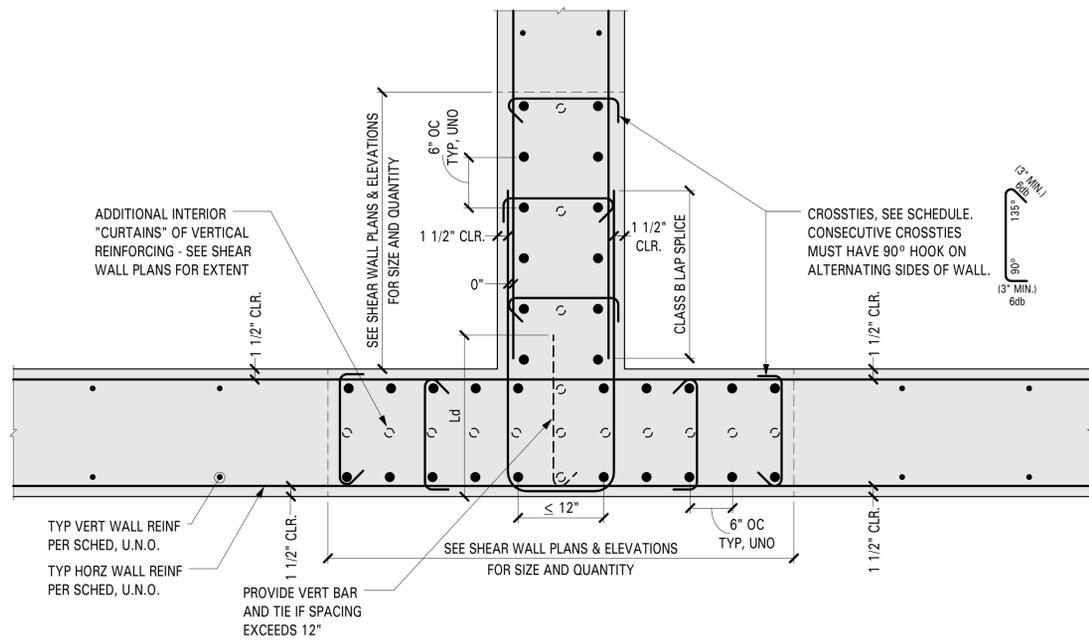
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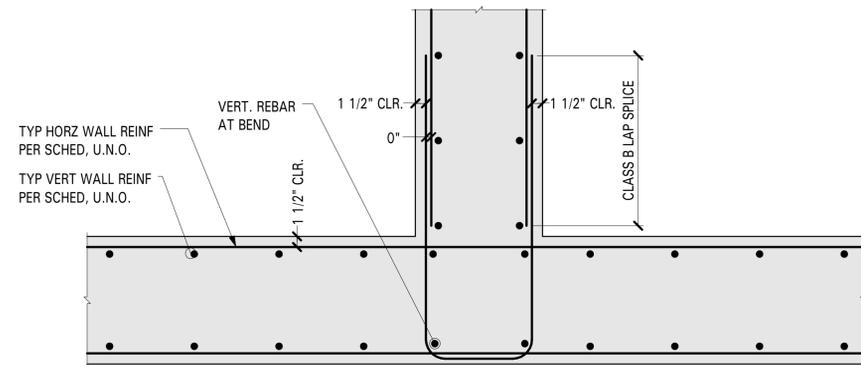
PROJECT
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TYPICAL COLUMN DETAILS

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	S-916.00
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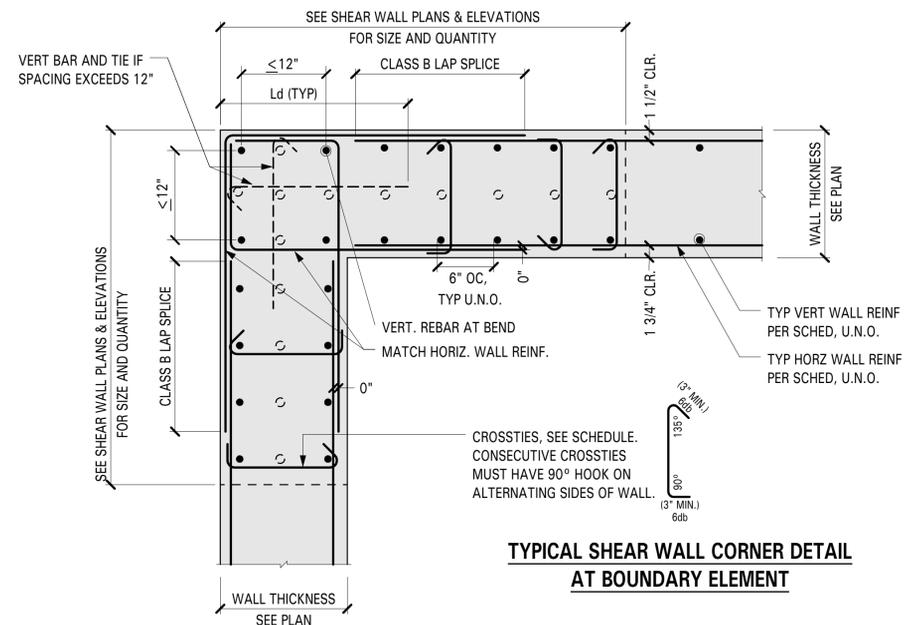


TYPICAL SHEAR WALL INTERSECTION AT BOUNDARY ELEMENT

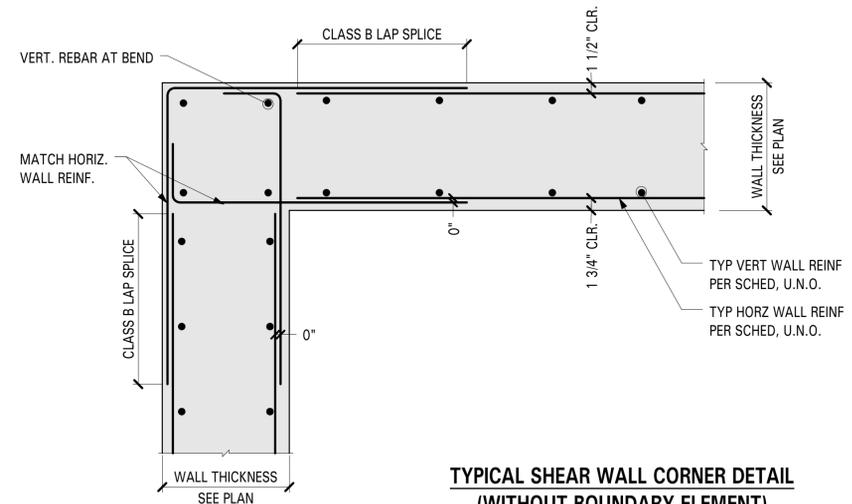


TYPICAL SHEAR WALL INTERSECTION (WITHOUT BOUNDARY ELEMENT)

1 TYPICAL SHEAR WALL INTERSECTIONS



TYPICAL SHEAR WALL CORNER DETAIL AT BOUNDARY ELEMENT



TYPICAL SHEAR WALL CORNER DETAIL (WITHOUT BOUNDARY ELEMENT)

2 TYPICAL SHEAR WALL CORNER DETAIL

MAXIMUM "CURTAINS" OF REINFORCING AT SHEAR WALL BOUNDARY ELEMENTS	
WALL THICKNESS "t", INCHES	NUMBER OF "CURTAINS"
t ≤ 12"	2
12" < t ≤ 16"	3
16" < t ≤ 20"	4
20" < t ≤ 24"	5
24" < t ≤ 30"	6

TYPICAL MINIMUM* SHEAR WALL REINFORCING	
WALL THICKNESS "t", INCHES	HORIZONTAL AND VERTICAL BAR, EACH FACE
t ≤ 8"	#4 @ 18"
8" < t ≤ 10"	#4 @ 14"
10" < t ≤ 12"	#4 @ 12"
12" < t ≤ 16"	#4 @ 10"
16" < t ≤ 20"	#5 @ 12"
20" < t ≤ 24"	#5 @ 10"
24" < t ≤ 30"	#6 @ 12"
30" < t	AS NOTED

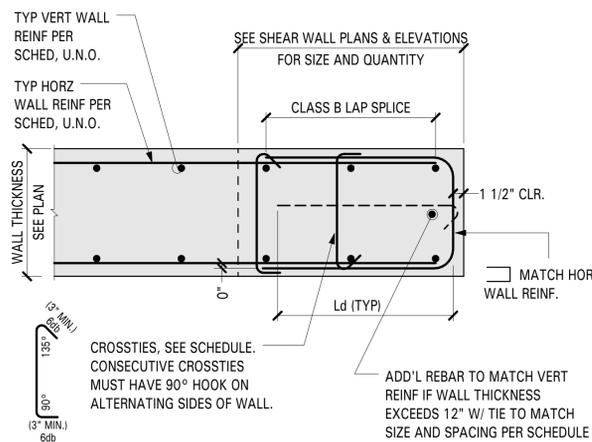
MINIMUM TIE REQUIREMENTS FOR SHEAR WALLS	
VERTICAL BAR SIZE	MINIMUM TIES (SEE NOTES FOR ADD'L REQUIREMENTS)
#5	#3 @ 10" OC
#6	#3 @ 12" OC
#7	#3 @ 14" OC
#8	#3 @ 16" OC
#9	#3 @ 18" OC
#10	#3 @ 18" OC
#11	#4 @ 20" OC
#14	#4 @ 20" OC
#18	#4 @ 20" OC

NOTE: TIES SPACING SHALL NOT EXCEED LEAST COLUMN DIMENSION

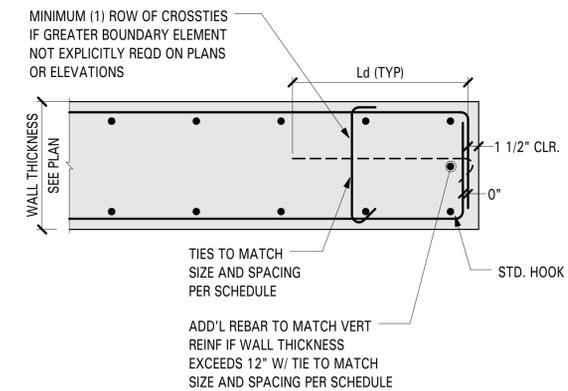
SHEAR WALL CONCRETE PROPERTIES REQUIRED*	
COMPRESSION STRENGTH (f'c)	MODULUS OF ELASTICITY (E)
8 ksi	5100 ksi
7 ksi	4700 ksi
6 ksi	4400 ksi
5 ksi	4000 ksi

*SEE COLUMN SCHEDULE FOR EXTENT OF EACH GRADE

4 TYPICAL MINIMUM SHEAR WALL REQUIREMENTS



TYPICAL SHEAR WALL EDGE DETAIL AT BOUNDARY ELEMENT



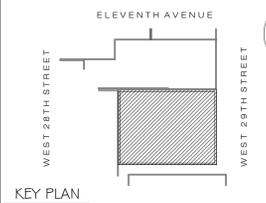
TYPICAL SHEAR WALL EDGE DETAIL (WITHOUT BOUNDARY ELEMENT)

3 TYPICAL SHEAR WALL EDGE DETAIL

NOTES

0 10-03-14 NYCTA REVIEW

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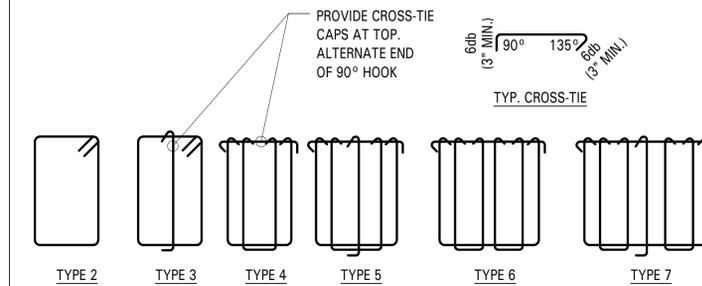
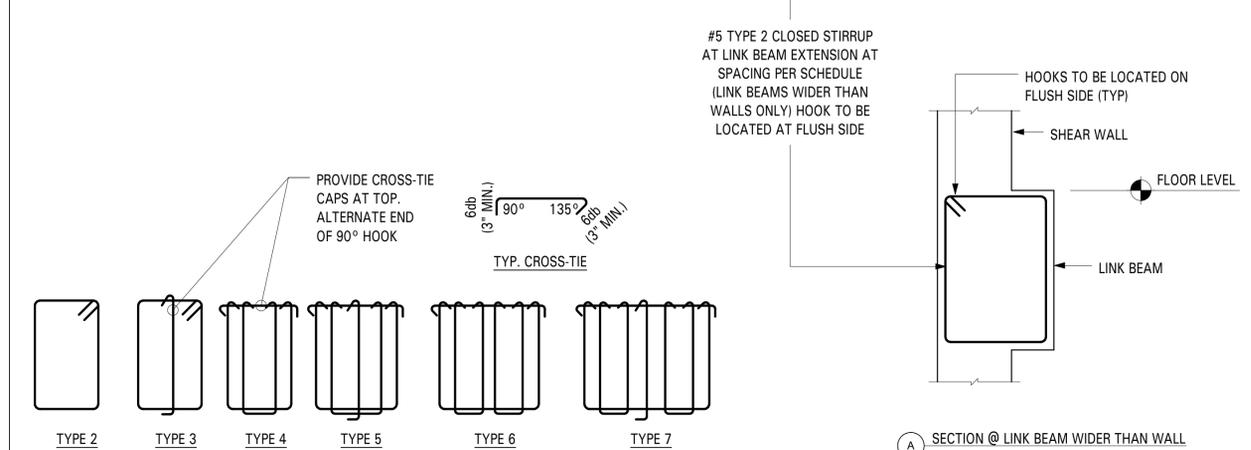
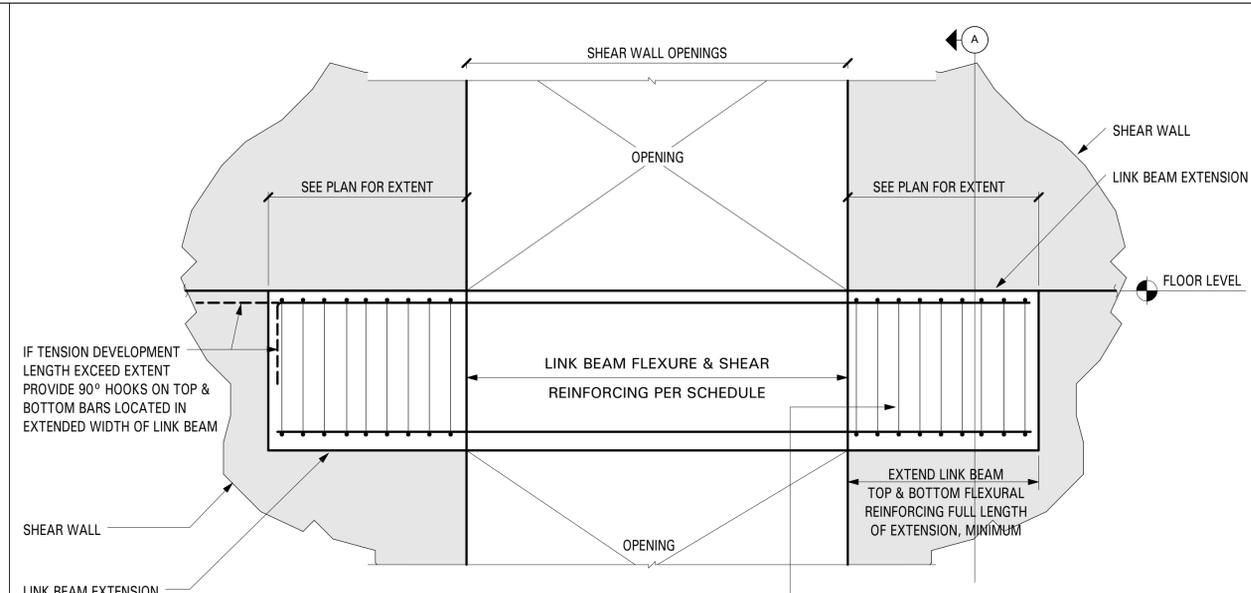
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PROJECT
550W 29TH
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 New York, NY

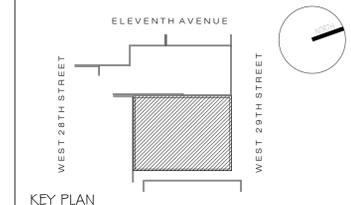
TYPICAL SHEAR WALL & LINK BEAM DETAILS

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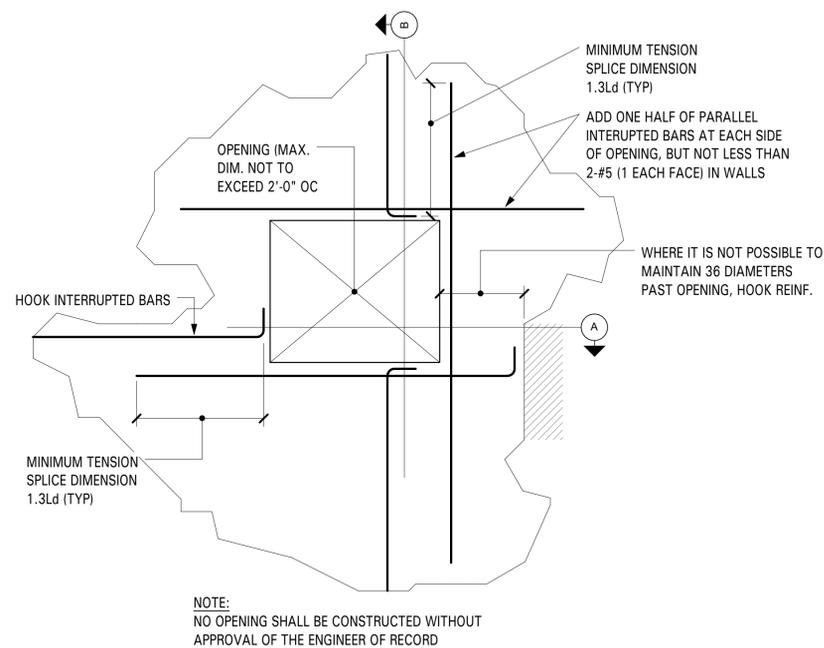
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TYPICAL SHEAR WALL & LINK BEAM DETAILS

