One Vanderbilt

Manhattan, NEW YORK

Remedial Action Work Plan

NYC VCP Project Number 16CVCP053M
OER Project Number 16EHAN049M

E-Designation E-357

CEQR Number 14DCP188M

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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 and Demolition
CEQR	City Environmental Quality Review
CFR	Code of Federal Regulations
CHASP	Construction Health and Safety Plan
COC	Certificate of Completion
CQAP	Construction Quality Assurance Plan
CSOP	Contractors Site Operation Plan
DCR	Declaration of Covenants and Restrictions
ECs/ICs	Engineering Controls and Institutional Controls
ELAP	Environmental Laboratory Accreditation Program
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations Emergency Response
IRM	Interim Remedial Measure
MNA	Monitored Natural Attenuation
NOC	Notice of Completion
NYS DEC	New York State Department of Environmental Conservation
NYC DEP	New York City Department of Environmental Protection
NYC DOHMH	New York State Department of Health and Mental Hygiene
NYC OER	New York City Office of Environmental Remediation
NYC VCP	New York City Voluntary Cleanup Program
NYCRR	New York Codes Rules and Regulations
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
PCBs	Polychlorinated Biphenyls
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
SSDS	Sub-Slab Depressurization System
SVOC	Semi-Volatile Organic Compound
TAL	Target Analyte List
TCL	Target Compound List
USGS	United States Geological Survey
UST	Underground Storage Tank
VCA	Voluntary Cleanup Agreement
VOC	Volatile Organic Compound

CERTIFICATION

I, Scott McDonald, am currently a registered professional engineer licensed by the State of New York. I performed professional engineering services and had primary direct responsibility for designing the remedial program for the 1 Vanderbilt site, site number 16EHAN049M and NYC VCP number 16CVCP053M. I certify to the following:

- I have reviewed this document and the Stipulation List, to which my signature and seal are affixed.
- Engineering Controls developed for this remedial action were designed by me or a person under my direct supervision and designed to achieve the goals established in this Remedial Action Work Plan for this site.
- The Engineering Controls to be constructed during this remedial action are accurately reflected in the text and drawings of the Remedial Action Work Plan and are of sufficient detail to enable proper construction.
- 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.
- This certification applies to the elements specifically listed in this RAWP to accomplished the stated Tract 1, Remedial Action Soil Cleanup Objective only, and does not apply to other building design elements by others, such as structural wall and floor thicknesses, and/or proposed vapor barrier systems, etc. These design elements will be reported in a design report and certified by the respective design engineer/architect

Scott McDonald
Name

092879-1
PE License Number

Signature

18 January 2016
Date

I, James Blaney, am a qualified Environmental Professional. I will have primary direct responsibility for implementation of the remedial program for the 1 Vanderbilt site, site number 16EHAN049M and NYC VCP number 16CVCP053M. I certify to the following:

- 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.

Jim Blaney
QEP Name

QEP Signature

18 January 2016
Date

EXECUTIVE SUMMARY

Hines is working with the NYC Office of Environmental Remediation (OER) in the New York City Voluntary Cleanup Program to investigate and remediate a 43,313-square foot site located at 1 Vanderbilt Avenue in Manhattan, 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 Background

The Site is located in the Midtown section of Manhattan, New York and is identified as Block 1277 and Lots 20, 27, 46 and 52 on the New York City Tax Map. Figure 1 is a Site location map. The Site consists of four adjacent lots encompassing approximately 43,313 square feet, improved with a total of four (4) structures that occupy the entire property footprint. The four (4) on-site buildings consist of 317 Madison Avenue (Lot 20) which is a 22-story building located at the corner of Madison Avenue and East 42nd Street, 331 Madison Avenue (Lot 52) which is a 14-story building at the corner of East 43rd Street and Madison Avenue, 48 East 43rd Street (Lot 46) which is a 7-story building located toward the middle of the block along East 43rd Street and 51 East 42nd Street (Lot 27) which is a 17-story building located on the eastern side of the block structure. The on-site buildings are currently vacant and undergoing interior demolition. The structures were previously occupied by commercial office space with first floor commercial retail space. All structures have at least on basement level with portions of the buildings having lower sub-basements. The existing structures were constructed from 1913 to 1923. The Site is bounded by E. 43rd Street, to the north, by E. 42nd Street, to the south, by Vanderbilt Avenue to the east, and by Madison Avenue to the west.

Summary of Redevelopment Plan

The planned redevelopment includes the demolition of the four (4) existing structures and construction of a mixed use 68-story tower with four subterranean basement levels (B-1 through B-4) encompassing the entire property footprint with the exception of a small angled pull back of the building's frontage on the eastern edge at 42nd street, which will be included in the pedestrian sidewalk. The redevelopment will include at-grade uses including retail space, transit access, loading dock elevator, and office lobbies; below grade will include pedestrian connections into adjacent NYCTA spaces, back-of-house space, observation deck ticketing and retail space, space, loading docks and truck turnarounds. The first and second floor will contain commercial retail space, floors 3 through 60 will consist of office space, floors 61 through 63 will be used as an observation deck and floor 64 will house the building's mechanical equipment. The various basement levels are summarized below:

- Level B1 is planned to occupy the entire site footprint with the top of slab occurring at approximately 14-feet below grade surface (bgs) or approximate el +46.

- Level B2 is planned to occupy part of the site footprint along the north and east with the top of slab occurring at approximately 28-feet bgs or approximate el +31.5 to el +34.
- Level B3 is planned to occupy the majority of the site footprint with the top of slab occurring at approximately 39-feet bgs or approximate el +21.
- Level B4 is planned to occupy part of the site footprint along the north and connect to the East Side Access (ESA) at the northeast corner with the top of slab occurring at approximately 47 to 51-feet bgs or approximate el +9 at the ESA connection to approximately el +13 along the north.

Basement levels will be excavated into bedrock and no site soil will remain within the limits of the property.

The proposed building will occupy and approximately 43,313-square foot footprint. The foundation excavation is anticipated to extend to a depth of approximately 60-feet bgs or approximate el. 0 into bedrock. The water table is present at approximately 32 feet bgs; and groundwater is expected to be encountered during basement level B-2, B-3, B-4 and foundation excavations and therefore, dewatering is anticipated during redevelopment. Approximately 20,000 tons of soil and 45,000 tons of bedrock will be excavated and removed from the site.

Layout of the proposed site development is presented in Appendix 1. The current zoning designation is C5-3. Special Permits have increased the allowable density to 30 FAR.

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

Summary of Surrounding Property

The Site is bounded to the north by East 43rd Street followed by high-rise commercial office buildings; to the east by Vanderbilt Avenue followed by Grand Central Terminal; to the west by Madison Avenue followed by high-rise commercial office buildings and to the south by East 42nd Street followed by the Lincoln Building. Bright Horizons Children's Day Care Center is located 200 feet to the northeast in the Met Life Building. No other sensitive receptors such as schools or hospitals located within 500 feet of the Site. Figure 2 shows the surrounding land usage.

Summary of Past Site Uses and Areas of Concern

WCD previously performed a Phase I Environmental Site Assessment (ESA) of each of the four (4) buildings in January 2014. Based upon the review of Sanborn Fire Insurance Maps, a Site history was established. According to the Sanborn maps, Lot 20 (317 Madison Avenue) was developed as early as 1890 with a church and school. By 1899, the lot contained a 2-story and 4-story commercial building which was redeveloped with a 12, 15, 17 and 22-story commercial office building in 1929. The 1929 map also identified a 12,000-gallon tank and a 7,500-gal tank. Additional stories are added to the buildings making them 17, 18, 22, and 25-stories. This configuration remained up through the 2005 map. According to the Sanborn maps, Lot 27 (51 East 42nd Street) was developed as early as 1890 with a 2-story commercial building. By 1910 the lot was utilized as a store/office and pharmacy. The lot was developed with its current 18-story office/retail building in 1913. Lot 46 (48 East 43rd Street) was also developed by 1890 with a 2-story commercial building and with a store in 1910. The current 7-story office/retail building was constructed in 1922 and has remained the same configuration since then. Lot 52 (331 Madison Avenue) was developed by 1890 with a 2, 4, and 5-story commercial building which was later redeveloped into a 4 and 12-story dwelling and store/office in 1910. The current 15-story building was built in 1923 but contained an additional 12 and 14-story section and an 18-story fire tower. The evaluation revealed no evidence of RECs and/or VECs in connection with the Site except for the following:

1. One (1) on-site REC/VEC was identified associated with the presence of an on-site NYSDEC spill case listed as open. The New York State Department of Environmental Conservation (NYSDEC) was notified of a release on September 9, 2013 as a result of a release of No. 2 fuel during the cleaning and fuel oil removal from the 7,500-gallon aboveground storage tank (AST) located in the lowest basement level of 317 Madison Avenue, New York, NY. The NYSDEC assigned Spill Case Number 13-05985 to the Site. The Spill No. 13-05985 is currently listed as open. The building's boiler was converted to natural gas and the AST is currently out-of-service.
2. On-Site environmental concerns associated with suspect asbestos-containing material (ACM), lead-containing paint (LCP) and polychlorinated biphenyls (PCBs) in building materials.

3. WCD performed an inspection of the tank room on May 30, 2014. The tank room is constructed of poured concrete floors and brick walls. No cracks or penetrations were observed in the floor or walls of the AST room. The floor and walls of the tank room were screened with a photoionization detector and no elevated readings were recorded. The 7,500-gallon out-of-service AST was registered with the NYSDEC and petroleum bulk storage (PBS) number 2-612267 was assigned to the Site. In addition to the 7,500-gal AST, a 275-gal AST was also noted in the sub-basement storage of 317 Madison as well as 4 oil drums and 2 sump pumps.
4. The sub-basement of 331 Madison Avenue also contained 2 oil drums containing kitchen waste grease as well as 2 sump pumps.

Summary of Work Performed under the Remedial Investigation

WCD previously performed Phase II ESI field activities from July 10 to August 26, 2014, work performed consisted of the following:

1. Installed fourteen (14) geotechnical borings; continuous soil sampling to depths ranging from 12-feet to 36-feet feet bgs and selection for laboratory analysis of six (6) discrete and six (6) composite soil samples from six (6) borings with sufficient sample recovery for chemical analysis to evaluate soil quality.
2. Installed three (3) groundwater monitoring wells and the collected three (3) groundwater samples for chemical analysis to evaluate groundwater quality.

WCD performed a Supplemental Site Investigation including a vapor intrusion survey on November 19, 2014, work performed consisted of the following:

1. Installed eight (8) soil vapor probes around Site perimeter and collection of eight (8) sub-slab samples for chemical analysis.

Summary of Findings of Remedial Investigation

1. Elevation of the property ranges from approximately 58 to 62 feet above mean seal level (amsl).
2. Groundwater was encountered at approximately 32-feet bgs at the site.
3. Groundwater flow is east beneath the Site.
4. Bedrock was encountered at the site at depths ranging from 17 to 39-feet bgs.

5. The stratigraphy of the Site, from the surface down, consists of approximately 17 to 39-feet bgs of fill material consisting of red/brown/gray sand, silt, gravel, red brick, concrete, ash and decomposed rock underlain by bedrock.

6. Soil/fill samples results were compared to NYSDEC Unrestricted Use Soil Cleanup Objectives and Restricted Residential Soil Cleanup Objectives as presented in 6NYCRR Part 375-6.8 and CP51. The six discrete soil/fill samples collected during the RI showed trace concentrations of three VOCs, but none above Unrestricted Use SCOs. The five-point composite samples were analyzed for SVOCs, pesticides, PCBs, and metals. The composite samples showed no pesticides in any samples. Several SVOCs consisting of Polycyclic Aromatic Hydrocarbons (PAHs) were detected at trace concentrations below Unrestricted Use SCOs. Total PCBs were detected at a maximum of 0.00868 ppm, below Unrestricted Use SCOs. Several metals including copper (max of 73 ppm), lead (max of 350 ppm), mercury (max of 1.2 ppm), and nickel (max of 39 ppm) exceeded Unrestricted Use SCOs. Lead also failed the TCLP analysis (8.2 ppm) in one composite sample. Overall, the findings were consistent with observations for historic fill sites in areas throughout NYC.

7. Groundwater samples results were compared to New York State 6NYCRR Part 703.5 Class GA groundwater quality standards (GQS). Groundwater samples collected during the investigations showed no PCBs in any sample. Trace concentrations of VOCs were detected with toluene (7 µg/L) detected above GQS. PCE (0.51 µg/L) was also detected in groundwater below its GQS. One SVOC, bis(2-ethylhexyl)phthalate (max of 6.4 µg/L) was detected above its GQS. Two pesticides were detected as well, but below their respective GQS. Several dissolved metals were identified in groundwater but only iron (max of 7,490 µg/L), manganese (max of 1,241 µg/L), and sodium (max of 132,000 µg/L) exceeded their respective GQS.

8. Soil vapor results collected during the RI were compared to the compounds listed by the NYSDOH located in the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion dated October 2006. Soil vapor samples showed low levels of petroleum-related in most samples and elevated levels chlorinated VOCs. Total concentrations of petroleum-related VOCs (BTEX) ranged from 0.38 $\mu g/m^3$

to 1,092 µg/m^3 with the highest petroleum-related VOC detected being naphthalene at 2,900 µg/m^3. Chlorinated VOCs were detected including tetrachloroethylene (PCE) in seven samples ranging from 0.72 µg/m^3 to 480 µg/m^3, trichloroethylene (TCE) in two samples at a maximum of 180 µg/m^3, and 1,1,1-trichloroethane (TCA) in one sample at 2.7 µg/m^3. Carbon tetrachloride was not detected in any samples. Concentrations for PCE and TCE were above the monitoring level ranges established within the State DOH soil vapor guidance matrix.

Summary of the Remedial Action

The preferred remedy for the Site is Alternative 1, Track 1 Unrestricted Use SCOs. The Track 1 remedy will remove all soil/fill exceeding Unrestricted Use SCOs throughout the Site. Since excavation will extend into bedrock, endpoint samples are not required. No Engineering Controls are required for a Track 1 cleanup. A concrete slab covering the entire site and vapor barrier/waterproofing membrane would be installed as part of standard building development and are not considered part 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.
2. Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
3. Selection of Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs).
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.

5. Completion of a Waste Characterization Study prior to excavation activities. Waste characterization soil samples will be collected at a frequency dictated by disposal facility(s).
6. Excavation and removal of soil/fill exceeding Unrestricted Use (Track 1) SCOs. For development purposes, the property will be excavated to a depth of approximately 60-feet bgs into bedrock for construction of the building's cellars and foundation system. Excavation will extend into the bedrock throughout the entire property and no soil is to remain. Approximately 20,000 tons of soil and 45,000 tons of bedrock will be excavated and removed from the site and properly disposed at an appropriately licensed or permitted facility.
7. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID. Appropriate segregation of excavated media on-Site.
8. Management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.
9. Removal all USTs that are encountered during soil/fill removal actions. Registration of tanks and reporting of any petroleum spills associated with UST's and appropriate closure of these petroleum spills in compliance with applicable local, State and Federal laws and regulations.
10. Transportation and off-Site disposal of all soil/fill material at licensed or 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.
11. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of Track 1 SCOs. Since excavation will extend into bedrock and groundwater, end-point samples will be taken where any soil remains including the eastern edge of the Site (proposed pedestrian sidewalk).
12. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.

13. Performance of all activities required for the remedial action, including acquisition of required permits and attainment of pretreatment requirements, in compliance with applicable laws and regulations.
14. Dewatering in compliance with city, state, and federal laws and regulations. Extracted groundwater will either be containerized for off-site licensed or permitted disposal or will be treated under a permit from New York City Department of Environmental Protection (NYCDEP) to meet pretreatment requirements prior to discharge to the sewer system.
15. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
16. Submission of a Remedial Action Report (RAR) that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, and lists any changes from this RAWP.
17. As part of development, construction of an engineered composite cover consisting of a minimum thickness 6-inch thick concrete building slab underlain by the buildings foundations with an approximate minimum 6-inch clean granular sub-base beneath all building areas.
18. As part of development, installation of a vapor barrier system consisting of waterproofing beneath the building slab and outside of sub-grade foundation sidewalls to mitigate soil vapor migration into the building. The vapor barrier system will consist of a 46-mil Grace Waterproofing Systems PREPRUFE 300R vapor barrier below the slab throughout the full building area and a 56-mil Grace Waterproofing Systems BITUTHENE 4000 outside all sub-grade foundation sidewalls. All welds, seams and penetrations will be properly sealed to prevent preferential pathways for vapor migration.
19. As part of new development, levels below grade will contain pedestrian connections into adjacent NYCTA spaces, back-of-house space, observation deck ticketing and retail space, loading docks and truck turnarounds with high volume air exchange in conformance with the NYC Building Code.
20. If Track 1 SCOs are not achieved, submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual contamination, including plans for inspection and reporting of Engineering and Institutional Controls and reporting at a specified frequency.

21. If Track 1 SCOs are not achieved, the property will continue to be registered with an E-designation at the NYC Buildings Department. Establishment of ECs and ICs in this RAWP and a requirement that management of these controls must be in compliance with the approved Site Management Plan (SMP). ICs will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without New York City Office of Environmental Remediation (NYC OER) approval.

COMMUNITY PROTECTION STATEMENT

The NYC Office of Environmental Remediation (OER) provides governmental oversight for the cleanup of contaminated property in NYC. This Remedial Action Work Plan ("cleanup plan") describes the findings of prior environmental studies, shows the location of identified 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.

Project Information:

- Site Name: One Vanderbilt
- Site Address: 317 and 327 Madison Avenue, 48 East 43rd Street and 51 East 42nd Street
- NYC Voluntary Cleanup Program Project Number: 16CVCP053M

Project Contacts:

- OER Project Manager: Sarah Pong, 212-788-8841
- Site Project Manager: James Blaney, 212-631-9000
- Site Safety Officer: Michael Rhoden
- Online Document Repository:

http://www.nyc.gov/html/oer/html/document-repository/document-repository.shtml

Remedial Investigation and Cleanup Plan: Under the oversight of the NYC OER, a thorough study of this property (called a remedial investigation) has been performed to identify past property usage, to sample and test soils, groundwater and soil vapor, and to identify

contaminant sources present on the property. The cleanup plan has been designed to address all contaminant sources that have been identified during the study of this property.

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

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

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

Site Safety Coordinator: This project has a designated Site safety coordinator to implement the CHASP. The safety coordinator maintains an emergency contact sheet and protocol for management of emergencies. The Site safety coordinator is identified at the beginning of this Community Protection Statement.

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 applicable NYC noise control standards. If you observe problems in these areas, please contact the onsite Project Manager or NYC Office of Environmental Remediation Project Manager listed on the first page of this Community Protection Statement document.

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.

Stormwater Management: To limit the potential for soil erosion and discharge, this cleanup plan has provisions for stormwater management. The main elements of the stormwater 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 conform to requirements of the NYC Department of Buildings.

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

Complaint Management: The contractor performing this cleanup is required to address all complaints. If you have any complaints, you can call the facility Project Manager or the NYC Office of Environmental Remediation Project Manager listed on the first page of this Community Protection Statement document, 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, odor 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 applicable 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 the 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 the Remedial Action Report) that will be available for public review online. A link to the online document repository and the public library with Internet access nearest the Site are listed on the first page of this Community Protection Statement document

Long-Term Site Management: If long-term protection is needed 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 registered with the Department of Buildings. 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 Project Background

Hines is working with the NYC Office of Environmental Remediation (OER) in the New York City Voluntary Cleanup Program and in the "E" Designation Program to investigate and remediate a property located at 1 Vanderbilt Avenue in the Midtown section of Manhattan, 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 alternatives analysis that includes consideration of a permanent cleanup, and provides a description of the selected remedial action. The remedial action described in this document provides for the protection of public health and the environment, and complies with applicable environmental standards, criteria and guidance and applicable laws and regulations.

1.1 Site Location and Background

The Site is located in the Midtown section of Manhattan, New York and is identified as Block 1277 and Lots 20, 27, 46 and 52 on the New York City Tax Map. Figure 1 is a Site location map. The Site consists of four adjacent lots encompassing approximately 43,313 square feet, improved with a total of four (4) structures that occupy the entire property footprint. The four (4) on-site buildings consist of 317 Madison Avenue (Lot 20) which is a a 22-story building located at the corner of Madison Avenue and East 42nd Street, 331 Madison Avenue (Lot 52) which is a a 14-story building at the corner of East 43rd Street and Madison Avenue, 48 East 43rd Street (Lot 46) which is a 7-story building located toward the middle of the block along East 43rd Street and 51 East 42nd Street (Lot 27) which is a 17-story building located on the eastern side of the block structure The on-site buildings are currently vacant and undergoing interior demolition. The structures were previously occupied by commercial office space with first floor commercial retail space. All structures have at least one basement level with portions of the buildings having lower sub-basements. The existing structures were constructed from 1913 to 1923. The Site is bounded by E. 43rd Street to the north, by E. 42nd Street to the south, by Vanderbilt Avenue to the east, and by Madison Avenue to the west.

1.2 Redevelopment Plan

The planned redevelopment includes the demolition of the four (4) existing structures and construction of a mixed use 68-story tower with four subterranean basement levels (B-1 through B-4) encompassing the entire property footprint with the exception of a small angled pull back of the building's frontage on the eastern edge at 42nd street, which will be included in the pedestrian sidewalk. The redevelopment will include at-grade uses including retail space, transit access, loading dock elevator, and office lobbies; below grade will include pedestrian connections into adjacent NYCTA spaces, back-of-house space, observation deck ticketing and retail space, space, loading docks and truck turnarounds. The first and second floor will contain commercial retail space, floors 3 through 60 will consist of office space, floors 61 through 63 will be used as an observation deck and floor 64 will house the building's mechanical equipment. The various basement levels are summarized below:

- Level B1 is planned to occupy the entire site footprint with the top of slab occurring at approximately 14-feet below grade surface (bgs) or approximate el +46.
- Level B2 is planned to occupy part of the site footprint along the north and east with the top of slab occurring at approximately 28-feet bgs or approximate el +31.5 to el +34.
- Level B3 is planned to occupy the majority of the site footprint with the top of slab occurring at approximately 39-feet bgs or approximate el +21.
- Level B4 is planned to occupy part of the site footprint along the north and connect to the East Side Access (ESA) at the northeast corner with the top of slab occurring at approximately 47 to 51-feet bgs or approximate el +9 at the ESA connection to approximately el +13 along the north.
- All basement levels will be excavated into bedrock and no site soil will remain within the limits of the property.

The proposed building will occupy an approximately 43,313-square foot footprint. The foundation excavation is anticipated to extend to a depth of approximately 60-feet bgs or approximate el. 0 into bedrock. The water table is present at approximately 32-feet bgs; and groundwater is expected to be encountered during excavation of basement levels B-2, B-3, B-4 and foundation excavations and, therefore; dewatering is anticipated during redevelopment. Approximately 20,000 tons of soil and 45,000 tons of bedrock will be excavated and removed from the site.

Layout of the proposed site development is presented in Figure 9. The current zoning designation is C5-3. Special Permits have increased the allowable density to 30 FAR.

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

1.3 Description of Surrounding Property

The Site is bounded to the north by East 43rd Street followed by high-rise commercial office buildings; to the east by Vanderbilt Avenue followed by Grand Central Terminal; to the west by Madison Avenue followed by high-rise commercial office buildings and to the south by East 42nd Street followed by the Lincoln Building. Bright Horizons Children's Day Care Center is located 200 feet to the northeast in the Met Life Building. No other sensitive receptors such as

schools or hospitals located within 500 feet of the Site. Figure 2 shows the surrounding land usage.

1.4 Summary of Past Site Uses and Areas of Concern

WCD previously performed a Phase I Environmental Site Assessment (ESA) of each of the four (4) buildings in January 2014. Based upon the review of Sanborn Fire Insurance Maps, a Site history was established. According to the Sanborn maps, Lot 20 (317 Madison Avenue) was developed as early as 1890 with a church and school. By 1899, the lot contained a 2-story and 4-story commercial building which was redeveloped with a 12, 15, 17 and 22-story commercial office building in 1929. The 1929 map also identified a 12,000-gallon tank and a 7,500-gal tank. Additional stories are added to the buildings making them 17, 18, 22, and 25-stories. This configuration remained up through the 2005 map. According to the Sanborn maps, Lot 27 (51 East 42nd Street) was developed as early as 1890 with a 2-story commercial building. By 1910 the lot was utilized as a store/office and pharmacy. The lot was developed with its current 18-story office/retail building in 1913. Lot 46 (48 East 43rd Street) was also developed by 1890 with a 2-story commercial building and with a store in 1910. The current 7-story office/retail building was constructed in 1922 and has remained the same configuration since then. Lot 52 (331 Madison Avenue) was developed by 1890 with a 2, 4, and 5-story commercial building which was later redeveloped into a 4 and 12-story dwelling and store/office in 1910. The current 15-story building was built in 1923 but contained an additional 12 and 14-story section and an 18-story fire tower. The evaluation revealed no RECs and/or VECs in connection with the Site except for the following:

1. One (1) on-site REC/VEC was identified associated with the presence of an on-site NYSDEC spill case. The New York State Department of Environmental Conservation (NYSDEC) was notified of a release on September 9, 2013 as a result of a release of No. 2 fuel during the cleaning and fuel oil removal from the 7,500-gallon aboveground storage tank (AST) located in the lowest basement level of 317 Madison Avenue. The NYSDEC assigned Spill Case Number 13-05985 to the Site. The Spill No. 13-05985 was closed on January 22, 2015. The building's boiler was converted to natural gas and the AST is currently out-of-service.

2. On-Site environmental concerns associated with suspect asbestos-containing material (ACM), lead-containing paint (LCP) and polychlorinated biphenyls (PCBs) in building materials.
3. WCD performed an inspection of the tank room of 317 Madison Avenue on May 30, 2014. The tank room is constructed of poured concrete floors and brick walls. No cracks or penetrations were observed in the floor or walls of the AST room. The floor and walls of the tank room were screened with a photoionization detector and no elevated readings were recorded. The 7,500-gallon out-of-service AST was registered with the NYSDEC and petroleum bulk storage (PBS) number 2-612267 was assigned to the Site. In addition to the 7,500-gal AST, a 275-gal AST was also noted in the sub-basement storage of 317 Madison as well as 4 oil drums and 2 sump pumps.
4. The sub-basement of 331 Madison Avenue also contained 2 oil drums containing kitchen waste grease as well as 2 sump pumps.

1.5 Summary of Work Performed under the Remedial Investigation

WCD previously performed Phase II ESI field activities from July 10 to August 26, 2014 and consisted of the following:

1. Installed fourteen (14) geotechnical borings; continuous soil sampling to depths ranging from 12-feet to 36-feet feet bgs and selection for laboratory analysis of six (6) discrete and six (6) composite soil samples from six (6) borings with sufficient sample recovery for chemical analysis to evaluate soil quality.
2. Installed three (3) groundwater monitoring wells and the collected three (3) groundwater samples for chemical analysis to evaluate groundwater quality.

WCD performed a Supplemental Site Investigation including a vapor intrusion survey on November 19, 2014, work performed consisted of the following:

3. Installed eight (8) soil vapor probes around Site perimeter and collected eight (8) sub-slab samples for chemical analysis.

1.6 Summary of Environmental Findings

A remedial investigation was performed and the results are documented in a companion document called "Phase II Environmental Site Investigation Report, 317 and 327 Madison Avenue, 48 East 43rd Street, and 51 East 42nd Street", dated September 2014. Additionally, a supplemental investigation was performed and the results are documented in a companion document called "Supplemental Site Investigation, 317 and 327 Madison Avenue, 48 East 43rd Street, and 51 East 42nd Street", dated December 15, 2014. The results of the site investigations indicate the following:

1. Elevation of the property ranges from approximately 58 to 62 feet above mean seal level (amsl).
2. Groundwater was encountered from approximately 32 feet bgs at the site.
3. Groundwater flow is east beneath the Site.
4. Bedrock was encountered at the site at depths ranging from 17 to 39 feet bgs.
5. The stratigraphy of the Site, from the surface down, consists of approximately 17 to 39-feet bgs of fill material consisting of red/brown/gray sand, silt, gravel, red brick, concrete, ash and decomposed rock underlain by bedrock.
6. Soil/fill samples results were compared to NYSDEC Unrestricted Use Soil Cleanup Objectives and Restricted Residential Soil Cleanup Objectives as presented in 6NYCRR Part 375-6.8 and CP51. The six discrete soil/fill samples collected during the RI showed trace concentrations of three VOCs, but none above Unrestricted Use SCOs. The five-point composite samples were analyzed for SVOCs, pesticides, PCBs, and metals. The composite samples showed no pesticides in any samples. Several SVOCs consisting of Polycyclic Aromatic Hydrocarbons (PAHs) were detected at trace concentrations below Unrestricted Use SCOs. Total PCBs were detected at a maximum of 0.00868 ppm, below Unrestricted Use SCOs. Several metals including copper (max of 73 ppm), lead (max of 350 ppm), mercury (max of 1.2 ppm), and nickel (max of 39 ppm) exceeded Unrestricted Use SCOs. Lead also failed the TCLP analysis (8.2 ppm) in one composite sample. Overall, the findings were consistent with observations for historic fill sites in areas throughout NYC.
7. Groundwater samples results were compared to New York State 6NYCRR Part 703.5 Class GA groundwater quality standards (GQS). Groundwater samples collected during

the investigations showed no PCBs in any sample. Trace concentrations of VOCs were detected with toluene (7 µg/L) detected above GQS. PCE (0.51 µg/L) was also detected in groundwater below its GQS. One SVOC, bis(2-ethylhexyl)phthalate (max of 6.4 µg/L) was detected above its GQS. Two pesticides were detected as well, but below their respective GQS. Several dissolved metals were identified in groundwater but only iron (max of 7,490 µg/L), manganese (max of 1,241 µg/L), and sodium (max of 132,000 µg/L) exceeded their respective GQS.