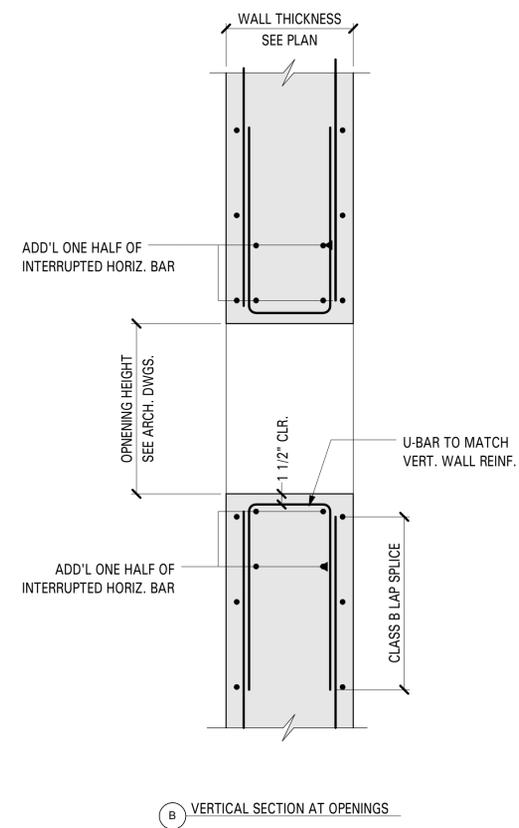
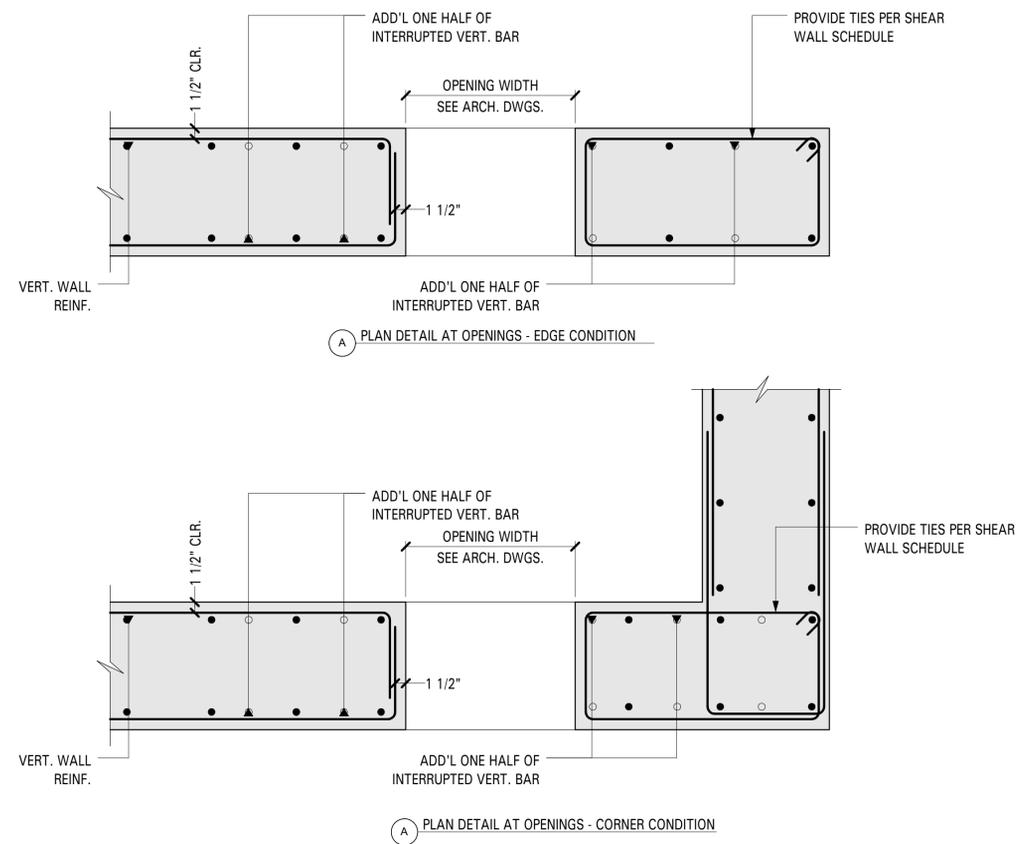
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1 LINK BEAM SCHEDULE

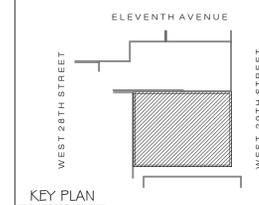
2 TYPICAL LINK BEAM ELEVATION - WIDTH WIDER THAN WALL



○ SHEAR WALL ELEVATION OPENING



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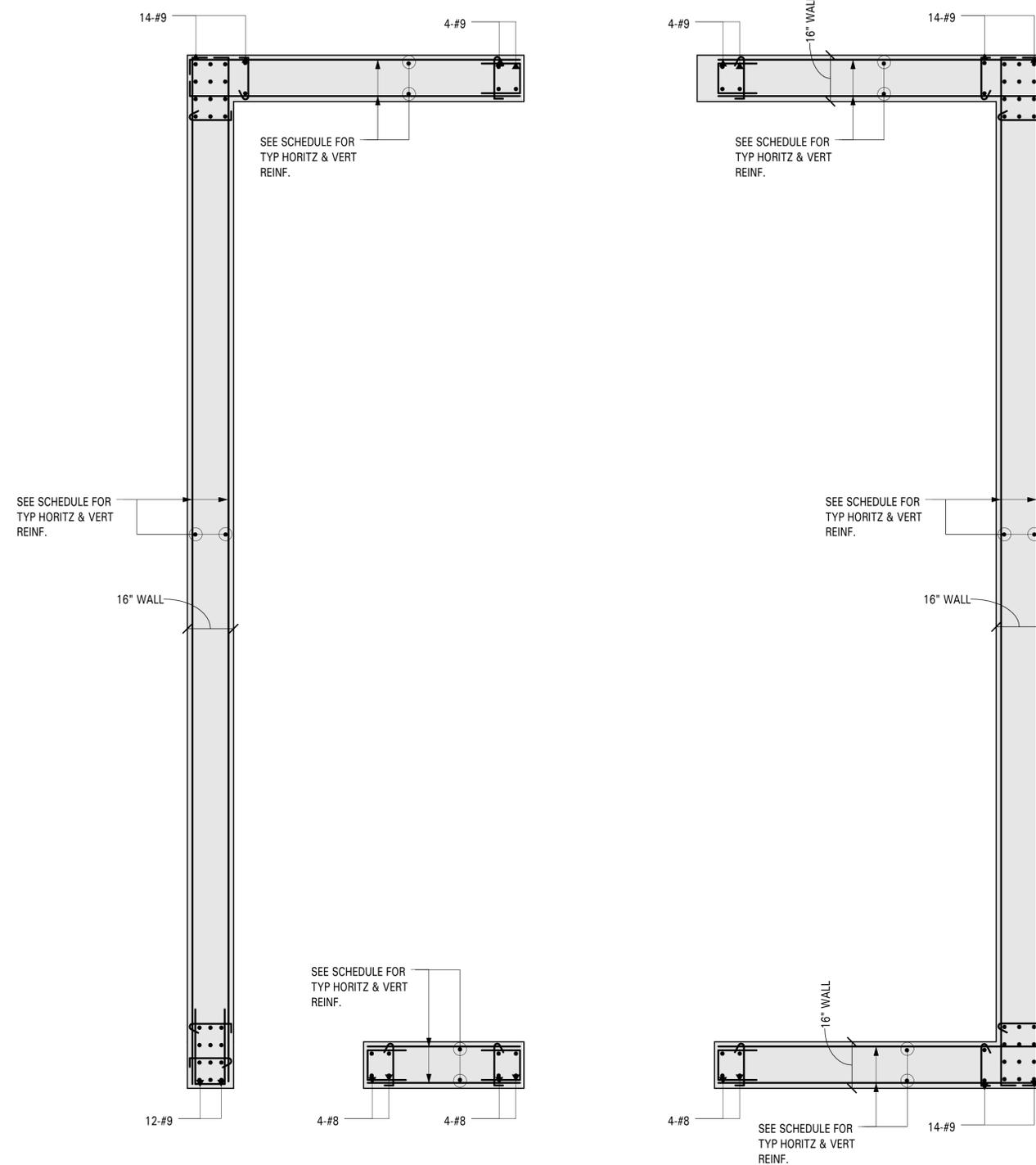
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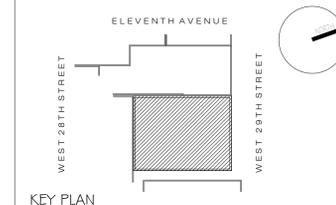
TYPICAL SHEAR WALL & LINK BEAM DETAILS

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FDN TO U/S OF 2ND SHEAR WALL REINFORCEMENT
 SCALE: 1/2" = 1'-0"

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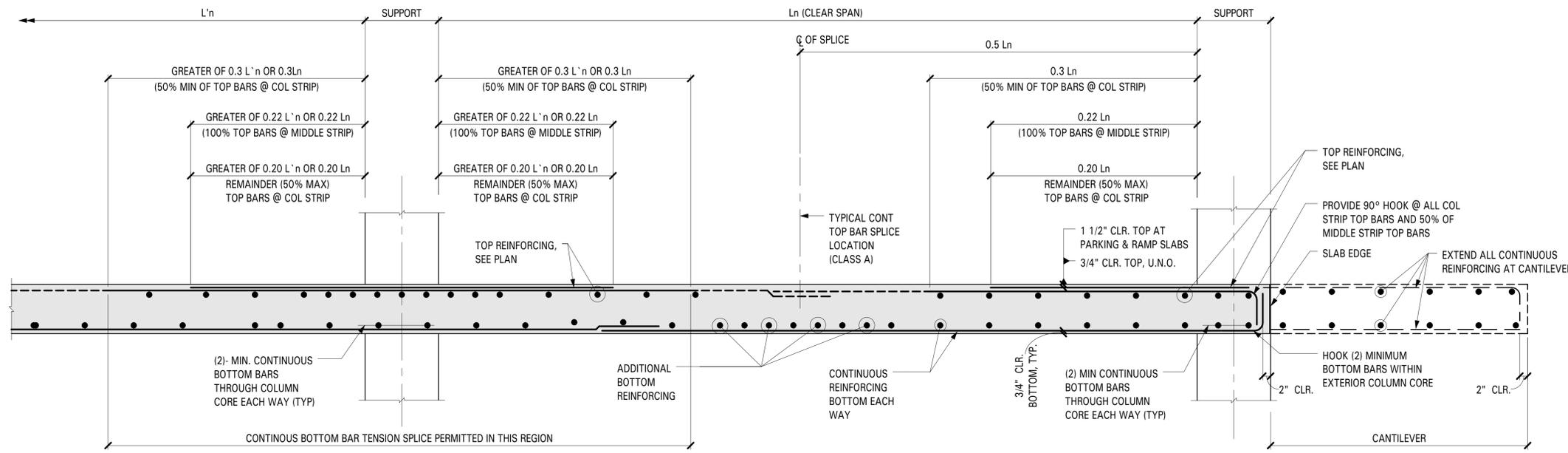
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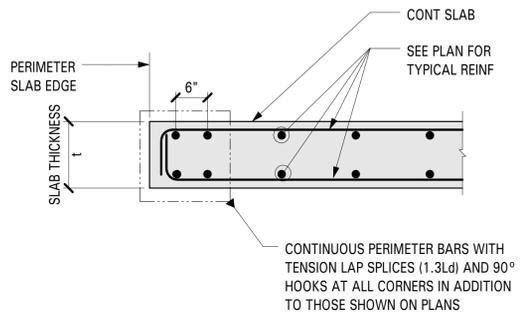
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SHEAR WALL REINF DETAILS

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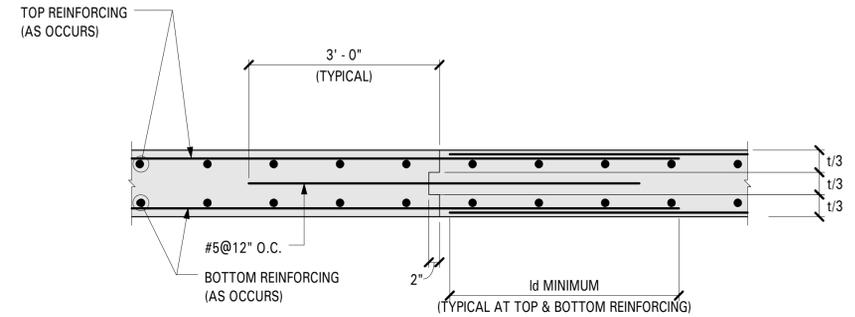


TYPICAL FLAT PLATE SLAB ELEVATION



SLAB THICKNESS (t)	CONT REINF (HALF TOP / HALF BOT)
6" TO 8"	4 - #6
9" TO 10"	4 - #7
11" TO 12"	4 - #8
13" AND ABOVE	4 - #9 (U.N.O. ON PLAN)

MINIMUM CONTINUOUS PERIMETER SLAB REINFORCING



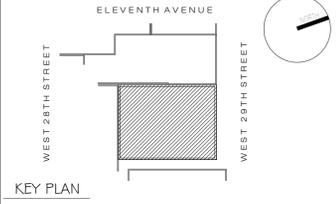
TYPICAL CONSTRUCTION JOINT DETAIL AT REINFORCED CONCRETE SLAB

NOTE:
1. SUBMIT ALL SLAB CONSTRUCTION JOINT LOCATIONS TO ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION

- NOTES:
- ALL SPLICES TO BE CLASS B TENSION SPLICES (TYPICAL) PER LAP SPLICE SCHEDULE
 - ALL ADDITIONAL TOP BARS TO BE PLACED EQUALLY ABOUT SUPPORT IN THE TRANSVERSE DIRECTION AND DISTRIBUTED ACROSS WIDTH OF COLUMN STRIP
 - ALL ADDITIONAL BOTTOM BARS TO BE SPACED EQUALLY ABOUT SPAN END SUPPORTS IN THE TRANSVERSE DIRECTION AND SPACED AT THE SAME SPACING AS CONTINUOUS REINFORCING TO ACHIEVE A SPACING OF 1/2 THAT OF THE CONTINUOUS BARS.
 - BAR PLACEMENT ORDER (U.N.O.):
 - E/W BOTTOM
 - N/S BOTTOM
 - N/S TOP
 - E/W TOP
 - REFER TO PLANS FOR ALL CONTINUOUS REINFORCING AND ALL ADDITIONAL REINFORCING (TOP & BOTTOM).
 - SHOP DRAWINGS FOR SLAB REINFORCING SHALL CLEARLY INDICATE BAR SIZE, SPACING, SPLICE POINTS, LENGTHS, CLEARANCES, HOOKS, BAR SUPPORTS, ETC... REQUIRED FOR FIELD INSTALLATION OF REINFORCING. PROVIDE SEPARATE SHOP DRAWINGS FOR BOTTOM AND TOP SLAB REINFORCING.
 - COORDINATE CLOSELY SLAB REINFORCING PLACED LOCAL TO STUD RAILS. WHERE CONFLICTS OCCUR, OFFSET SLAB REINFORCING TO PASS THRU STUD RAILS.

- NOTES:

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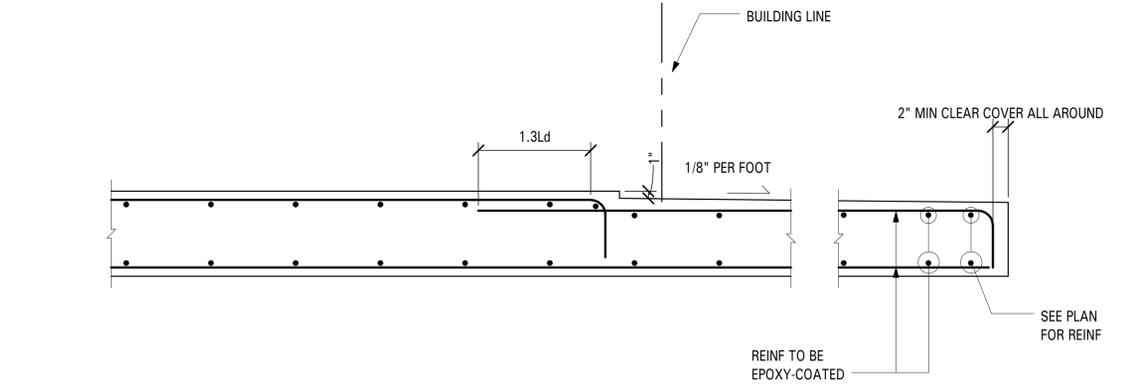
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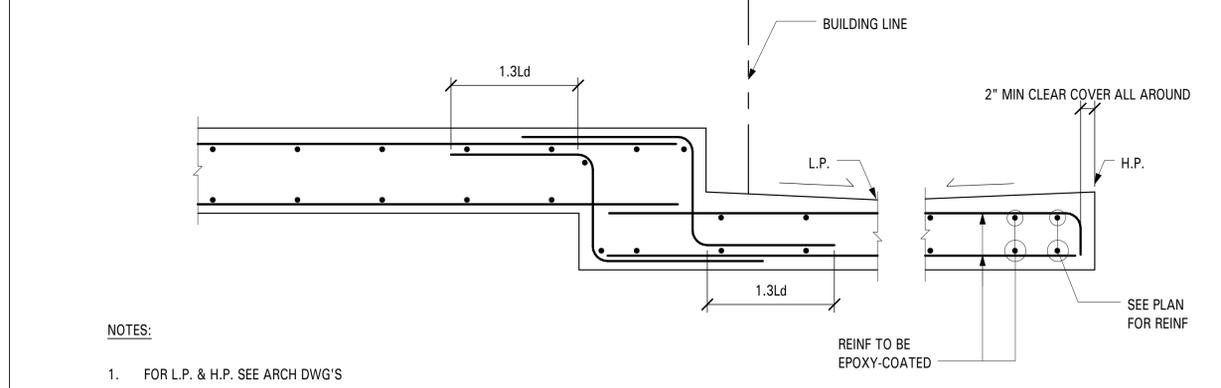
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TYPICAL CONCRETE DETAILS