8. Soil vapor results collected during the RI were compared to the compounds listed by the NYSDOH located in the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion dated October 2006. Soil vapor samples showed low levels of petroleum-related in most samples and elevated levels chlorinated VOCs. Total concentrations of petroleum-related VOCs (BTEX) ranged from 0.38 $\mu g/m^3$ to 1,092 $\mu g/m^3$ with the highest petroleum-related VOC detected being naphthalene at 2,900 $\mu g/m^3$. Chlorinated VOCs were detected including tetrachloroethylene (PCE) in seven samples ranging from 0.72 $\mu g/m^3$ to 480 $\mu g/m^3$, trichloroethylene (TCE) in two samples at a maximum of 180 $\mu g/m^3$, and 1,1,1-trichloroethane (TCA) in one sample at 2.7 $\mu g/m^3$. Carbon tetrachloride was not detected in any samples. Concentrations for PCE and TCE were above the monitoring level ranges established within the State DOH soil vapor guidance matrix.

For more detailed results, consult the Phase II. Based on an evaluation of the data and information from the RIR and this RAWP, disposal 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:

Soil

- Prevent direct contact with contaminated soil.
- Prevent exposure to contaminants volatilizing from contaminated soil.

Groundwater

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

Soil Vapor

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

3.0 Remedial Alternatives Analysis

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

Bedrock below the property is at depths ranging from approximately 17 to 39 feet bgs, and excavation is proposed to approximately 60feet bgs. Since the proposed excavation depths at the site are anticipated to extend well into bedrock and groundwater (which is at a depth of 32 feet bgs) across the entire site, no soils will be left behind, only Track 1 Unrestricted Use scenario is evaluated for the remedial action. The following is a detailed description of the alternatives analyzed to address impacted media at the Site:

Alternative 1:

- Selection of NYSDEC 6NYCRR Part 375 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 levels is complete, additional excavation would be performed to ensure complete removal of soil/ fill that does not meet Track 1 Unrestricted Use SCOs.

- No Engineering or Institutional Controls are required for a Track 1 cleanup. However, as part of development, a vapor barrier and ventilated basement levels would be installed to prevent potential exposures from soil vapor in the future.
- As part of new development, a composite cover system will be placed over the entire site.

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 exceeding Track 1 Unrestricted Use SCOs and groundwater protection standards, thus eliminating potential for direct contact with contaminated soil/fill once construction is complete and eliminating the risk of contaminants leaching into groundwater.

For Alternative 1, potential exposure to contaminated soils or groundwater during construction would be minimized by implementing a Construction Health and Safety Plan, an approved Soil/Materials Management Plan, and Community Air Monitoring Plan (CAMP). Potential contact with contaminated groundwater would be prevented as its use is prohibited by city laws and regulations. Potential future migration of off-Site soil vapors into the new building would be prevented by installing a vapor barrier below the building slab and outside foundations walls below grade.

3.2 Balancing Criteria

Compliance with Standards, Criteria and Guidance (SCGs)

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

Alternative 1 would achieve compliance with the remedial goals, chemical-specific SCGs and RAOs for soil through removal of soil to achieve Track 1 Unrestricted Use SCOs and Protection of Groundwater SCOs. Compliance with SCGs for soil vapor would also be achieved by installing a waterproofing/vapor barrier system below the new building's basement slab and continuing the vapor barrier outside of subgrade foundation walls, as part of development. In addition, levels below grade will contain pedestrian connections into adjacent NYCTA spaces, back-of-house space, observation deck ticketing and retail space, loading docks and truck turnarounds with high volume air exchange that conforms to the NYC Building Code. Also, as part of development, a composite cover system consisting of a concrete slab will be installed.

Health and safety measures contained in the CHASP and Community Air Monitoring Plan (CAMP) will be implemented during Site redevelopment under this RAWP. Focused attention on means and methods employed during the remedial action would ensure that handling and management of contaminated material would be in compliance with applicable SCGs. These measures will protect on-site workers and the surrounding community from exposure to Site-related contaminants.

Short-Term Effectiveness and Impacts

This evaluation criterion assesses the effects of the alternative during the construction and implementation phase until remedial action objectives are met. Under this criterion, the alternative is evaluated with respect to short term effects during the remedial action on public health and the environment during implementation of the remedial action, including protection of the community, protection of onsite workers and environmental impacts.

Alternative 1 has short-term effectiveness during implementation, as excavation of historic fill material is required resulting in short-term dust generation impacts associated with excavation,

handling, load out of materials, and truck traffic. However, focused attention to means and methods during a Track 1 removal action, including community air monitoring and appropriate truck routing, would minimize the overall impact of these activities.

An additional short-term adverse impact and risks to the community associated the remedial alternative is increased truck traffic. Truck traffic will be routed on the most direct course using major thoroughfares where possible and flag persons will be used to protect pedestrians at Site entrances and exits.

The potential adverse impact to the community, workers and the environment would be minimized through implementation of control plans including a Construction Health and Safety Plan, a Community Air Monitoring Plan (CAMP) and a Soil/Materials Management Plan (SMMP), during all on-Site soil disturbance activities and would minimize the release of contaminants into the environment. Alternative 1 provides 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 Construction Health and Safety Plan (CHASP) would provide protection from on-Site contaminants by using personal protective equipment would be worn consistent with the documented risks within the respective work zones.

Long-term effectiveness and permanence

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

Alternative 1 would achieve long-term effectiveness and permanence related to on-Site contamination by permanently removing all impacted soil/fill above Track 1 Unrestricted Use

SCO's. Removal of on-Site contaminant sources will also prevent future groundwater contamination.

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 will permanently eliminate the toxicity, mobility, and volume of contaminants from on-Site soil by removing all soil in excess of Track 1 Unrestricted Use SCO's through the permanent removal of all impacted soil/fill.

Implementability

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

The techniques, materials and equipment to implement Alternative 1 are readily available and have been proven to be effective in remediating the contaminants present on the Site. They use standard equipment and technologies that are well established in the industry. The reliability of the remedy is also high. There are no special difficulties associated with any of the activities proposed.

Cost effectiveness

This evaluation criterion addresses the cost of alternatives, including capital costs (such as construction costs, equipment costs, 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 historic fill at the Site was found to extend to a depth of approximately 17 to 39 feet bgs during the RI, and the new building requires excavation of the entire Site into bedrock to a maximum depth of approximately of 60 feet bgs within the proposed B-4 basement and foundation level footprints.

The remedial plan would couple the remedial action with the redevelopment of the Site, lowering total costs. The remedial plan will also consider the selection of the most appropriate disposal facilities to reduce transportation and disposal costs during cleanup and redevelopment of the Site.

Community Acceptance

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

This RAWP will be subject to a public review under the NYC VCP and will provide the opportunity for detailed public input on the remedial alternatives and the selected remedy. This public comment will be considered by OER prior to approval of this plan. The Citizen Participation Plan for the project is provided in Appendix 2. Observations here will be supplemented by public comment received on the RAWP. The overall goals of the remedial program, to protect public health and the environment and eliminate potential contaminant exposures, have been broadly supported by citizens in NYC communities.

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 current, intended, and reasonably anticipated future land use of the Site and its surroundings are compatible with the selected remedy of soil remediation. The proposed future use of the Site includes a mixed use 68-story tower with four basement levels encompassing the entire property footprint with the exception of a small angled pull back of the building's frontage on the eastern edge at 42nd street, which will be included in the pedestrian sidewalk. The redevelopment will include at-grade uses including retail space, transit access, loading dock elevator, and office lobbies; below grade will include pedestrian connections into adjacent NYCTA spaces, back-of-house space, observation deck ticketing, retail space, loading docks and truck turnarounds. Following remediation, the Site will meet Track 1 Unrestricted Use, which is protective of public health and the environment for its planned use. The current zoning designation is C5-3. Special Permits have increased the allowable density to 30 FAR. The site is located in an urban area and is surrounded predominantly by mixed commercial and office buildings. The proposed development would clean up the property and make it safer, create new employment opportunities, and other economic benefits from land revitalization.

Temporary short-term project impacts are being mitigated through site management controls and truck traffic controls during remediation activities. Following remediation, the Site will meet Track 1 Unrestricted Use SCOs which is protective of public health and the environmental for its planned use.

The Site is located in an urban area and not in proximity to fish or wildlife and neither alternative would result in any potential exposure pathways of contaminant migration affecting fish or

wildlife. The remedial action is also protective of groundwater natural resources. The Site does not lie in a Federal Emergency Management Agency (FEMA)-designated flood plain. The Site is in close proximity to Grand Central Terminal, a designated landmark, located adjacent and east of the site. The proposed alternative is protective of natural resources and cultural resources. Improvements in the current environmental condition of the property have been considered in this plan and are consistent with the City's goals for cleanup of contaminated land.

Sustainability of the Remedial Action

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

The remedial plan would take into consideration the shortest trucking routes during off-Site disposal of historic fill and other soils, which would reduce greenhouse gas emissions and conserve energy used to fuel trucks. The New York City Clean Soil Bank program is available for reuse of any clean native soils under either alternative. A complete list of green remedial activities considered as part of the NYC VCP is included in a Sustainability Statement, included as Appendix 3.

Selection of the Preferred Remedy

The preferred remedy for the site is Track 1 Unrestricted Use SCOs. The Track 1 remedy will remove all soil/fill exceeding Unrestricted Use SCOs throughout the Site, which will be confirmed with post-excavation sampling.

No Engineering Controls are required for a Track 1 cleanup. A concrete slab covering the entire site and a waterproofing/vapor barrier would be installed as part of standard building development and are not considered part of the remedy.

4.0 Remedial Action

4.1 Summary of Preferred Remedial Action

The preferred remedial action is Alternative 1, the Track 1 remedial action. The preferred remedial action achieves protection of public health and the environment for the intended use of the property. The preferred remedial action will achieve all of the remedial action objectives established for the project and addresses applicable SCGs. The preferred remedial action is effective in both the short-term and long-term and reduces mobility, toxicity and volume of contaminants. The preferred remedial action alternative is cost effective and implementable and uses standards methods that are well established in the industry.

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan.
2. Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
3. Selection of Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs).
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
5. Completion of a Waste Characterization Study prior to excavation activities. Waste characterization soil samples will be collected at a frequency dictated by disposal facility(s).
6. Excavation and removal of soil/fill exceeding Unrestricted Use (Track 1) SCOs. For development purposes, the property will be excavated to a depth of approximately 60-feet bgs into bedrock for construction of the building's cellars and foundation system. Excavation will extend into the bedrock beneath throughout the entire property. Approximately 20,000 tons of soil and 45,000 tons of bedrock will be excavated and removed from the site and properly disposed at an appropriately licensed or permitted facility.

7. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID. Appropriate segregation of excavated media on-Site.
8. Management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.
9. Removal all USTs that are encountered during soil/fill removal actions. Registration of tanks and reporting of any petroleum spills associated with UST's and appropriate closure of these petroleum spills in compliance with applicable local, State and Federal laws and regulations.
10. Transportation and off-Site disposal of all soil/fill material at licensed or 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.
11. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of Track 1 SCOs. Since excavation will extend into bedrock and groundwater, end-point samples will be taken where any soil remains including the eastern edge of the Site (proposed pedestrian sidewalk).
12. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
13. Performance of all activities required for the remedial action, including acquisition of required permits and attainment of pretreatment requirements, in compliance with applicable laws and regulations.
14. Dewatering in compliance with city, state, and federal laws and regulations. Extracted groundwater will either be containerized for off-site licensed or permitted disposal or will be treated under a permit from New York City Department of Environmental Protection (NYCDEP) to meet pretreatment requirements prior to discharge to the sewer system.
15. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.

16. Submission of a Remedial Action Report (RAR) that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, and lists any changes from this RAWP.
17. As part of development, construction of an engineered composite cover consisting of a minimum thickness 6-inch thick concrete building slab underlain by the buildings foundations with an approximate minimum 6-inch clean granular sub-base beneath all building areas.
18. As part of development, installation of a vapor barrier system consisting of waterproofing beneath the building slab and outside of sub-grade foundation sidewalls to mitigate soil vapor migration into the building. The vapor barrier system will consist of a 46-mil Grace Waterproofing Systems PREPRUFE 300R vapor barrier below the slab throughout the full building area and a 56-mil Grace Waterproofing Systems BITUTHENE 4000 outside all sub-grade foundation sidewalls. All welds, seams and penetrations will be properly sealed to prevent preferential pathways for vapor migration.
19. As part of new development, levels below grade will contain pedestrian connections into adjacent NYCTA spaces, back-of-house space, observation deck ticketing and retail space, loading docks and truck turnarounds with high volume air exchange in conformance with NYC Building Code.
20. If Track 1 SCOs are not achieved, 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.
21. If Track 1 SCOs are not achieved, the property will continue to be registered with an E-designation at the NYC Buildings Department. Establishment of ECs and ICs in this RAWP and a requirement that management of these controls must be in compliance with an approved SMP. ICs will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER- approval.

4.2 Soil Cleanup Objectives and Soil/ Fill Management

Track 1 SCOs are proposed for this project and SCOs are defined in 6 NYCRR Part 375, Table 6.8(a) Track 1 Unrestricted Use.

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 in Appendix 4. 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.

Soil/Fill Excavation and Removal

Proposed excavation depths for the construction of the building's cellar levels are anticipated to extend to approximately 60 feet bgs and extend into bedrock across the entire site. The location of planned excavations is shown in Figure 4. The total quantity of soil/fill expected to be excavated and disposed off-Site is approximately 20,000 tons (45,000 tons of rock will also be excavated). For each disposal facility to be used in the remedial action, a letter from the developer/QEP to the receiving facility requesting approval for disposal and a letter back to the developer/QEP providing approval for disposal will be submitted to OER prior to any transport and disposal of soil at a facility.

Disposal facilities will be reported to OER when they are identified and prior to the start of remedial action.

End-point Sampling

End point samples are not required for bedrock. If any soils are left behind, end-point samples will be analyzed for compounds and elements as described below utilizing the following methodology:

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

New York State ELAP certified labs will be used for all end-point sample analyses. Labs performing end-point sample analyses will be reported in the RAR. The RAR will provide a tabular and map summary of all end-point sample results and will include all data including non-detects and applicable standards and/or guidance values.

Confirmation End-point Sampling

The entire Site will be excavated into bedrock and there will be no soil left behind; as such, there will be no endpoint sampling.

Hotspot End-point Sampling

For any hotspots identified during this remedial program, including any hotspots identified during the remedial action, hotspot removal actions will be performed to ensure that hotspots are fully removed and end-point samples will be collected at the following frequency:

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

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

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

One duplicate sample for every 20 samples collected will be submitted to the approved laboratory for analysis of the same parameters. One trip blank will be submitted to the laboratory with each shipment of soil samples.

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

Dedicated disposable sampling materials will be used for the collection endpoint samples, eliminating the need to prepare field equipment (rinsate) blanks. However, if non-disposable equipment is used, (stainless steel scoop, etc.) field rinsate blanks will be prepared at the rate of 1

for every eight samples collected. Decontamination of non-dedicated sampling equipment will consist of the following:

- Gently tap or scrape to remove adhered soil
- Rinse with tap water
- Wash with alconox® detergent solution and scrub
- Rinse with tap water
- Rinse with distilled or deionized water

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

Import of Soils

Import of soils onto the property will be performed in conformance with the Soil/Materials Management Plan in Appendix 4. Imported soil will meet Track 1 Unrestricted Use SCOs. It is anticipated that 950-tons of clean gravel will be imported to the Site for use beneath the slab on grade and as bedding for drainage trenches.

Reuse of Onsite Soils

Soil reuse is not planned on this project.

4.3 Engineering Controls

The remedial action will achieve Track 1 Unrestricted Use SCOs and no Engineering Controls are required. However, the following design elements will be incorporated into the project as part of the development:

(1) Composite Cover System consisting of concrete covered sidewalks and concrete building slabs and foundation;

(2) Soil Vapor/Moisture Barrier System beneath the building concrete foundation and outside the building vertical foundation walls; and
(3) Sub-grade ventilated levels

If Track 1 is not achieved, these construction elements will constitute Engineering Controls that will be employed in the remedial action to address residual contamination remaining at the Site.

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 will be comprised of concrete building slabs and concrete sidewalks, all of which covers the entire Site. Figure 5 shows the typical design for each remedial cover type used on this Site. Figure 4 shows the location of each cover type built at the Site.

The composite cover system will be a permanent engineering control. The system will be inspected and its performance certified at specified intervals as required by this RAWP and the Site Management Plan. A Soil and Materials 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 Remedial Action Report.

Vapor Barrier System

Migration of soil vapor from onsite or offsite sources into the building will be mitigated with a combination of building slab and vapor barrier. The vapor barrier will consist of Grace Waterproofing Systems PREPRUFE 300R (or similar product) vapor/moisture barrier system (46 mil thick), installed beneath the entire building cellar concrete slab and a Grace Waterproofing Systems BITUTHENE 4000 (or similar product) vapor/moisture barrier system (56 mil thick) will be installed along foundation side walls. Product specification sheets are provided in Appendix 6. The waterproofing/vapor barrier will extend throughout the area occupied by the footprint of the new building and up the foundation sidewalls and will be installed in accordance

with manufacturer specifications.

A plan view showing the location of the proposed vapor barrier system is provided in Figure 10. Typical design sections for the vapor barrier on slab and sidewalls are provided in Appendix 6. A detailed description including manufacturer's specifications will be submitted as part of the building design, and can be found in Appendix 6. The Remedial Action Report will include as-built drawings and diagrams; manufacturer documentation; and photographs. The Remedial Action Report will include a PE-certified letter (on company letterhead) from the primary contractor responsible for installation oversight and field inspections and a copy of the manufacturer's certificate of warranty.

The Vapor Barrier System is a permanent engineering control and will be inspected and its performance certified at specified intervals as required by this RAWP and the Site Management Plan. A Soil and Materials 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 vapor barrier system is disturbed after the remedial action is complete. Maintenance of these systems will be described in the Site Management Plan in the Remedial Action Report.

4.4 Institutional Controls

A Track 1 remedial action is proposed and Institutional Controls are not required. If a Track 1 remedial action is not achieved, Institutional Controls (IC's) will be incorporated in this remedial action to manage residual soil/fill and other media and render the Site protective of public health and the environment. These IC's define the program to operate, maintain, inspect and certify the performance of Engineering Controls and Institutional Controls on this property. Institutional Controls would be implemented in accordance with a Site Management Plan included in the final Remedial Action Report (RAR). Institutional Controls would be:

- Continued registration of the E-Designation for the property. This RAWP includes a description of all ECs and ICs and summarizes the requirements of the SMP which will note that the property owner and property owner's successors and assigns must comply with the approved SMP;

- Submittal of a Site Management Plan in the RAR for approval by OER that provides procedures for monitoring and reporting of ECs and ICs. 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 on a annual basis and will comply with RCNY §43-1407(l)(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; and
- The Site will be used for commercial use and will not be used for a higher level of use without prior approval by OER.

4.5 Site Management Plan

A Track 1 remedial action is proposed and Site Management is not required. If a Track 1 remedial action is not achieved, Site Management will be required and will be the last phase of remediation. Site Management will begin 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 Voluntary Cleanup Agreement with OER. This includes a plan for: (1) implementation of EC's and ICs; (2) operation and maintenance of EC's; (3) inspection and certification of IC's and EC's.

Site management activities and EC/IC certification will be scheduled by OER on a periodic basis to be established in the RAR and 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 30 of the year following the reporting period.

4.6 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.

Data and information reported in the Remedial Investigation Report (RIR) are sufficient to complete a Qualitative Human Health Exposure Assessment (QHHEA) for this project. 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 under current and future conditions 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 Contaminant Sources

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

Soil:

- Metals (copper, lead, mercury, and nickel). exceeding Unrestricted Use SCOs; and
- TCLP lead detected at of 8.2 mg/L exceeding the EPA regulatory level.

Groundwater:

- One VOC, toluene exceeding its respective GQS;
- One SVOC, bis[2-ethylhexyl]phthalate, exceeding GQS; and
- Dissolved metals including iron, manganese and sodium exceeding GQS.

Soil Vapor:

- Chlorinated VOCs, including methyl chloride, PCE and TCE, were detected above NYS DOH monitoring thresholds; and
- Moderate levels of petroleum-related VOCs including benzene, toluene, ethyl-benzene and xylenes

Nature, Extent, Fate and Transport of Contaminants

Soil: Metals detected in soil as identified in the Phase II are associated with historic fill placed beneath the ground surface at the site. Metals in the soil vary throughout the site which is indicative of contamination present in historic fill.

Groundwater: VOCs and SVOCs detected in groundwater samples at concentrations above Class GA Values are attributed to the presence historic fill at the site and to the natural characteristics of the aquifer.

Soil Vapor: Elevated levels of VOCs detected in soil vapor were not detected in soil or groundwater at the site.

Receptor Populations

On-Site Receptors: The site is currently vacant and undergoing interior demolition. Access to the Site is restricted by chained and locked, perimeter fence and security guards. During

construction, potential on-site receptors include construction workers, site representatives, and visitors. Under proposed future conditions, potential on-site receptors include adult professionals, workers and visitors.

Off-Site Receptors: Potential off-site receptors within a 500 foot radius of the Site include commercial and construction workers; pedestrians; and trespassers based on the following land uses within 500 feet of the Site:

1. Commercial Businesses – existing and future
2. Building Construction/ Renovation – existing and future
3. Pedestrians, Trespassers, Cyclists – existing and future
4. Transportation – existing and future
5. Schools and Daycare Facilities – existing and future

Potential Routes of Exposure

Three potential primary routes exist by which chemicals can enter the body: ingestion, inhalation, and dermal absorption. Exposure can occur based on the following potential media:

- Ingestion of groundwater or fill/ soil;
- Inhalation of vapors or particulates; and
- Dermal absorption of groundwater or fill/ soil.

Potential Exposure Points

Current Conditions: The site is currently improved with four (4) on-site buildings consisting of a 22-story, a 14-story, a 7-story and a 17-story structure. A one-story basement is located beneath each building and a two-story basement is located beneath a large portion of the property. The on-site buildings are currently undergoing interior demolition and there are numerous pits, trenches and boreholes in the existing concrete building slab allowing soil and soil vapor to escape, however, numerous interior and exterior walls have been removed during interior demolition to allow for ventilation while using construction equipment, increasing ventilation throughout below-grade levels. The buildings are capped with a concrete building slab and there are no potential exposure pathways from ingestion, inhalation, or dermal absorption of soil/ fill.

Groundwater is not exposed at the Site. The Site is served by the public water supply and groundwater is not used at the Site for potable supply and there is no potential for exposure.

Construction/ Remediation Conditions: During the remedial action, onsite workers will come into direct contact with surface and subsurface soils as a result of on-Site construction and excavation activities. On-Site construction workers potentially could ingest, inhale or have dermal contact with exposed impacted soil and fill. Similarly, off-Site receptors could be exposed to dust and vapors from on-Site activities. Due to the depth of groundwater, direct contact with groundwater is expected. During construction, on-Site and off-Site exposures to contaminated dust from on-Site will be addressed through the Soil/Materials Management Plan, dust controls, and through the implementation of the Community Air-Monitoring Program and a Construction Health and Safety Plan.

Proposed Future Conditions: Under future remediated conditions, all soils in excess of Track 1 SCOs will be removed and the site will be fully capped on top of bedrock; there will be no potential of direct exposure to soil and groundwater remaining in place. In addition, the vapor barrier will prevent any potential soil vapors from entering the building. The site is served by the public water supply, and groundwater is not used at the site. There are no plausible off-site pathways for oral, inhalation, or dermal exposure to contaminants derived from the site.

Overall Human Health Exposure Assessment

There are no potential complete exposure pathways for the current site condition. There are potential complete exposure pathways that require mitigation during implementation of the remedy. There are no complete exposure pathways under future conditions after the site is developed. This assessment takes into consideration the reasonably anticipated use of the site, which includes a 68-story commercial tower with four basement levels, a site-wide surface cover, and a subsurface vapor barrier system for the building. Under current conditions, on-Site exposure pathways exist for those with access to the Site and trespassers. During remedial construction, on-Site and off-Site exposures to contaminated dust from historic fill material will be addressed through dust controls, and through the implementation of the Community Air Monitoring Program, the Soil/Materials Management Plan, and a Construction Health and Safety

Plan. 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. There are no surface waters in close proximity to the Site that could be impacted or threatened.

5.0 Remedial Action Management

5.1 Project Organization and Oversight

Principal personnel who will participate in the remedial action are still to be determined as an excavation and foundation contractor have yet been selected. Once this firm is selected this information will be conveyed to OER. The Professional Engineer (PE) and Qualified Environmental Professionals (QEP) for this project are Mr. Scott McDonald and Mr. James Blaney of WCD Group, LLC.

5.2 Site Security

Site access will be controlled by gated entrances to the fenced property.

5.3 Work Hours

The hours for operation of cleanup are expected to remain the same as the current demolition hours approved by NYC Department of Buildings (6:00am to 6:00 pm) and will continue to comply with the NYC Department of Buildings construction code requirements or according to specific variances issued by that agency. Any change in the hours of operation will be conveyed to OER.

5.4 Construction Health and Safety Plan

The Health and Safety Plan is included in Appendix 5. The Site Safety Coordinator will be Michael Rhoden of Tishman. 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, such as 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 will comply with all requirements of 29 CFR 1910.120. Site-specific training will be provided to field personnel. Additional safety training may be added depending on the tasks performed. Emergency telephone numbers will be posted at the site location before any remedial work begins. A safety meeting will be conducted before each shift begins. Topics to be discussed include task hazards and protective measures (physical, chemical, environmental); emergency procedures; PPE levels and other relevant safety topics. Meetings will be documented in a log book or specific form.

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

5.5 Community Air Monitoring Plan

Real-time air monitoring for 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 bailing/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. Exceedences 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/m3) 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 mcg/m3 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 mcg/m3 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 mcg/m3 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 incompliance with applicable laws and regulations including NYC Building Code to assure safety. Utility companies and other responsible authorities will be contacted to locate and mark the locations, and a copy of the Mark-Out 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

Dewatering is anticipated during remediation and construction. Construction dewatering will be performed in order to excavate soil and fill material below the water table (which has been documented at 32 feet bgs). Dewatering for this site will utilize a pumping system, settling tanks, possibly a treatment system prior to discharge into the city sewer system. All required permits will be obtained from NYCDEP prior to any discharge of groundwater into the sewer system. An initial groundwater sample was collected for analysis of the NYCDEP Sewer Discharge Parameters. The sample indicates that the results do not exceed the NYCDEP Sewer

Use Discharge Parameters. If dewatering is necessary during construction activities, treatment of dewatering effluent may not be required prior to discharge to the municipal sewer.

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 pads 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 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 clean 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 excavated areas, 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. Stormwater 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 within statutory defined timelines. 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 Site with soil/fill will be instructed to proceed without stopping in the vicinity of the Site to prevent neighborhood impacts. The planned route on local roads for

trucks leaving the site is still to be determined however dependent on disposal facility selection trucks leaving Site will pull out of the site and head directly to either the FDR (NYS 90) or the West Side Highway (NYS 9A).

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 business day. Those reports will include:

- Project number and statement of the activities and an update of progress made and locations of excavation and other remedial 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 results noting all excursions. CAMP data may be reported;

- 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, and approved by, 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 with basis 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;
- Text description with thorough detail of all engineering and institutional controls (if Track 1 remedial action is not achieved)
- As-built drawings for all constructed remedial elements;
- Manifests for al soil or fill disposal;
- Photographic documentation of remedial work performed under this remedy;
- Site Management Plan (if Track 1 remedial action 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 (including all soil test results from the remedial investigation for soil that will remain on site) and all soil/fill waste characterization results, QA/QC results for end-point sampling, and other sampling and chemical analysis performed as part of the remedial action;
- Test results or other evidence demonstrating that remedial systems are functioning properly;
- Account of the source area locations and characteristics of all soil or fill material removed from the Site including a map showing the location of these excavations and hotspots, tanks or other contaminant source areas;
- Full accounting 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 (if Track 1 remedial action is not achieved);

- The RAWP and Remedial Investigation Report will be included as appendices to the RAR; and
- Reports and supporting material will be submitted in digital form and final PDF's will include bookmarks for each appendix.

Remedial Action Report Certification

I, _____, am currently a registered professional engineer licensed by the State of New York. I performed professional engineering services and had primary direct responsibility for implementation of the remedial program for the 1 Vanderbilt site, site number [VCP site number]. I certify to the following:

- I have reviewed this document, to which my signature and seal are affixed.
- Engineering Controls implemented during this remedial action were designed by me or a person under my direct supervision and achieve the goals established in the Remedial Action Work Plan for this site.
- The Engineering Controls constructed during this remedial action were professionally observed by me or by a person under my direct supervision and (1) are consistent with the Engineering Control design established in the Remedial action Work Plan and (2) are accurately reflected in the text and drawings for as-built design reported in this Remedial Action Report.
- The OER-approved Remedial Action Work Plan dated [date] and Stipulations in a letter dated [date] 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.

Name

PE License Number

Signature

Date

PE Stamp

I, James Blaney, am a Qualified Environmental Professional. I had primary direct responsibility for implementation of the remedial program for the 1 Vanderbilt site, site number [VCP site number]. I certify to the following:

- The OER-approved Remedial Action Work Plan dated August 15, 2012 and Stipulations in a letter dated September 10, 2014 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.

QEP Name

QEP Signature

Date

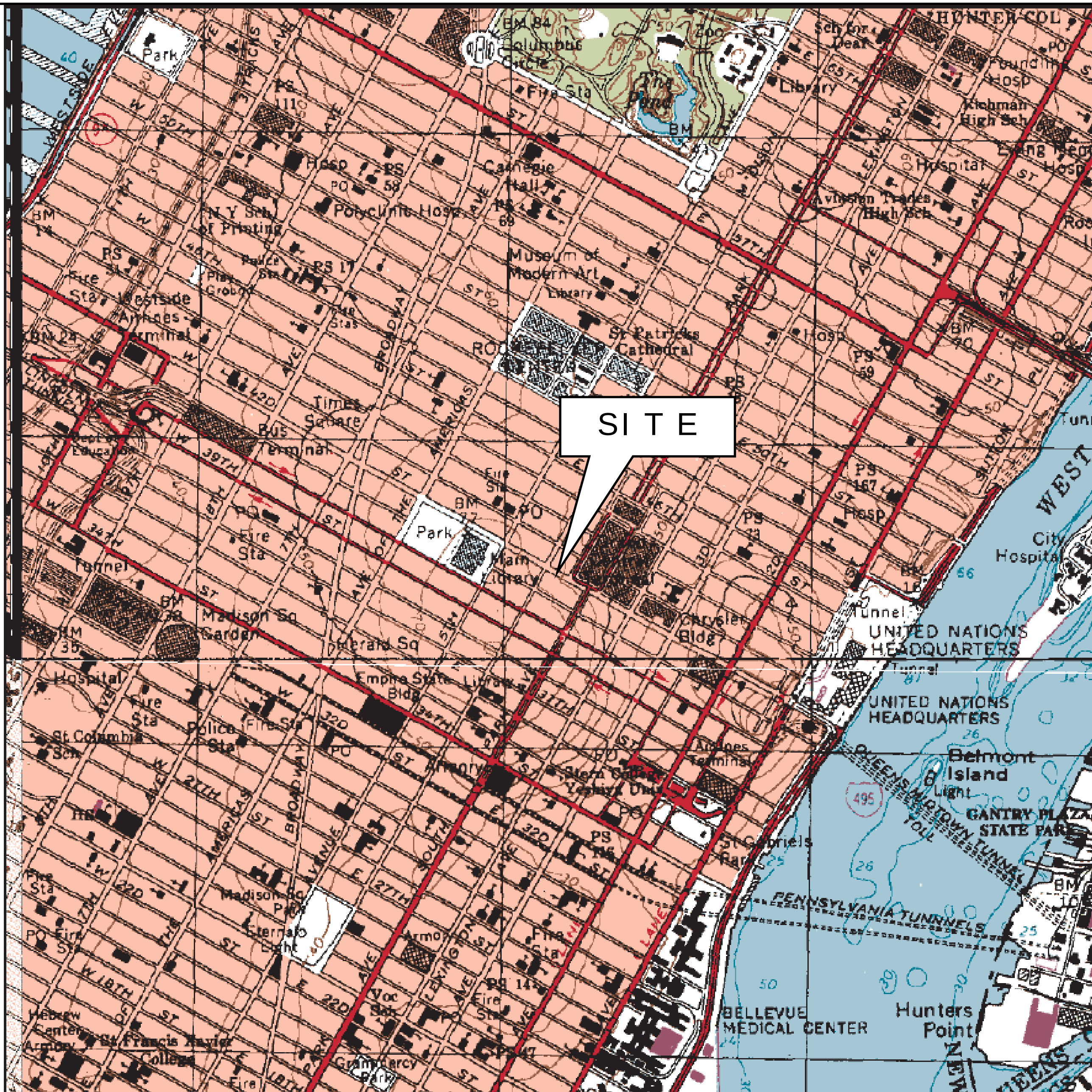
7.0 Schedule

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 fifteen month remediation period is anticipated.

Schedule Milestone	**Weeks from Remedial Action Start**	**Duration (weeks)**
OER Approval of RAWP	0	4
Fact Sheet 2 announcing start of remedy	0	4
Mobilization	1	4
Remedial Excavation	5	52
Demobilization	65	4
Submit Remedial Action Report	70	4

Figure 1

Site Location Map



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Project Location:

317 and 327 Madison Avenue
48 East 43rd Street
51 East 42nd Street
New York, NY 10017

Project No.:

14-6882

Title:

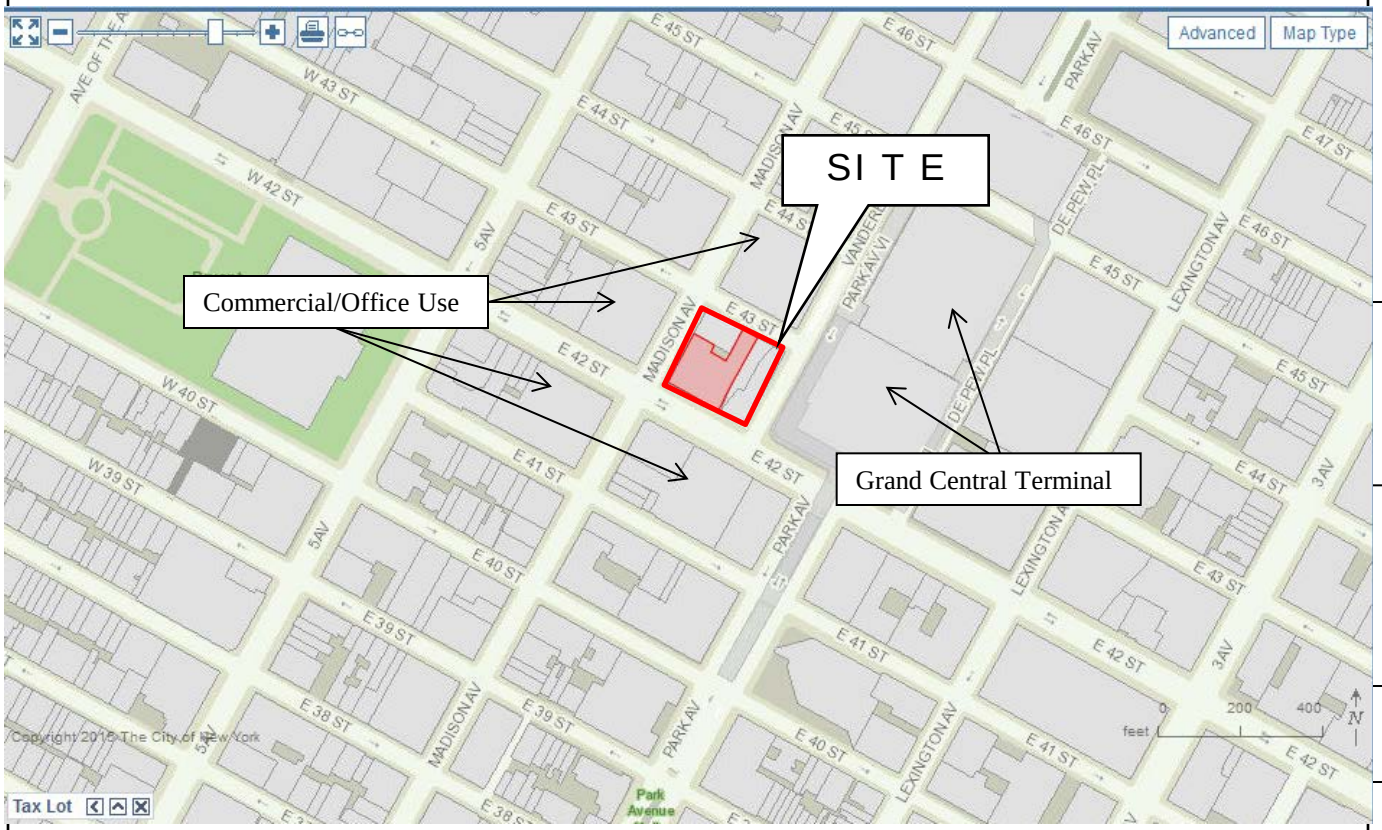
SITE LOCATION MAP

FIGURE 1

Source: USGS Central Park Quadrangle, 7.5 Minute Series, Central Park NY-NJ 2013

Figure 2

Surrounding Land Usage



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Project No.:

15-7854

Title:

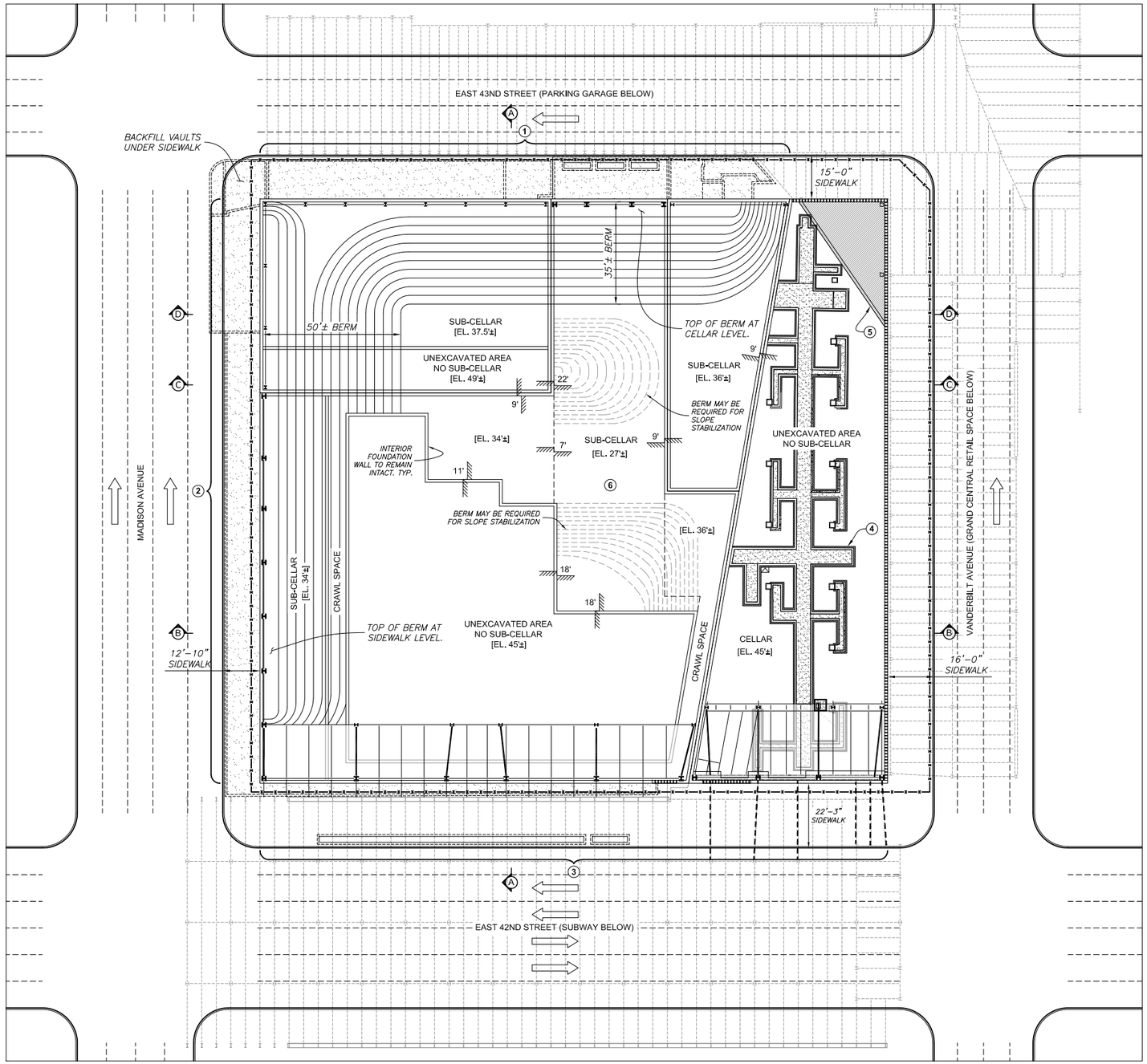
Surrounding Land Use

FIGURE 2

Source: NYC Planning Zoning and Land Use ZoLa Map

Figure 3

Current Site Building Slab Elevations Plan



PLAN VIEW
SCALE: 1"=20'

NOTES:

THE FINAL SITE CONDITION SHALL CONFORM TO THE FOLLOWING:

1. A) AT NORTH SIDE OF SITE (E 43RD ST.), LEAVE EXISTING PERIMETER COLUMNS, SPANDREL BEAMS, AND SIDEWALK VAULT FRAMING FROM 331, 317, & 48 IN PLACE FROM SUB-CELLAR TO GROUND FLOOR.

   B) INFILL SIDEWALK VAULT AND CONSTRUCT 1V : 2H BERM FROM SUB-CELLAR TO CELLAR LEVEL.

2. A) AT WEST SIDE OF SITE (MADISON AVE.), LEAVE EXISTING PERIMETER COLUMNS, SPANDREL BEAMS, AND SIDEWALK VAULT FRAMING IN PLACE FROM SUB-CELLAR TO GROUND FLOOR.

   B) INFILL SIDEWALK VAULT AND CONSTRUCT 1V : 2H BERM FROM SUB-CELLAR TO SIDEWALK LEVEL.

3. A) LEAVE ONE-BAY OF GROUND FLOOR STEEL FRAME AT SOUTH END OF 51 & 317. REMOVE CONCRETE SLAB AND FIREPROOFING.

   B) INSTALL SHORING AT CELLAR AND SUB-CELLAR LEVELS. SEE SHEETS DM-501 THRU DM-503 FOR DETAILS.

4. CHOP CELLAR SLAB OVER UTILITY TRENCH IN 51 E. 42ND ST. AND INFILL TRENCH WITH CLEAN CONCRETE AND MASONRY DEBRIS.

5. WATERPROOF EXPOSED PORTION OF METRO-NORTH LOOP TRACK (i.e. CELLAR SLAB AT 51 E. 42ND ST.)

6. SLAB-ON-GRADE AT CELLAR/SUB-CELLAR LEVELS AND CORRESPONDING FOUNDATION WALLS SHALL REMAIN INTACT. CONTROL WATER ACCUMULATION WITH THE USE OF SUMP PUMPS, EXISTING PITS, AND EXISTING STORM DRAIN SYSTEMS.

GROUND FLOOR ELEVATION ON 42ND ST. APPROX = EL. 60.0'±

GROUND FLOOR ELEVATION ON 43RD ST. APPROX = EL. 58.0'±

LEGEND

- TEMPORARY CMU DEMISING WALL FROM CELLAR TO GROUND FLOOR
- EXISTING SUBWAY FRAMING
- EXISTING SUBWAY FRAMING SUPPORTED ON BUILDING COLUMNS
- EXISTING GROUND FLOOR FRAMING TO REMAIN
- NEW DIAGONAL RAKERS
- WATERPROOFING FOR METRO-NORTH LOOP TRACK
- SITE FENCE
- CONTOUR LINE FOR BERM

No.	REVISIONS	BY

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CLIENT
HINES
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NEW YORK, NY

PROJECT
STRUCTURAL DEMOLITION OF
317 MADISON AVENUE BUILDINGS

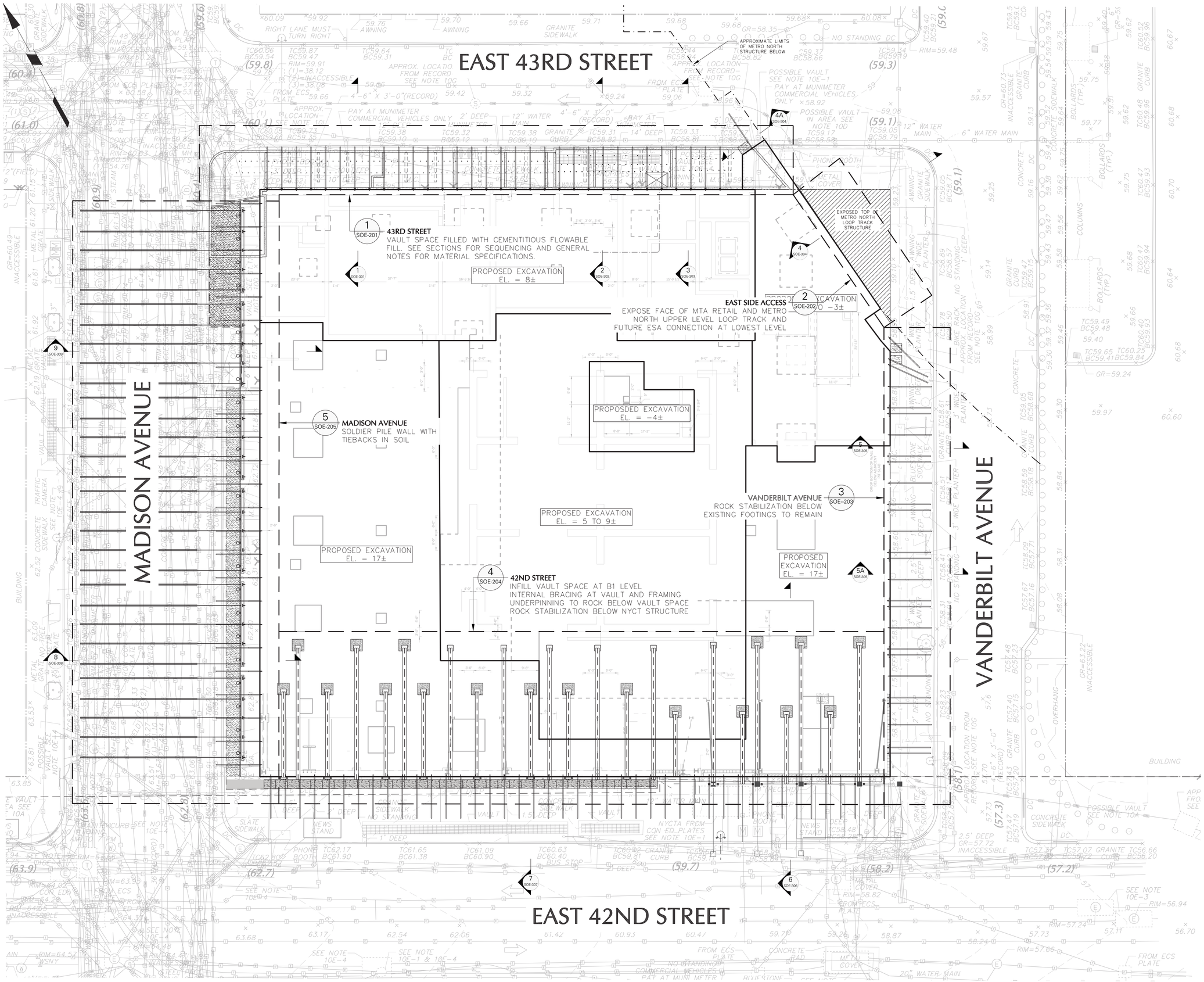
TITLE
FINAL SITE CONDITION – PLAN VIEW

SEAL & SIGNATURE

DATE: 07/21/14
PROJECT NO: 14154.00.00
DRAWING BY: SM
CHK BY: JS
DWG NO: DM-504.00
FILE: 14154.00.00
SHEET: 32 OF 37 SHEETS

Figure 4

Site Excavation Diagram



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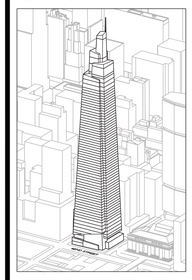

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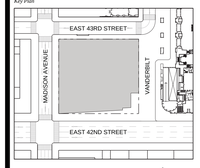
Key Plan



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Drawing Title

SUPPORT OF EXCAVATION PLAN OVERALL

Drawing Number

SOE-107.00

SHEET 11 OF 32

Figure 5

Site-wide Cover System Plan (Level B-3)

EAST 43RD STREET

MADISON AVENUE

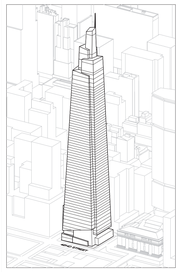
VANDERBILT AVENUE

EAST 42ND STREET

B3 LEVEL PLAN

1/8" = 1'-0"

ONE VANDERBILT



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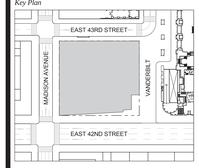
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



STATE OF NEW YORK · RICHARD M. KOHN · 038128 · LICENSED PROFESSIONAL ENGINEER

Issue Date: 09-01-2015
Project No. 14500
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
B3 LEVEL PLAN

Drawing Number
FO-101.00

SHEET 2 OF 11

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Figure 6

Site-wide Cover System Plan (Level B-4)

EAST 43RD STREET

FOUNDATION AND B4 LEVEL PLAN
1/8" = 1'-0"

EAST 42ND STREET

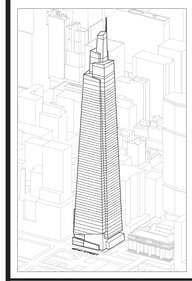
LEVEL B4 AND FOUNDATION PLAN

1. REFERENCE FOR ALL ELEVATIONS IS LEVEL NAVD88 EL. 0'-0"
2. TOP OF FOUNDATION MAT IS AT ELEVATION 18'-9" UNLESS OTHERWISE NOTED.
3. BOTTOM OF FOOTING ELEVATION IS NOTED THUS (s...), RELATIVE TO REFERENCE ELEVATION.
4. INVERT ELEVATION IS NOTED THUS <s...>, RELATIVE TO REFERENCE ELEVATION.
5. SYMBOLS:
   - 8" SLAB ON GRADE — INDICATES 8" CONC. SLAB ON GRADE WITH #4 @ 12" T. & B. EA. WAY.
   - INDICATES ROCK ANCHOR. SEE PLAN FOR LOCATION AND CAPACITY.
6. FOOTINGS SHALL BEAR ON UNDISTURBED ROCK HAVING A SAFE MINIMUM BEARING CAPACITY OF SIXTY (60) TONS PER SQ. FT. (CLASS 1a IN ACCORDANCE WITH THE NEW YORK CITY BUILDING CODE).
7. BOTTOM OF FOOTING ELEVATION SHOWN IS HIGHEST POSSIBLE FOR 60 TSF ROCK. ACTUAL ELEVATION MAY CHANGE DEPENDING ON CONDITION OF BEARING SURFACE REVEALED BY EXCAVATION.
8. ALL BEARING SURFACES SHALL BE EXAMINED BY THE ARCHITECT (OR ARCHITECT'S REPRESENTATIVE) PRIOR TO PLACING FOOTINGS OR REINFORCEMENT.
9. FOOTINGS SHALL BE CONCENTRIC WITH COLUMN OR BUTTRESS ABOVE UNLESS OTHERWISE NOTED. FOR COORDINATES OF CENTERLINES SEE DWG. S-010.
10. SLOPE BETWEEN BOTTOM OF ADJACENT FOOTINGS, ELEVATOR PIT SLABS, SUMP PITS, ETC. SHALL BE NO STEEPER THAN ONE VERTICAL TO ONE HORIZONTAL.
11. ALL CONCRETE FOR FOUNDATION SHALL BE NORMAL WEIGHT SEE DWG. S-701 FOR REQUIRED STRENGTHS.
12. FOUNDATION WALLS SHALL BE PLACED IN ALTERNATE PANELS NOT TO EXCEED 60 FEET IN LENGTH. CONSTRUCTION JOINTS SHALL BE PLACED AT POINTS OF MINIMUM SHEAR, GENERALLY AT MID-SPAN AND THREE FEET MINIMUM FROM EDGE OF BUTTRESS. ALLOW 7 DAYS MINIMUM BETWEEN PLACING OF ADJACENT PANELS. HORIZONTAL JOINTS WILL BE PERMITTED ONLY AS SHOWN ON SECTIONS AND DETAILS.
13. FOUNDATION WALLS SHALL BE TEMPORARILY BRACED AGAINST EARTH PRESSURE, WIND AND OTHER FORCES UNTIL SLABS, METAL DECK, BEAMS OR COLUMNS DESIGNED TO BRACE THE FINISHED STRUCTURE HAVE BEEN INSTALLED AND HAVE ATTAINED THEIR REQUIRED STRENGTH.
14. SEE DWGS. FO-201 THRU FO-207 FOR FOUNDATION SECTIONS AND DETAILS.
15. SEE DWGS. S301 THRU S308 FOR LATERAL FRAME AND SHEAR WALL ELEVATIONS AND DETAILS.
16. SEE DWGS. S-251 AND S-252 FOR TYPICAL FOUNDATION DETAILS.
17. SEE DWGS. S601 THRU S603 FOR COLUMN SCHEDULE.
18. SEE DWGS. S701 FOR GENERAL NOTES.
19. SEE DWGS. S702 THRU S703 FOR LOADING SCHEDULE AND FLOOR CONSTRUCTION DETAILS.
20. COORDINATE SIZE, LOCATION AND INVERT ELEVATION OF WALL SLEEVES WITH MECHANICAL AND TELECOMMUNICATIONS DRAWINGS. SEE DWG. S-252 FOR TYPICAL SLEEVE DETAIL.
21. COORDINATE CON ED VAULTS WITH CON ED DWGS.
22. COORDINATE ELEVATOR PIT BEAM LOCATIONS WITH ELEVATOR CONTRACTOR.
23. COORDINATE NYCT/MTA SUBWAY PASSAGE WITH NYCT DWGS.
24. NO TEMPORARY OR PERMANENT ATTACHMENTS OR PENETRATIONS SHALL BE MADE TO NYCT/MTA STRUCTURES.
25. SEE TEMPORARY SUPPORT OF EXCAVATION SUPPORT DWGS PREPARED BY LANGAN CONSULTING ENGINEERS. FOR NYCT/MTA GENERAL NOTES AND STANDARD INSURANCE CLAUSES SEE FO-301.
26. SEE SPECIFICATIONS AND CIVIL DRAWINGS FOR UNDERSLAB DRAINAGE SYSTEM.
27. SEE DWGS. S401 THRU S404 FOR CONCRETE CORE PLANS AND DETAILS.
28. SEE ELECTRICAL DRAWINGS FOR UNDERSLAB LIGHTNING PROTECTION GROUNDING PLATES.
29. COORDINATE WATERPROOFING WITH CIVIL DRAWINGS.

FOOTING SCHEDULE
(ALLOWABLE ROCK BEARING = 60 TONS/SQ. FT.)