1 TYP. FLAT PLAT FRAMED SLAB ELEVATION



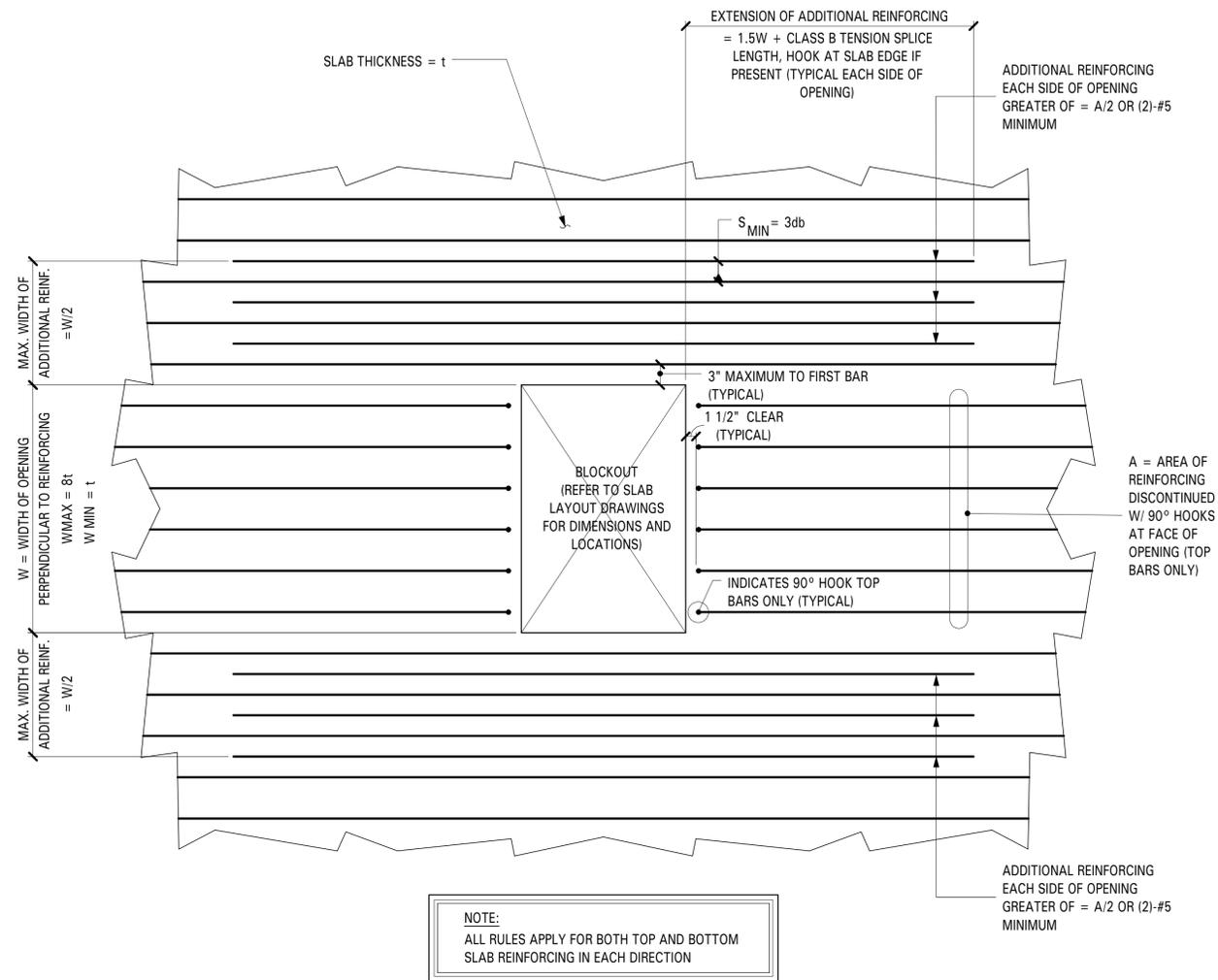
2 TYPICAL SECTION AT BALCONY1



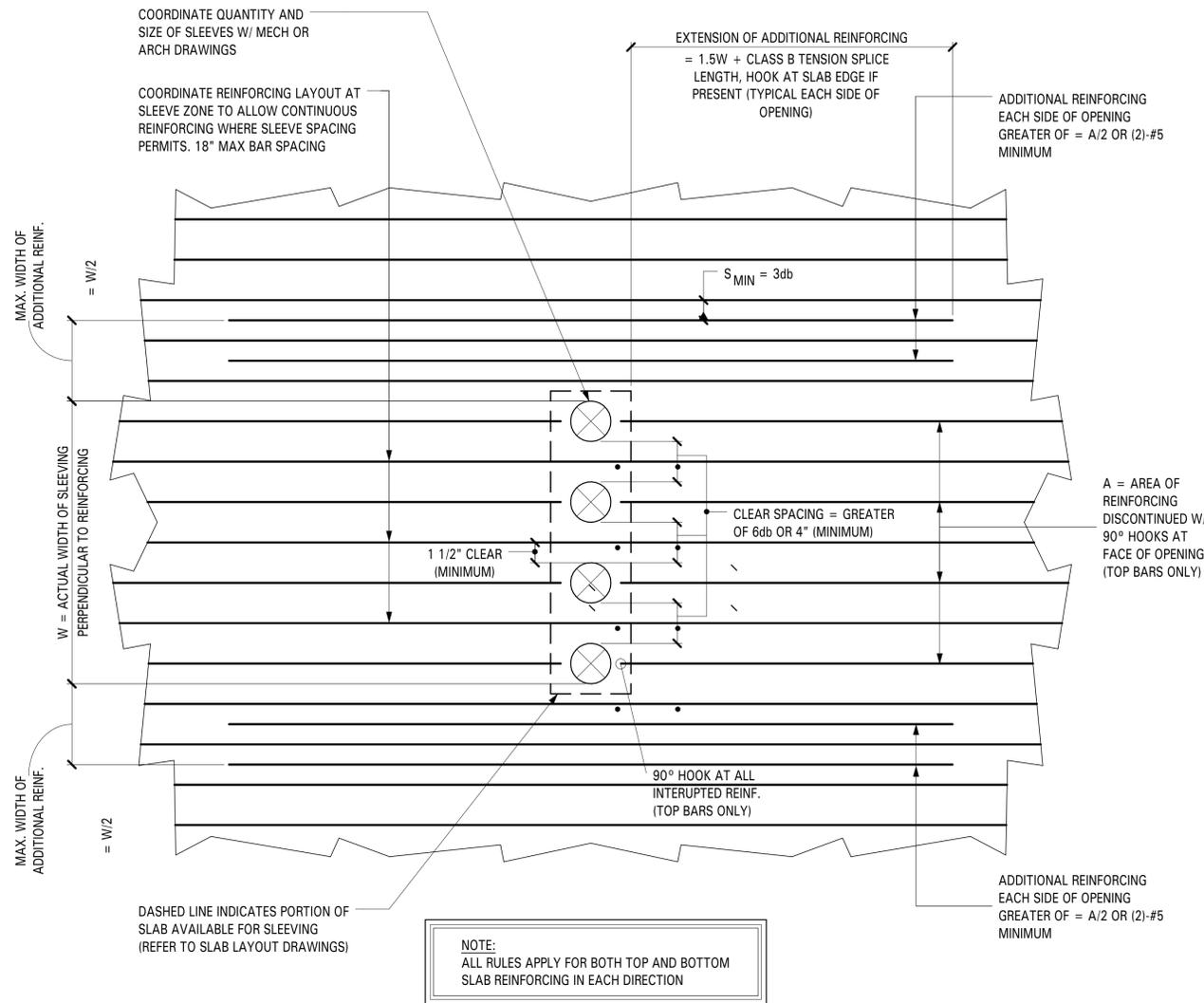
3 TYPICAL SECTION AT TERRACE1

NOTES:
1. FOR L.P. & H.P. SEE ARCH DWG'S

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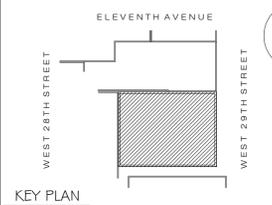
TYPICAL SLAB REINFORCING AT OPENINGS (BLOCK OUTS)



TYPICAL SLAB REINFORCING AT SLEEVED OPENING AREAS

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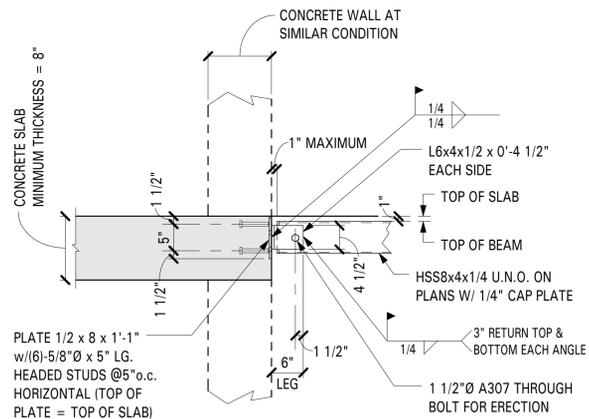
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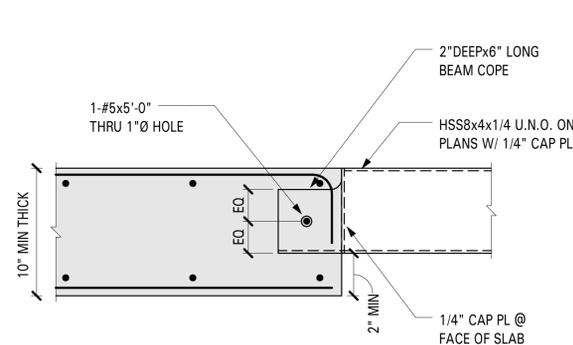
TYPICAL CONCRETE DETAILS

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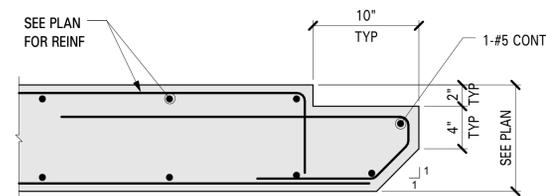
1 TYP. SLAB REINFORCING AT OPENINGS



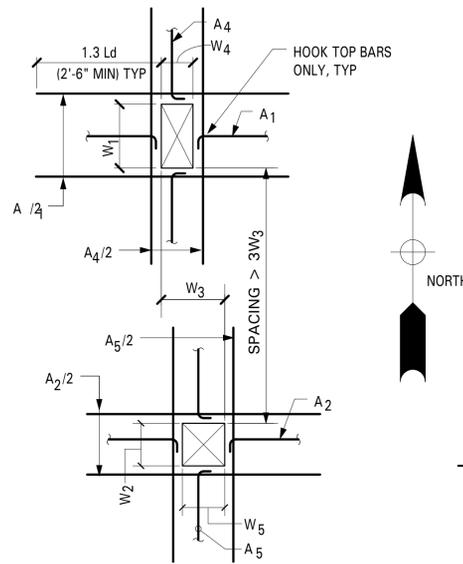
2 ELEV SEPERATOR BM CONN



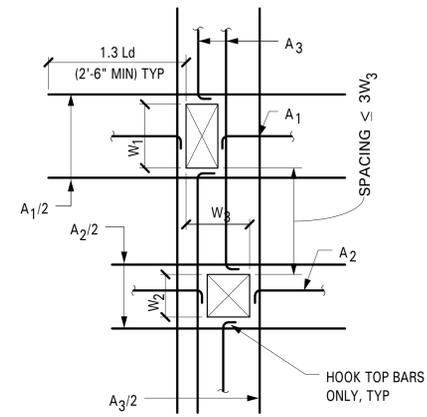
3 ALT ELEV SEPERATOR BM CONN



4 TYP ELEVATOR SILL DETAIL



SEPARATED OPENINGS EACH WAY



COMBINED OPENINGS FOR NORTH/SOUTH REINFORCING
SEPARATED OPENINGS FOR EAST/WEST REINFORCING

A₁ = AREA OF REINFORCING DISCONTINUED WITH HOOKS AT OPENING
W₁ = WIDTH OF OPENING PERPENDICULAR TO REINFORCING DIRECTION

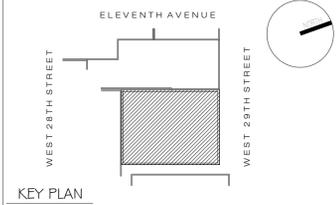
NOTE:
ALL RULES APPLY FOR BOTH TOP AND BOTTOM
SLAB REINFORCING IN EACH DIRECTION

TYPICAL SLAB REINFORCING RULES AT MULTIPLE OPENINGS

3 SLAB REINFORCING RULES AT MULTIPLE OPENINGS

NOTES

0	10-03-14	NYCTA REVIEW
No.	Date	Revision



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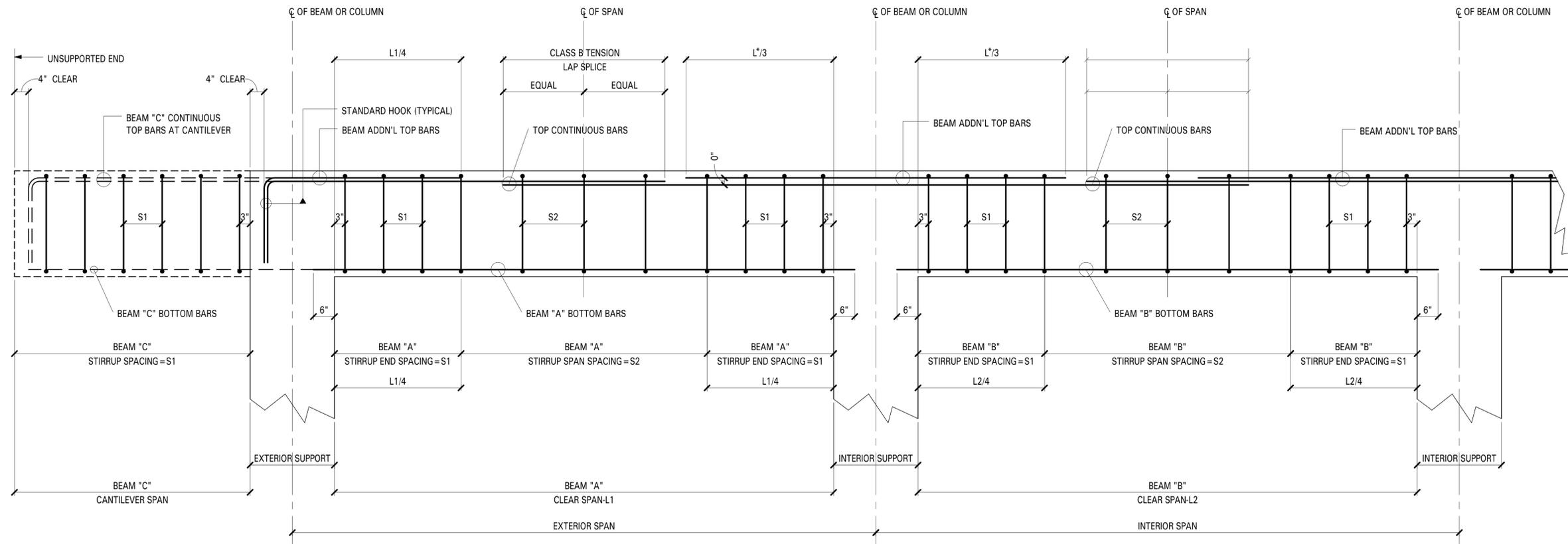
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PROJECT
550W 29TH
550 WEST 29TH STREET
New York, NY

TYPICAL CONCRETE
DETAILS

SEAL & SIG.	DATE: 10-03-2014
	PROJECT No.: 14082.00
	SCALE:
	DWG NO.:
	S-942.00
	CADD FILE NO.:
	XX
	OF 10

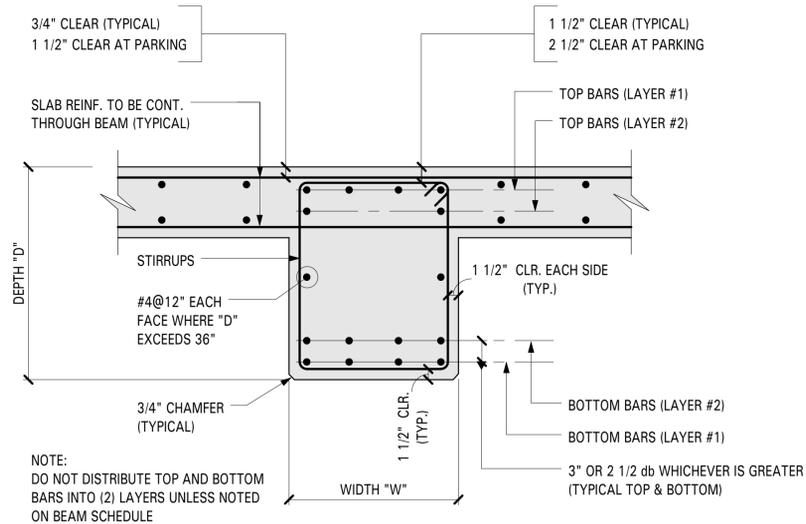


TYPICAL REINFORCING CONCRETE BEAM ELEVATION

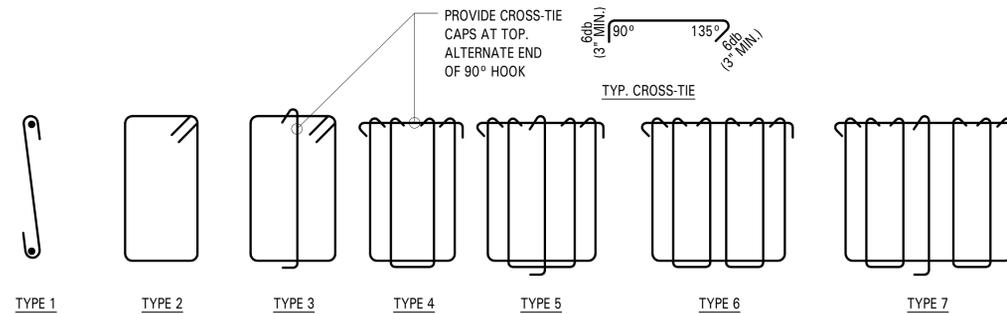
NOTES:

1. L* IS THE LARGER OF ADJACENT SPANS L1 AND L2.
2. IF BEAM "A" TOP BARS DO NOT MATCH BEAM "B" TOP BARS AS SCHEDULED, THE LARGER STEEL AREA SHALL GOVERN.
3. BOTTOM BAR SPLICES (IF REQUIRED) SHALL BE STAGGERED AND SHALL OCCUR WITHIN THE END THIRDS OF THE BEAM CLEAR SPAN.
4. REFER TO DETAIL BELOW FOR TYPICAL STIRRUP TYPES.
5. IF S1 AND S2 SPACING NOT GIVEN SEPARATELY IN SCHEDULES, USE SPACING="S" GIVEN THROUGHOUT BOTH ZONES

1 TYP. REINFORCING CONCRETE BEAM ELEVATION



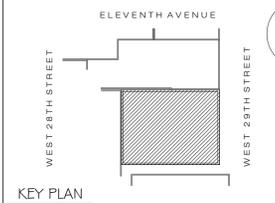
TYPICAL BEAM SECTION



2 TYP. BEAM SECTION AND STIRRUP TYPES

NOTES

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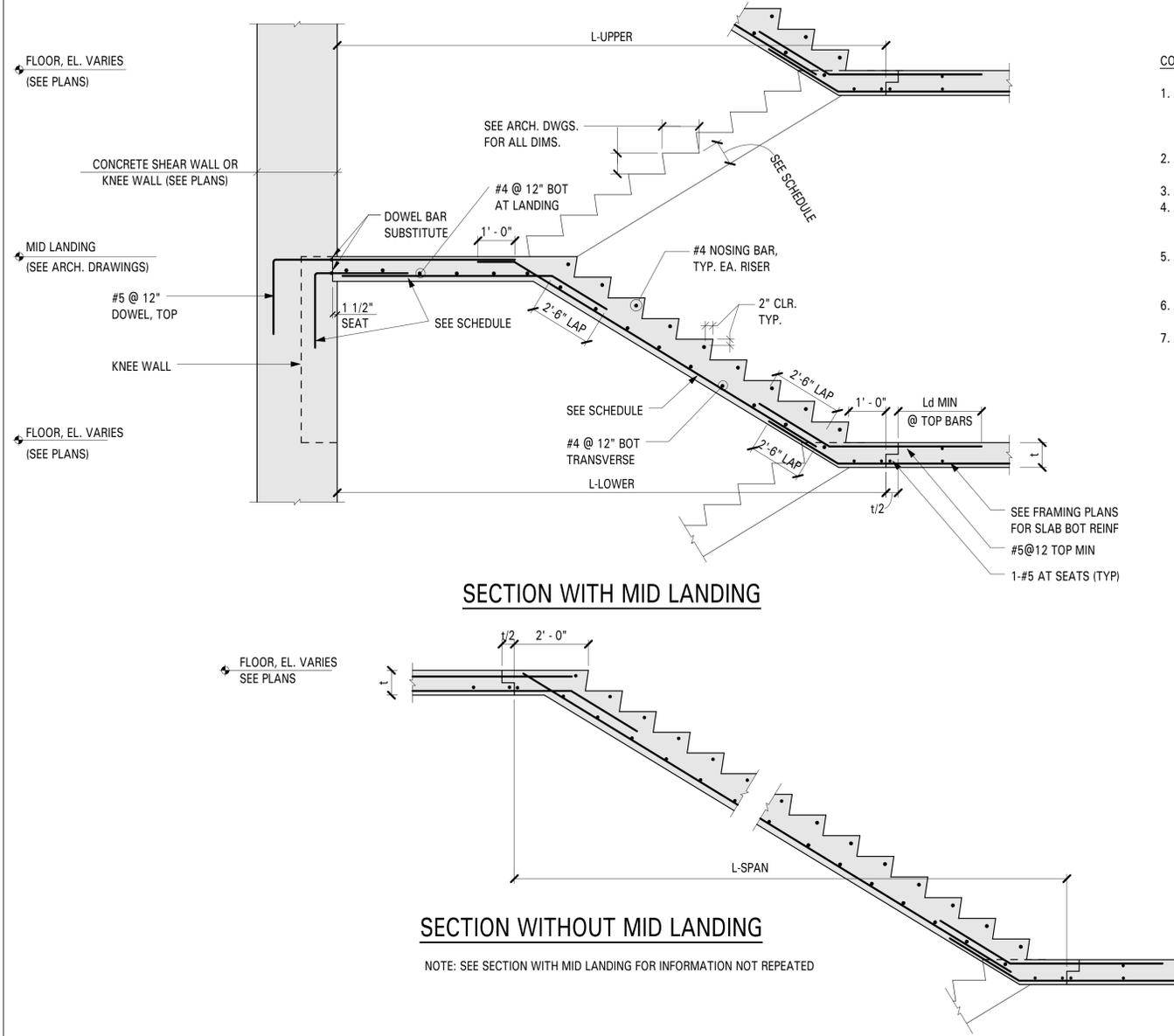
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TYPICAL CONCRETE DETAILS

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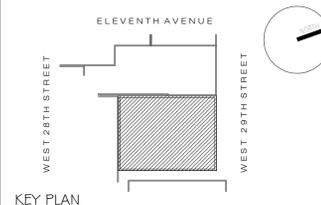
- CONCRETE STAIR NOTES:**
1. ALL CONCRETE STAIRS SHALL BE 8" ONE-WAY STAIR SLABS SPANNING IN LONGITUDINAL DIRECTION OF STAIR RUN, REINFORCED WITH #6@12" BOTTOM LONGITUDINAL AND #4@12" BOTTOM TRANSVERSE, UNLESS OTHERWISE DETAILED.
 2. PROVIDE (1)-#4 NOSING BAR TRANSVERSE AT EACH STAIR RISER WITH 2" CLEAR TO BAR
 3. ALL STAIR TREAD AND RISER DIMENSIONS SHALL BE PER ARCHITECT.
 4. ALL 6" OR 8" KNEE WALLS UP FROM MAIN BUILDING FLOOR STRUCTURE SHALL BE REINFORCED WITH #5@12" EACH WAY CENTERED. PROVIDE MATCHING VERTICAL DOWELS UP FROM MAIN FLOOR STRUCTURE.
 5. ALL STAIR SLABS SHALL BE DOWELED AND FULLY DEVELOPED AT EACH END TO MAIN FLOOR STRUCTURE WITH DOWELS MATCHING THE BOTTOM REINFORCING SCHEDULE.
 6. PROVIDE 2'-6" LAP SPLICES FOR ALL #5 STAIR SLAB BOTTOM REINFORCEMENT AS REQUIRED.
 7. SHOP DRAWINGS FOR STAIRS SHALL CLEARLY INDICATE BAR SIZE, SPACING, SPLICE POINTS, LENGTHS, CLEARANCES, HOOKS, BAR SUPPORTS, ETC... REQUIRED FOR FIELD INSTALLATION OF REINFORCING. PROVIDE BOTH PLANS AND SECTIONS FOR EACH INDIVIDUAL STAIR. COORDINATE FULLY WITH ARCHITECTURAL DRAWINGS.

MAIN STAIR REINF AND THICKNESS SCHEDULE		
SPAN (MAX OF L-UPPER OR L-LOWER)	STAIR SLAB THICKNESS	REINF
L ≤ 10'-0"	8"	#4@10
10'-0" < L ≤ 12'-6"	8"	#5@10
12'-6" < L ≤ 15'-0"	8"	#5@6
15'-0" < L ≤ 17'-6"	9"	#5@6
17'-6" < L ≤ 20'-0"	9"	#5@4

1 TYP CONCRETE STAIR SECTION

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TYPICAL STAIR DETAILS

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APPENDIX C

Soil/Materials Management Plan



APPENDIX C

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 Remedial Closure Report (RCR). Soil screening will be performed during invasive work performed during the remedy and development phases prior to issuance of the Notice of Satisfaction.

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 RAP;
- 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 in Section 3.8 of the RAP. This routing 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 Applicant 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 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 Applicant. 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 RCR.

The RCR 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 RCR.

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. 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 RCR. A manifest system for off-Site transportation of exported materials will be employed. Manifest information will be reported in the RCR. Hazardous wastes derived from on-Site will be stored, transported, and disposed of in compliance with applicable laws and regulations.

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. The soil cleanup objectives for on-Site reuse are listed in the RAP. "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 Engineering Controls. The PE/QEP will ensure that reused materials are segregated from other materials to be exported from the Site and that procedures defined for material reuse in this RAP are followed. The expected location for placement of reused material is shown in the RAP.

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 RCR; 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 RCR. This demarcation will constitute the top of the site management horizon.

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. The backfill and cover soil quality objectives are listed in the RAP.

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 RAP. The RCR 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 RCR. 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 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 RAP (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 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 Full List volatiles and semi-volatiles, pesticides/PCBs, and TAL metals, 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 RCR.

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 Closure 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 D

Support of Excavation Plans



GENERAL NOTES FOR SUPPORT OF EXCAVATION:

GENERAL

1. DELINEATION OF DESIGN AND SPECIAL INSPECTION RESPONSIBILITY:
 - A. THE CONTRACT DRAWINGS SHOW THE DESIGN OF SUPPORT OF EXCAVATION AND UNDERPINNING REQUIRED FOR THE PROPOSED CONSTRUCTION OF THE NEW BUILDING.
 - B. IF THE CONTRACTOR PROPOSES AN ALTERNATIVE DESIGN OR MODIFICATIONS TO THE DESIGN SHOWN, THEN:
 - i. THE CONTRACTOR SHALL RETAIN THE SERVICES OF A LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NEW YORK TO PREPARE ALL SUPPORT OF EXCAVATION AND UNDERPINNING DESIGN, AND DRAWINGS.
 - ii. MINIMUM 4 WEEKS PRIOR TO START OF THE WORK, THE CONTRACTOR SHALL SUBMIT SIGNED AND SEALED SUPPORT OF EXCAVATION AND UNDERPINNING CALCULATIONS AND DRAWINGS TO THE CONSTRUCTION MANAGER FOR REVIEW AND APPROVAL.
 - iii. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE NYC DOB FOR HIS ALTERNATIVE DESIGN.
 - C. THE OWNER WILL PROVIDE SPECIAL INSPECTION FOR ALL SUPPORT OF EXCAVATION AND UNDERPINNING WORK.
 - D. THE CONTRACTOR SHALL PREPARE AND SUBMIT A SITE LOGISTICS PLAN TO THE CONSTRUCTION MANAGER FOR REVIEW AND APPROVAL PRIOR TO START OF WORK. SITE LOGISTICS PLAN SHALL INCLUDE LOCATION OF TOWER CRANE (IF ANY) AND SITE ACCESS RAMP.
2. ELEVATIONS ARE REFERENCED TO NAVD88.
3. BASE PLAN AND SECTIONS ARE COMPILED USING:
 - A. EXISTING CONDITIONS SURVEY DRAWING FOR BLOCK 700, LOT 59, 60 AND 61, DATED 7-2-2014, PREPARED BY MONROSE SURVEYING.
 - B. FOUNDATION AND CELLAR FLOOR PLAN DATED X-X-2014, PREPARED BY MCNAMARA/SALVIA CONSULTING ENGINEERS.
 - C. AVAILABLE DRAWINGS OF AVALON WEST CHELSEA DATED 5-20-2014.
4. PROPOSED FOUNDATIONS ARE SHOWN ON THESE SOE DRAWINGS FOR REFERENCE ONLY. REFER TO STRUCTURAL DRAWINGS FOR ALL FOUNDATION INFORMATION.
4. FOR SUBSURFACE INFORMATION, REFER TO "GEOTECHNICAL REPORT, 550WEST 29TH STREET, NEW YORK, NY, DATED XXX XX, 2014," PREPARED BY MUESER RUTLEDGE CONSULTING ENGINEERS.
5. THE SOE DRAWINGS DO NOT ADDRESS SAFETY ISSUES RELATED TO THE EXCAVATION AND SHORING WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SAFETY AND PROVIDE A SAFETY PLAN CONFORMING TO OSHA STANDARDS.
6. CONTRACTOR SHALL PROVIDE BARRIERS AND FENCING AROUND THE EXCAVATION PER NYC DOB AND DOT REQUIREMENTS.
7. CONTRACTOR SHALL VERIFY AND COORDINATE ALL DIMENSIONS AND CHECK FOR CLEARANCES PRIOR TO THE START OF WORK. ACTUAL FIELD CONDITIONS MAY REQUIRE MODIFICATIONS TO THE CONSTRUCTION DETAILS SHOWN. CONFLICTS BETWEEN ACTUAL CONDITIONS AND DETAILS SHOWN SHALL BE BROUGHT TO THE CONSTRUCTION MANAGER'S ATTENTION FOR RESOLUTION.
8. EXCAVATION SHORING SHOWN IS DESIGNED FOR A UNIFORM VERTICAL CONSTRUCTION SURCHARGE OF 600 PSF AT STREET GRADE.
9. PRIOR TO THE START OF EXCAVATION, PERFORM ONE TEST PIT AT TWO COLUMNS OF THE EXISTING HIGHLINE STRUCTURE ADJACENT TO THE SITE. THE TEST PITS SHALL CONFIRM THE PILE FOUNDATION AT THESE LOCATIONS.

MATERIALS AND TESTING

1. ALL STRUCTURAL STEEL SHALL BE ASTM A572 OR ASTM A992, GRADE 50.
2. ALL WELDING SHALL BE DONE BY CERTIFIED WELDERS, USING E-70 ELECTRODES, AND SHALL CONFORM TO THE REQUIREMENTS OF AWS D1.1. ALL WELDS SHALL BE VISUALLY INSPECTED BY THE ENGINEER RESPONSIBLE FOR THE SPECIAL INSPECTION.
3. TIEBACK BOND LENGTHS SHOWN ON THESE DRAWINGS ARE MINIMUM LENGTHS. PRIOR TO THE START OF THE WORK, THE CONTRACTOR SHALL DETERMINE THE ADDITIONAL BOND LENGTH REQUIRED, IF ANY, TO OBTAIN THE TIEBACK DESIGN LOADS INDICATED BELOW BASED ON HIS OWN MEANS AND METHOD OF INSTALLATION. ALL TIEBACKS SHALL BE PERFORMANCE OR PROOF TESTED IN ACCORDANCE WITH PTI RECOMMENDATIONS AND LOCKED OFF AT 80% OF THE DESIGN LOAD. TIEBACK ANCHORS SHALL CONSIST OF 1-3/8" DIAMETER, HIGH STRENGTH THREADED BAR CONFORMING TO ASTM A722, WITH A MINIMUM ULTIMATE STRESS OF 150 KSI.
 - A. TIEBACK DESIGN LOAD = 130 KIPS
 - B. TIEBACK TESTING LOAD = 1.2 x DESIGN LOAD = 160 KIPS
 - C. TIEBACK LOCK-OFF LOAD = 0.8 x DESIGN LOAD = 100 KIPS
4. GROUT FOR TIEBACKS SHALL CONSIST OF ONE BAG OF TYPE II CEMENT TO 5 GALLONS OF WATER. CONTRACTOR SHALL MAKE A SET OF SIX GROUT CUBES FOR EACH DAY GROUTING IS PERFORMED. CUBES SHALL BE TESTED FOR 7, 14, AND 28 DAY COMPRESSIVE STRENGTHS. IF THE DESIGN STRENGTH IS ACHIEVED AT 14 DAYS, NO FURTHER TESTING IS REQUIRED FOR THAT SET OF GROUT CUBES.
5. FLOWABLE FILL SHALL BE A MIXTURE OF SAND, CEMENT, FLYASH, WATER AND ADMIXTURES. MIX SHALL BE DESIGNED BY THE CONTRACTOR TO BE SELF COMPACTING DURING PLACEMENT, SET UP WITHIN SEVERAL HOURS, AND SHALL HAVE COMPRESSIVE STRENGTH AS DESCRIBED BELOW. CONTRACTOR SHALL SUBMIT FOR APPROVAL EACH MIX DESIGN INCLUDING 1, 3, 7, 14, 28 AND 56 DAY COMPRESSIVE STRENGTHS.
 - A. FLOWABLE FILL FOR FILLING OVER EXCAVATIONS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 100 PSI AT 28 DAYS.

PROCEDURAL

1. LOCATE ALL EXISTING UTILITIES BY UTILITY COMPANY MARK OUT, THEN, FOR UTILITIES WITHIN 5 FEET OF SHEET PILE INSTALLATION, CONFIRM CLEARANCE BY LOCAL PRE-EXCAVATION UP TO 5 FEET DEEP.
2. SHEET PILING NOTES AND INSTALLATION:
 - A. THE VERTICALITY IN EACH PLANE OF THE SHEET PILES SHALL NOT DEVIATE FROM PLUMB BY MORE THAN ONE PERCENT. PLAN LOCATION SHALL BE WITHIN 3 INCHES OF THEORETICAL.
 - B. ALL STEEL SHEET PILING SHALL BE DRIVEN CONTINUOUSLY INTERLOCKED TO EACH OTHER AND FOR THE FULL LENGTH OF THE SHEETS. THIS IS REQUIRED FOR GROUND WATER CUT-OFF.
 - C. DURING SHEET PILE SETTING AND DRIVING, SURVEY LOCATION AND MEASURE VERTICALITY TO CONFIRM TOLERANCES ARE MET.
 - D. IF A SHEET PILE IS OUT OF LOCATION BEYOND 3 INCHES BUT LESS THAN 6 INCHES, SUBSEQUENT SHEET LOCATIONS SHALL BE ADJUSTED TO BRING THE ALIGNMENT BACK INTO TOLERANCE.
 - E. IF A SHEET PILE IS OUT OF LOCATION BY MORE THAN 6 INCHES, IT SHALL BE EXTRACTED, RELOCATED AND REINSTALLED.
 - F. HANDLE STEEL SHEET PILING USING HANDLING HOLES OR LIFTING DEVICES. HANDLE STEEL SHEET PILES WITH CARE TO PREVENT DAMAGE. SUPPORT ON LEVEL BLOCKS OR RACKS SPACED NOT MORE THAN 10 FEET APART AND NOT MORE THAN 2 FEET FROM THE ENDS. SUPPORTS BETWEEN MULTIPLE LIFTS SHALL BE IN A VERTICAL PLANE.
 - G. PILE HAMMER: USE A PILE IMPACT HAMMER HAVING A CAPACITY SUITABLE FOR THE TOTAL WEIGHT OF THE PILE AND THE CHARACTER OF SUBSURFACE MATERIAL TO BE ENCOUNTERED. OPERATE HAMMER AT THE RATE(S) RECOMMENDED BY THE MANUFACTURER THROUGHOUT THE ENTIRE DRIVING PERIOD. REPAIR DAMAGE TO PILING CAUSED BY USE OF A PILE HAMMER.
 - H. DRIVING FRAME: IT IS SUGGESTED THE CONTRACTOR PROVIDE A DRIVING FRAME SUITABLE FOR ALIGNING, SUPPORTING AND MAINTAINING SHEET PILING PLUMB IN THE CORRECT POSITION DURING SETTING AND DRIVING. USE A SYSTEM OF STRUCTURAL FRAMING SUFFICIENTLY RIGID TO RESIST LATERAL AND DRIVING FORCES AND TO ADEQUATELY SUPPORT THE SHEET PILING UNTIL DESIGN TIP ELEVATION IS ACHIEVED.
 - i. DRIVING FRAMES SHALL NOT MOVE WHEN SUPPORTING SHEET PILING. FIT FRAMES WITH WOOD BLOCKING TO BEAR AGAINST SHEET PILES AND HOLD THE SHEET PILE AT THE DESIGN LOCATION ALIGNMENT. PROVIDE OUTER TEMPLATE STRAPS OR OTHER RESTRAINTS AS NECESSARY TO PREVENT THE SHEETS FROM WARPING, WANDERING OR RACKING ALONG THE ALIGNMENT.
 - ii. SHEET PILES COMPLETED AND DRIVEN TO FINAL TIP ELEVATION MAY BE WELDED TO ADJACENT COMPLETED SHEETS IF REQUIRED TO RESTRAIN MOVEMENT OF COMPLETED SHEETS.
3. INSTALL SHEET PILES TO THE TIP ELEVATION(S) SHOWN ON THE CONTRACT DRAWINGS, OR DEEPER.
4. DO NOT DRIVE STEEL SHEET PILES UNTIL DEBRIS AND OTHER MATERIALS HAVE BEEN REMOVED THAT MAY INTERFERE WITH STEEL SHEET PILE DRIVING. IF NECESSARY, PERFORM PRE-TRENCHING ALONG ALIGNMENT TO REMOVE OBSTRUCTIONS, ABANDONED PILES, ETC. ABANDONED PILES OR UTILITIES THAT CANNOT BE REMOVED MAY NECESSITATE RELOCATION OF SHEET PILES AS DETERMINED BY THE ENGINEER.
5. CUTTING AND SPLICING: PILES DRIVEN BELOW THE REQUIRED TIP ELEVATION AND PILES DAMAGED BY DRIVING AND CUT OFF TO PERMIT FURTHER DRIVING SHALL BE EXTENDED AS REQUIRED TO REACH THE TOP ELEVATION BY SPLICING AS APPROVED BY THE ENGINEER.
 - i. ENDS OF PILES TO BE SPLICED SHALL BE SQUARED BEFORE SPLICING, ELIMINATE DIPS OR CAMBER. SPLICE PILES WITH CONCENTRIC ALIGNMENT OF THE INTERLOCKS SO THAT THERE ARE NO DISCONTINUITIES, DIPS OR CAMBER AT THE ABUTTING INTERLOCKS.
 - ii. SPLICED PILES SHALL BE FREE SLIDING AND ABLE TO OBTAIN THE MAXIMUM SWING WITH CONTIGUOUS PILES.
 - iii. SPLICES SHALL DEVELOP THE FULL STRUCTURAL STRENGTH OF THE MEMBER.
6. REMOVE AND REPLACE STEEL SHEET PILES FOUND TO BE OUT OF INTERLOCK, OUT OF TOLERANCE, DAMAGED OR OTHERWISE DEFICIENT AT NO ADDITIONAL COST TO THE OWNER.
7. MAINTAIN A PILE INSTALLATION RECORD FOR EACH SHEET PILE. INDICATE ON THE INSTALLATION RECORD INSTALLATION DATES AND TIMES, TYPE AND SIZE OF HAMMER, RATE OF OPERATION, TOTAL DRIVING TIME, DIMENSIONS OF DRIVING HELMET AND CAP USED, BLOWS REQUIRED PER FOOT FOR EACH FOOT OF PENETRATION, PILE LOCATIONS, PILE PLUMBNESS, TIP ELEVATIONS, GROUND ELEVATIONS, CUT-OFF ELEVATIONS, AND ANY REHEADING OR CUTTING OF SHEET PILES. RECORD ANY UNUSUAL SHEET PILE INSTALLATION PROBLEMS.
8. WHERE REQUIRED FOR INSTALLATION OF SHEET PILES, PRE-EXCAVATE ALONG SHEETING ALIGNMENT AND REMOVE ALL OBSTRUCTIONS (EXISTING FOUNDATIONS, UTILITIES, ETC). SEE TYPICAL PRE-TRENCHING DETAIL ON DRAWING ON DRAWING NO. SOE-XX.
9. TIEBACKS:
 - A. TIEBACKS SHALL BE DRILLED USING ROTARY DUPLEX DRILLING TECHNIQUES. SOILS SHALL BE REMOVED FROM WITHIN THE CASING USING WASH BORING METHODS, KEEPING THE WASH WATER RETURN INSIDE THE CASING. FLUSHING BEYOND THE CASING AND DRILLING TOOLS THAT RESULT IN CIRCULATION OUTSIDE OF THE CASING SHALL NOT BE USED.
 - B. TIEBACK GROUTING PRESSURE AND VOLUME SHALL BE DETERMINED BY THE TIEBACK CONTRACTOR TO ACHIEVE THE TIEBACK CAPACITIES SHOWN ON THESE DRAWINGS.
10. EXCAVATION, DEWATERING AND BACKFILLING:
 - A. DO NOT EXCAVATE MORE THAN TWO FEET BELOW CENTER LINE OF BRACING PRIOR TO INSTALLING THAT BRACING.
 - B. PRIOR TO EXCAVATING BELOW THE GROUND WATER TABLE, INSTALL THE APPROVED DEWATERING SYSTEM AND DEWATER TO MAINTAIN THE GROUND WATER TABLE MINIMUM TWO FEET BELOW THE LOWEST EXCAVATION SUBGRADE. DEWATER AHEAD OF THE EXCAVATION. DO NOT EXCAVATE IN THE WET.

5. UPON COMPLETION OF FOUNDATION CONSTRUCTION TO ONE FOOT BELOW CENTER LINE OF BRACING AND AFTER FOUNDATION CONCRETE HAS OBTAINED ITS DESIGN STRENGTH:
 - A. TEMPORARILY BRACE FOUNDATION WALL, AS REQUIRED BY THE STRUCTURAL ENGINEER, AND PLACE COMPACTED BACKFILL BETWEEN SHEET PILE WALL AND FOUNDATION WALL.
 - B. REMOVE LATERAL BRACING.
 - C. COMPLETE CONSTRUCTION OF FOUNDATION WALL AND GRADE SLAB, AND BACKFILL BETWEEN SHEET PILE WALL AND FOUNDATION WALL.
 - D. ALL SHEET PILES SHALL BE CUT AND REMOVED TO 4 FEET BELOW SIDEWALK GRADE.

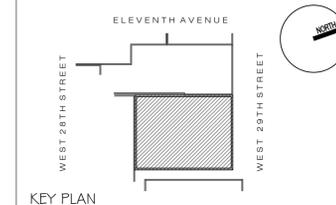
SURVEY AND MONITORING

1. THE OWNER WILL PERFORM A PRE-CONSTRUCTION BUILDING CONDITION SURVEY OF THE ADJACENT BUILDINGS. COPIES WILL BE AVAILABLE FOR THE CONTRACTOR'S INFORMATION UPON REQUEST.
2. THE OWNER'S GEOTECHNICAL INSTRUMENTATION ENGINEER (GIE) WILL IMPLEMENT A MONITORING AND INSTRUMENTATION PROGRAM DURING CONSTRUCTION FOR PROTECTION OF ADJACENT STRUCTURES. THRESHOLD AND LIMITING VALUES FOR MOVEMENTS AND VIBRATIONS OF ADJACENT STRUCTURES DURING THE CONSTRUCTION ARE AS INDICATED BELOW. THE CONTRACTOR SHALL UTILIZE CONSTRUCTION METHODS THAT MINIMIZE MOVEMENTS AND VIBRATIONS, WHICH IN NO CASE SHALL EXCEED THE SPECIFIED CRITERIA.
3. THE OWNER'S GIE WILL PROVIDE MONITORING OF SURVEY POINTS AND VIBRATIONS, AND WILL PROVIDE DATA ACCESS ON A WEBSITE PLUS ALARM NOTIFICATION VIA EMAIL TO A DISTRIBUTION LIST OF RECIPIENTS. THE CONTRACTOR SHALL DESIGNATE AN ON-SITE POINT OF CONTACT FOR SUCH CORRESPONDENCE WHO SHALL REMAIN AVAILABLE TO RESPOND TO ALARMS THROUGHOUT CONSTRUCTION AND WHO HAS THE AUTHORITY TO DIRECT SITE ACTIVITIES AS MAY BE REQUIRED SHOULD MOVEMENT OR VIBRATION CRITERIA BE EXCEEDED.
4. PRIOR TO THE START OF THE EXCAVATION, SOE AND UNDERPINNING WORK, THE CONTRACTOR SHALL PROVIDE A SURVEY OF AS-BUILT X, Y, Z COORDINATES OF MONITORING PRISMS INSTALLED BY THE GIE ON THE PROJECT COORDINATE SYSTEM.
5. THE CONTRACTOR SHALL PROVIDE THE GIE ACCESS TO THE SITE AND COOPERATE WITH HIM IN HIS MONITORING AND INSTRUMENTATION DUTIES. THE CONTRACTOR SHALL, AT THE GIE'S REQUEST, PROVIDE AN EXTENSION LADDER AND LABOR, OR OTHER EQUIPMENT/LABOR AS REQUIRED FOR INSTALLATION, MAINTENANCE AND REMOVAL OF PRISMS AND OTHER MONITORING EQUIPMENT.
6. BUILDING MOVEMENT AND VIBRATION CRITERIA:
 - A. IF BUILDING MOVEMENT EXCEEDS 1/4" (THRESHOLD VALUE) ABOVE BASELINE READINGS, THE CONSTRUCTION MANAGER WILL MEET WITH THE CONTRACTOR AND ENGINEER TO REVIEW CONSTRUCTION PROCEDURES AND ESTABLISH COURSE OF ACTION TO MINIMIZE FUTURE ADDITIONAL MOVEMENTS.
 - B. IF BUILDING MOVEMENT REACHES 1/2" (LIMITING VALUE) ABOVE BASELINE READINGS, THE CONTRACTOR SHALL IMMEDIATELY STOP WORK, EXCEPT FOR THAT WORK DEEMED NECESSARY TO STABILIZE CONDITIONS, AND SUBMIT REVISED WORK PROCEDURES AND A REMEDIATION PLAN, IF REQUIRED, TO THE CONSTRUCTION MANAGER. WORK SHALL NOT RESUME UNTIL APPROVED BY THE CONSTRUCTION MANAGER.
 - C. SOLDIER PILES MOVEMENT CRITERIA IS 0.75" THRESHOLD VALUE AND 1.5" LIMITING VALUE WITH THE SAME ACTION RESPONSE REQUIREMENTS AS PROVIDED FOR BUILDING MOVEMENTS.
 - D. IF THE VIBRATION MONITORING PEAK PARTICLE VELOCITY (PPV) EXCEEDS 0.5 INCH PER SECOND (IPS) (THRESHOLD VALUE), THE CONTRACTOR SHALL MODIFY HIS PROCEDURES TO MINIMIZE THRESHOLD VALUES FROM BEING EXCEEDED IN THE FUTURE.
 - E. IF THE VIBRATION MONITORING PPV EXCEEDS 2 IPS (LIMITING VALUE), IMMEDIATELY STOP WORK. WORK SHALL RESUME UPON THE APPROVAL BY THE CONSTRUCTION MANAGER. REVISED WORK PROCEDURES MAY BE REQUIRED.

NOTES

0	9-8-14	NYCTA REVIEW
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No.	Date	Revision
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SUPPORT OF EXCAVATION
GENERAL NOTES

SEAL & SIG.	DATE: 09-08-2014
	PROJECT No.: MRCE12243
	SCALE:
	DWG NO.:
	SOE-100.00
	CADD FILE NO.:
	XX
	OF 10

DOB# -----

NEW YORK CITY TRANSIT GENERAL NOTES:

NOTE: THE APPROPRIATE NOTES ARE TO BE MADE PART OF THE PROJECT'S CONTRACT DRAWINGS.

- THE NYC TRANSIT (NYCT) RESERVES THE RIGHT TO PLACE INSPECTORS, FLAGMEN OR OTHER PERSONNEL IN THE SUBWAY STRUCTURES DURING CONSTRUCTION OF THE PROJECT LINKED BY A TELEPHONE SYSTEM, IF DEEMED NECESSARY, TO OBSERVE THE EFFECTS OF THE CONSTRUCTION ON THE TRANSIT FACILITIES. NYCT FURTHER RESERVES THE RIGHT TO PLACE SUCH PERSONNEL WHENEVER, IN ITS OPINION, THE PROJECT CONDITIONS WARRANT SUCH PLACEMENT, REGARDLESS OF DISTANCE. THE COST OF SUCH PERSONNEL, TELEPHONE INSTALLATION AND ANY RE-ROUTES, DIVERSIONS OF SERVICE, WORK TRAINS, ETC., MADE NECESSARY BY THE PROJECT, MUST BE BORNE BY THE PROJECT OR THE RESPONSIBLE NEW YORK CITY/STATE AGENCY.
- ALL ROCK EXCAVATION ADJACENT TO THE TRANSIT STRUCTURE IS TO BE CHANNEL DRILLED TWO FEET BELOW SUBGRADE.
- IF TOP OF ROCK IS FOUND BELOW SUBWAY STRUCTURE, THE SUBWAY STRUCTURE MUST BE UNDERPINNED IN ACCORDANCE WITH DRAWINGS TO BE SUBMITTED TO NYCT FOR APPROVAL.
- IF ROCK IS SOFT OR SEAMY, LATERAL SUPPORTS MUST BE PROVIDED BELOW THE SUBWAY STRUCTURE IN ACCORDANCE WITH DRAWINGS TO BE SUBMITTED TO NYCT FOR APPROVAL.
- BLASTING WILL BE PERMITTED ONLY WITH LIGHT CHARGES SUBJECT TO THE APPROVAL OF NYCT'S ENGINEER AND IN ACCORDANCE WITH THE REGULATIONS OF THE FIRE DEPARTMENT. THE CONTRACTOR SHALL PROVIDE A DETAILED MONITORING PLAN, PROVIDING FOR MEASUREMENTS OF BOTH PARTICLE VELOCITY AND DISPLACEMENTS AT CRITICAL LOCATIONS OF THE NYCT STRUCTURE. THE MONITORING PLAN SHALL INCLUDE THRESHOLD AND UPSET LEVELS OF BOTH PARTICLE VELOCITY AND SETTLEMENT TOGETHER WITH AN ACTION PLAN FOR THEIR IMPLEMENTATION. THE CONTRACTOR SHALL SECURE AN APPROVED SEISMOLOGIST TO INSTALL AND OPERATE SUITABLE VELOCITY GAUGES TO CONTINUOUSLY MONITOR PARTICLE VELOCITY AND AN INDEPENDENT LICENSED SURVEYOR TO MONITOR DISPLACEMENTS. THE PRESENCE OF A QUALIFIED TECHNICIAN FROM MONITORING COMPANY IS NECESSARY TO PROVIDE THE VIBRATION READING UPON REQUEST OF NYCT ENGINEER. THE THRESHOLD MAXIMUM PARTICLE VELOCITY ABOVE AMBIENT CAUSED BY THE BLASTING WILL BE 0.5 INCH PER SECOND. VALUES EXCEEDING THIS LEVEL WILL BE REVIEWED AND EVALUATED BY NYCT'S ENGINEER. IN NO CASE WILL PARTICLE VELOCITIES EXCEED THE UPSET LEVEL OF 2.0 INCHES PER SECOND.
- BEFORE PLACING CONCRETE, THE SUBGRADE OF THE FOUNDATIONS IN THE VICINITY OF THE SUBWAY STRUCTURE IS TO BE INSPECTED AND APPROVED BY NYCT'S ENGINEER.
- IF ANY PORTION OF THE SUBWAY STRUCTURE OR FINISH IS DAMAGED, IT SHALL BE REPAIRED OR REPLACED WITH THE SAME MATERIALS IN PLACE, SUBJECT TO THE APPROVAL OF NYCT'S ENGINEER AND AT THE EXPENSE OF THE PROJECT.
- EXCAVATION EMBANKMENTS ARE TO BE SHORED AND BRACED. DRAWINGS INDICATING A SUGGESTED METHOD OF CONSTRUCTION ARE TO BE SUBMITTED TO NYCT FOR APPROVAL IN CONJUNCTION WITH THE PROJECT'S CONTRACT DRAWINGS. IN CASE OF EXCAVATION UNDERMINING THE SUBWAY STRUCTURE, UNDERPINNING MAY BE REQUIRED. DRAWINGS FOR UNDERPINNING ARE TO BE SUBMITTED TO NYCT FOR APPROVAL.
- TEMPORARY SHORING MAY BE PLACED IN DIRECT CONTACT WITH NYCT STRUCTURES ONLY IF THE NYCT STRUCTURE IS SHOWN TO BE ABLE TO SUPPORT ALL ANTICIPATED LOADS THAT CAN BE TRANSFERRED THROUGH THE TEMPORARY STRUCTURES WITHOUT DAMAGING THE EXISTING STRUCTURE. AT THE COMPLETION OF THE PROJECT, THESE TEMPORARY SHORING AND BRACING SYSTEMS ARE TO BE REMOVED OR CUT-OFF AS APPROVED BY NYCT.
- WHEN PILES ARE TO BE DRIVEN OR DRILLED ADJACENT TO THE SUBWAY STRUCTURE, BORING DATA, PILE LAYOUTS, SPECIFICATIONS AND INSTALLATION PROCEDURES ARE TO BE SUBMITTED TO NYCT FOR APPROVAL. VELOCITY METERS ARE TO BE INSTALLED IN THE SUBWAY TUNNEL AT CRITICAL LOCATIONS TO MONITOR INDUCED VIBRATIONS. INDUCED DISPLACEMENTS ALONG THE TUNNEL STRUCTURE AND TRACK INVERT ARE TO BE MONITORED DURING DRIVING OR DRILLING. THE THRESHOLD MAXIMUM PARTICLE VELOCITY ABOVE AMBIENT CAUSED BY THE DRIVING OR DRILLING WILL BE 0.5 INCH PER SECOND. VALUES EXCEEDING THIS LEVEL WILL BE REVIEWED AND EVALUATED BY NYCT'S ENGINEER. IN NO CASE WILL PARTICLE VELOCITIES EXCEED THE UPSET LEVEL OF 2.0 INCHES PER SECOND.
- NO PILES ARE PERMITTED TO BE INSTALLED BY ANY METHOD WITHIN THREE FEET OF SUBWAY STRUCTURE, MEASURED FROM THE EDGE OF THE PILE OR CASING TO THE WALL. CLOSED-END PILES WILL NOT BE PERMITTED TO BE DRIVEN WITHIN TEN FEET OF THE SUBWAY STRUCTURE.
- ALL PILES ARE TO BE PLACED WITHIN A PREAUGERED CASED HOLE TO THE INFLUENCE LINE. THE CASING SHALL BE CLEANED WITHOUT DISTURBING THE SOIL OUTSIDE THE CASING AND THE PILE TO BE PLACED WITHIN THE CASING FOR INSTALLATION. THE PILES MAY THEN BE DRIVEN BEYOND THE INFLUENCE LINE WITHIN THE CASING.
- THE INFLUENCE LINE SHALL START AT THE BOTTOM OF THE SUBWAY STRUCTURE AND EXTEND FROM 1H:1V TO 2H:1V SLOPE DEPENDING ON THE SOIL PROPERTIES AND GROUND WATER TABLE. FOR PILES INSTALLED WITHIN TEN FEET OF THE SUBWAY STRUCTURE, THE CASING SHALL BE EXTENDED UP TO THE BOTTOM OF THE SUBWAY STRUCTURE.
- ALL PILES ARE TO BE DRIVEN OR DRILLED A MINIMUM OF TEN FEET BELOW THE INTERSECTION OF THE PILE CENTERLINE AND THE INFLUENCE LINE OF THE SUBWAY STRUCTURE.
- THE USE OF "DOWN-THE-HOLE -HAMMERS" FOR INSTALLATION OF PILES THROUGH OVERBURDEN AND FILL WILL BE PERMITTED ONLY TO REMOVE BOULDERS. IT WILL NOT BE PERMITTED AS A MATTER OF COURSE TO ADVANCE THE HOLE. THEIR USE TO CONSTRUCT ROCK SOCKETS WILL NOT BE ALLOWED WITHIN 5 FEET OF THE NYCT STRUCTURE. THE USE OF MACHINE UTILIZING AIR FOR SOIL REMOVAL WILL NOT BE ALLOWED.