MARK	SIZE	DEPTH (INCHES)	BOTTOM REINF. EACH WAY (U.O.N.)	REMARKS
F3.5	3'-6" x 3'-6"	18	4 - #5	-
F5	5'-0" x 5'-0"	42	8 - #9	-
F6	6'-0" x 6'-0"	48	10 - #9	-
F7	7'-0" x 7'-0"	50	16 - #9	-
F8	8'-0" x 8'-0"	54	18 - #10	-
F9	9'-0" x 9'-0"	60	20 - #10	-
F9.5	9'-6" x 9'-6"	66	22 - #10	-
F10	10'-0" x 10'-0"	66	24 - #10	-
F10.5 x 6.5	10'-6" x 6'-6"	60	-	7-#10 LONG WAY 11-#10 SHORT WAY
F11	11'-0" x 11'-0"	76	30 - #10	-
F12	12'-0" x 12'-0"	88	36 - #10	-
F13	13'-0" x 13'-0"	96	38 - #10	-

ONE VANDERBILT



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Mechanical, Electrical, Plumbing, Fire Protection
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Vertical Transportation
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Code Consulting
Code Consultants, Inc.
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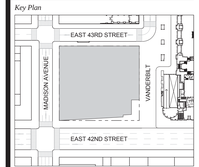
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



Issue Date: 09-01-2015
Project No. 14500
Drawn By
Scale As indicated

Drawing Title
FOUNDATION AND B4 LEVEL PLAN

Drawing Number
FO-100.00
SHEET 1 OF 11

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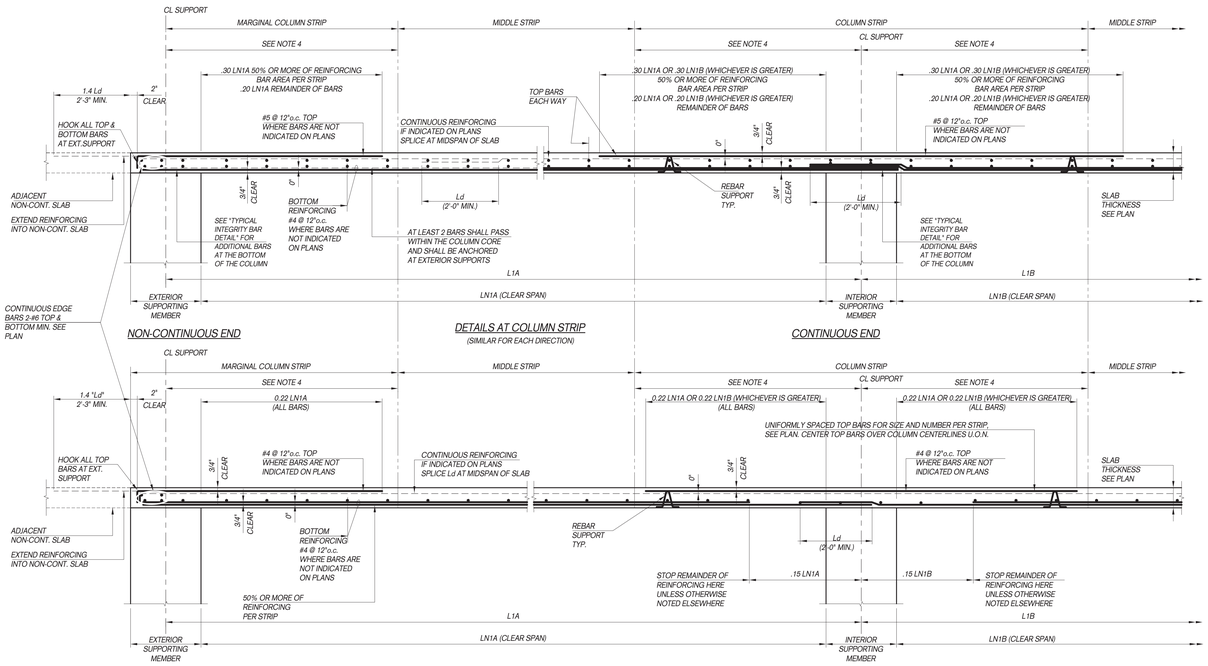
Figure 7

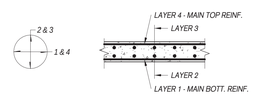
Typical Cover Detail for All Cover Types



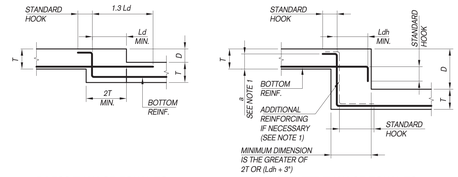
NOTES:

1. FOR SIZE AND NUMBER OF ALL TOP AND BOTTOM BARS, SEE PLANS AND/OR SCHEDULES.
2. DEVELOPMENT LENGTH Ld TO BE DETERMINED IN ACCORDANCE WITH THE REQUIREMENTS OF ACI 318, CHAPTER 12.
3. AT INTERIOR SUPPORTS LN1A AND LN1B IS THE CLEAR SLAB SPAN TO THE LEFT AND RIGHT OF SUPPORT.
4. COLUMN STRIP DIMENSIONS TO BE DETERMINED IN ACCORDANCE WITH THE REQUIREMENT OF ACI 318, CHAPTER 13 UNLESS NOTED OTHERWISE ON PLANS.
5. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR PROVIDING THE TYPE, SIZE, LOCATION AND FREQUENCY OF REBAR SUPPORTS AND THE MEANS AND METHODS TO ASSURE THAT THE REINFORCEMENT IS ACCURATELY PLACED AND IS ADEQUATELY SUPPORTED BEFORE CONCRETE IS PLACED, AND ADEQUATELY SECURED AGAINST DISPLACEMENT BY CONCRETE PLACEMENT OR CONSTRUCTION PERSONNEL.

TYPICAL FLAT SLAB DETAILS



FLAT SLAB BAR PLACING ORDER



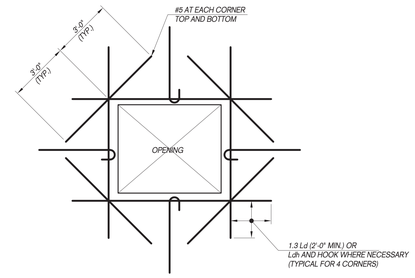
D LESS THAN OR EQUAL TO T - 3"

D GREATER THAN OR EQUAL TO T - 3"

NOTES:

1. IF DIMENSION "a" IS LESS THAN Ldh, PROVIDE ADDITIONAL REINFORCING OF SAME SIZE SUCH THAT THE TOTAL AMOUNT OF REINFORCING IS INCREASED BY THE FACTOR (Ldh/a).
2. DEVELOPMENT LENGTH Ld AND Ldh TO BE DETERMINED IN ACCORDANCE WITH THE REQUIREMENTS OF ACI 318, CHAPTER 12.
3. WHERE TOP REINFORCING OCCURS, PROVIDE SIMILAR DETAIL.

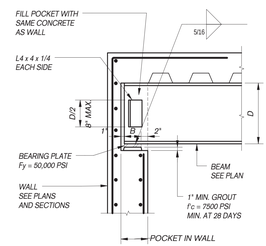
TYPICAL CHANGE IN SLAB ELEVATION DETAIL



NOTES:

1. HOOK ALL TOP BARS INTERRUPTED BY OPENING.
2. ONE HALF OF REINFORCING BARS INTERRUPTED BY OPENING SHALL BE PROVIDED EACH SIDE OF OPENING (SAME NUMBER AND SIZE) MINIMUM 1 - #5 TOP AND BOTTOM.
3. SLAB REINFORCING MAY BE SPREAD TO MISS OPENINGS BUT SPACING BETWEEN SLAB REINFORCING BARS SHALL NOT EXCEED 3 TIMES SLAB THICKNESS NOR 18".
4. DEVELOPMENT LENGTH Ld AND Ldh TO BE DETERMINED IN ACCORDANCE WITH THE REQUIREMENT OF ACI 318, CHAPTER 12.
5. DO NOT CONSTRUCT OPENINGS THROUGH FLAT SLABS, IN AREAS COMMON TO TWO COLUMN STRIPS UNLESS OPENINGS ARE DIMENSIONED AND SPECIFICALLY DETAILED ON FRAMING PLANS.
6. SUBMIT SIZE AND LOCATION OF ALL PROPOSED OPENINGS NOT SHOWN ON FRAMING PLANS.

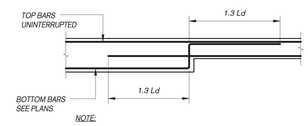
TYPICAL CONCRETE SLAB OPENING DETAIL



BEARING PLATE SCHEDULE

BEAM SIZE	B	THICKNESS	LENGTH
W8 THRU W12	4"	3/4"	0'-8"
W14 & W16	4"	1"	0'-10"
W18	4"	1 1/4"	0'-10"
W21	5"	1 1/4"	0'-10"
W24	6"	1 1/4"	0'-11"
W27 AND W30	7"	1 1/2"	1'-0"
LARGER THAN W30	8"	1 3/4"	1'-2"

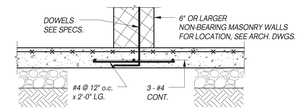
TYPICAL BEAM BEARING PLATE DETAIL



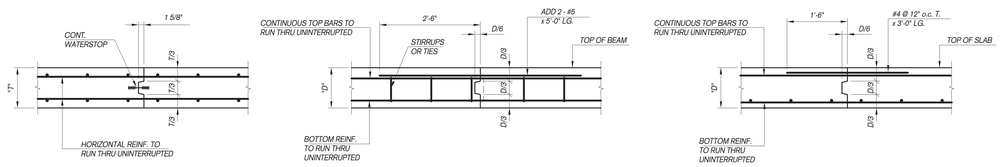
NOTE:

1. DEVELOPMENT LENGTH Ld TO BE DETERMINED IN ACCORDANCE WITH THE REQUIREMENTS OF ACI 318, CHAPTER 12.

TYPICAL CHANGE IN SLAB DEPTH DETAIL



TYPICAL DETAIL AT NON BEARING MASONRY WALLS BEARING ON SLAB ON GRADE



NOTES:

1. UNLESS OTHERWISE NOTED ELSEWHERE, LOCATE JOINTS MIDWAY BETWEEN COLUMN CENTERLINES.
2. UNLESS OTHERWISE NOTED ELSEWHERE, SPACING OF JOINTS SHALL NOT EXCEED 60'-0".
3. ALLOW 7 (SEVEN) DAYS MINIMUM BETWEEN PLACING CONCRETE ADJACENT TO PREVIOUSLY CAST CONCRETE.

TYPICAL CONCRETE WALL CONSTRUCTION JOINT DETAIL

NOTES:

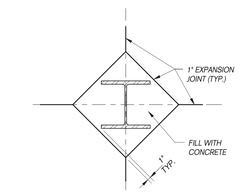
1. UNLESS OTHERWISE NOTED ELSEWHERE, LOCATE JOINTS MIDWAY BETWEEN COLUMN CENTERLINES.
2. UNLESS OTHERWISE NOTED ELSEWHERE, SPACING OF JOINTS SHALL NOT EXCEED 75'-0".
3. ALLOW 7 (SEVEN) DAYS MINIMUM BETWEEN PLACING CONCRETE ADJACENT TO PREVIOUSLY CAST CONCRETE.
4. CONCRETE BEAMS ARE NOT SELF SUPPORTING UNTILL BOTH SIDES OF JOINT HAVE BEEN PLACED

TYPICAL CONCRETE BEAM CONSTRUCTION JOINT DETAIL

NOTES:

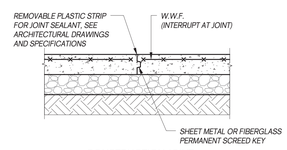
1. UNLESS OTHERWISE NOTED ELSEWHERE, LOCATE JOINTS MIDWAY BETWEEN COLUMN CENTERLINES.
2. UNLESS OTHERWISE NOTED ELSEWHERE, SPACING OF JOINTS SHALL NOT EXCEED 75'-0".
3. ALLOW 7 (SEVEN) DAYS MINIMUM BETWEEN PLACING CONCRETE ADJACENT TO PREVIOUSLY CAST CONCRETE.
4. CONCRETE SLABS ARE NOT SELF SUPPORTING UNTILL BOTH SIDES OF JOINT HAVE BEEN PLACED

TYPICAL FRAMED CONCRETE SLAB CONSTRUCTION JOINT DETAIL



CONSTRUCTION JOINT IN BOTH DIRECTION

PLANS AT COLUMNS

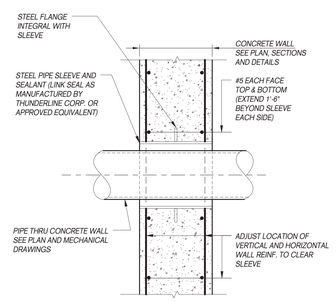


CONSTRUCTION JOINT

NOTES:

1. LOCATE SCREED KEYS ON COLUMN CENTERLINES IN EACH DIRECTION UNLESS OTHERWISE NOTED ELSEWHERE.
2. THE CONTRACTOR SHALL SUBMIT A DRAWING FOR THE ARCHITECTS REVIEW INDICATING THE LOCATION OF JOINTS AND THE SEQUENCE OF CASTINGS.

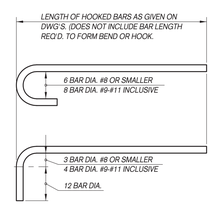
TYPICAL SLAB ON GRADE JOINT DETAILS



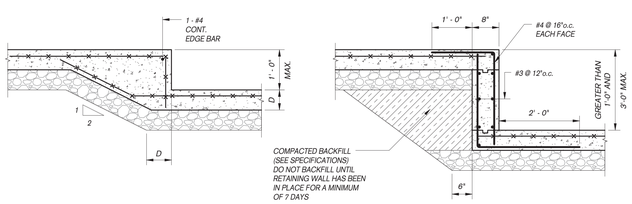
NOTES: 1. COORDINATE SIZE, NUMBER AND LOCATION OF ALL PIPES AND SLEEVES WITH MECHNICAL DRAWINGS.

2. DETAIL SHOWN IS FOR INDIVIDUAL SLEEVES. WHERE SLEEVES OCCUR IN GROUPS, STEEL FLANGES MAY BE COMBINED INTO SINGLE PIECE.

TYPICAL WALL SLEEVE DETAIL

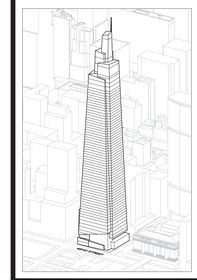


TYPICAL HOOK DETAILS



TYPICAL SLAB ON GRADE DEPRESSION DETAILS

ONE VANDERBILT



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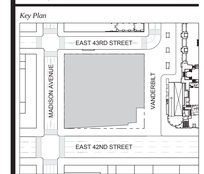
Key Plan



Issue Date: 09-01-2015
Project No. 14500
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Scale 3/4" = 1'-0"

Drawing Title
FOUNDATION TYPICAL DETAILS 2

Drawing Number
FO-252.00

SHEET 11 OF 11

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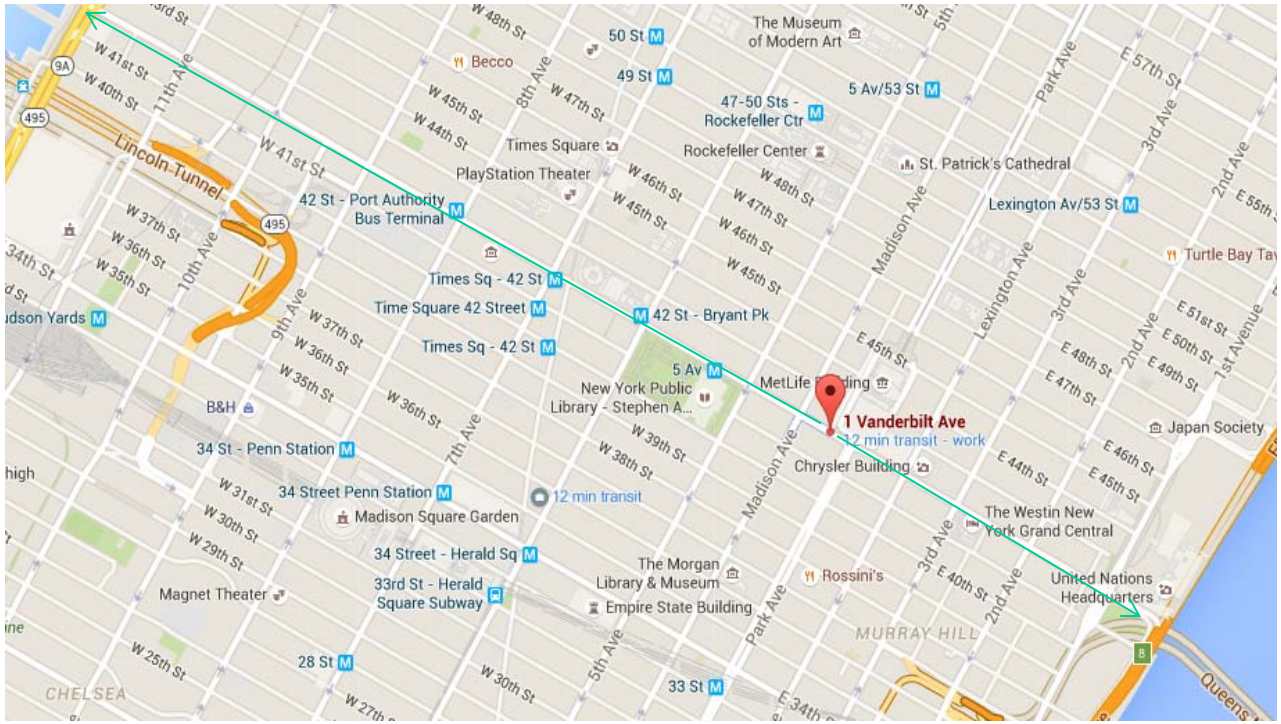
Figure 8

Map showing Truck Route



Proposed Truck Routes

WCD GROUP

WCD Group
1350 Broadway, Suite 1904
New York, NY 10018
Phone: 212.631.9000
Fax: 212.631.8066
www.wcdgroup.com

Client:

Hines
499 Park Avenue, 12th Floor
New York, NY 10022

Project Location:

One Vanderbilt Avenue
New York, NY 10017

Project No.:

15-7854

Title:

Proposed Truck Route

FIGURE 6

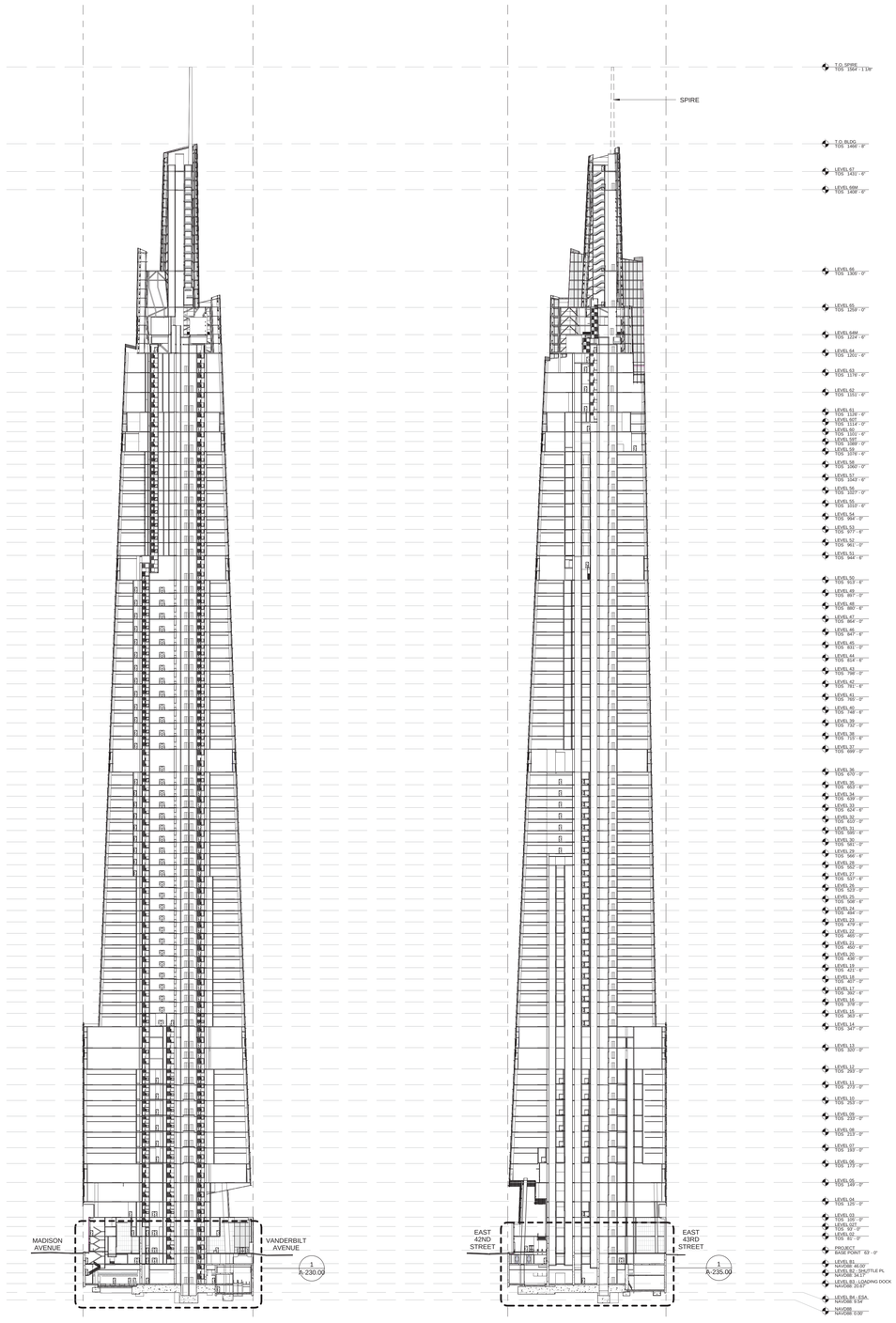
Source: Google Maps 2015

Figure 9

Site Redevelopment Plan

NOTE:

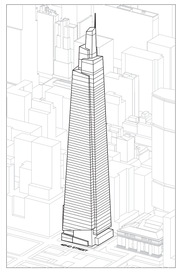
ALL ELEVATIONS ARE SHOWN IN NAVD88



2 EAST-WEST SECTION

1 NORTH-SOUTH SECTION

ONE VANDERBILT



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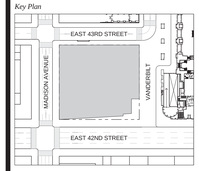
Key Plan



Issue Date: **09-01-2015**

Project No. **1943.16**

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Drawing Title

BUILDING SECTIONS

Drawing Number

A-210.00

SHEET 51 OF 56

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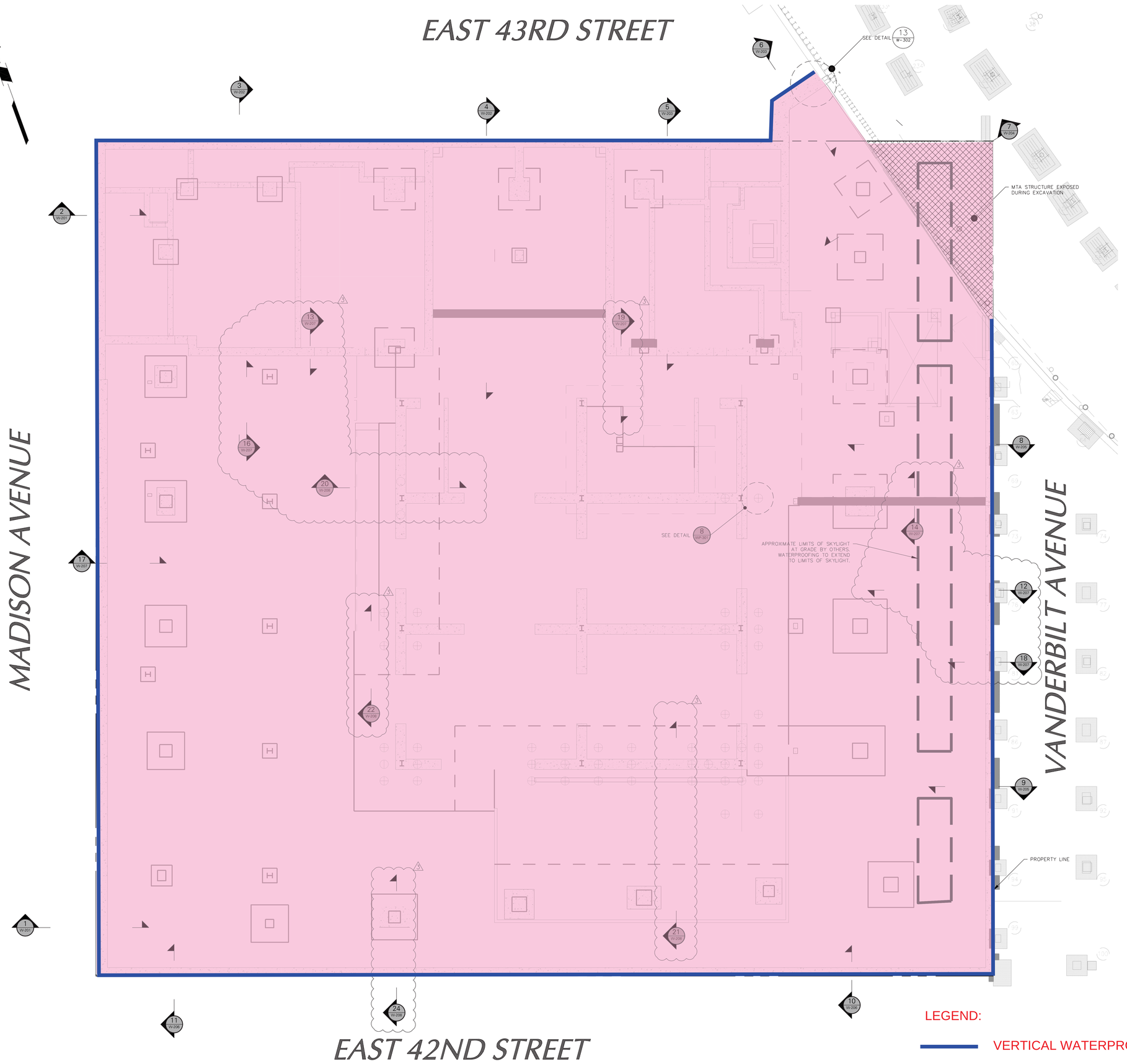
Figure 10

Vapor Barrier Diagram



GENERAL NOTES

1. BASE PLAN TAKEN FROM DRAWING F0-100.00 PREPARED BY SEVERUD ASSOCIATES CONSULTING ENGINEERS, TITLED "FOUNDATION AND B4 LEVEL PLAN," DATED 29 MAY 2015.
2. REFER TO CONTRACT SPECIFICATIONS FOR WATERPROOFING TYPES AND LOCATIONS (E.G., WALLS, SLABS, ETC.).
3. ALL WATERPROOFING MEMBERS TO BE INSTALLED PER MANUFACTURERS SPECIFICATIONS.
4. MINIMUM 3-INCH OVERLAP AT ALL MEMBRANE TIE-INS. REFER TO W-301 FOR TRANSITION DETAILS.
5. WATERPROOFING SHALL BE INSTALLED TO PROVIDE A CONTINUOUS "BATHTUB" MEMBRANE WATERPROOFING SYSTEM TO THE TOP OF FOUNDATION WALLS. ALL EXTERIOR FOUNDATION WALLS, SLABS, PITS, SUMPS, ETC. SHALL BE WATERPROOFED.
6. ALL BELOW-GRADE HORIZONTAL WATERPROOFING SHALL BE PREPRUFE 300R WATERPROOFING MEMBRANE.
7. ALL ABOVE-GRADE HORIZONTAL WATERPROOFING SHALL BE BITUTHENE 4000 WATERPROOFING MEMBRANE.
8. ALL VERTICAL WATERPROOFING SHALL BE BITUTHENE 4000 WATERPROOFING MEMBRANE.
9. REFER TO SECTION 071000 OF THE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS PERTAINING TO WATERPROOFING.

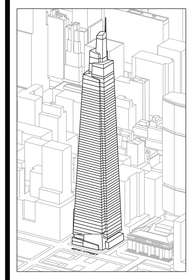
LEGEND:

VERTICAL WATERPROOFING AT FOUNDATION WALL

HORIZONTAL WATERPROOFNIG BELOW FOUNDATION

0 8 16
SCALE IN FEET

ONE VANDERBILT



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No.	Issue	Date
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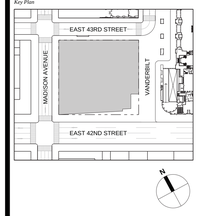
2	DOCUMENT ISSUANCE NO. 2	11-16-2015
1	DOCUMENT ISSUANCE NO. 1	10-16-2015

Key Plan



WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS ITEM IN ANY WAY.