- VIBRATORY HAMMERS WILL NOT BE PERMITTED WITHIN 75 FEET OF SUBWAY STRUCTURES. HOERAMS WILL NOT BE PERMITTED WITHIN 25 FEET OF SUBWAY STRUCTURES.
- DYNAMIC COMPACTION METHODS USING DROPPED HEAVY WEIGHTS CANNOT BE CONDUCTED WITHIN 1000 FEET OF ANY NYCT STRUCTURE UNLESS IT IS SHOWN THAT INDUCED SETTLEMENTS AND VIBRATIONS WILL NOT DAMAGE THESE STRUCTURES. A SUITABLE MONITORING PLAN INCLUDING SETTLEMENT AND VIBRATION MEASUREMENTS MUST BE APPROVED BY NYCT'S ENGINEER FOR ALL SUCH OPERATIONS WITHIN THESE DISTANCES.
- THERE SHALL BE NO MACHINE EXCAVATION WITHIN 3 FEET OF NYCT STRUCTURES, POWER DUCT LINES, OR ANY OTHER FACILITIES UNTIL THEY HAVE BEEN CAREFULLY EXPOSED BY HAND EXCAVATION.
- ALL DEWATERING OPERATIONS CONDUCTED WITHIN 500 FEET OF THE NYCT STRUCTURE MUST BE PERFORMED IN ACCORDANCE WITH DRAWINGS AND PROCEDURES SUBMITTED TO NYCT FOR APPROVAL. THE DISTANCE FROM THE STRUCTURE TO THE DEWATERING OPERATION CAN BE REDUCED PROVIDED THAT SOIL CONDITIONS AT THE SITE INDICATE THAT THE RADIUS OF INFLUENCE OF THE DEWATERING IS LESS THAN 500 FEET. FOR DEWATERING WITHIN THE RADIUS OF INFLUENCE, THE DEWATERING PROGRAM MUST BE SHOWN TO HAVE NEGLIGIBLE INFLUENCE ON SETTLEMENTS OF THE NYCT STRUCTURE.
- SUBWAY ENTRANCES (VENTILATORS, ETC.) ARE TO BE UNDERPINNED OR SHORED AND BRACED IF DIRECTED BY NYCT'S ENGINEER.
- NYCT, AT ITS DISCRETION, RESERVES THE RIGHT TO REQUIRE THE PROJECT TO CLOSE OR MAINTAIN AND PROTECT EXISTING SUBWAY ENTRANCES, VENTILATORS, ETC. ADJACENT TO THE PROJECT DURING CONSTRUCTION. SUCH CONSTRUCTION MAY INCLUDE UNDERPINNING, SHORING, BRACING AND ERECTION OF SUITABLE BARRICADES AND/OR CANOPIES AND SHIELDS. SUCH PROTECTION SHALL BE IN ACCORDANCE WITH DRAWINGS SUBMITTED TO NYCT FOR APPROVAL.
- IF SHIELDS ARE TO BE INSTALLED TO PROTECT NYCT FACILITIES AND/OR THE PUBLIC, PLANS SHOWING THE LOCATION, TYPE AND METHOD OF ATTACHMENT TO THE TRANSIT STRUCTURE MUST BE SUBMITTED TO NYCT FOR APPROVAL.
- ALL LUMBER AND PLYWOOD USED FOR PROTECTION OF SUBWAY FACILITIES MUST BE FIRE RETARDANT.
- SUBWAY EMERGENCY EXITS MUST BE KEPT CLEAR AT ALL TIMES.
- IN EXCAVATING OVER OR NEAR THE SUBWAY ROOF, SPECIAL CARE SHALL BE EXERCISED SO THAT THE THIN CONCRETE PROTECTION OF THE SUBWAY WATERPROOFING IS NOT DAMAGED.
- BURNING OF, WELDING TO OR DRILLING THROUGH EXISTING STEEL STRUCTURES WILL NOT BE PERMITTED EXCEPT AS SHOWN ON DRAWINGS APPROVED BY NYCT.
- HORIZONTAL AND VERTICAL CONTROL SURVEY DATA OF THE EXISTING NYCT STRUCTURE IS TO BE TAKEN BY A LICENSED LAND SURVEYOR TO MONITOR ANY MOVEMENTS THAT OCCUR DURING CONSTRUCTION AND TO SHOW THAT THE INDUCED MOVEMENTS ARE WITHIN ALLOWABLES NOTED BELOW. IF ANY MOVEMENTS EXCEED ALLOWABLES, REMEDIATION AS APPROVED BY NYCT SHALL BE PERFORMED.

STRUCTURE	NOTIFY NYCT ENGINEER	STOP WORK
ELEVATED	1/8 inch	1/4 inch
SUBWAY	1/4 inch	1/2 inch

- BUS ROUTES AFFECTED BY THE PROJECT WILL OR MAY REQUIRE BUS DIVERSIONS. THESE ARRANGEMENTS SHALL BE MADE THROUGH:

MS. SARAH WYSS
ACTING DIRECTOR, OPERATIONS PLANNING
NEW YORK CITY TRANSIT
2 BROADWAY, ROOM A17.82
NEW YORK, NEW YORK 10004
TELEPHONE NUMBER 646/252-5517

WHEN IMPACTING ANY BUS STOP, SPECIAL OPERATIONS MUST BE NOTIFIED TWO WEEKS IN ADVANCE.
- DUCT LINES MUST BE MAINTAINED AND PROTECTED DURING CONSTRUCTION. ANY INTERFERENCE WITH DUCT LINES SHOULD BE REPORTED TO NYCT INSPECTOR. WHEN A DUCT LINE CONTAINING CABLES IS TO BE REMOVED, OR WHEN MASONRY ADJACENT THERETO IS TO BE REMOVED, PENETRATED, OR DRILLED, THE WORK SHALL BE DONE WITH HAND LABOR ENTIRELY, USING HAMMER AND CHISEL. JACKHAMMERS, BULL POINTS OR OTHER POWER EQUIPMENT SHALL NOT BE USED.
- WHERE MANHOLES ARE ENCOUNTERED:
 - THEY SHALL BE PROTECTED AND RAISED OR LOWERED AS REQUIRED, TO MATCH THE NEW STREET GRADE.
 - IF MANHOLE COVERS ARE RAISED OR LOWERED, PROTECT CABLES IN MANHOLE BY WOOD SHEETING OF 2" NOMINAL THICKNESS.
 - PRIOR TO THE START OF CONSTRUCTION OPERATIONS AFFECTING MANHOLES AND DUCT LINES, SEVEN DAYS NOTICE MUST BE GIVEN TO MR. JOHN MALVASIO, P.E., ASSISTANT CHIEF ENGINEERING OFFICER, MAINTENANCE OF WAY, AT 718/694-1358.
- CONSTRUCTION WORK DONE NEAR VENT GRATINGS AND HATCHES SHALL BE AS FOLLOWS:
 - UNLESS APPROVED BY THE NYCT'S ENGINEER, ALL VENT GRATINGS AND HATCHES SHOULD REMAIN OUTSIDE THE CONSTRUCTION SITE, SEPARATED BY A CONSTRUCTION FENCE. PROTECTIVE SHIELDS MUST BE PROVIDED OVER VENT GRATINGS AS REQUIRED BY NYCT'S ENGINEER.
 - NO BUILDING MATERIAL, VEHICLES OR CONSTRUCTION EQUIPMENT IS TO BE STORED OR RUN OVER VENT, GRATINGS, HATCHES OR EMERGENCY EXITS.

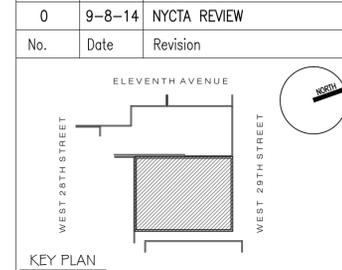
- DETAILS OF SIDEWALK RECONSTRUCTION AROUND VENT GRATINGS, HATCHES AND EMERGENCY EXITS ARE TO BE SUBMITTED TO NYCT FOR APPROVAL.
- TRACTORS, CRANES, EXCAVATORS, ETC. USED IN THE VICINITY OF THE ELEVATED STRUCTURES SHALL BE ISOLATED FROM THE GROUND. SINCE THE ELEVATED STRUCTURE IS USED AS A NEGATIVE RETURN PATH, WITH A CONSEQUENT POTENTIAL BETWEEN IT AND THE GROUND, ANY CONTACT BETWEEN THE STRUCTURE AND GROUNDED EQUIPMENT COULD RESULT IN BURNING OF THE STEEL.
- TEMPORARY CONSTRUCTION SHEDS, BARRICADES OR PLYWOOD PARTITIONS MUST BE A MINIMUM OF 5'-0" FROM EDGE OF FINISHED PLATFORM.
- STATION AREAS OR STAIRWAY/CLOSINGS: THE GENERAL REQUIREMENTS FOR STATION AREAS OR STAIRWAY/CLOSINGS ARE AS FOLLOWS:
 - ONLY ONE STAIRWAY AT EACH STATION WILL BE PERMITTED TO BE CLOSED AT THE SAME TIME. APPROVALS FOR CLOSING ANY STAIRWAY MUST BE OBTAINED FROM THE DIVISION OF STATION OPERATIONS AT LEAST THREE WEEKS IN ADVANCE.
 - MR. ASHOK PATEL, DIRECTOR, OFFICE OF STATION PROGRAMS; TELEPHONE 718/694-1695 OF THE DIVISION OF STATIONS MUST BE NOTIFIED ONE WEEK PRIOR TO THE ACTUAL CLOSING AND REOPENING OF THE ENTRANCE.
 - SIGNAGE MUST BE SUPPLIED AND POSTED AT LEAST ONE WEEK IN ADVANCE, ADVISING THE PUBLIC OF THE PROPOSED SUBWAY STAIR CLOSING. HOWEVER, IF IT IS AN ENTIRE ENTRANCE CLOSING, SIGNAGE MUST BE POSTED TWO WEEKS IN ADVANCE.
 - THE STREET ENTRANCE STAIRWAY SHOULD NOT BE CLOSED UNLESS MANPOWER AND MATERIALS ARE AVAILABLE TO COMMENCE WORK ON DATES PERMITTED.
 - ONCE THE CLOSING IS EFFECTED, CONSTRUCTION SIGNS MUST BE PLACED AT APPROPRIATE LOCATIONS ON THE BARRICADES AT THE STREET AND MEZZANINE LEVELS, STATING THE CONTRACTOR'S NAME, 24 HOUR EMERGENCY TELEPHONE NUMBER, CONTRACT NUMBER, THE DURATION OF THE CLOSING, DIRECTION TO AN ALTERNATE ENTRANCE/EXIT, AND AN APOLOGY FOR THE INCONVENIENCE TO OUR CUSTOMERS.
 - EXISTING STATION SIGNAGE MUST BE ADJUSTED TO REFLECT ANY CHANGES IN ACCESS/EGRESS.
 - BARRICADES ARE TO BE PAINTED AND KEPT GRAFFITI FREE AT ALL TIMES. THE CONTRACTOR MUST MAINTAIN THE BARRICADED AREA CLEAN OF ALL DEBRIS.
 - ALL MATERIALS ARE TO BE PROPERLY STORED AND SECURED AWAY FROM PASSENGER TRAFFIC.
 - THE CONTRACTOR MUST REMOVE ALL WASTE MATERIAL AND BARRICADES FROM ALL STATION AREAS WHEN CONSTRUCTION IS COMPLETED.
 - INSPECTION OF THE AREA UNDER CONSTRUCTION BY AUTHORIZED STATION DEPARTMENT EMPLOYEES SHALL NOT BE INHIBITED.
 - IF STREETLIGHTS ON THE SIDEWALKS ARE AFFECTED, TEMPORARY LIGHTS SHALL BE PROVIDED.
- IF NEW CONCRETE CONSTRUCTION IS JOINED TO EXISTING CONCRETE, DOWELS AND KEYWAYS ARE TO BE USED IN ACCORDANCE WITH NYCT STANDARDS.
- IF THE PROJECT INVOLVES CONSTRUCTION OR ALTERATION OF A SUBWAY FACILITY ON PRIVATE PROPERTY, THE PROPERTY OWNERS WILL BE REQUIRED TO ENTER INTO AN AGREEMENT WITH NYCT PERTAINING TO ALL WORK AFFECTING THE TRANSIT FACILITIES AND CLEARLY DEFINING LIMITS AND RESPONSIBILITY FOR MAINTENANCE AND LIABILITY.
- WHEREVER A NEW SIDEWALK IS BEING PLACED ADJACENT TO NYCT STRUCTURES THE FOLLOWING WILL BE REQUIRED:
 - THE TOP OF THE NEW SIDEWALK SHALL BE FLUSH WITH THE SUBWAY VENT GRATINGS, HATCHES AND EMERGENCY EXITS.
 - THE SLOPE OF THE NEW SIDEWALK SHALL BE SUCH THAT THE DRAINAGE BE AWAY FROM THESE STRUCTURES.
 - A 1/2" PREMOLDED FILLER SHALL BE INSTALLED BETWEEN THE NEW SIDEWALK AND NYCT STRUCTURE.
 - WHERE SIDEWALK ELEVATIONS ARE BEING CHANGED DETAILS OF PROPOSED WORK AROUND NYCT STRUCTURES ARE TO BE SUBMITTED FOR APPROVAL.
- BEFORE ENTERING NYCT PROPERTY, CONTRACTOR OR SUBCONTRACTOR'S PERSONNEL SHALL HAVE ATTENDED NYCT TRACK SAFETY TRAINING AND EXPECT TO FOLLOW NYCT RULES AND REGULATIONS AS PER TRAINING AND ENGINEER INSTRUCTIONS
- BEFORE THE START OF ANY WORK, THE CONTRACTOR SHALL MAKE AN EXAMINATION, IN THE PRESENCE OF NYCT'S ENGINEER, OF THE INTERIOR AND EXTERIOR OF NYCT SUBWAY OR OTHER STRUCTURE ADJACENT TO THE PROPOSED WORK. THE PERSON OR PERSONS AUTHORIZED BY THE CONTRACTOR TO MAKE THESE EXAMINATIONS SHALL BE APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL TAKE ALL PHOTOGRAPHS AS MAY BE NECESSARY OR ORDERED TO INDICATE THE EXISTING CONDITION OF NYCT STRUCTURE. ONE COPY OF EACH PHOTOGRAPH, EIGHT INCHES BY TEN INCHES IN SIZE, AND THE NEGATIVE IS TO BE SUBMITTED TO MR. JOHN MALVASIO, P.E., ASSISTANT CHIEF ENGINEERING OFFICER, MAINTENANCE-OF-WAY, 130 LIVINGSTON STREET, ROOM 8044D, BROOKLYN, NEW YORK 11201, TELEPHONE 718/694-1358 BEFORE THE START OF CONSTRUCTION.
- ALL ARCHITECTURAL DETAILS (TOKEN BOOTHS, RAILINGS, DOORS, ETC.) ARE TO CONFORM TO THE LATEST NYCT STANDARDS. THESE STANDARDS ARE AVAILABLE AT NYCT.

- STANDARD NYCT INSURANCE CLAUSES ARE TO BE MADE PART OF THE PROJECT'S CONTRACT DRAWINGS. PROOF THAT THE NECESSARY INSURANCE IS IN EFFECT WILL BE REQUIRED BEFORE WORK CAN COMMENCE.
- AT THE CLOSE OF ANY PROJECT INVOLVING CONSTRUCTION OR ALTERATIONS TO TRANSIT FACILITIES, ONE SET OF VELLUMS OR MYLARS, FIVE SETS OF 35MM MICROFILM, AND ELECTRONIC COPIES COMPLYING TO MICROSTATION.DGN FORMAT OF "APPROVED AS-BUILTS" MUST BE PROVIDED TO NYCT FOR ITS RECORDS. FOR DETAILS OF SPECIFIC REQUIREMENTS CONTACT NYCT OUTSIDE PROJECTS.
- AT LEAST SEVEN WORKING DAYS PRIOR TO THE START OF CONSTRUCTION OPERATIONS, NOTIFICATION MUST BE GIVEN TO MR. JOHN MALVASIO, P.E., ASSISTANT CHIEF ENGINEERING OFFICER, MAINTENANCE-OF-WAY, AT 718/694-1358. THE CONTRACTOR TO PROVIDE TEMPORARY QUARTERS NEAR THE JOB SITE FOR NYCT INSPECTORS CONTAINING A DESK AND TELEPHONE.

MAY 2, 2014

NOTES

0	9-8-14	NYCTA REVIEW
No.	Date	Revision



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 Tel (212) 687-9888 Fax (646) 487-5501

PROJECT
550W 29TH
 550 WEST 29TH STREET
 New York, NY

**NEW YORK CITY TRANSIT
 GENERAL NOTES**

SEAL & SIG.	DATE: 09-08-2014
	PROJECT No.: MRCE12243
	SCALE:
	DWG NO.:
	SOE-100A.00
	CADD FILE NO.:
	XX

DOB# -----

NEW YORK CITY TRANSIT "NOT FOR BENEFIT" INSURANCE REQUIREMENTS:

SECTION A: INSURANCE REQUIREMENTS

THE PERMITTEE AT ITS SOLE COST AND EXPENSE SHALL CARRY AND MAINTAIN POLICIES OF INSURANCE AT ALL TIMES DURING THE PERIOD OF PERFORMANCE UNDER THIS AGREEMENT AS HEREIN SET FORTH BELOW:

1. WORKERS' COMPENSATION: INCLUDING EMPLOYER'S LIABILITY INSURANCE WITH LIMITS OF LIABILITY NOT LESS THAN \$2,000,000 WHICH MAY BE MET BY A COMBINATION OF PRIMARY AND EXCESS INSURANCE MEETING THE STATUTORY LIMITS OF NEW YORK STATE.
2. COMMERCIAL GENERAL LIABILITY: (ISO 2001 FORM OR EQUIVALENT) APPROVED BY PERMITTOR IN THE PERMITTEE'S NAME WITH LIMITS OF LIABILITY IN THE AMOUNT OF NOT LESS THAN \$3,000,000 FOR EACH OCCURRENCE ON A COMBINED SINGLE LIMIT BASIS FOR INJURIES TO PERSONS (INCLUDING DEATH) AND DAMAGE TO PROPERTY, \$3,000,000 GENERAL AGGREGATE AND \$3,000,000 IN THE AGGREGATE WITH RESPECT TO PRODUCTS/COMPLETED OPERATIONS. THE LIMITS MAY BE PROVIDED IN THE FORM OF A PRIMARY POLICY OR COMBINATION OF PRIMARY AND UMBRELLA/EXCESS POLICY. WHEN THE MINIMUM CONTRACT AMOUNTS CAN ONLY BE MET WHEN APPLYING THE UMBRELLA/EXCESS POLICY, THE UMBRELLA/EXCESS POLICY MUST FOLLOW FORM OF THE UNDERLYING POLICY AND BE EXTENDED TO "DROP DOWN" TO BECOME PRIMARY IN THE EVENT PRIMARY LIMITS ARE REDUCED OR AGGREGATE LIMITS ARE EXHAUSTED. SUCH INSURANCE SHALL BE PRIMARY AND NON-CONTRIBUTORY TO ANY OTHER VALID AND COLLECTIBLE INSURANCE AND MUST BE EXHAUSTED BEFORE IMPLICATING ANY PERMITTOR/MTA POLICY AVAILABLE.

SUCH POLICY SHOULD BE WRITTEN ON AN OCCURRENCE FORM, AND SHALL INCLUDE THE FOLLOWING COVERAGES:

- ADDITIONAL INSURED ENDORSEMENT (I.S.O. FORM CG 20 26 07/04) VERSION OR EQUIVALENT APPROVED BY THE PERMITTOR, SHALL NAME THE INDEMNITEES AS REFERENCED UNDER SECTION B OF THIS AGREEMENT AS ADDITIONAL INSURED.
- CONTRACTUAL LIABILITY ASSUMED BY THE PERMITTEE UNDER THIS AGREEMENT;
- PERSONAL AND ADVERTISING INJURY;
- PRODUCTS-COMPLETED OPERATIONS;
- INDEPENDENT CONTRACTORS;
- "XCU" (EXPLOSION, COLLAPSE, AND UNDERGROUND HAZARDS) WHERE NECESSARY;
- CONTRACTUAL LIABILITY EXCLUSION, APPLICABLE TO CONSTRUCTION OR DEMOLITION OPERATIONS TO BE PERFORMED WITHIN 50 FEET OF RAILROAD TRACKS, MUST BE REMOVED, WHERE NECESSARY;

3. BUSINESS AUTOMOBILE LIABILITY: (ISO FORM CA 00 01 10 01 OR EQUIVALENT) APPROVED BY THE PERMITTOR IS REQUIRED IF PERMITTEE'S VEHICLE ENTERS PERMITTOR'S PROPERTY. THE INSURANCE MUST BE IN THE NAME OF THE PERMITTEE OR ITS CONTRACTOR ENTERING THE PERMITTOR PROPERTY WITH LIMITS OF LIABILITY IN THE AMOUNT OF NOT LESS THAN \$2,000,000 EACH ACCIDENT FOR CLAIMS FOR BODILY INJURIES (INCLUDING DEATH) TO PERSONS AND FOR DAMAGE TO PROPERTY ARISING OUT OF THE OWNERSHIP, MAINTENANCE OR USE OF ANY OWNED, HIRED OR NON-OWNED MOTOR VEHICLE.

4. RAILROAD PROTECTIVE LIABILITY: (ISO-RIMA OR EQUIVALENT FORM) APPROVED BY PERMITTOR COVERING THE WORK TO BE PERFORMED AT THE DESIGNATED JOB SITE AND AFFORDING PROTECTION FOR DAMAGES ARISING OUT OF BODILY INJURY OR DEATH, PHYSICAL DAMAGE TO OR DESTRUCTION OF PROPERTY, INCLUDING DAMAGE TO THE INSURED'S OWN PROPERTY AND CONFORMING TO THE FOLLOWING:

- THE POLICY SHALL BE ISSUED TO THE "NAMED INSUREDS" LISTED UNDER SECTION B.
- THE LIMIT OF LIABILITY SHALL BE NOT LESS THAN \$2,000,000 PER OCCURRENCE, SUBJECT TO A \$6,000,000 ANNUAL AGGREGATE;
- POLICY MUST BE ENDORSED TO PROVIDE COVERAGE FOR CLAIMS ARISING FROM INJURY TO EMPLOYEES COVERED BY FEDERAL EMPLOYER'S LIABILITY ACT (FELA).
- INDICATE THE NAME AND ADDRESS OF THE DESIGNATED CONTRACTOR, PROJECT LOCATION AND DESCRIPTION OF WORK, AND PERMIT NUMBER IF APPLICABLE.
- EVIDENCE OF RAILROAD PROTECTIVE LIABILITY INSURANCE, MUST BE PROVIDED IN THE FORM OF A POLICY. A DETAILED INSURANCE BINDER (ACORD OR MANUSCRIPT FORM) WILL BE ACCEPTED PENDING ISSUANCE OF THE POLICY, WHICH MUST BE PROVIDED WITHIN 30 DAYS FROM THE EFFECTIVE DATE.

5. ENVIRONMENTAL INSURANCE: IN THE EVENT ENVIRONMENTAL OR POLLUTION EXPOSURES EXIST, THE PERMITTEE SHALL REQUIRE THE ENVIRONMENTAL CONTRACTOR OR SUB-CONTRACTOR TO PROVIDE THE APPLICABLE INSURANCE COVERING SUCH EXPOSURE. THE LIMITS AND TYPES OF INSURANCE PROVIDED MUST BE SATISFACTORY TO THE PERMITTOR AND APPROVED PRIOR TO THE START OF THE WORK.

SECTION B: INDEMNITEES (ADDITIONAL INSUREDS / NAMED INSUREDS)

NEW YORK CITY TRANSIT AUTHORITY ("NYCT"), THE MANHATTAN AND BRONX SURFACE TRANSIT OPERATING AUTHORITY ("MABSTOA"), THE STATEN ISLAND RAPID TRANSIT OPERATING AUTHORITY ("SIRTOA"), THE METROPOLITAN TRANSPORTATION AUTHORITY ("MTA") INCLUDING ITS SUBSIDIARIES AND AFFILIATES, MTA CAPITAL CONSTRUCTION ("MTACC"), MTA BUS COMPANY ("MTA BUS"), AND THE CITY OF NEW YORK ("CITY" AS OWNER) AND THE RESPECTIVE AFFILIATES AND SUBSIDIARIES EXISTING CURRENTLY OR IN THE FUTURE OF AND SUCCESSORS TO EACH INDEMNIFIED PARTIES LISTED HEREIN.

SECTION C: GENERAL INSURANCE REQUIREMENTS

1. INSURANCE COMPANIES: ALL OF THE INSURANCE REQUIRED BY THIS ARTICLE SHALL BE WITH COMPANIES LICENSED OR AUTHORIZED TO DO BUSINESS IN THE STATE OF NEW YORK WITH AN A.M. BEST COMPANY RATING OF NOT LESS THAN A-/VII OR BETTER AND REASONABLY APPROVED BY THE PERMITTOR/MTA.
2. FORMS: ALL FORMS SHALL COMPLY WITH THE INSURANCE SERVICES OFFICE, INC. ("ISO") OR ITS EQUIVALENT APPROVED BY THE INSURANCE DEPARTMENT OF THE STATE OF NEW YORK
3. POLICY DEDUCTIBLE / SELF INSURED RETENTION: INSURANCE MAY CONTAIN A DEDUCTIBLE AND OR SELF-INSURED RETENTION AND SHALL NOT EXCEED \$100,000. THE PERMITTEE SHALL BE RESPONSIBLE FOR ALL CLAIM EXPENSES AND LOSS PAYMENTS WITHIN THE DEDUCTIBLE OR SELF-INSURED RETENTION.
4. POLICY TERMS: THESE POLICIES MUST: (I) BE WRITTEN IN ACCORDANCE WITH THE REQUIREMENTS OF THE PARAGRAPHS ABOVE, AS APPLICABLE; (II) BE ENDORSED IN FORM ACCEPTABLE TO INCLUDE A PROVISION THAT SHOULD THE POLICY BE CANCELED, MATERIALLY CHANGED, OR NOT RENEWED, NOTICE SHALL BE DELIVERED IN ACCORDANCE WITH THE INSURANCE POLICY PROVISIONS TO THE PERMITTOR, AND (III) STATE OR BE ENDORSED TO PROVIDE THAT THE COVERAGE AFFORDED UNDER THE PERMITTEE'S POLICIES SHALL APPLY ON A PRIMARY AND NOT ON AN EXCESS OR CONTRIBUTING BASIS WITH ANY POLICIES WHICH MAY BE AVAILABLE TO THE PERMITTOR/MTA, AND ALSO THAT THE PERMITTEE'S POLICIES, PRIMARY AND EXCESS, MUST BE EXHAUSTED BEFORE IMPLICATING ANY PERMITTOR/MTA POLICY AVAILABLE. (IV) IN ADDITION, PERMITTEE'S POLICIES SHALL STATE OR BE ENDORSED TO PROVIDE THAT, IF A SUBCONTRACTOR'S POLICY CONTAINS ANY PROVISION THAT MAY ADVERSELY AFFECT WHETHER PERMITTEE'S POLICIES ARE PRIMARY AND MUST BE EXHAUSTED BEFORE IMPLICATING ANY PERMITTOR/MTA POLICY AVAILABLE, PERMITTEE'S AND SUBCONTRACTOR'S POLICIES SHALL NEVERTHELESS BE PRIMARY AND MUST BE EXHAUSTED BEFORE IMPLICATING ANY PERMITTOR/MTA POLICY AVAILABLE. AT LEAST TWO (2) WEEKS PRIOR TO THE EXPIRATION OF THE POLICIES, THE PERMITTEE SHALL ENDEAVOR TO PROVIDE EVIDENCE OF RENEWAL OR REPLACEMENT POLICIES OF INSURANCE, WITH TERMS AND LIMITS NO LESS FAVORABLE THAN THE EXPIRING POLICIES.

SECTION D: SUBMISSION OF INSURANCE

CERTIFICATES OF INSURANCE MAY BE SUPPLIED AS EVIDENCE OF POLICIES EXCEPT FOR RAILROAD PROTECTIVE LIABILITY. HOWEVER, IF REQUESTED BY THE PERMITTOR, THE PERMITTEE SHALL DELIVER TO THE PERMITTOR WITHIN FORTY-FIVE (45) DAYS A COPY OF SUCH POLICIES, CERTIFIED BY THE INSURANCE CARRIER AS BEING TRUE AND COMPLETE. IF A CERTIFICATE OF INSURANCE IS SUBMITTED, IT MUST: (1) BE PROVIDED ON THE PERMITTOR CERTIFICATE OF INSURANCE; (2) BE SIGNED BY AN AUTHORIZED REPRESENTATIVE OF THE INSURANCE CARRIER OR PRODUCER AND NOTARIZED; (3) DISCLOSE ANY DEDUCTIBLE, SELF-INSURED RETENTION, SUB-LIMIT, AGGREGATE LIMIT OR ANY EXCLUSIONS TO THE POLICY THAT MATERIALLY CHANGE THE COVERAGE; (4) INDICATE THE ADDITIONAL INSUREDS AS REQUIRED HEREIN UNDER SECTION B; THE PERMITTEE MUST PROVIDE A COPY OF THE ADDITIONAL INSURED ENDORSEMENT (ISO) FORM CG 20 26 07/04 OR ITS EQUIVALENT AND MUST REFERENCE THE POLICY INFORMATION; (5) INDICATE PROJECT NAME AND LOCATION ON THE CERTIFICATE; AND (6) EXPRESSLY REFERENCE THE INCLUSION OF ALL REQUIRED ENDORSEMENTS.

THE PERMITTEE OR ITS CONTRACTOR/SUBCONTRACTOR PERFORMING THE WORK SHALL FURNISH EVIDENCE OF ALL POLICIES BEFORE ANY WORK IS STARTED TO THE APPROPRIATE DEPARTMENT:

NEW AGREEMENTS: MTA/NYCT MOW ENGINEERING ATTENTION: MR. JOHN MALVASIO 130 LIVINGSTON STREET BROOKLYN, NY 11201	RENEWAL INSURANCE: MTA RISK INSURANCE MANAGEMENT ATTENTION: RUTH APOSTOL 2 BROADWAY - 21ST FLOOR NEW YORK, NY 10004
---	--

SECTION E: NO LIMIT OF LIABILITY

THE MINIMUM AMOUNTS OF INSURANCE REQUIRED IN THE DETAIL DESCRIPTION OF POLICIES ABOVE SHALL NOT BE CONSTRUED TO LIMIT THE EXTENT OF THE PERMITTEE'S LIABILITY UNDER THIS AGREEMENT.

SECTION F: RIGHT TO REQUEST ADDITIONAL INSURANCE

PERMITTEE FURTHER AGREES TO PROVIDE, AT PERMITTEE'S SOLE COST AND EXPENSE, SUCH INCREASED OR EXPANDED INSURANCE COVERAGE AS PERMITTOR MAY FROM TIME TO TIME AS DEEM APPROPRIATE.

SECTION G: EVENT OF DEFAULT

IF, AT ANY TIME DURING THE PERIOD OF THIS AGREEMENT, INSURANCE AS REQUIRED IS NOT IN EFFECT, OR PROOF THEREOF IS NOT PROVIDED TO THE PERMITTOR, THE PERMITTOR SHALL HAVE THE OPTIONS TO: (I) DIRECT THE PERMITTEE TO SUSPEND WORK OR OPERATION WITH NO ADDITIONAL COST OR EXTENSION OF TIME DUE ON ACCOUNT THEREOF; OR (II) TREAT SUCH FAILURE AS AN EVENT OF DEFAULT.

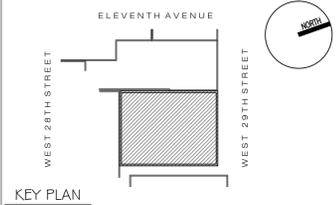
SECTION H: NOTICE OF CLAIM

THE PERMITTEE SHALL IMMEDIATELY FILE WITH NYCT/MTA'S TORT DIVISION (WITH A COPY TO THE PROJECT MANAGER), 130 LIVINGSTON STREET, 11TH FLOOR, BROOKLYN, NEW YORK 11201, A NOTICE OF ANY OCCURRENCE LIKELY TO RESULT IN A CLAIM AGAINST NYCT/MTA AND SHALL ALSO FILE WITH THE TORTS DIVISION DETAILED SWORN PROOF OF INTEREST AND LOSS WITH THE CLAIM. THIS PARAGRAPH SHALL SURVIVE THE EXPIRATION OR EARLIER TERMINATION OF THE CONTRACT.