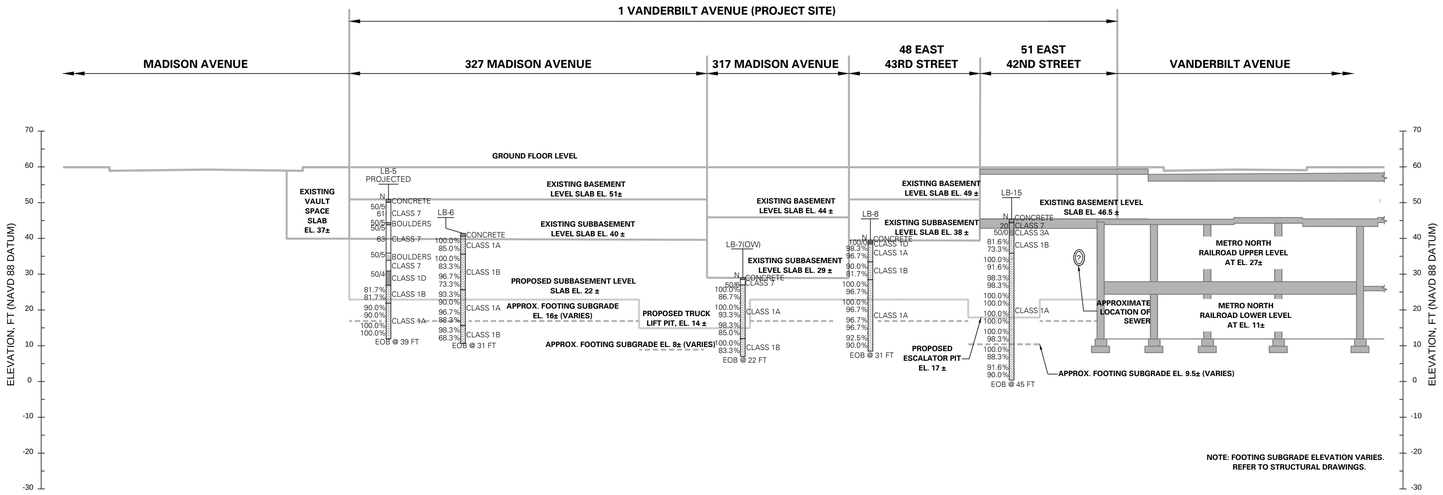
Issue Date: 10-16-2015
Project No. 170140801
Drawn By SM
Scale

Drawing Title
WATERPROOFING PLAN

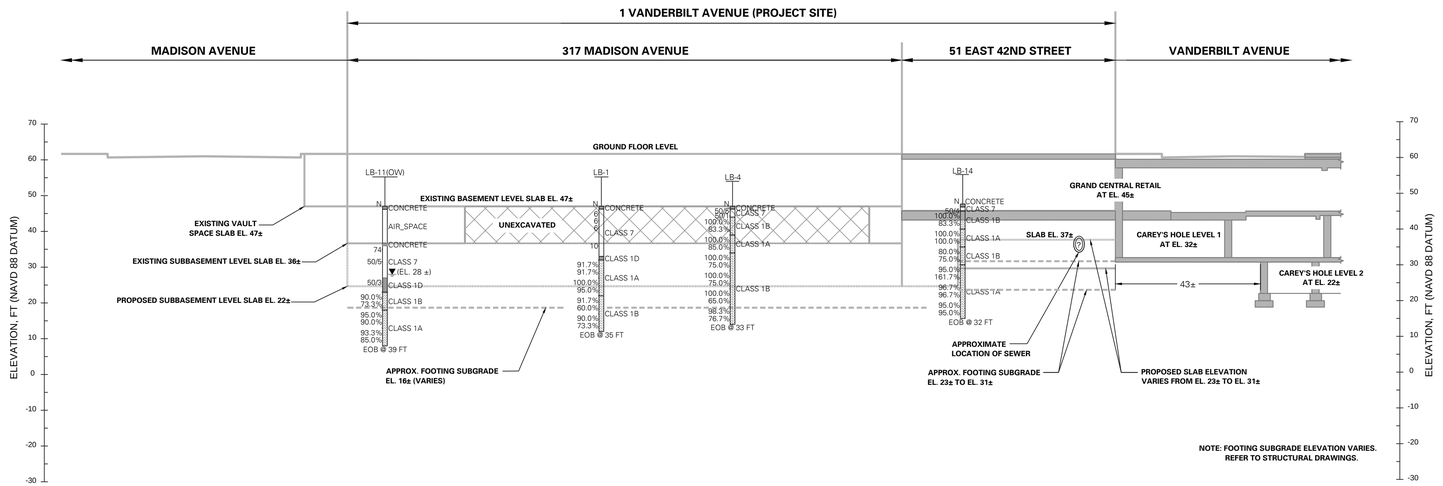
Drawing Number
WP-101

Figure 11

Subsurface Profiles (A&B)



SUBSURFACE PROFILE A
FACING NORTH



SUBSURFACE PROFILE B
FACING NORTH

BORING KEY

B(OW) — EL — N — X — REC — RQD

B	BORING IDENTIFICATION
EL	GROUND SURFACE ELEVATION AT TIME OF BORING
N	STANDARD PENETRATION RESISTANCE; NUMBER OF BLOWS OF A 140 LB. HAMMER FREE FALLING 30 IN. TO DRIVE A 2 IN O.D. SPLIT SPOON SAMPLER 12 IN. AFTER 6 INCHES OF INITIAL PENETRATION
REC	(LENGTH OF ROCK RETRIEEVED)/(LENGTH OF ROCK CORED)*100%
RQD	ROCK QUALITY DESIGNATION (LENGTH OF ROCK PIECES 4 INCHES OR LONGER)/ (LENGTH OF ROCK CORED)*100%
X	NEW YORK CITY BUILDING CODE CLASSIFICATION
(OW)	GROUNDWATER OBSERVATION WELL
▼	MEASURED GROUNDWATER LEVEL
C-1	ROCK CORE RUN IDENTIFICATION AND LENGTH

MATERIAL SYMBOLS

F	UNCONTROLLED FILL
S	SAND
C	CLAY
M	SILT
WR	WEATHERED ROCK
R	BEDROCK

NEW YORK CITY BUILDING CODE CLASSIFICATION NUMBER

1A	HARD SOUND ROCK
1B	MEDIUM SOUND ROCK
1C	INTERMEDIATE ROCK
1D	SOFT ROCK/WEATHER ROCK
2A	DENSE SANDY GRAVEL & GRAVEL
2B	MEDIUM SANDY GRAVEL & GRAVEL
3A	DENSE GRANULAR SOILS
3B	MEDIUM GRANULAR SOILS
4A	HARD CLAYS
4B	STIFF CLAYS
4C	MEDIUM CLAYS
5A	DENSE SILTS & SILTY SOILS
5B	MEDIUM SILTS & SILTY SOILS
6	ORGANIC SILTS & CLAYS, PEATS, SOFT CLAYS, LOOSE GRANULAR SOILS, AND VARVED SILTS
7	CONCTROLLED & UNCOTROLLED FILLS

20 0 5 10 20
SCALE IN FEET

Date	Description	No.
REVISIONS		

SIGNATURE DATE SIGNED
PROFESSIONAL XXXXXXXXXX
STATE LIC. No. XXXXX

LANGAN
21 Penn Plaza, 360 West 31st Street, 8th Floor, New York, NY 10001
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Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
Langan Engineering and Environmental Services, Inc.
Langan CT, Inc.
Langan International LLC
Collectively known as Langan

Project
1 VANDERBILT AVENUE
BLOCK No. 1277, LOT No. 20, 27, 46, 52
MANHATTAN NEW YORK

Drawing Title
SUBSURFACE PROFILES A & B

Project No. 170140801	Drawing No. 8
Date 10/16/2015	
Scale 1" = 20'	
Drawn By MLM / Checked By SKM	
Submission Date 10/16/2015	Sheet 8 of 11

LANGAN
PROJECT No. 170140801

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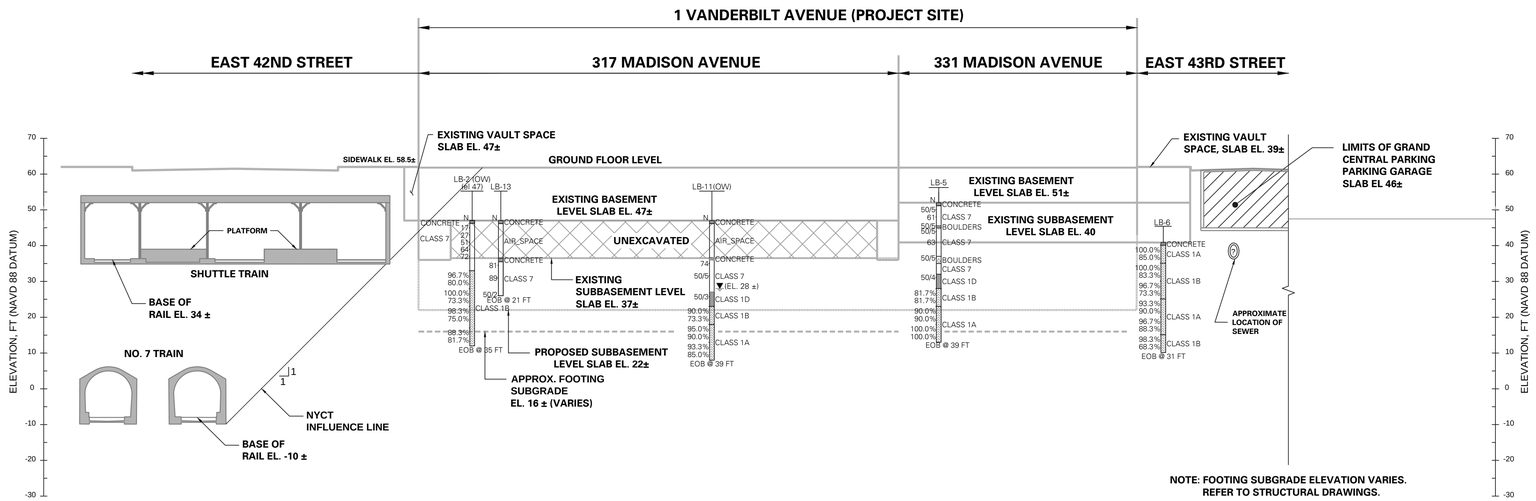
Figure 12

Subsurface Profiles (C&D)



SUBSURFACE PROFILE C
FACING WEST

BORING KEY

B(OW) — EL — N — X — REC — RQD

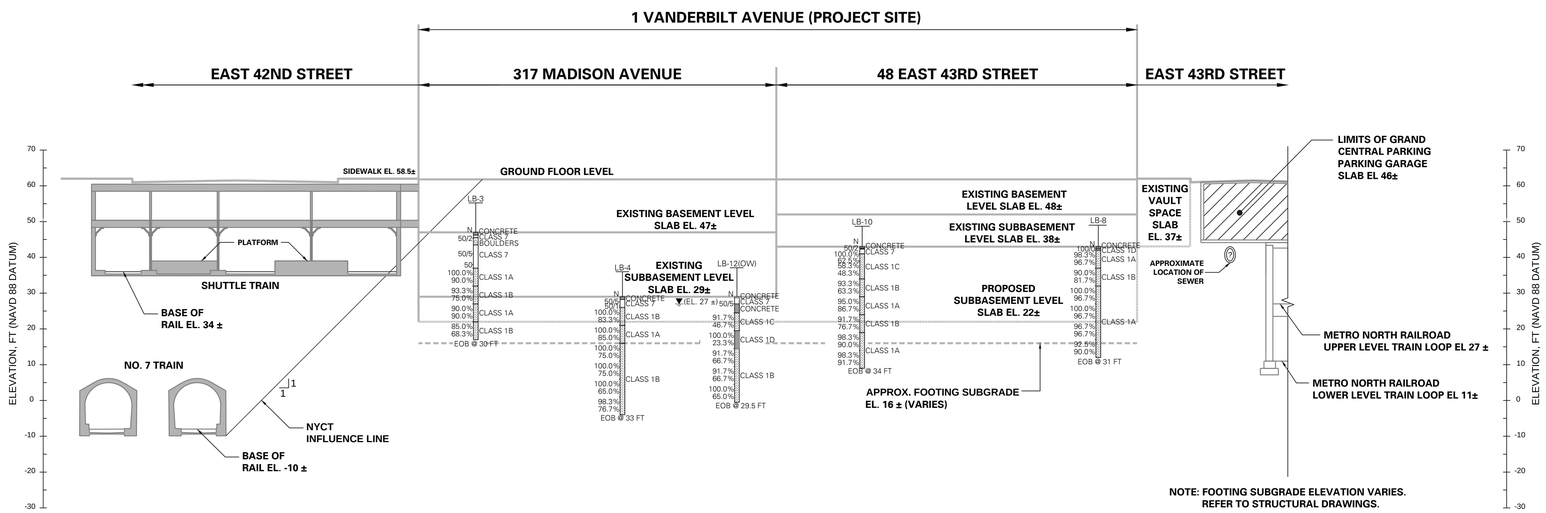
B	BORING IDENTIFICATION
EL	GROUND SURFACE ELEVATION AT TIME OF BORING
N	STANDARD PENETRATION RESISTANCE; NUMBER OF BLOWS OF A 140 LB. HAMMER FREE FALLING 30 IN. TO DRIVE A 2 IN O.D. SPLIT SPOON SAMPLER 12 IN. AFTER 6 INCHES OF INITIAL PENETRATION
REC	(LENGTH OF ROCK RETRIEEVED)/(LENGTH OF ROCK CORED)*100%
RQD	ROCK QUALITY DESIGNATION (LENGTH OF ROCK PIECES 4 INCHES OR LONGER)/ (LENGTH OF ROCK CORED)*100%
X	NEW YORK CITY BUILDING CODE CLASSIFICATION
(OW)	GROUNDWATER OBSERVATION WELL
▼	MEASURED GROUNDWATER LEVEL
C-1	ROCK CORE RUN IDENTIFICATION AND LENGTH

MATERIAL SYMBOLS

F	UNCONTROLLED FILL
S	SAND
C	CLAY
M	SILT
WR	WEATHERED ROCK
R	BEDROCK

NEW YORK CITY BUILDING CODE CLASSIFICATION NUMBER

1A	HARD SOUND ROCK
1B	MEDIUM SOUND ROCK
1C	INTERMEDIATE ROCK
1D	SOFT ROCK-WEATHER ROCK
2A	DENSE SANDY GRAVEL & GRAVEL
2B	MEDIUM SANDY GRAVEL & GRAVEL
3A	DENSE GRANULAR SOILS
3B	MEDIUM GRANULAR SOILS
4A	HARD CLAYS
4B	STIFF CLAYS
4C	MEDIUM CLAYS
5A	DENSE SILTS & SILTY SOILS
5B	MEDIUM SILTS & SILTY SOILS
6	ORGANIC SILTS & CLAYS, PEATS, SOFT CLAYS, LOOSE GRANULAR SOILS, AND VARVED SILTS
7	CONCTROLLED & UNCOTROLLED FILLS



SUBSURFACE PROFILE D
FACING WEST

SCALE IN FEET: 20 0 5 10 20

Date	Description	No.
REVISIONS		

SIGNATURE — DATE SIGNED
PROFESSIONAL XXXXXXXXXX
STATE LIC. No. XXXXX

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Project
1 VANDERBILT AVENUE
BLOCK No. 1277, LOT No. 20, 27, 46, 52
MANHATTAN — NEW YORK

Drawing Title
SUBSURFACE PROFILES C & D

Project No. 170140801	Drawing No. 9
Date 10/16/2015	
Scale 1" = 20'	
Drawn By MLM / Checked By SKM	
Submission Date 10/16/2015	Sheet 9 of 11

LANGAN
PROJECT No. 170140801

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Tables

Table 1
Summary of Soil Sampling Analytical Results for
Volatile Organic Compounds
317 and 327 Madison Avenue, 48 East 43rd Street, and 51 East 42nd Street, New York, NY 10017

LOCATION	CP-51 SCL	Unrestricted Use SCOs	Units	LB-1 (1-3)		LB-11 (11-13)		LB-13 (11.5-13.5)		LB-2 (1-3)		LB-3 (8-10)		LB-5 (3-5)	
SAMPLING DATE				**7/31/2014**		**7/22/2014**		**7/21/2014**		**7/14/2014**		**7/15/2014**		**8/7/2014**	
LAB SAMPLE ID				**L1417248-01**		**L1416329-03**		**L1416329-01**		**L1415590-01**		**L1415650-01**		**L1417905-01**	
SAMPLE TYPE				**SOIL**		**SOIL**		**SOIL**		**SOIL**		**SOIL**		**SOIL**	
SAMPLE DEPTH (ELEVATION FT)				**42-44**		**32-34**		**31.5-33.5**		**42-44**		**35-37**		**44-46**	
Volatile Organics															
1,1,1-Trichloroethane	NC	0.68	mg/Kg	0.0014	U	0.0019	U	0.0011	U	0.0014	U	0.001	U	0.0012	U
1,1,2,2-Tetrachloroethane	NC	NC	mg/Kg	0.0014	U	0.0019	U	0.0011	U	0.0014	U	0.001	U	0.0012	U
1,1,2-Trichloroethane	NC	NC	mg/Kg	0.0021	U	0.0028	U	0.0017	U	0.0021	U	0.0015	U	0.0018	U
1,1-Dichloroethane	NC	0.27	mg/Kg	0.0021	U	0.0028	U	0.0017	U	0.0021	U	0.0015	U	0.0018	U
1,1-Dichloroethene	NC	0.33	mg/Kg	0.0014	U	0.0019	U	0.0011	U	0.0014	U	0.001	U	0.0012	U
1,2,3-Trichlorobenzene	NC	NC	mg/Kg	0.0069	U	0.0093	U	0.0057	U	0.007	U	0.005	U	0.0059	U
1,2,4-Trichlorobenzene	NC	NC	mg/Kg	0.0069	U	0.0093	U	0.0057	U	0.007	U	0.005	U	0.0059	U
1,2-Dibromo-3-chloropropane	NC	NC	mg/Kg	0.0069	U	0.0093	U	0.0057	U	0.007	U	0.005	U	0.0036	U
1,2-Dibromoethane	NC	NC	mg/Kg	0.0055	U	0.0074	U	0.0046	U	0.0056	U	0.004	U	0.0036	U
1,2-Dichlorobenzene	NC	1.1	mg/Kg	0.0069	U	0.0093	U	0.0057	U	0.007	U	0.005	U	0.0059	U
1,2-Dichloroethane	NC	0.02	mg/Kg	0.0014	U	0.0019	U	0.0011	U	0.0014	U	0.001	U	0.0012	U
1,2-Dichloropropane	NC	NC	mg/Kg	0.0048	U	0.0065	U	0.004	U	0.0049	U	0.0035	U	0.0041	U
1,3-Dichlorobenzene	NC	2.4	mg/Kg	0.0069	U	0.0093	U	0.0057	U	0.007	U	0.005	U	0.0059	U
1,3-Dichloropropene, Total	NC	NC	mg/Kg	0.0014	U	0.0019	U	0.0011	U	0.0014	U	0.001	U	0.0012	U
1,4-Dichlorobenzene	NC	1.8	mg/Kg	0.0069	U	0.0093	U	0.0057	U	0.007	U	0.005	U	0.0059	U
1,4-Dioxane	NC	0.1	mg/Kg	0.14	U	0.19	U	0.11	U	0.14	U	0.1	U	0.12	U
2-Butanone	NC	0.12	mg/Kg	0.0051	J	0.019	U	0.011	U	0.014	U	0.01	U	0.012	U
2-Hexanone	NC	NC	mg/Kg	0.014	U	0.019	U	0.011	U	0.014	U	0.01	U	0.012	U
4-Methyl-2-pentanone	NC	NC	mg/Kg	0.014	U	0.019	U	0.011	U	0.014	U	0.01	U	0.012	U
Acetone	NC	0.05	mg/Kg	0.027	J	0.004	J	0.0064	J	0.051	U	0.0025	J	0.0036	J
Benzene	0.06	0.06	mg/Kg	0.0014	U	0.0019	U	0.0011	U	0.0014	U	0.001	U	0.0012	U
Bromochloromethane	NC	NC	mg/Kg	0.0069	U	0.0093	U	0.0057	U	0.007	U	0.005	U	0.0059	U
Bromodichloromethane	NC	NC	mg/Kg	0.0014	U	0.0019	U	0.0011	U	0.0014	U	0.001	U	0.0012	U
Bromoform	NC	NC	mg/Kg	0.0055	U	0.0074	U	0.0046	U	0.0056	U	0.004	U	0.0047	U
Bromomethane	NC	NC	mg/Kg	0.0028	U	0.0037	U	0.0023	U	0.0028	U	0.002	U	0.0024	U
Carbon disulfide	NC	NC	mg/Kg	0.014	U	0.019	U	0.011	U	0.014	U	0.01	U	0.012	U
Carbon tetrachloride	NC	0.76	mg/Kg	0.0014	U	0.0019	U	0.0011	U	0.0014	U	0.001	U	0.0012	U
Chlorobenzene	NC	1.1	mg/Kg	0.0014	U	0.0019	U	0.0011	U	0.0014	U	0.001	U	0.0012	U
Chloroethane	NC	NC	mg/Kg	0.0028	U	0.0037	U	0.0023	U	0.0028	U	0.002	U	0.0024	U
Chloroform	NC	0.37	mg/Kg	0.0021	U	0.0028	U	0.0017	U	0.0021	U	0.0015	U	0.0018	U
Chloromethane	NC	NC	mg/Kg	0.0069	U	0.0093	U	0.0057	U	0.007	U	0.005	U	0.0059	U
cis-1,2-Dichloroethene	NC	0.25	mg/Kg	0.0014	U	0.0019	U	0.0011	U	0.0014	U	0.001	U	0.0012	U
cis-1,3-Dichloropropene	NC	NC	mg/Kg	0.0014	U	0.0019	U	0.0011	U	0.0014	U	0.001	U	0.0012	U
Cyclohexane	NC	NC	mg/Kg	0.028	U	0.037	U	0.023	U	0.028	U	0.02	U	0.024	U
Dibromochloromethane	NC	NC	mg/Kg	0.0014	U	0.0019	U	0.0011	U	0.0014	U	0.001	U	0.0012	U
Dichlorodifluoromethane	NC	NC	mg/Kg	0.014	U	0.019	U	0.011	U	0.014	U	0.01	U	0.012	U
Ethylbenzene	1	1	mg/Kg	0.0014	U	0.0019	U	0.0011	U	0.0014	U	0.001	U	0.0012	U
Freon-113	NC	NC	mg/Kg	0.028	U	0.037	U	0.023	U	0.028	U	0.02	U	0.024	U
Isopropylbenzene	2.3	NC	mg/Kg	0.0014	U	0.0019	U	0.0011	U	0.0014	U	0.001	U	0.0012	U
Methyl Acetate	NC	NC	mg/Kg	0.0055	U	0.0074	U	0.0046	U	0.0056	U	0.004	U	0.0047	U
Methyl cyclohexane	NC	NC	mg/Kg	0.0055	U	0.0074	U	0.0046	U	0.0056	U	0.004	U	0.0047	U
Methyl tert butyl ether	0.93	0.93	mg/Kg	0.0028	U	0.0037	U	0.0023	U	0.0028	U	0.002	U	0.0024	U
Methylene chloride	NC	0.05	mg/Kg	0.0069	U	0.0083	J	0.0057	U	0.0031	J	0.005	U	0.0059	U
o-Xylene	0.26	NC	mg/Kg	0.0028	U	0.0037	U	0.0023	U	0.0028	U	0.002	U	0.0024	U
p/m-Xylene	0.26	NC	mg/Kg	0.0028	U	0.0037	U	0.0023	U	0.0028	U	0.002	U	0.0024	U
Styrene	NC	NC	mg/Kg	0.0028	U	0.0037	U	0.0023	U	0.0028	U	0.002	U	0.0024	U
Tetrachloroethene	NC	1.3	mg/Kg	0.0014	U	0.0019	U	0.0011	U	0.0014	U	0.001	U	0.0012	U
Toluene	0.7	0.7	mg/Kg	0.0021	U	0.0028	U	0.0017	U	0.0021	U	0.0015	U	0.0018	U
trans-1,2-Dichloroethene	NC	0.19	mg/Kg	0.0021	U	0.0028	U	0.0017	U	0.0021	U	0.0015	U	0.0018	U
trans-1,3-Dichloropropene	NC	NC	mg/Kg	0.0014	U	0.0019	U	0.0011	U	0.0014	U	0.001	U	0.0012	U
Trichloroethene	NC	0.47	mg/Kg	0.0014	U	0.0019	U	0.0011	U	0.0014	U	0.001	U	0.0012	U
Trichlorofluoromethane	NC	NC	mg/Kg	0.0069	U	0.0093	U	0.0057	U	0.007	U	0.005	U	0.0059	U
Vinyl chloride	NC	0.02	mg/Kg	0.0028	U	0.0037	U	0.0023	U	0.0028	U	0.002	U	0.0024	U
Xylenes, Total	0.26	0.26	mg/Kg	0.0028	U	0.0037	U	0.0023	U	0.0028	U	0.002	U	0.0024	U

Notes:
U - Not detected at the reported detection limit
J - Estimated value
SCO - Soil Cleanup Objective
mg/Kg - milligram per kilogram
NC - No Criterion
SCL - Soil Cleanup Level

Table 2
Summary of Soil Sampling Analytical Results for
Semivolatile Organic Compounds
317 and 327 Madison Avenue, 48 East 43rd Street, and 51 East 42nd Street, New York, NY 10017

LOCATION	CP-51 SCL	Unrestricted Use SCOs	Units	LB-1 (1-12)		LB-11 (11-21)		LB-13 (11.5-21)		LB-2 (1-11)		LB-3 (1-10)		LB-5 (1-12)	
SAMPLING DATE				7/31/2014		7/22/2014		7/21/2014		7/14/2014		7/15/2014		8/7/2014	
LAB SAMPLE ID				L1417248-02		L1416329-04		L1416329-02		L1415590-02		L1415650-02		L1417905-02	
SAMPLE TYPE				SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
SOIL DEPTH (ELEVATION FT)				33-44		24-34		24-33.5		34-44		35-44		37-48	
Semivolatile Organics	NC	NC													
1,2,4,5-Tetrachlorobenzene	NC	NC	mg/Kg	0.18	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
2,3,4,6-Tetrachlorophenol	NC	NC	mg/Kg	0.18	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
2,4,5-Trichlorophenol	NC	NC	mg/Kg	0.19	U	0.05	U	0.049	U	0.05	U	0.05	U	0.05	U
2,4,6-Trichlorophenol	NC	NC	mg/Kg	0.19	U	0.05	U	0.049	U	0.05	U	0.05	U	0.05	U
2,4-Dichlorophenol	NC	NC	mg/Kg	0.19	U	0.05	U	0.049	U	0.05	U	0.05	U	0.05	U
2,4-Dimethylphenol	NC	NC	mg/Kg	0.66	U	0.17	U	0.17	U	0.17	U	0.17	U	0.17	U
2,4-Dinitrophenol	NC	NC	mg/Kg	0.28	U	0.075	U	0.073	U	0.075	U	0.075	U	0.074	U
2,4-Dinitrotoluene	NC	NC	mg/Kg	0.19	U	0.05	U	0.049	U	0.05	U	0.05	U	0.05	U
2,6-Dinitrotoluene	NC	NC	mg/Kg	0.19	U	0.05	U	0.049	U	0.05	U	0.05	U	0.05	U
2-Chloronaphthalene	NC	NC	mg/Kg	0.18	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
2-Chlorophenol	NC	NC	mg/Kg	0.47	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U
2-Methylnaphthalene	NC	NC	mg/Kg	0.22	U	0.23	U	0.23	U	0.23	U	0.23	U	0.23	U
2-Methylphenol	NC	0.33	mg/Kg	0.18	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
2-Nitroaniline	NC	NC	mg/Kg	0.18	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
2-Nitrophenol	NC	NC	mg/Kg	0.39	U	0.42	U	0.41	U	0.42	U	0.42	U	0.42	U
3,3'-Dichlorobenzidine	NC	NC	mg/Kg	0.19	U	0.05	U	0.049	U	0.05	U	0.05	U	0.05	U
3-Methylphenol/4-Methylphenol	NC	0.33	mg/Kg	0.26	U	0.28	U	0.27	U	0.28	U	0.28	U	0.28	U
3-Nitroaniline	NC	NC	mg/Kg	0.18	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
4,6-Dinitro-o-cresol	NC	NC	mg/Kg	0.28	U	0.075	U	0.073	U	0.075	U	0.075	U	0.074	U
4-Bromophenyl phenyl ether	NC	NC	mg/Kg	0.18	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
4-Chloroaniline	NC	NC	mg/Kg	0.18	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
4-Chlorophenyl phenyl ether	NC	NC	mg/Kg	0.18	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
4-Nitroaniline	NC	NC	mg/Kg	0.18	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
4-Nitrophenol	NC	NC	mg/Kg	0.26	U	0.27	U	0.26	U	0.27	U	0.27	U	0.27	U
Acenaphthene	20	20	mg/Kg	0.15	U	0.16	U	0.15	U	0.16	U	0.16	U	0.16	U
Acenaphthylene	100	100	mg/Kg	0.15	U	0.16	U	0.15	U	0.16	U	0.16	U	0.16	U
Acetophenone	NC	NC	mg/Kg	0.18	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Anthracene	100	100	mg/Kg	0.11	U	0.12	U	0.11	U	0.12	U	0.12	U	0.12	U
Atrazine	NC	NC	mg/Kg	0.19	U	0.05	U	0.049	U	0.05	U	0.05	U	0.05	U
Benzaldehyde	NC	NC	mg/Kg	0.24	U	0.26	U	0.25	U	0.26	U	0.26	U	0.26	U
Benzo(a)anthracene	1	1	mg/Kg	0.088	J	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U
Benzo(a)pyrene	1	1	mg/Kg	0.065	J	0.05	U	0.049	U	0.05	U	0.05	U	0.05	U
Benzo(b)fluoranthene	1	1	mg/Kg	0.19	U	0.05	U	0.049	U	0.05	U	0.05	U	0.05	U
Benzo(ghi)perylene	100	100	mg/Kg	0.086	J	0.16	U	0.15	U	0.16	U	0.16	U	0.16	U
Benzo(k)fluoranthene	0.8	0.8	mg/Kg	0.19	U	0.05	U	0.049	U	0.05	U	0.05	U	0.05	U
Biphenyl	NC	NC	mg/Kg	0.42	U	0.44	U	0.43	U	0.44	U	0.44	U	0.44	U
Bis(2-chloroethoxy)methane	NC	NC	mg/Kg	0.2	U	0.21	U	0.2	U	0.21	U	0.21	U	0.21	U
Bis(2-chloroethyl)ether	NC	NC	mg/Kg	0.19	U	0.05	U	0.049	U	0.05	U	0.05	U	0.05	U
Bis(2-chloroisopropyl)ether	NC	NC	mg/Kg	0.22	U	0.23	U	0.23	U	0.23	U	0.23	U	0.23	U
Bis(2-Ethylhexyl)phthalate	NC	NC	mg/Kg	0.44		0.19	U	0.19	U	0.069	J	0.19	U	0.19	U
Butyl benzyl phthalate	NC	NC	mg/Kg	0.18	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Caprolactam	NC	NC	mg/Kg	0.18	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Carbazole	NC	NC	mg/Kg	0.18	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Chrysene	1	1	mg/Kg	0.053	J	0.12	U	0.11	U	0.12	U	0.12	U	0.12	U
Dibenzo(a,h)anthracene	0.33	0.33	mg/Kg	0.19	U	0.05	U	0.049	U	0.05	U	0.05	U	0.05	U
Dibenzofuran	NC	7	mg/Kg	0.18	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Diethyl phthalate	NC	NC	mg/Kg	0.18	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Dimethyl phthalate	NC	NC	mg/Kg	0.18	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Di-n-butylphthalate	NC	NC	mg/Kg	0.18	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Di-n-octylphthalate	NC	NC	mg/Kg	0.18	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Fluoranthene	100	100	mg/Kg	0.084	J	0.12	U	0.11	U	0.12	U	0.12	U	0.12	U
Fluorene	30	30	mg/Kg	0.18	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Hexachlorobenzene	NC	0.33	mg/Kg	0.19	U	0.05	U	0.049	U	0.05	U	0.05	U	0.05	U
Hexachlorobutadiene	NC	NC	mg/Kg	0.56	U	0.15	U	0.14	U	0.15	U	0.15	U	0.15	U
Hexachlorocyclopentadiene	NC	NC	mg/Kg	0.52	U	0.56	U	0.54	U	0.56	U	0.56	U	0.56	U
Hexachloroethane	NC	NC	mg/Kg	0.19	U	0.05	U	0.049	U	0.05	U	0.05	U	0.05	U
Indeno(1,2,3-cd)Pyrene	0.5	0.5	mg/Kg	0.56	U	0.15	U	0.14	U	0.15	U	0.15	U	0.15	U
Isophorone	NC	NC	mg/Kg	0.19	U	0.05	U	0.049	U	0.05	U	0.05	U	0.05	U
Naphthalene	12	12	mg/Kg	0.18	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Nitrobenzene	NC	NC	mg/Kg	0.19	U	0.05	U	0.049	U	0.05	U	0.05	U	0.05	U
NitrosoDiPhenylAmine(NDPA)/DPA	NC	NC	mg/Kg	0.19	U	0.05	U	0.049	U	0.05	U	0.05	U	0.05	U
n-Nitrosodi-n-propylamine	NC	NC	mg/Kg	0.19	U	0.05	U	0.049	U	0.05	U	0.05	U	0.05	U
P-Chloro-M-Cresol	NC	NC	mg/Kg	0.18	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Pentachlorophenol	NC	0.8	mg/Kg	0.28	U	0.075	U	0.073	U	0.075	U	0.075	U	0.074	U
Phenanthrene	100	100	mg/Kg	0.045	J	0.12	U	0.11	U	0.12	U	0.12	U	0.12	U
Phenol	NC	0.33	mg/Kg	0.18	U	0.19	U	0.19	U	0.19	U	0.19	U	0.19	U
Pyrene	100	100	mg/Kg	0.064	J	0.12	U	0.11	U	0.12	U	0.12	U	0.12	U

Notes:
U - Not detected at the reported detection limit
J - Estimated value
SCO - Soil Cleanup Objective
mg/Kg - milligram per kilogram
NC - No Criterion
SCL - Soil Cleanup Level

Table 3
Summary of Soil Sampling Analytical Results for
TAL Metals
317 and 327 Madison Avenue, 48 East 43rd Street, and 51 East 42nd Street, New York, NY 10017

LOCATION	EPA-TCLP	Unrestricted Use SCOs	Units	LB-1 (1-12)		LB-11 (11-21)		LB-11 (11-21)		LB-13 (11.5-21)		LB-13 (11.5-21)		LB-2 (1-11)		LB-2 (1-11)		LB-3 (1-10)		LB-3 (1-10)		LB-5 (1-12)	
SAMPLING DATE				7/31/2014		7/22/2014		7/22/2014		7/21/2014		7/21/2014		7/14/2014		7/14/2014		7/15/2014		7/15/2014		8/7/2014	
LAB SAMPLE ID				L1417248-02		L1416329-04		L1417994-04		L1416329-02		L1417994-03		L1415590-02		L1417994-01		L1415650-02		L1417994-02		L1417905-02	
SAMPLE TYPE				SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
SAMPLE DEPTH (ELEVATION FT)				33-44		24-34		24-34		24-33.5		24-33.5		34-44		34-44		35-44		35-44		37-48	
TCLP Metals by EPA 1311																							
Arsenic, TCLP	5	NC	mg/l	1	U	-		0.13	J	-		0.08	J	-		0.14	J	-		1	U	0.03	J
Barium, TCLP	100	NC	mg/l	0.14	J	-		0.05	J	-		0.11	J	-		0.11	J	-		0.3	J	0.64	
Cadmium, TCLP	1	NC	mg/l	0.1	U	-		0.1	U	-		0.1	U	-		0.1	U	-		0.1	U	0.1	U
Chromium, TCLP	5	NC	mg/l	0.03	J	-		0.2	U	-		0.2	U	-		0.2	U	-		0.03	J	0.2	U
Lead, TCLP	5	NC	mg/l	0.5	U	-		0.5	U	-		0.5	U	-		0.5	U	-		8.2		0.05	J
Mercury, TCLP	0.2	NC	mg/l	0.001	U	-		0.001	U	-		0.001	U	-		0.001	U	-		0.001	U	0.001	U
Selenium, TCLP	1	NC	mg/l	0.5	U	-		0.5	U	-		0.5	U	-		0.5	U	-		0.5	U	0.5	U
Silver, TCLP	5	NC	mg/l	0.1	U	-		0.1	U	-		0.1	U	-		0.1	U	-		0.1	U	0.1	U
Total Metals																							
Aluminum, Total	NC	NC	mg/Kg	8800		6500		-		16000		-		8600		-		9400		-		6000	
Antimony, Total	NC	NC	mg/Kg	4.3	U	4.8	U	-		4.5	U	-		1	J	-		4.7	U	-		4.4	U
Arsenic, Total	NC	13	mg/Kg	6.1		1.9		-		2.5		-		8.3		-		4.6		-		4.2	
Barium, Total	NC	350	mg/Kg	55		30		-		120		-		61		-		120		-		56	
Beryllium, Total	NC	7.2	mg/Kg	0.25	J	1		-		5.1		-		2		-		1.3		-		0.28	J
Cadmium, Total	NC	2.5	mg/Kg	0.86	U	0.09	J	-		0.07	J	-		0.92	U	-		0.12	J	-		0.89	U
Calcium, Total	NC	NC	mg/Kg	69000		580		-		700		-		1000		-		2900		-		3800	
Chromium, Total	NC	NC	mg/Kg	11		33		-		32		-		33		-		130		-		16	
Cobalt, Total	NC	NC	mg/Kg	27		22		-		16		-		15		-		70		-		10	
Copper, Total	NC	50	mg/Kg	12		73		-		12		-		22		-		66		-		26	
Iron, Total	NC	NC	mg/Kg	16000		32000		-		43000		-		42000		-		46000		-		12000	
Lead, Total	NC	63	mg/Kg	14		19		-		1.5	J	-		17		-		350		-		13	
Magnesium, Total	NC	NC	mg/Kg	3000		2600		-		6000		-		2600		-		4600		-		3100	
Manganese, Total	NC	1600	mg/Kg	140		1100		-		320		-		500		-		1400		-		250	
Mercury, Total	NC	0.18	mg/Kg	0.08	U	0.08	U	-		0.08	U	-		0.08	U	-		0.03	J	-		1.2	
Nickel, Total	NC	30	mg/Kg	9.3		21		-		29		-		19		-		39		-		22	
Potassium, Total	NC	NC	mg/Kg	2000		3200		-		9900		-		3600		-		1800		-		2300	
Selenium, Total	NC	3.9	mg/Kg	1.7	U	1.9	U	-		0.35	J	-		1.8	U	-		1.9	U	-		1.8	U
Silver, Total	NC	2	mg/Kg	0.86	U	0.95	U	-		0.91	U	-		0.92	U	-		0.94	U	-		0.89	U
Sodium, Total	NC	NC	mg/Kg	900		83	J	-		400		-		220		-		250		-		240	
Thallium, Total	NC	NC	mg/Kg	1.7	U	1.9	U	-		1.8	U	-		1.8	U	-		1.9	U	-		1.8	U
Vanadium, Total	NC	NC	mg/Kg	15		52		-		39		-		34		-		16		-		18	
Zinc, Total	NC	109	mg/Kg	16		67		-		81		-		70		-		99		-		27	

Notes:
U - Not detected at the reported detection limi
J - Estimated value
SCO - Soil Cleanup Objective
mg/Kg - milligram per kilogram
NC - No Criterion
SCL - Soil Cleanup Leve

Table 4
Summary of Soil Sampling Analytical Results for
Pesticides
317 and 327 Madison Avenue, 48 East 43rd Street, and 51 East 42nd Street, New York, NY 10017

LOCATION	**Unrestricted Use SCOs**	**Units**	**LB-1 (1-12)**		**LB-11 (11-21)**		**LB-13 (11.5-21)**		**LB-2 (1-11)**		**LB-3 (1-10)**		**LB-5 (1-12)**	
SAMPLING DATE			**7/31/2014**		**7/22/2014**		**7/21/2014**		**7/14/2014**		**7/15/2014**		**8/7/2014**	
LAB SAMPLE ID			**L1417248-02**		**L1416329-04**		**L1416329-02**		**L1415590-02**		**L1415650-02**		**L1417905-02**	
SAMPLE TYPE			**SOIL**		**SOIL**		**SOIL**		**SOIL**		**SOIL**		**SOIL**	
SAMPLE DEPTH (ELEVATION FT)			**33-44**		**24-34**		**34-33.5**		**34-44**		**35-44**		**37-48**	
Chlorinated Herbicides														
2,4,5-T	NC	mg/Kg	-		0.198	U	0.191	U	0.194	U	0.195	U	0.19	U
2,4,5-TP (Silvex)	3.8	mg/Kg	-		0.198	U	0.191	U	0.194	U	0.195	U	0.19	U
2,4-D	NC	mg/Kg	-		0.198	U	0.191	U	0.194	U	0.195	U	0.0342	J
Pesticides														
4,4'-DDD	0.0033	mg/Kg	0.00176	U	0.00186	U	0.00178	U	0.00188	U	0.00187	U	0.00176	U
4,4'-DDE	0.0033	mg/Kg	0.00176	U	0.00186	U	0.00178	U	0.00188	U	0.00187	U	0.00176	U
4,4'-DDT	0.0033	mg/Kg	0.0033	U	0.00348	U	0.00333	U	0.00352	U	0.0035	U	0.00331	U
Aldrin	0.005	mg/Kg	0.00176	U	0.00186	U	0.00178	U	0.00188	U	0.00187	U	0.00176	U
Alpha-BHC	0.02	mg/Kg	0.00073	U	0.00077	U	0.00074	U	0.00078	U	0.00077	U	0.00073	U
Beta-BHC	0.036	mg/Kg	0.00176	U	0.00186	U	0.00178	U	0.00188	U	0.00187	U	0.00176	U
Chlordane	NC	mg/Kg	0.0143	U	0.0151	U	0.0144	U	0.0153	U	0.0152	U	0.0143	U
cis-Chlordane	0.094	mg/Kg	0.0022	U	0.00232	U	0.00222	U	0.00235	U	0.00234	U	0.0022	U
Delta-BHC	0.04	mg/Kg	0.00176	U	0.00186	U	0.00178	U	0.00188	U	0.00187	U	0.00176	U
Dieldrin	0.005	mg/Kg	0.0011	U	0.00116	U	0.00111	U	0.00117	U	0.00117	U	0.0011	U
Endosulfan I	2.4	mg/Kg	0.00176	U	0.00186	U	0.00178	U	0.00188	U	0.00187	U	0.00176	U
Endosulfan II	2.4	mg/Kg	0.00176	U	0.00186	U	0.00178	U	0.00188	U	0.00187	U	0.00176	U
Endosulfan sulfate	2.4	mg/Kg	0.00073	U	0.00077	U	0.00074	U	0.00078	U	0.00077	U	0.00073	U
Endrin	0.014	mg/Kg	0.00073	U	0.00077	U	0.00074	U	0.00078	U	0.00077	U	0.00073	U
Endrin aldehyde	NC	mg/Kg	0.0022	U	0.00232	U	0.00222	U	0.00235	U	0.00234	U	0.0022	U
Endrin ketone	NC	mg/Kg	0.00176	U	0.00186	U	0.00178	U	0.00188	U	0.00187	U	0.00176	U
Heptachlor	0.042	mg/Kg	0.00088	U	0.00092	U	0.00088	U	0.00094	U	0.00093	U	0.00088	U
Heptachlor epoxide	NC	mg/Kg	0.0033	U	0.00348	U	0.00333	U	0.00352	U	0.0035	U	0.00331	U
Lindane	0.1	mg/Kg	0.00073	U	0.00077	U	0.00074	U	0.00078	U	0.00077	U	0.00073	U
Methoxychlor	NC	mg/Kg	0.0033	U	0.00348	U	0.00333	U	0.00352	U	0.0035	U	0.00331	U
Toxaphene	NC	mg/Kg	0.033	U	0.0348	U	0.0333	U	0.0352	U	0.035	U	0.0331	U
trans-Chlordane	NC	mg/Kg	0.0022	U	0.00232	U	0.00222	U	0.00235	U	0.00234	U	0.0022	U

Notes:
U - Not detected at the reported detection limit
J - Estimated value
SCO - Soil Cleanup Objective
mg/Kg - milligram per kilogram
NC - No Criterion
SCL - Soil Cleanup Level

Table 5
Summary of Soil Sampling Analytical Results for
Polychlorinated Biphenyls
317 and 327 Madison Avenue, 48 East 43rd Street, and 51 East 42nd Street, New York, NY 10017

LOCATION	**Unrestricted Use SCOs**	**Units**	**LB-11 (11-21)**		**LB-13 (11.5-21)**		**LB-2 (1-11)**		**LB-3 (1-10)**		**LB-5 (1-12)**	
SAMPLING DATE			**7/22/2014**		**7/21/2014**		**7/14/2014**		**7/15/2014**		**8/7/2014**	
LAB SAMPLE ID			**L1416329-04**		**L1416329-02**		**L1415590-02**		**L1415650-02**		**L1417905-02**	
SAMPLE TYPE			**SOIL**		**SOIL**		**SOIL**		**SOIL**		**SOIL**	
SAMPLE DEPTH (ELEVATION FT)			**24-34**		**24-33.5**		**34-44**		**35-44**		**37-48**	
Polychlorinated Biphenyls												
Aroclor 1016	0.1	mg/Kg	0.039	U	0.038	U	0.0371	U	0.0377	U	0.0371	U
Aroclor 1221	0.1	mg/Kg	0.039	U	0.038	U	0.0371	U	0.0377	U	0.0371	U
Aroclor 1232	0.1	mg/Kg	0.039	U	0.038	U	0.0371	U	0.0377	U	0.0371	U
Aroclor 1242	0.1	mg/Kg	0.039	U	0.038	U	0.0371	U	0.0377	U	0.0371	U
Aroclor 1248	0.1	mg/Kg	0.039	U	0.038	U	0.0371	U	0.0377	U	0.0371	U
Aroclor 1254	0.1	mg/Kg	0.039	U	0.038	U	0.0371	U	0.0377	U	0.0371	U
Aroclor 1260	0.1	mg/Kg	0.039	U	0.00868	J	0.00827	J	0.0377	U	0.0371	U
Aroclor 1262	0.1	mg/Kg	0.039	U	0.038	U	0.0371	U	0.0377	U	0.0371	U
Aroclor 1268	0.1	mg/Kg	0.039	U	0.038	U	0.0371	U	0.0377	U	0.0371	U
PCBs, Total		mg/Kg	0.039	U	0.00868	J	0.00827	J	0.0377	U	0.0371	U

Notes:
U - Not detected at the reported detection limit
J - Estimated value
SCO - Soil Cleanup Objective
mg/Kg - milligram per kilogram
NC - No Criterion
SCL - Soil Cleanup Level

Table 6
Summary of Soil Sampling Analytical Results for
TPH - GRO/DRO/NJ EPH
317 and 327 Madison Avenue, 48 East 43rd Street, and 51 East 42nd Street, New York, NY 10017

LOCATION	**Units**	**LB-1 (1-3)**		**LB-11 (11-13)**		**LB-13 (11.5-13.5)**		**LB-2 (1-3)**		**LB-3 (8-10)**		**LB-5 (3-5)**		**LB-5 (3-5)**	
SAMPLING DATE		**7/31/2014**		**7/22/2014**		**7/21/2014**		**7/14/2014**		**7/15/2014**		**8/7/2014**		**8/7/2014**	
LAB SAMPLE ID		**L1417248-01**		**L1416329-03**		**L1416329-01**		**L1415590-01**		**L1415650-01**		**L1417905-01**		**.1417905-01 R**	
SAMPLE TYPE		**SOIL**		**SOIL**		**SOIL**		**SOIL**		**SOIL**		**SOIL**		**SOIL**	
SAMPLE DEPTH (ELEVATION FT)		**42-44**		**32-34**		**31.5-33.5**		**42-44**		**35-37**		**44-46**		**44-46**	
TPH - GRO/DRO/NJ EPH															
Gasoline Range Organics	mg/Kg	3	U	2.8	U	2.7	U	0.054	J	0.9	J	2.8	U	-	-
Diesel Range Organics	mg/Kg	38.4		6.25	J	62.1		70.2		8.02	J	-		15	J
NJ Extractable Petroleum Hydrocarbons (Total)	mg/Kg	42.1		30.6		97		84.7		27.3	U	25.8	U	-	-

Notes:
U - Not detected at the reported detection limit
J - Estimated value
SCO - Soil Cleanup Objective
mg/Kg - milligram per kilogram
NC - No Criterion
SCL - Soil Cleanup Level

Table 7
Summary of Groundwater Sampling Analytical Results for
Volatile Organic Compounds
317 and 327 Madison Avenue, 48 East 43rd Street, and 51 East 42nd Street, New York, NY 10017

LOCATION	Class GA Values	Units	LB-12		LB-2		LB-7		TRIP BLANK 82614	
SAMPLING DATE			8/25/2014		8/25/2014		8/26/2014		8/26/2014	
LAB SAMPLE ID			L1419355-02		L1419355-04		L1419498-01		L1419498-02	
Volatile Organics										
1,1,1-Trichloroethane	5	µg/l	2.5	U	2.5	U	2.5	U	2.5	U
1,1,2,2-Tetrachloroethane	5	µg/l	0.5	U	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	1	µg/l	1.5	U	1.5	U	1.5	U	1.5	U
1,1-Dichloroethane	5	µg/l	2.5	U	2.5	U	2.5	U	2.5	U
1,1-Dichloroethene	5	µg/l	0.5	U	0.5	U	0.5	U	0.5	U
1,2,3-Trichlorobenzene	5	µg/l	2.5	U	2.5	U	2.5	U	2.5	U
1,2,4-Trichlorobenzene	5	µg/l	2.5	U	2.5	U	2.5	U	2.5	U
1,2,4-Trimethylbenzene	5	µg/l	2.5	U	2.5	U	2.5	U	2.5	U
1,2-Dibromo-3-chloropropane	0.04	µg/l	2.5	U	2.5	U	2.5	U	2.5	U
1,2-Dibromoethane	0.0006	µg/l	2	U	2	U	2	U	2	U
1,2-Dichlorobenzene	3	µg/l	2.5	U	2.5	U	2.5	U	2.5	U
1,2-Dichloroethane	0.6	µg/l	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichloropropane	1	µg/l	1	U	1	U	1	U	1	U
1,3,5-Trimethylbenzene	5	µg/l	2.5	U	2.5	U	2.5	U	2.5	U
1,3-Dichlorobenzene	3	µg/l	2.5	U	2.5	U	2.5	U	2.5	U
1,3-Dichloropropene, Total	NC	µg/l	0.5	U	0.5	U	0.5	U	0.5	U
1,4-Dichlorobenzene	3	µg/l	2.5	U	2.5	U	2.5	U	2.5	U
1,4-Dioxane	NC	µg/l	250	U	250	U	250	U	250	U
2-Butanone	50	µg/l	5	U	5	U	5	U	5	U
2-Hexanone	50	µg/l	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone	NC	µg/l	5	U	5	U	5	U	5	U
Acetone	50	µg/l	3.4	J	1.9	J	2.6	J	3.3	J
Benzene	1	µg/l	0.5	U	0.5	U	0.5	U	0.5	U
Bromochloromethane	5	µg/l	2.5	U	2.5	U	2.5	U	2.5	U
Bromodichloromethane	50	µg/l	0.5	U	0.5	U	0.5	U	0.5	U
Bromoform	50	µg/l	2	U	2	U	2	U	2	U
Bromomethane	5	µg/l	2.5	U	2.5	U	2.5	U	2.5	U
Carbon disulfide	60	µg/l	5	U	5	U	5	U	5	U
Carbon tetrachloride	5	µg/l	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	5	µg/l	2.5	U	2.5	U	2.5	U	2.5	U
Chloroethane	5	µg/l	2.5	U	2.5	U	2.5	U	2.5	U
Chloroform	7	µg/l	1.1	J	3.9		2.5	U	2.5	U
Chloromethane	NC	µg/l	2.5	U	2.5	U	2.5	U	2.5	U
cis-1,2-Dichloroethene	5	µg/l	2.5	U	2.5	U	2.5	U	2.5	U
cis-1,3-Dichloropropene	0.4	µg/l	0.5	U	0.5	U	0.5	U	0.5	U
Cyclohexane	NC	µg/l	-		-		10	U	10	U
Dibromochloromethane	50	µg/l	0.5	U	0.5	U	0.5	U	0.5	U
Dichlorodifluoromethane	5	µg/l	5	U	5	U	5	U	5	U
Ethylbenzene	5	µg/l	2.5	U	2.5	U	2.5	U	2.5	U
Freon-113	5	µg/l	-		-		2.5	U	2.5	U
Methyl Acetate	NC	µg/l	-		-		2	U	2	U
Methyl cyclohexane	NC	µg/l	-		-		10	U	10	U
Methyl tert butyl ether	10	µg/l	2.5	U	2.5	U	2.5	U	2.5	U
Methylene chloride	5	µg/l	2.5	U	2.5	U	2.5	U	2.5	U
n-Butylbenzene	5	µg/l	2.5	U	2.5	U	2.5	U	2.5	U
n-Propylbenzene	5	µg/l	2.5	U	2.5	U	2.5	U	2.5	U
o-Xylene	5	µg/l	2.5	U	2.5	U	2.5	U	2.5	U
p/m-Xylene	5	µg/l	2.5	U	2.5	U	2.5	U	2.5	U
sec-Butylbenzene	5	µg/l	2.5	U	2.5	U	2.5	U	2.5	U
Styrene	5	µg/l	2.5	U	2.5	U	2.5	U	2.5	U
tert-Butylbenzene	5	µg/l	2.5	U	2.5	U	2.5	U	2.5	U
Tetrachloroethene	5	µg/l	0.51		0.5	U	0.5	U	0.5	U
Toluene	5	µg/l	2.5	U	7		2.5	U	2.5	U
trans-1,2-Dichloroethene	5	µg/l	2.5	U	2.5	U	2.5	U	2.5	U
trans-1,3-Dichloropropene	0.4	µg/l	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	5	µg/l	0.5	U	0.5	U	0.5	U	0.5	U
Trichlorofluoromethane	5	µg/l	2.5	U	2.5	U	2.5	U	2.5	U
Vinyl chloride	2	µg/l	1	U	1	U	1	U	1	U
Xylenes, Total	NC	µg/l	2.5	U	2.5	U	2.5	U	2.5	U

Notes:
All results in µg/l are parts per billion
J - Estimated value
U - The compound was not detected at the indicated concentration
NC - No Criterion

Table 8
Summary of Groundwater Sampling Analytical Results for
Semivolatile Organic Compounds
317 and 327 Madison Avenue, 48 East 43rd Street, and 51 East 42nd Street, New York, NY 10017