MTA RIM - 08/15/2013

NOTES

0	9-8-14	NYCTA REVIEW
No.	Date	Revision



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Tel 212.213.8007 Fax 212.686.1754

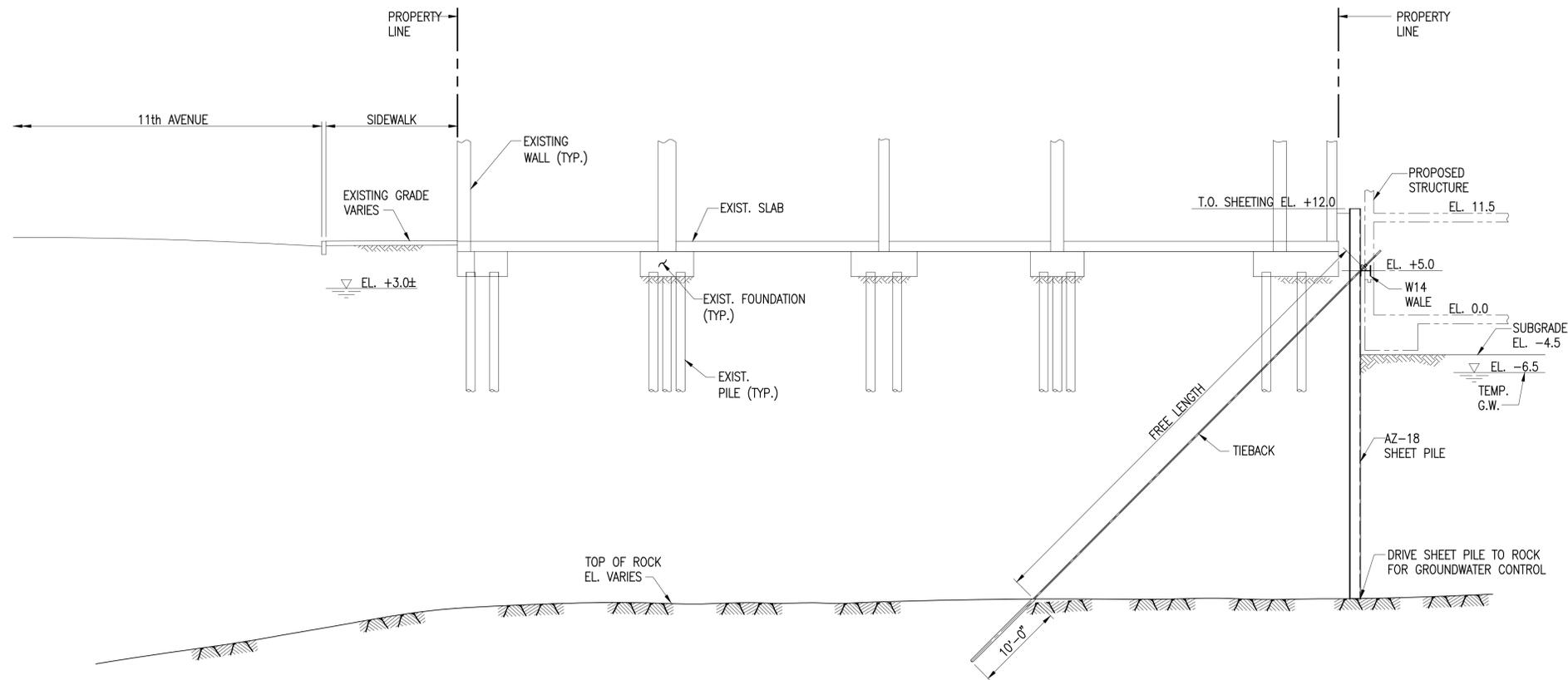
McNamara/Salvia, Inc.
Consulting Engineers
250 West 49th Street
Tel (212) 246-9800
WSP F+K Associates
512 th Avenue, New York, NY 10018
Tel (212) 687-9888 Fax (646) 487-5501

PROJECT
550W 29TH
550 WEST 29TH STREET
New York, NY

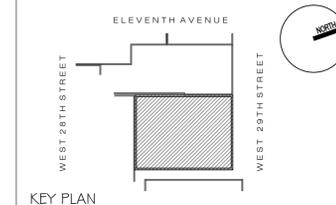
NEW YORK CITY TRANSIT INSURANCE REQUIREMENTS

SEAL & SIG.	DATE: 09-08-2014
	PROJECT No.: MRCE12243
	SCALE:
	DWG NO.:
	SOE-100B.00
	CADD FILE NO.:
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	OF 10

DOB# -----



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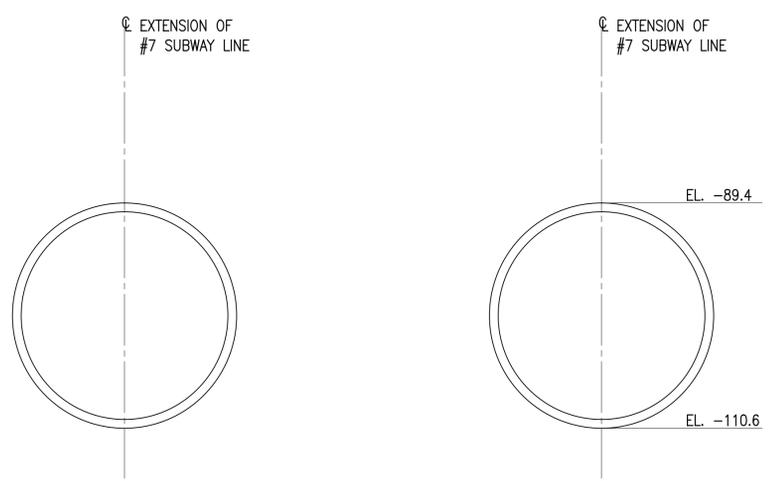
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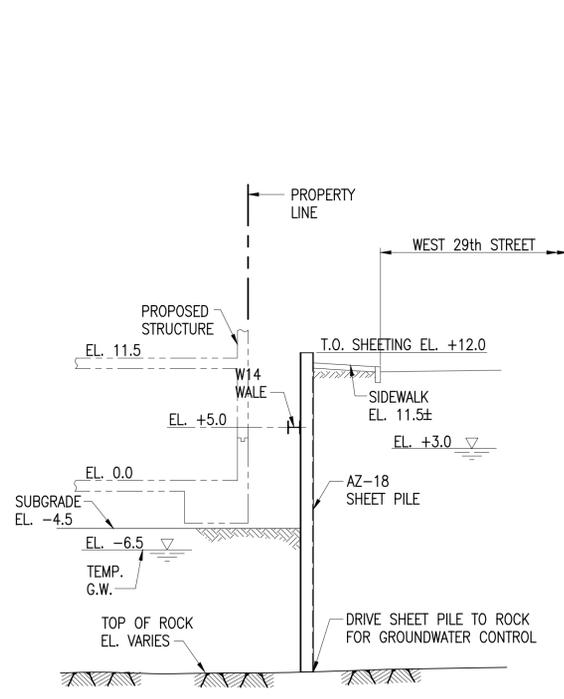
SUPPORT OF EXCAVATION SECTIONS

SEAL & SIG.	DATE: 09-08-2014
	PROJECT No.: MRCE12243
	SCALE:
	DWG NO.:
	SOE-102.00
	CADD FILE NO.:
	XX
	OF 10

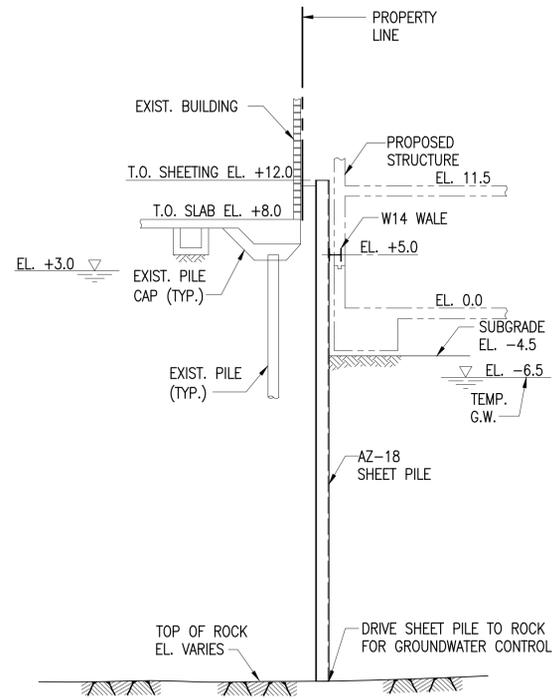


SECTION
 SCALE: 1/8"=1'-0" SOE-101|SOE-102

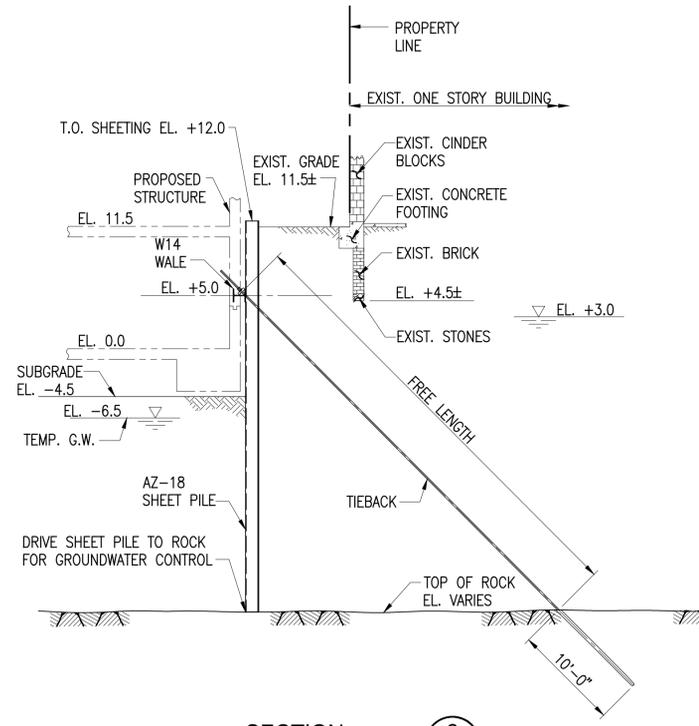
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SECTION A
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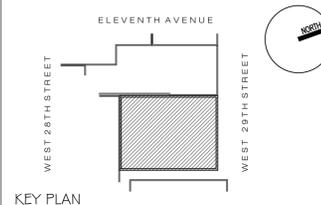


SECTION B
SCALE: 1/8"=1'-0" SOE-101|SOE-103



SECTION C
SCALE: 1/8"=1'-0" SOE-101|SOE-103

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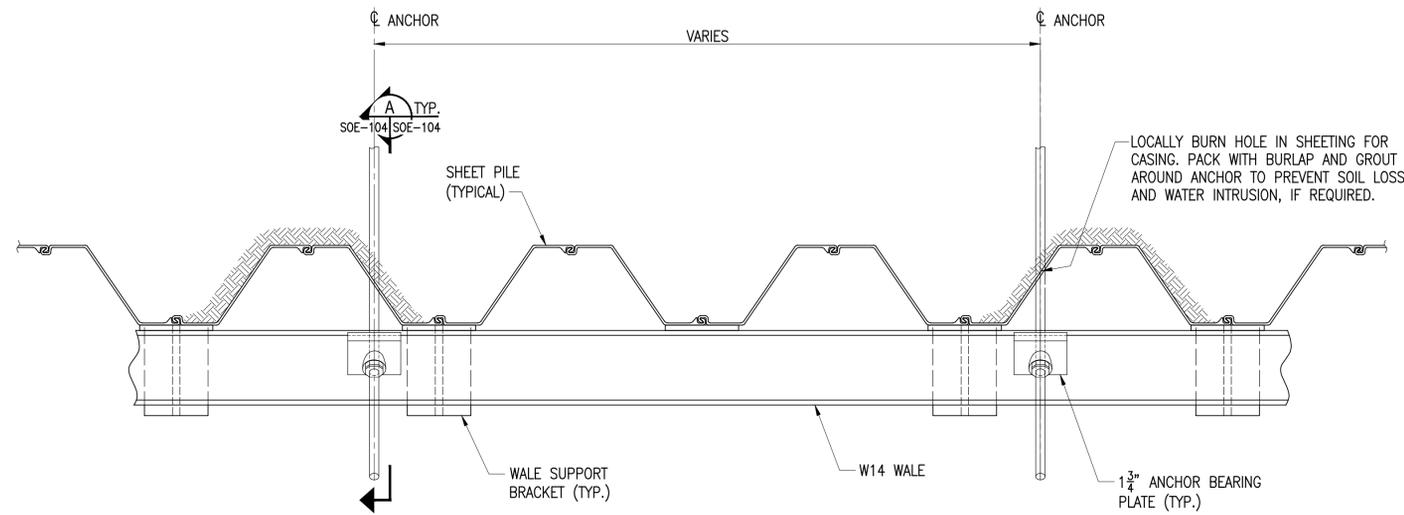
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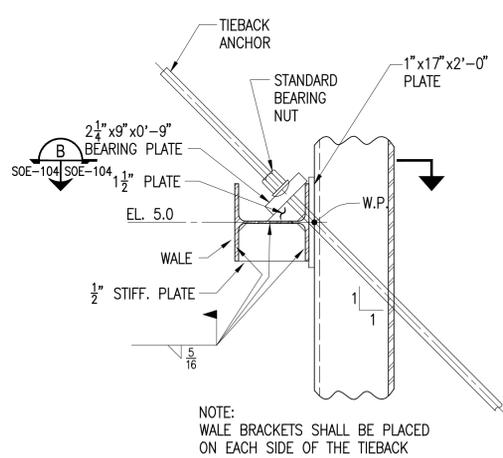
PROJECT
550W 29TH
 550 WEST 29TH STREET
 New York, NY

SUPPORT OF EXCAVATION SECTIONS

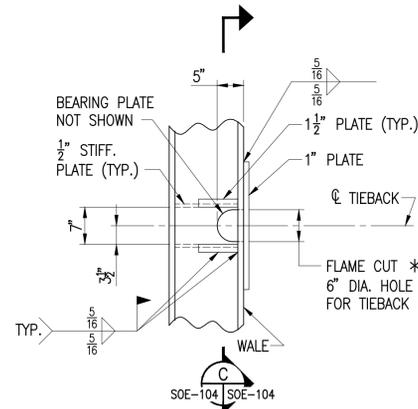
SEAL & SIG.	DATE: 09-08-2014
	PROJECT No.: MRCE12243
	SCALE:
	DWG NO.:
	SOE-103.00
	CADD FILE NO.:
	XX



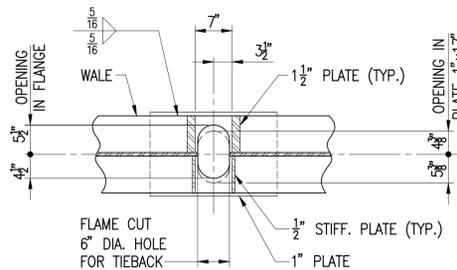
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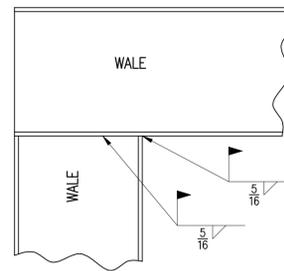
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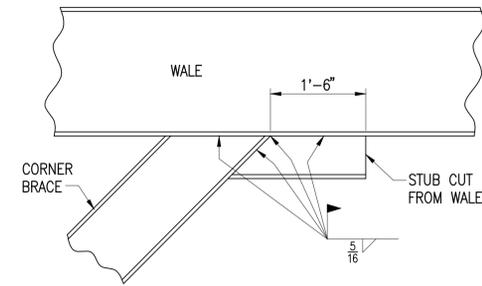
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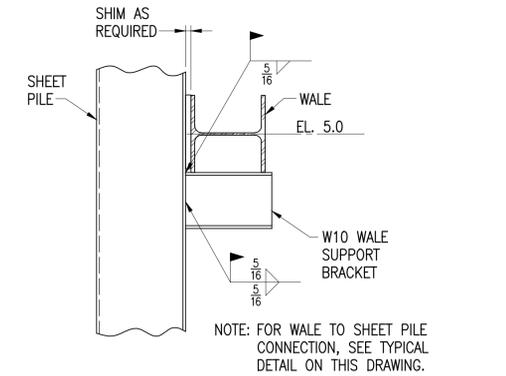
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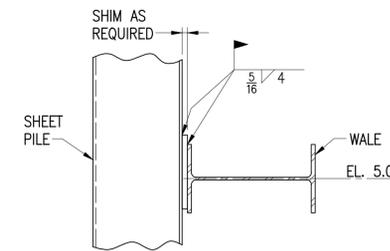
DETAIL 2
SCALE: 3/4"=1'-0" SOE-101|SOE-104



DETAIL 3
SCALE: 3/4"=1'-0" SOE-101|SOE-104



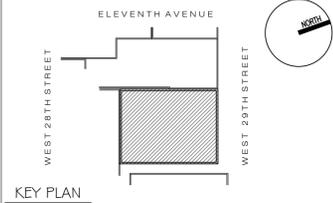
TYPICAL WALE SUPPORT BRACKET DETAIL
SCALE: 3/4"=1'-0"



TYPICAL WALE TO SHEET PILE WALL CONNECTION DETAIL
SCALE: 3/4"=1'-0"

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PROJECT
550W 29TH
550 WEST 29TH STREET
New York, NY

**SUPPORT OF EXCAVATION
DETAILS AND SECTIONS**

SEAL & SIG.	DATE: 09-08-2014
	PROJECT No.: MRCE12243
	SCALE:
	DWG NO.:
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	CADD FILE NO.:
	XX
	OF 10

APPENDIX E

Citizen Participation Plan



APPENDIX E

CITIZEN PARTICIPATION PLAN

The NYC Office of Environmental Remediation and 550 West 29th Street, LLC 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, 550 West 29th Street, LLC 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, Samantha Morris, who can be contacted about these issues or any others questions, comments or concerns that arise during the remedial process at (212) 788-8841.

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 in the nearest public library that maintains evening and weekend hours. 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. 550 West 29th Street, LLC will inspect the repositories to ensure that they are fully populated with project information. The repository for this project is:

Muhlenberg Library

209 West 23rd Street

New York, New York

(212) 924-1585

Monday and Wednesday: 10:00am – 6:00pm

Tuesday and Thursday: 10:00am – 7:00pm

Friday and Saturday: 10:00am – 5:00pm

Sunday: Closed

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.

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 550 West 29th Street, LLC, reviewed and approved by OER prior to distribution and mailed by 550 West 29th Street, LLC. 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 F

Sustainability Statement



APPENDIX 2

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. 550 West 29th Street, LLC 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. 550 West 29th Street, LLC 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.