LOCATION	Class GA Values	Units	LB-12		LB-2		LB-7	
SAMPLING DATE			8/25/2014		8/25/2014		8/26/2014	
LAB SAMPLE ID			L1419355-02		L1419355-04		L1419498-01	
Semivolatile Organics								
1,2,4,5-Tetrachlorobenzene	5	µg/l	10	U	10	U	9.5	U
1,2,4-Trichlorobenzene	5	µg/l	5	U	5	U	4.8	U
1,2-Dichlorobenzene	3	µg/l	2	U	2	U	1.9	U
1,3-Dichlorobenzene	3	µg/l	2	U	2	U	1.9	U
1,4-Dichlorobenzene	3	µg/l	2	U	2	U	1.9	U
2,4,5-Trichlorophenol	NC	µg/l	5	U	5	U	4.8	U
2,4,6-Trichlorophenol	NC	µg/l	5	U	5	U	4.8	U
2,4-Dichlorophenol	1	µg/l	5	U	5	U	4.8	U
2,4-Dimethylphenol	50	µg/l	5	U	5	U	4.8	U
2,4-Dinitrophenol	10	µg/l	20	U	20	U	19	U
2,4-Dinitrotoluene	5	µg/l	5	U	5	U	4.8	U
2,6-Dinitrotoluene	5	µg/l	5	U	5	U	4.8	U
2-Chloronaphthalene	10	µg/l	0.4	U	0.2	U	0.19	U
2-Chlorophenol	NC	µg/l	2	U	2	U	1.9	U
2-Methylnaphthalene	NC	µg/l	0.12	J	0.11	J	0.19	U
2-Methylphenol	NC	µg/l	5	U	5	U	4.8	U
2-Nitroaniline	5	µg/l	5	U	5	U	4.8	U
2-Nitrophenol	NC	µg/l	10	U	10	U	9.5	U
3,3'-Dichlorobenzidine	5	µg/l	5	U	5	U	4.8	U
3-Methylphenol/4-Methylphenol	NC	µg/l	5	U	5	U	4.8	U
3-Nitroaniline	5	µg/l	5	U	5	U	4.8	U
4,6-Dinitro-o-cresol	NC	µg/l	10	U	10	U	9.5	U
4-Bromophenyl phenyl ether	NC	µg/l	2	U	2	U	1.9	U
4-Chloroaniline	5	µg/l	5	U	5	U	4.8	U
4-Chlorophenyl phenyl ether	NC	µg/l	2	U	2	U	1.9	U
4-Nitroaniline	5	µg/l	5	U	5	U	4.8	U
4-Nitrophenol	NC	µg/l	10	U	10	U	9.5	U
Acenaphthene	20	µg/l	0.4	U	0.2	U	0.19	U
Acenaphthylene	NC	µg/l	0.4	U	0.2	U	0.19	U
Acetophenone	NC	µg/l	5	U	5	U	4.8	U
Anthracene	50	µg/l	0.4	U	0.2	U	0.19	U
Benzo(a)anthracene	0.002	µg/l	0.4	U	0.2	U	0.19	U
Benzo(a)pyrene	0	µg/l	0.4	U	0.2	U	0.19	U
Benzo(b)fluoranthene	0.002	µg/l	0.4	U	0.2	U	0.19	U
Benzo(ghi)perylene	NC	µg/l	0.4	U	0.2	U	0.19	U
Benzo(k)fluoranthene	0.002	µg/l	0.4	U	0.2	U	0.19	U
Benzoic Acid	NC	µg/l	13	J	50	U	48	U
Benzyl Alcohol	NC	µg/l	4.4		2	U	1.9	U
Biphenyl	5	µg/l	2	U	2	U	1.9	U
Bis(2-chloroethoxy)methane	5	µg/l	5	U	5	U	4.8	U
Bis(2-chloroethyl)ether	1	µg/l	2	U	2	U	1.9	U
Bis(2-chloroisopropyl)ether	5	µg/l	2	U	2	U	1.9	U
Bis(2-Ethylhexyl)phthalate	5	µg/l	6.4		3.7		2.2	J
Butyl benzyl phthalate	50	µg/l	5	U	5	U	4.8	U
Carbazole	NC	µg/l	2	U	2	U	1.9	U
Chrysene	0.002	µg/l	0.4	U	0.2	U	0.19	U
Dibenzo(a,h)anthracene	NC	µg/l	0.4	U	0.2	U	0.19	U
Dibenzofuran	NC	µg/l	2	U	2	U	1.9	U
Diethyl phthalate	50	µg/l	5	U	5	U	4.8	U
Dimethyl phthalate	50	µg/l	5	U	5	U	4.8	U
Di-n-butylphthalate	50	µg/l	5	U	5	U	4.8	U
Di-n-octylphthalate	50	µg/l	5	U	5	U	4.8	U
Fluoranthene	50	µg/l	0.4	U	0.09	J	0.11	J
Fluorene	50	µg/l	0.4	U	0.08	J	0.19	U
Hexachlorobenzene	0.04	µg/l	1.6	U	0.8	U	0.76	U
Hexachlorobutadiene	0.5	µg/l	1	U	0.5	U	0.48	U
Hexachlorocyclopentadiene	5	µg/l	20	U	20	U	19	U
Hexachloroethane	5	µg/l	1.6	U	0.8	U	0.76	U
Indeno(1,2,3-cd)Pyrene	0.002	µg/l	0.4	U	0.2	U	0.19	U
Isophorone	50	µg/l	5	U	5	U	4.8	U
Naphthalene	10	µg/l	-	-	-	-	-	-
Naphthalene	10	µg/l	0.17	J	0.13	J	0.19	U
Nitrobenzene	0.4	µg/l	2	U	2	U	1.9	U
NitrosoDiPhenylAmine(NDPA)/DP	50	µg/l	2	U	2	U	1.9	U
n-Nitrosodi-n-propylamine	NC	µg/l	5	U	5	U	4.8	U
P-Chloro-M-Cresol	NC	µg/l	2	U	2	U	1.9	U
Pentachlorophenol	1	µg/l	1.6	U	0.8	U	0.76	U
Phenanthrene	50	µg/l	0.23	J	0.12	J	0.52	
Phenol	1	µg/l	5	U	5	U	4.8	U
Pyrene	50	µg/l	0.4	U	0.09	J	0.09	J

Notes:
All results in µg/l are parts per billion
J - Estimated value
U - The compound was not detected at the indicated concentration
NC - No Criterion

Table 9
Summary of Groundwater Sampling Analytical Results for
Total and Dissolved Metals
317 and 327 Madison Avenue, 48 East 43rd Street, and 51 East 42nd Street, New York, NY 10017

LOCATION	Class GA Values	Units	LB-12		LB-12		LB-12		LB-2		LB-2		LB-2		LB-7		LB-7		LB-7	
SAMPLING DATE			8/25/2014		8/25/2014		8/25/2014		8/25/2014		8/25/2014		8/25/2014		8/26/2014		8/26/2014		8/26/2014	
LAB SAMPLE ID			L1419355-02		L1419355-02 R1		L1419355-02 R2		L1419355-04		L1419355-04 R1		L1419355-04 R2		L1419498-01		L1419498-01 R1		L1419498-01 R2	
Dissolved Metals																				
Aluminum, Dissolved		µg/l	3810		-		-		-		76		-		-		8	J	-	-
Antimony, Dissolved	3	µg/l	-		0.66	J	-		-		0.68	J	-		-		0.24	J	-	-
Arsenic, Dissolved	25	µg/l	-		2.19		-		-		0.31	J	-		-		2.16		-	-
Barium, Dissolved	1000	µg/l	-		75.09		-		-		66.14		-		-		61.48		-	-
Beryllium, Dissolved	3	µg/l	-		0.25	J	-		-		0.5	U	-		-		0.5	U	-	-
Cadmium, Dissolved	5	µg/l	-		0.08	J	-		-		0.2	U	-		-		0.2	U	-	-
Calcium, Dissolved		µg/l	38500		-		-		47800		-		-		169000		-	-	-	-
Chromium, Dissolved	50	µg/l	-		15.25		-		-		0.96	J	-		-		0.3	J	-	-
Cobalt, Dissolved		µg/l	-		5.93		-		-		7.5		-		-		0.32		-	-
Copper, Dissolved	200	µg/l	-		55.19		-		-		6.39		-		-		0.45	J	-	-
Iron, Dissolved	300	µg/l	-		7490		-		-		2580		-		-		4390		-	-
Lead, Dissolved	25	µg/l	-		8.64		-		-		0.28	J	-		-		1	U	-	-
Magnesium, Dissolved	35000	µg/l	-		-		3960		-		-		6110		-		-		18900	
Manganese, Dissolved	300	µg/l	-		111		-		1241		-		-		-		220		-	-
Mercury, Dissolved	0.7	µg/l	0.37		-		-		0.2	U	-		-		0.2	U	-	-	-	-
Nickel, Dissolved	100	µg/l	-		11.42		-		-		6.2		-		-		3.16		-	-
Potassium, Dissolved		µg/l	-		21100		-		-		11200		-		-		32500		-	-
Selenium, Dissolved	10	µg/l	-		0.51	J	-		-		0.32	J	-		-		5	U	-	-
Silver, Dissolved	50	µg/l	-		0.4	U	-		-		0.15	J	-		-		0.4	U	-	-
Sodium, Dissolved	20000	µg/l	96700		-		-		82300		-		-		132000		-	-	-	-
Thallium, Dissolved	0.5	µg/l	-		0.18	J	-		-		0.5	U	-		-		0.5	U	-	-
Vanadium, Dissolved		µg/l	-		7.64		-		-		0.18	J	-		-		5	U	-	-
Zinc, Dissolved	2000	µg/l	-		20.92		-		-		7.9	J	-		-		1.95	J	-	-
Total Metals																				
Aluminum, Total		µg/l	4040		-		-		-		180		-		-		36.8		-	-
Antimony, Total	3	µg/l	-		0.93	J	-		-		0.52	J	-		-		2	U	-	-
Arsenic, Total	25	µg/l	-		2		-		-		0.3	J	-		-		2.13		-	-
Barium, Total	1000	µg/l	-		81.15		-		-		68.45		-		-		68.11		-	-
Beryllium, Total	3	µg/l	-		0.28	J	-		-		0.5	U	-		-		0.5	U	-	-
Cadmium, Total	5	µg/l	-		0.08	J	-		-		0.05	J	-		-		0.06	J	-	-
Calcium, Total		µg/l	36400		-		-		40100		-		-		154000		-	-	-	-
Chromium, Total	50	µg/l	-		15.1		-		-		0.93	J	-		-		0.47	J	-	-
Cobalt, Total		µg/l	-		5.57		-		-		7.98		-		-		0.41		-	-
Copper, Total	200	µg/l	-		51.92		-		-		13.89		-		-		1.59		-	-
Iron, Total	300	µg/l	-		7190		-		-		2180		-		-		4430		-	-
Lead, Total	25	µg/l	-		8.71		-		-		0.51	J	-		-		0.72	J	-	-
Magnesium, Total	35000	µg/l	-		5260		-		-		6410		-		19500		-	-	-	-
Manganese, Total	300	µg/l	-		111.8		-		1014		-		-		-		213.8		-	-
Mercury, Total	0.7	µg/l	0.37		-		-		0.06	J	-		-		0.2	U	-	-	-	-
Nickel, Total	100	µg/l	-		11.03		-		-		6.19		-		-		3.13		-	-
Potassium, Total		µg/l	-		21200		-		-		12000		-		-		30900		-	-
Selenium, Total	10	µg/l	-		0.46	J	-		-		0.46	J	-		-		5	U	-	-
Silver, Total	50	µg/l	-		0.4	U	-		-		0.42		-		-		0.4	U	-	-
Sodium, Total	20000	µg/l	75000		-		-		77300		-		-		120000		-	-	-	-
Thallium, Total	0.5	µg/l	-		0.08	J	-		-		0.5	U	-		-		0.5	U	-	-
Vanadium, Total		µg/l	-		7.12		-		-		0.25	J	-		-		0.21	J	-	-
Zinc, Total	2000	µg/l	-		204.8		-		-		7.96	J	-		-		3.77	J	-	-

Notes:
All results in µg/l are parts per billion
J - Estimated value
U - The compound was not detected at the indicated concentration
NC - No Criterion

Table 10
Summary of Groundwater Sampling Analytical Results for
Pesticides
317 and 327 Madison Avenue, 48 East 43rd Street, and 51 East 42nd Street, New York, NY 10017

LOCATION	Class GA Values	Units	LB-12		LB-2		LB-7	
SAMPLING DATE			8/25/2014		8/25/2014		8/26/2014	
LAB SAMPLE ID			L1419355-02		L1419355-04		L1419498-01	
Organochlorine Pesticides								
4,4'-DDD	0.3	µg/l	0.04	U	0.2	U	0.04	U
4,4'-DDE	0.2	µg/l	0.04	U	0.2	U	0.04	U
4,4'-DDT	0.2	µg/l	0.04	U	0.2	U	0.02	J
Aldrin	0	µg/l	0.02	U	0.1	U	0.02	U
Alpha-BHC	0.01	µg/l	0.02	U	0.1	U	0.02	U
Beta-BHC	0.04	µg/l	0.02	U	0.1	U	0.02	U
Chlordane	0.05	µg/l	0.2	U	1	U	0.2	U
cis-Chlordane	NC	µg/l	0.02	U	0.1	U	0.02	U
Delta-BHC	0.04	µg/l	0.02	U	0.1	U	0.02	U
Dieldrin	0.004	µg/l	0.04	U	0.2	U	0.04	U
Endosulfan I	NC	µg/l	0.02	U	0.1	U	0.02	U
Endosulfan II	NC	µg/l	0.04	U	0.2	U	0.04	U
Endosulfan sulfate	NC	µg/l	0.04	U	0.2	U	0.04	U
Endrin	0	µg/l	0.04	U	0.2	U	0.04	U
Endrin ketone	5	µg/l	0.04	U	0.2	U	0.04	U
Heptachlor	0.04	µg/l	0.02	U	0.1	U	0.02	U
Heptachlor epoxide	0.03	µg/l	0.02	U	0.1	U	0.02	U
Lindane	0.05	µg/l	0.017	J	0.1	U	0.02	U
Methoxychlor	35	µg/l	0.2	U	1	U	0.2	U
Toxaphene	0.06	µg/l	0.2	U	1	U	0.2	U
trans-Chlordane	NC	µg/l	0.02	U	0.1	U	0.02	U

Notes:
All results in µg/l are parts per billion
J - Estimated value
U - The compound was not detected at the indicated concentration
NC - No Criterion

Table 11
Summary of Groundwater Sampling Analytical Results for
Polychlorinated Biphenyls
317 and 327 Madison Avenue, 48 East 43rd Street, and 51 East 42nd Street, New York, NY 10017

LOCATION	Class GA Values	Units	LB-12		LB-2		LB-7	
SAMPLING DATE			8/25/2014		8/25/2014		8/26/2014	
LAB SAMPLE ID			L1419355-02		L1419355-04		L1419498-01	
Polychlorinated Biphenyls								
Aroclor 1016	0.09	µg/l	0.083	U	0.083	U	0.083	U
Aroclor 1221	0.09	µg/l	0.083	U	0.083	U	0.083	U
Aroclor 1232	0.09	µg/l	0.083	U	0.083	U	0.083	U
Aroclor 1242	0.09	µg/l	0.083	U	0.083	U	0.083	U
Aroclor 1248	0.09	µg/l	0.083	U	0.083	U	0.083	U
Aroclor 1254	0.09	µg/l	0.083	U	0.083	U	0.083	U
Aroclor 1260	0.09	µg/l	0.083	U	0.083	U	0.083	U
Aroclor 1262	0.09	µg/l	0.083	U	0.083	U	0.083	U
Aroclor 1268	0.09	µg/l	0.083	U	0.083	U	0.083	U
PCBs, Total	NC	µg/l	0.083	U	0.083	U	0.083	U

Notes:
All results in µg/l are parts per billion
J - Estimated value
U - The compound was not detected at the indicated concentration
NC - No Criterion

Table 12
Summary of Groundwater Sampling Analytical Results for
NYCDEP Sewer Use Discharge Parameters
317 and 327 Madison Avenue, 48 East 43rd Street, and 51 East 42nd Street, New York, NY 10017

SAMPLE NAME	**NYCDEP Sewer Use Discharge Parameters**		**LB-2**	
LAB SAMPLE ID			**L1419355-01**	
DATE SAMPLE COLLECTED			**8/25/2014**	
PARAMETERS		**Units**	**Results**	
1,1,1-Trichloroethane	NC	µg/l	2	U
1,2,4 Trichlorobenzene	NC	µg/l	3	U
1,4 Dichlorobenzene	NC	µg/l	5	U
Benzene	134	µg/l	1	U
Cadmium	2,000	µg/l	5	U
Carbon Tetrachloride	NC	µg/l	1	U
CBOD	NC	µg/l	2,000	U
Chloride	NC	µg/l	120,000	
Chloroform	NC	µg/l	3.2	
Chromium (VI)	5,000	µg/l	10	U
Copper	5,000	µg/l	15	
Ethylbenzene	380	µg/l	1	U
Flash Point	>140	degrees F	150	
Lead	2,000	µg/l	10	U
Mercury	50	µg/l	0.2	U
MTBE (Methyl-Tert-Butyl-Ether)	50	µg/l	10	U
Naphthalene	47	µg/l	5	U
Nickel	3,000	µg/l	7	J
Nitrate+Nitrate	NC	µg/l	320	
Non-polar material*	NC	µg/l	4,400	U
PCB's (Total)***	1	µg/l	0.05	U
pH (range)	5-11	SU's	5.9	
Phenol	NC	µg/l	7	U
Temperature	<150	degrees F	73.29	
Tetrachloroethene (PCE)	20	µg/l	1.5	U
TKN	NC	µg/l	1,740	
Toluene	74	µg/l	4.5	
Total Nitrogen	NC	µg/l	2,100	
Total Solids	NC	µg/l	410,000	
Total Suspended Solids	350,000	µg/l	5,000	U
Xylene (Total)	74	µg/l	1	U
Zinc	5,000	µg/l	7	J

Notes:
All results in µg/l are parts per billion
J - Estimated value
U - The compound was not detected at the indicated concentration
NC - No Criterion

Table
Summary of Soil Vapor Sampling Analytical Results for
Volatile Organic Compounds
317 Madison Avenue, New York, NY 10017

	Sub-Slab Soil Vapor								NYSDOH AGV	ASTM E 2600 Concentration in Existing Residences - 95th Percentile[1]	NYSDOH Fuel Oil 2003 Upper Fence Limit[2]		USEPA BASE Data 90th Percentile Value[2]		HEI RIOPA 2005 95th Percentile Value	
LAB ID	14K1004-01	14K1004-02	14K1004-03	14K1004-04	14K1004-05	14K1004-06	14K1004-07	14K1004-08								
CLIENT ID	WCD-SV-2	WCD-SV-3	WCD-SV-6	WCD-SV-1	WCD-SV-4	WCD-SV-5	WCD-SV-7	WCD-SV-8								
SAMPLING DATE	19-Nov-14	19-Nov-14	19-Nov-14	19-Nov-14	19-Nov-14	19-Nov-14	19-Nov-14	19-Nov-14		Indoor	Outdoor	Indoor	Outdoor	Indoor	Outdoor	Indoor
Compound	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³
1,1,1-Trichloroethane	<0.55	<0.55	<0.55	<0.55	2.7	<5.5	<0.55	<0.55	-	7.6 - 17	0.6	2.5	2.6	20.6	-	-
1,1,2,2-Tetrachloroethane	<0.69	<0.69	<0.69	<0.69	<0.69	<6.9	<0.69	<0.69	-	-	0.4	0.4	-	-	-	-
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<0.77	<0.77	<0.77	<0.77	<0.77	<7.7	<0.77	<0.77	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	<0.55	<0.55	<0.55	<0.55	<0.55	<5.5	<0.55	<0.55	-	-	0.3	0.4	<1.6	<1.5	-	-
1,1-Dichloroethane	<0.40	<0.40	<0.40	<0.40	<0.40	<4.0	<0.40	<0.40	-	-	-	0.4	<0.6	<0.7	-	-
1,1-Dichloroethylene	<0.40	<0.40	<0.40	<0.40	<0.40	<4.0	<0.40	<0.40	-	-	0.4	0.4	<1.4	<1.4	-	-
1,2,4-Trichlorobenzene	<0.74	<0.74	<0.74	<0.74	<0.74	<7.4	<0.74	<0.74	-	-	0.4	0.5	<6.4	<1.5	-	-
1,2,4-Trimethylbenzene	<0.49	<0.49	0.63	<0.49	<0.49	**1300**	0.89	<0.49	-	-	1.9	9.8	5.8	9.5	-	-
1,2-Dibromoethane (EDB)	<0.77	<0.77	<0.77	<0.77	<0.77	<7.7	<0.77	<0.77	-	-	0.4	0.4	<1.6	<1.5	-	-
1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon 114)	<0.70	<0.70	<0.70	<0.70	<0.70	<7.0	<0.70	<0.70	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	<0.60	<0.60	<0.60	<0.60	<0.60	<6.0	<0.60	<0.60	-	-	0.4	0.5	<1.2	<1.2	-	-
1,2-Dichloroethane	<0.40	<0.40	<0.40	**7.5**	<0.40	<4.0	<0.40	<0.40	-	-	0.4	0.4	<0.8	<0.9	-	-
1,2-Dichloropropane	<0.46	<0.46	<0.46	<0.46	<0.46	<4.6	<0.46	<0.46	-	-	0.4	0.4	<1.6	<1.6	-	-
1,3,5-Trimethylbenzene	<0.49	<0.49	<0.49	<0.49	<0.49	**420**	<0.49	<0.49	-	-	0.7	3.9	2.7	3.7	-	-
1,3-Butadiene	<0.22	<0.22	<0.22	<0.22	<0.22	<2.2	<0.22	<0.22	-	-	-	-	<3.4	<3.0	-	-
1,3-Dichlorobenzene	<0.60	<0.60	<0.60	<0.60	<0.60	<6.0	<0.60	<0.60	-	-	0.4	0.5	<2.2	<2.4	-	-
1,4-Dichlorobenzene	<0.60	<0.60	<0.60	<0.60	<0.60	<6.0	<0.60	<0.60	-	-	0.5	1.2	1.2	5.5	-	-
1,4-Dioxane	<3.6	<3.6	<3.6	<3.6	<3.6	<36	<3.6	<3.6	-	-	-	-	-	-	-	-
2-Butanone (MEK)	<12	<12	<12	<12	<12	<120	<12	<12	-	-	-	-	11.3	12.0	-	-
2-Hexanone (MBK)	<0.41	<0.41	<0.41	1.1	<0.41	<4.1	0.66	<0.41	-	-	-	-	-	-	-	-
4-Ethyltoluene	<0.49	<0.49	<0.49	<0.49	<0.49	**210**	<0.49	<0.49	-	-	-	-	3.0	3.6	-	-
4-Methyl-2-pentanone (MIBK)	<0.41	<0.41	<0.41	<0.41	<0.41	<4.1	<0.41	<0.41	-	-	-	-	1.9	6.0	-	-
Acetone	22	15	92	**140**	38	**920**	24	27	-	-	30	115	43.7	98.9	19.6	45.8
Benzene	0.69	<0.32	<0.32	1.2	0.47	**18**	<0.32	<0.32	-	13	4.8	13	6.6	9.4	5.16	10
Benzyl chloride	<0.52	<0.52	<0.52	<0.52	<0.52	<5.2	<0.52	<0.52	-	-	-	-	<6.4	<6.8	-	-
Bromodichloromethane	<0.67	0.84	5.6	<0.67	19	<6.7	<0.67	<0.67	-	-	-	-	-	-	-	-
Bromoform	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<1.0	<1.0	-	-	-	-	-	-	-	-
Bromomethane	<0.39	<0.39	<0.39	<0.39	<0.39	<3.9	<0.39	<0.39	-	-	0.5	0.5	<1.6	<1.7	-	-
Carbon Disulfide	<3.1	<3.1	<3.1	<3.1	<3.1	<31	<3.1	<3.1	-	-	-	-	3.7	4.2	-	-
Carbon Tetrachloride	0.82	0.75	<0.63	0.69	**4**	<6.3	0.73	0.73	-	-	1.2	1.3	0.7	<1.3	1.0	1.1
Chlorobenzene	<0.46	<0.46	<0.46	<0.46	<0.46	<4.6	<0.46	<0.46	-	-	-	0.4	<0.8	<0.9	-	-
Chloroethane	<0.26	<0.26	<0.26	**4.6**	<0.26	<2.6	<0.26	<0.26	-	-	0.4	0.4	<1.2	<1.1	-	-
Chloroform	0.82	5.1	**82**	3.3	**410**	**200**	**6.6**	2.9	-	-	0.5	1.2	0.6	1.1	0.76	6.34
Chloromethane	1.3	<0.41	<0.41	1.1	<0.41	<4.1	<0.41	<0.41	-	-	4.3	4.2	3.7	3.7	-	-
cis-1,2-Dichloroethylene	<0.40	<0.40	**2.7**	<0.40	<0.40	<4.0	<0.40	<0.40	-	-	0.4	0.4	<1.8	<1.9	-	-
cis-1,3-Dichloropropene	<0.45	<0.45	<0.45	<0.45	<0.45	<4.5	<0.45	<0.45	-	-	0.4	0.4	<2.2	<2.3	-	-
Cyclohexane	<0.34	<0.34	<0.34	<0.34	<0.34	<3.4	<0.34	<0.34	-	-	0.9	6.3	-	-	-	-
Dibromochloromethane	<0.85	<0.85	<0.85	<0.85	<0.85	<8.5	<0.85	<0.85	-	-	-	-	-	-	-	-
Dichlorodifluoromethane (Freon 12)	3.7	3.7	4.7	3.3	3.7	<4.9	3.2	3.2	-	-	10	10	8.1	16.5	-	-
Ethanol	58	36	<7.5	8	<7.5	120	17	<7.5	-	-	34	1,300	57.0	210.0	-	-
Ethyl Acetate	<0.36	<0.36	<0.36	**11**	<0.36	<3.6	<0.36	<0.36	-	-	-	-	1.5	5.4	-	-
Ethylbenzene	<0.43	<0.43	<0.43	0.48	<0.43	**200**	<0.43	<0.43	-	13	1.0	6.4	3.5	5.7	3.04	7.62
Heptane	<0.41	<0.41	<0.41	1.3	<0.41	4.8	<0.41	2.9	-	-	-	-	-	-	-	-
Hexachlorobutadiene	<1.1	<1.1	<1.1	<1.1	<1.1	<11	<1.1	<1.1	-	-	-	-	<6.4	<6.8	-	-
Hexane	<14	<14	<14	<14	<14	<140	<14	<14	-	-	2.2	14	6.4	10.2	-	-
Isopropanol	17	<9.8	<9.8	<9.8	<9.8	<98	<9.8	<9.8	-	-	-	-	-	-	-	-
m&p-Xylene	<0.87	<0.87	<0.87	2.1	<0.87	520	<0.87	<0.87	-	22	1.0	11	12.8	22.2	10	22.2
Methyl tert-Butyl Ether (MTBE)	<0.36	<0.36	<0.36	<0.36	<0.36	<3.6	<0.36	<0.36	-	-	-	14	6.2	11.5	22.1	36
Methylene Chloride	<3.5	<3.5	<3.5	**79**	<3.5	<35	<3.5	<3.5	60	-	1.6	16	6.1	10.0	2.46	7.5
Naphthalene	0.8	0.57	**9.1**	<0.52	1.5	**2900**	180	1.1	-	2.1[3]	-	-	4.9	5.1	-	-
o-Xylene	<0.43	<0.43	<0.43	0.65	<0.43	**270**	<0.43	<0.43	-	6.9	1.2	7.1	4.6	7.9	3.23	7.24
Propene	<6.9	<6.9	<6.9	<6.9	<6.9	<69	<6.9	<6.9	-	-	-	-	-	-	-	-
Styrene	<0.43	<0.43	<0.43	<0.43	<0.43	**5.5**	<0.43	<0.43	-	-	0.5	1.4	1.3	1.9	1.29	5.13
Tetrachloroethylene (PCE)	<0.68	0.85	**480**	0.81	5.9	8.1	0.72	8.1	30	4.9 - 6.8	0.7	2.5	6.5	15.9	3.17	6.01
Tetrahydrofuran	<0.29	<0.29	<0.29	<0.29	<0.29	<2.9	<0.29	<0.29	-	-	0.4	0.8	-	-	19.6	39.8
Toluene	0.69	0.38	<0.38	35	4.1	**84**	3.3	2	-	29 - 49	5.1	57	33.7	43.0	19.6	39.8
trans-1,2-Dichloroethylene	<0.40	<0.40	<0.40	<0.40	<0.40	<4.0	<0.40	<0.40	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene	<0.45	<0.45	<0.45	<0.45	<0.45	<4.5	<0.45	<0.45	-	-	-	-	<1.4	<1.3	-	-
Trichloroethylene (TCE)	<0.54	<0.54	**180**	<0.54	3.1	<5.4	<0.54	<0.54	5	0.70 - 1.4	0.4	0.5	1.3	4.2	0.79	1.36
Trichlorofluoromethane (Freon 11)	1.9	2	2.8	1.7	2.5	<5.6	1.7	1.9	-	-	0.4	12	4.3	18.1	-	-
Vinyl Acetate	<7.0	<7.0	<7.0	14	<7.0	<70	<7.0	<7.0	-	-	-	-	-	-	-	-
Vinyl Chloride	<0.26	<0.26	<0.26	<0.26	<0.26	<2.6	<0.26	<0.26	-	0.10	0.4	0.4	<1.8	<1.9	-	-

Notes:
µg/m³ = micrograms per cubic meter
< - Less than reporting limit
-- = Not Available
Items shown in bold font exceed the range of published background indoor air concentrations.
Items shaded gray and in bold font equal or exceed NYSDOH AGVs.
NYSDOH - New York State Department of Health
AGV - Air Guideline Value
ASTM - ASTM International
BASE - Building Assessment and Survey Evaluation
HEI RIOPA - Health Effect Institute: Relationship of Indoor, Outdoor and Personal Air
(1) - From ASTM E 2600-08 "Standard Practice for Assessment of Vapor Intrusion into Structures on Property Involved in Real Estate Transactions"
(2) - Per Appendix C of the Final NYSDOH Guidance.
(3) - 90th percentile value

APPENDIX 1

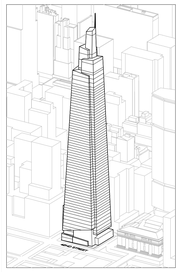
PROPOSED DEVELOPMENT PLANS

ONE VANDERBILT

NEW 64 STORY OFFICE BUILDING

SEPTEMBER 1ST, 2015

ONE VANDERBILT



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215 West 40th Street, 15th Floor
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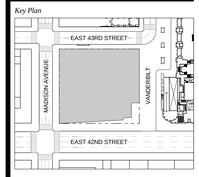
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
DOMINIC LUONG
021449-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale

Drawing Title
COVER SHEET

Drawing Number
G-001.00

SHEET 1 OF 56

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PLUMBING DRAWING LIST

SHEET NUMBER	DRAWING TITLE	FOUNDATION PERMIT 09-01-2015
P-001.00	PLUMBING DRAWING LIST	■
P-002.00	PLUMBING NOTES AND ABBREVIATIONS	■
P-097.00	PLUMBING FLOOR PLAN B4	■
P-098.00	PLUMBING FLOOR PLAN B3	■
P-099.00	PLUMBING FLOOR PLAN B2	■
P-100.00	PLUMBING FLOOR PLAN B1	■
P-101.00	PLUMBING FLOOR PLAN 01	■
P-102.00	PLUMBING FLOOR PLAN 02	■
P-103.00	PLUMBING FLOOR PLAN 03	■
P-104.00	PLUMBING FLOOR PLAN 04	■
P-105.00	PLUMBING FLOOR PLAN 05	■
P-106.00	PLUMBING FLOOR PLAN 06	■
P-111.00	PLUMBING FLOOR PLAN 11	■
P-112.00	PLUMBING FLOOR PLAN 12	■
P-113.00	PLUMBING FLOOR PLAN 13	■
P-114.00	PLUMBING FLOOR PLAN 14	■
P-122.00	PLUMBING FLOOR PLAN 22	■
P-123.00	PLUMBING FLOOR PLAN 23	■
P-126.00	PLUMBING FLOOR PLAN 26	■
P-127.00	PLUMBING FLOOR PLAN 27	■
P-128.00	PLUMBING FLOOR PLAN 28	■
P-135.00	PLUMBING FLOOR PLAN 35	■
P-136.00	PLUMBING FLOOR PLAN 36	■
P-137.00	PLUMBING FLOOR PLAN 37	■
P-143.00	PLUMBING FLOOR PLAN 43	■
P-144.00	PLUMBING FLOOR PLAN 44	■
P-149.00	PLUMBING FLOOR PLAN 49	■
P-150.00	PLUMBING FLOOR PLAN 50	■
P-151.00	PLUMBING FLOOR PLAN 51	■
P-158.00	PLUMBING FLOOR PLAN 58	■
P-159.00	PLUMBING FLOOR PLAN 59	■
P-160.00	PLUMBING FLOOR PLAN 60	■
P-164.00	PLUMBING FLOOR PLAN 64	■
P-300.00	PLUMBING DOMESTIC WATER RISER DIAGRAM SHEET 1	■
P-301.00	PLUMBING DOMESTIC WATER RISER DIAGRAM SHEET 2	■
P-302.00	PLUMBING SANITARY RISER DIAGRAM SHEET 1	■
P-303.00	PLUMBING SANITARY RISER DIAGRAM SHEET 2	■
P-304.00	PLUMBING STORM WATER AND GAS RISER DIAGRAM SHEET 1	■
P-305.00	PLUMBING STORM WATER AND GAS RISER DIAGRAM SHEET 2	■
P-500.00	PLUMBING EQUIPMENT SCHEDULE SHEET	■

PLUMBING - FOUNDATION - DRAWING LIST

SHEET NUMBER	DRAWING TITLE	FOUNDATION PERMIT 09-01-2015
P-001.00	PLUMBING FOUNDATION - DRAWING LIST, ABBREVIATIONS, & NOTES	■
P-100.00	PLUMBING FOUNDATION - UNDERGROUND & POE PLAN	■

FIRE PROTECTION - SPRINKLER - DRAWING LIST

SHEET NUMBER	DRAWING TITLE	FOUNDATION PERMIT 09-01-2015
SP-001.00	FIRE PROTECTION DRAWING LIST	■
SP-002.00	FIRE PROTECTION NOTES AND ABBREVIATIONS	■
SP-400.00	FIRE PROTECTION STANDPIPE RISER DIAGRAM SHEET 1	■
SP-401.00	FIRE PROTECTION STANDPIPE RISER DIAGRAM SHEET 2	■

FIRE PROTECTION - STANDPIPE - DRAWING LIST

SHEET NUMBER	DRAWING TITLE	FOUNDATION PERMIT 09-01-2015
SD-001.00	FIRE PROTECTION DRAWING LIST	■
SD-002.00	FIRE PROTECTION NOTES AND ABBREVIATIONS	■
SD-400.00	FIRE PROTECTION STANDPIPE RISER DIAGRAM SHEET 1	■
SD-401.00	FIRE PROTECTION STANDPIPE RISER DIAGRAM SHEET 2	■

FIRE ALARM DRAWING LIST

SHEET NUMBER	DRAWING TITLE	FOUNDATION PERMIT 09-01-2015
FA-001.00	FIRE ALARM TITLE SHEET AND SYMBOLS LIST	■
FA-200.00	FIRE ALARM RISER DIAGRAM SHEET NO. 1	■
FA-201.00	FIRE ALARM RISER DIAGRAM SHEET NO. 2	■
FA-202.00	FIRE ALARM RISER DIAGRAM SHEET NO. 3	■
FA-203.00	FIRE ALARM RISER DIAGRAM SHEET NO. 4	■

STRUCTURAL DRAWING LIST

SHEET NUMBER	DRAWING TITLE	FOUNDATION PERMIT 09-01-2015
FO-100.00	FOUNDATION AND B4 LEVEL PLAN	■
FO-101.00	B3 LEVEL PLAN	■
FO-201.00	FOUNDATION SECTIONS 1	■
FO-202.00	FOUNDATION SECTIONS 2	■
FO-203.00	FOUNDATION SECTIONS 3	■
FO-204.00	FOUNDATION SECTIONS 4	■
FO-205.00	FOUNDATION SECTIONS 5	■
FO-206.00	FOUNDATION SECTIONS 6	■
FO-207.00	FOUNDATION SECTIONS 7	■
FO-251.00	FOUNDATION TYPICAL DETAILS 1	■
FO-252.00	FOUNDATION TYPICAL DETAILS 2	■
S-010.00	COLUMN COORDINATE PLAN	■
S-099.00	B2 FLOOR FRAMING PLAN	■
S-100.00	B1 FLOOR FRAMING PLAN	■
S-101.00	GROUND FLOOR FRAMING PLAN	■
S-601.00	COLUMN SCHEDULE 1	■
S-651.00	COLUMN DETAILS 1	■
S-701.00	GENERAL NOTES	■
S-702.00	LOADING SCHEDULE	■
S-703.00	TYPICAL FLOOR CONSTRUCTION DETAILS	■

MECHANICAL DRAWING LIST

SHEET NUMBER	DRAWING TITLE	FOUNDATION PERMIT 09-01-2015
M-001.00	MECHANICAL DRAWING LIST	■
M-002.00	MECHANICAL KEY TO SYMBOLS AND ABBREVIATIONS	■
M-097.00	MECHANICAL FLOOR PLAN B4	■
M-098.00	MECHANICAL FLOOR PLAN B3	■
M-099.00	MECHANICAL FLOOR PLAN B2	■
M-100.00	MECHANICAL FLOOR PLAN B1	■
M-101.00	MECHANICAL FLOOR PLAN 01	■
M-102.00	MECHANICAL FLOOR PLAN 02	■
M-103.00	MECHANICAL FLOOR PLAN 03	■
M-104.00	MECHANICAL FLOOR PLAN 04	■
M-105.00	MECHANICAL FLOOR PLAN 05	■
M-106.00	MECHANICAL FLOOR PLAN 06	■
M-111.00	MECHANICAL FLOOR PLAN 11	■
M-112.00	MECHANICAL FLOOR PLAN 12	■
M-113.00	MECHANICAL FLOOR PLAN 13	■
M-114.00	MECHANICAL FLOOR PLAN 14	■
M-115.00	MECHANICAL FLOOR PLAN 15	■
M-126.00	MECHANICAL FLOOR PLAN 26	■
M-127.00	MECHANICAL FLOOR PLAN 27	■
M-128.00	MECHANICAL FLOOR PLAN 28	■
M-135.00	MECHANICAL FLOOR PLAN 35	■
M-136.00	MECHANICAL FLOOR PLAN 36	■
M-137.00	MECHANICAL FLOOR PLAN 37	■
M-149.00	MECHANICAL FLOOR PLAN 49	■
M-150.00	MECHANICAL FLOOR PLAN 50	■
M-151.00	MECHANICAL FLOOR PLAN 51	■
M-158.00	MECHANICAL FLOOR PLAN 58	■
M-159.00	MECHANICAL FLOOR PLAN 59	■
M-160.00	MECHANICAL FLOOR PLAN 60	■
M-161.00	MECHANICAL FLOOR PLAN 61	■
M-162.00	MECHANICAL FLOOR PLAN 62	■
M-163.00	MECHANICAL FLOOR PLAN 63	■
M-164.00	MECHANICAL FLOOR PLAN 64	■
M-164M.00	MECHANICAL FLOOR PLAN 64M	■
M-300.00	MECHANICAL SECTION SHEET NO. 1	■
M-400.00	MECHANICAL DETAIL SHEET NO. 1	■
M-401.00	MECHANICAL DETAIL SHEET NO. 2	■
M-402.00	MECHANICAL DETAIL SHEET NO. 3	■
M-500.00	MECHANICAL SCHEDULE SHEET NO. 1	■
M-501.00	MECHANICAL SCHEDULE SHEET NO. 2	■
M-502.00	MECHANICAL SCHEDULE SHEET NO. 3	■
M-600.00	MECHANICAL AIR RISER DIAGRAMS SHEET NO. 1	■
M-601.00	MECHANICAL AIR RISER DIAGRAMS SHEET NO. 2	■
M-602.00	MECHANICAL AIR RISER DIAGRAMS SHEET NO. 3	■
M-603.00	MECHANICAL AIR RISER DIAGRAMS SHEET NO. 4	■
M-604.00	MECHANICAL AIR RISER DIAGRAMS SHEET NO. 5	■
M-700.00	MECHANICAL CHILLED AND CONDENSER WATER FLOW DIAGRAM NO. 1	■
M-701.00	MECHANICAL CHILLED AND CONDENSER WATER FLOW DIAGRAM NO. 2	■
M-702.00	MECHANICAL CHILLED AND CONDENSER WATER FLOW DIAGRAM NO. 3	■
M-703.00	MECHANICAL CHILLED AND CONDENSER WATER FLOW DIAGRAM NO. 4	■
M-704.00	MECHANICAL HOT WATER FLOW DIAGRAM NO. 1	■
M-705.00	MECHANICAL HOT WATER FLOW DIAGRAM NO. 2	■
M-706.00	MECHANICAL HOT WATER FLOW DIAGRAM NO. 3	■
M-707.00	MECHANICAL HOT WATER FLOW DIAGRAM NO. 4	■
M-708.00	MECHANICAL PERIMETER HOT WATER FLOW DIAGRAM NO. 1	■

ENERGY CODE COMPLIANCE DRAWING LIST

SHEET NUMBER	DRAWING TITLE	FOUNDATION PERMIT 09-01-2015
EN-001.00	ENERGY COMPLIANCE COVER SHEET	■
EN-002.00	SECTION DETAIL - FOUNDATION - NORTH	■
EN-003.00	SECTION DETAIL - FOUNDATION - NORTH EAST	■
EN-004.00	SECTION DETAIL - FOUNDATION - EAST	■
EN-005.00	SECTION DETAIL - FOUNDATION - SOUTH	■
EN-006.00	SECTION DETAIL - FOUNDATION - WEST	■

ELECTRICAL DRAWING LIST

SHEET NUMBER	DRAWING TITLE	FOUNDATION PERMIT 09-01-2015
EF-001.00	ELECTRICAL FOUNDATION TITLE SHEET, SYMBOL LIST & GENERAL NOTES	■
EF-100.00	ELECTRICAL FOUNDATION POWER PLAN - BASEMENT LEVEL 4	■
EF-101.00	ELECTRICAL FOUNDATION POWER PLAN - BASEMENT LEVEL 1	■
EF-102.00	ELECTRICAL FOUNDATION PARTIAL GROUNDING RISER DIAGRAM	■
EF-103.00	ELECTRICAL FOUNDATION LIGHTNING PROTECTION RISER DIAGRAM	■
EF-104.00	ELECTRICAL FOUNDATION DETAILS SHEET	■

ARCHITECTURAL DRAWING LIST

SHEET NUMBER	DRAWING TITLE	FOUNDATION PERMIT 09-01-2015
G-001.00	COVER SHEET	■
G-002.00	DRAWING LIST	■
G-003.00	DRAWING LIST	■
G-004.00	INDEX, ABBREVIATIONS & SYMBOLS	■
G-005.00	MATERIALS & FINISHES LEGENDS	■
A-020.00	BUILDING ELEVATIONS @ GRADE	■
A-021.00	SECTION DETAIL - FOUNDATION - NORTH	■
A-022.00	SECTION DETAIL - FOUNDATION - NORTH EAST	■
A-023.00	SECTION DETAIL - FOUNDATION - EAST	■
A-024.00	SECTION DETAIL - FOUNDATION - SOUTH	■
A-025.00	SECTION DETAIL - FOUNDATION - WEST	■
A-097.00	FLOOR PLAN B4 EAST SIDE ACCESS	■
A-098.00	FLOOR PLAN B3 LOADING DOCK	■
A-099.00	FLOOR PLAN B2 SHUTTLE PLATFORM	■
A-100.00	FLOOR PLAN B1 GCT CONCOURSE	■
A-101.00	FLOOR PLAN 01	■
A-102.00	FLOOR PLAN 02	■
A-103.00	FLOOR PLAN 03 OFFICE AMENITY	■
A-104.00	FLOOR PLAN 04 MECHANICAL	■
A-105.00	FLOOR PLAN 05 MECHANICAL	■
A-106.00	FLOOR PLAN 06 PODIUM (LOWEST)	■
A-107.00	FLOOR PLAN 07 PODIUM (TYPICAL)	■
A-111.00	FLOOR PLAN 11 PODIUM (HIGHEST)	■
A-112.00	FLOOR PLAN 12 MECHANICAL	■
A-113.00	FLOOR PLAN 13 MECHANICAL	■
A-114.00	FLOOR PLAN 14 LOW EXECUTIVE OFFICE (LOWEST)	■
A-115.00	FLOOR PLAN 15 LOW OFFICE (TYPICAL)	■
A-126.00	FLOOR PLAN 26 LOW OFFICE (HIGHEST)	■
A-127.00	FLOOR PLAN 27 MID LOW OFFICE (LOWEST)	■
A-128.00	FLOOR PLAN 28 MID LOW OFFICE	■
A-129.00	FLOOR PLAN 29 MID LOW OFFICE (TYPICAL)	■
A-135.00	FLOOR PLAN 35 MID LOW EXECUTIVE OFFICE (HIGHEST)	■
A-136.00	FLOOR PLAN 36 MECHANICAL	■
A-137.00	FLOOR PLAN 37 MID HIGH EXECUTIVE OFFICE (LOWEST)	■
A-149.00	FLOOR PLAN 49 MID HIGH EXECUTIVE OFFICE (HIGHEST)	■
A-150.00	FLOOR PLAN 50 MECHANICAL	■
A-151.00	FLOOR PLAN 51 HIGH EXECUTIVE OFFICE (LOWEST)	■
A-158.00	FLOOR PLAN 58 HIGH EXECUTIVE OFFICE (HIGHEST)	■
A-159.00	FLOOR PLAN 59 MECHANICAL	■
A-160.00	FLOOR PLAN 60 MECHANICAL - TMD	■
A-161.00	FLOOR PLAN 61 AMENITY 1	■
A-162.00	FLOOR PLAN 62 AMENITY 2	■
A-163.00	FLOOR PLAN 63 AMENITY 3	■
A-164.00	FLOOR PLAN 64 ROOF	■
A-164M.00	FLOOR PLAN 64 M COOLING TOWER ACCESS	■
A-165.00	FLOOR PLAN 65 MECHANICAL - BMU 1	■
A-166.00	FLOOR PLAN 66 MECHANICAL - BMU 2	■
A-167.00	FLOOR PLAN 67 MECHANICAL	■
A-168.00	CROWN	■
A-200.00	BUILDING ELEVATIONS	■
A-210.00	BUILDING SECTIONS	■
A-230.00	PARTIAL SECTION	■
A-231.00	PARTIAL SECTION	■
A-235.00	PARTIAL SECTION	■
A-236.00	PARTIAL SECTION	■
A-238.00	PARTIAL SECTION	■
EG-097.00	EGRESS FLOOR PLAN B4	■
EG-098.00	EGRESS FLOOR PLAN B3	■
EG-099.00	EGRESS FLOOR PLAN B2	■
EG-100.00	EGRESS FLOOR PLAN B1	■
EG-101.00	EGRESS FLOOR PLAN 01	■
EG-102.00	EGRESS FLOOR PLAN 02	■
EG-103.00	EGRESS FLOOR PLAN 03	■
EG-104.00	EGRESS FLOOR PLAN 04	■
EG-105.00	EGRESS FLOOR PLAN 05	■
EG-106.00	EGRESS FLOOR PLAN 06	■
EG-107.00	EGRESS FLOOR PLAN 07	■
EG-112.00	EGRESS FLOOR PLAN 12	■
EG-113.00	EGRESS FLOOR PLAN 13	■
EG-114.00	EGRESS FLOOR PLAN 14	■
EG-115.00	EGRESS FLOOR PLAN 15	■
EG-127.00	EGRESS FLOOR PLAN 27	■
EG-129.00	EGRESS FLOOR PLAN 29	■
EG-136.00	EGRESS FLOOR PLAN 36	■
EG-137.00	EGRESS FLOOR PLAN 37	■
EG-150.00	EGRESS FLOOR PLAN 50	■
EG-151.00	EGRESS FLOOR PLAN 51	■
EG-159.00	EGRESS FLOOR PLAN 59	■
EG-160.00	EGRESS FLOOR PLAN 60	■
EG-161.00	EGRESS FLOOR PLAN 61	■
EG-162.00	EGRESS FLOOR PLAN 62	■
EG-163.00	EGRESS FLOOR PLAN 63	■
EG-164.00	EGRESS FLOOR PLAN 64	■
Z-001.00	ZONING SITE PLAN, NOTES AND CALCULATIONS	■
Z-002.00	ZONING FLOOR AREA CALCULATIONS	■
Z-003.00	ZONING AXONOMETRIC DIAGRAM	■
Z-004.00	ZONING REQUIREMENTS, BUILDING ENCROACHMENT	■
Z-005.00	ZONING REQUIREMENTS, BUILDING ENCROACHMENT	■
Z-006.00	ZONING REQUIREMENTS, BUILDING ENCROACHMENT	■
Z-007.00	ZONING FLOOD ZONE MAP	■
Z-008.00	ZONING FLOOD ZONE MAP	■
Z-009.00	ZONING REQUIREMENTS, BICYCLE STORAGE	■
Z-010.00	ZONING REQUIREMENTS, AIR RIGHTS	■
Z-101.00	ZONING AREA FLOOR PLAN 01	■
Z-102.00	ZONING AREA FLOOR PLAN 02	■
Z-103.00	ZONING AREA FLOOR PLAN 03	■
Z-104.00	ZONING AREA FLOOR PLAN 04	■
Z-105.00	ZONING AREA FLOOR PLAN 05	■
Z-106.00	ZONING AREA FLOOR PLAN 06	■
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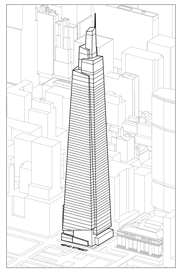
Z-137.00	ZONING AREA FLOOR PLAN 37	■
Z-150.00	ZONING AREA FLOOR PLAN 50	■
Z-151.00	ZONING AREA FLOOR PLAN 51	■
Z-159.00	ZONING AREA FLOOR PLAN 59	■
Z-160.00	ZONING AREA FLOOR PLAN 60	■
Z-161.00	ZONING AREA FLOOR PLAN 61	■
Z-162.00	ZONING AREA FLOOR PLAN 62	■
Z-163.00	ZONING AREA FLOOR PLAN 63	■
Z-164.00	ZONING AREA FLOOR PLAN 64	■

ONE VANDERBILT



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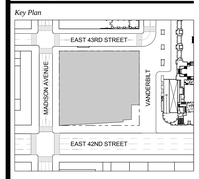
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
DOMINIC LUONGO
026149-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale

Drawing Title
DRAWING LIST

Drawing Number
G-002.00

SHEET 2 OF 56

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CIVIL DRAWING LIST

SHEET NUMBER	DRAWING TITLE	FOUNDATION PERMIT 09-01-2015
C-010.00	CIVIL NOTES	■
C-201.00	SITE PLAN	■
C-301.00	GRADING AND DRAINAGE PLAN	■
C-401.00	UTILITY PLAN	■
CC-101.00	CURB CUT	■

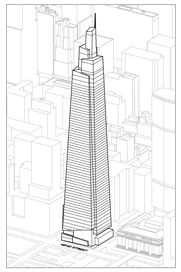
SUPPORT OF EXCAVATION DRAWING LIST

SHEET NUMBER	DRAWING TITLE	FOUNDATION PERMIT 09-01-2015
SOE-001.00	TITLE SHEET AND DRAWING LIST	■
SOE-002.00	GENERAL NOTES	■
SOE-003.00	NEW YORK CITY TRANSIT AUTHORITY NOTES	■
SOE-100.00	EXISTING SITE LAYOUT	■
SOE-101.00	SURVEY AT GRADE	■
SOE-102.00	EXISTING CONDITIONS - B1 LEVEL	■
SOE-103.00	EXISTING CONDITIONS - B2 LEVEL	■
SOE-104.00	EXISTING CONDITIONS - B3/B4 LEVEL	■
SOE-105.00	SUPPORT OF EXCAVATION MONITORING PLAN	■
SOE-106.00	INITIAL CONDITIONS PLAN AFTER COMPLETION OF DEMOLITION	■
SOE-107.00	SUPPORT OF EXCAVATION PLAN – OVERALL	■
SOE-108.00	SUPPORT OF EXCAVATION PLAN – PROPOSED B1 LEVEL	■
SOE-109.00	SUPPORT OF EXCAVATION PLAN – PROPOSED B2 LEVEL	■
SOE-110.00	SUPPORT OF EXCAVATION PLAN – PROPOSED B3 LEVEL	■
SOE-111.00	SUPPORT OF EXCAVATION PLAN – PROPOSED B4 LEVEL	■
SOE-201.00	PART PLAN AND ELEVATION - 43RD STREET	■
SOE-202.00	PART PLAN AND ELEVATION - EAST SIDE ACCESS	■
SOE-203.00	PART PLAN AND ELEVATION - VANDERBILT AVENUE	■
SOE-204.00	PART PLAN AND ELEVATION - 42ND STREET	■
SOE-205.00	PART PLAN AND ELEVATION - MADISON AVENUE	■
SOE-301.00	SUPPORT OF EXCAVATION SECTIONS - SECTION 1	■
SOE-302.00	SUPPORT OF EXCAVATION SECTIONS - SECTION 2	■
SOE-303.00	SUPPORT OF EXCAVATION SECTIONS - SECTION 3	■
SOE-304.00	SUPPORT OF EXCAVATION SECTIONS - SECTION 4	■
SOE-305.00	SUPPORT OF EXCAVATION SECTIONS - SECTION 5	■
SOE-306.00	SUPPORT OF EXCAVATION SECTIONS - SECTION 6	■
SOE-307.00	SUPPORT OF EXCAVATION SECTIONS - SECTION 7	■
SOE-308.00	SUPPORT OF EXCAVATION SECTIONS - SECTION 8	■
SOE-309.00	SUPPORT OF EXCAVATION SECTIONS - SECTION 9	■
SOE-401.00	SUPPORT OF EXCAVATION DETAILS	■
SOE-402.00	SUPPORT OF EXCAVATION DETAILS	■
SOE-403.00	SUPPORT OF EXCAVATION DETAILS	■

SUPPORT OF EXCAVATION DRAWING LIST CONT'D

SHEET NUMBER	DRAWING TITLE	FOUNDATION PERMIT 09-01-2015
SOE-500.00	COVER SHEET	■
SOE-501.00	STRUCTURE DEMO SIDEWALK/MEZZ ROOF LEVEL	■
SOE-502.00	STRUCTURE DEMO B1 LEVEL	■
SOE-503.00	STRUCTURE DEMO B2 LEVEL	■
SOE-510.00	EXISTING SECTIONS - A & B	■
SOE-511.00	EXISTING SECTION - C	■
SOE-512.00	EXISTING SECTION - D	■
SOE-601.00	STRUCTURE PROPOSED SIDEWALK/MEZZ ROOF LEVEL	■
SOE-602.00	STRUCTURE PROPOSED B1 LEVEL	■
SOE-603.00	STRUCTURE PROPOSED B2 LEVEL	■
SOE-610.00	PROPOSED SECTIONS - A & B	■
SOE-611.00	PROPOSED SECTION - C	■
SOE-612.00	PROPOSED SECTION - D	■
SOE-620.00	SUGGESTED CONSTRUCTION SEQUENCE	■
SOE-700.00	CONCRETE DETAIL - 1	■
SOE-701.00	CONCRETE DETAIL - 2	■
SOE-702.00	CONCRETE DETAIL - 3	■
SOE-703.00	STEEL DETAIL - 1	■
SOE-704.00	STEEL DETAIL - 2	■
SOE-705.00	STEEL DETAIL - 3	■
SOE-706.00	TYPICAL DETAILS	■

ONE VANDERBILT



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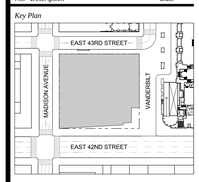
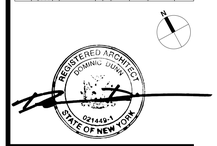
Key Plan





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Scale

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DRAWING LIST

Drawing Number
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FIRE RATED WALL INDICATIONS

SEE SHEET Ax-xxx FOR PARTITION TYPES

1-HOUR RATED WALL ASSEMBLY

2-HOUR RATED WALL ASSEMBLY

3-HOUR RATED WALL ASSEMBLY

ROOM OR AREA NAME AND NUMBERING LEGEND

NAME
01-100

SEQUENTIAL IDENTIFIER BY TYPE
LEVEL AND SECTOR LOCATION

100 = PUBLIC AREAS
200 = PRIVATE AREAS
300 = TENANT AREAS
400 = TOILETS
500 = MECHANICAL
600 = ELECTRICAL, TELECOM/IT
700 = STAIRS, SHAFTS, AND ELEVATOR HOISTWAYS
800 = PARKING
900 = AUTHORITY (INCL. LIRR)

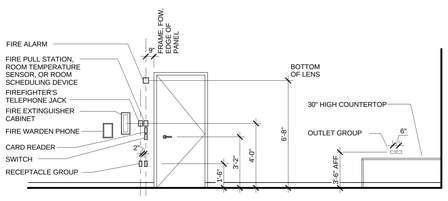
VERTICAL CIRCULATION IDENTIFICATION

C101-P01

X = EXISTING (IF USED)
S = SERVICE ELEVATOR
P = PASSENGER ELEVATOR
E = ESCALATOR
R = RAMP
L = LADDER
ST = STAIR

SEQUENTIAL IDENTIFIER IN SECTOR
ORIGINATING LEVEL AND SECTOR

PTE LEGEND



STANDARD MOUNTING HEIGHTS (UNLESS OTHERWISE NOTED ON THE INTERIOR AND EXTERIOR ELEVATIONS)
(Not to Scale)

NOTES: 1. ALWAYS ALIGN VERTICALLY WHEN IN PROXIMITY
2. SEE ARCHITECTS DRAWINGS FOR PLAN LOCATIONS
3. SEE A6 SERIES FOR ADA PUSH PLATE AND CARD READER AT EXTERIOR BOLLARD
4. ADA PUSHPLATES TO BE MOUNTED 3'-1" A.F.F. TYP. U.N.O.

ABBREVIATIONS

A	A.C.T.	ACOUSTICAL CEILING TILE
A	ABV.	ABOVE
A	ADDL.	ADDITIONAL
A	ADJ.	ADJUSTABLE
A	AFF.	ABOVE FINISHED FLOOR
A	AHU	AIR HANDLING UNIT
A	ALT.	ALTERNATE
A	ARCH.	ARCHITECTURAL
A	AVG.	AVERAGE
A	AXON.	AXONOMETRIC
B	B.O.	BOTTOM OF
B	BD.	BOARD
B	BLDG.	BUILDING
B	BLKG.	BLOCKING
B	BPP	BUILDER'S PAVEMENT PLAN
B	BTM.	BOTTOM
C	CJ	CONTROL JOINT
C	CL	CENTER LINE
C	CLG.	CEILING
C	CLG. HT.	CEILING HEIGHT
C	CLOS.	CLOSET
C	CLR.	CLEAR
C	CMU	CONCRETE MASONRY UNIT
C	COL.	COLUMN
C	COL. L.	COLUMN LINE
C	CONC.	CONCRETE
C	CONT.	CONTINUOUS
C	CW	CURTAINWALL
D	DEG.	DEGREE
D	DEP	DEPARTMENT OF ENVIRONMENTAL PROTECTION
D	DEPT.	DEPARTMENT
D	DETL.	DETAIL
D	DIAG.	DIAGONAL
D	DIFF.	DIFFUSER
D	DIV.	DIVISION
D	DN.	DOWN
D	DOB	DEPARTMENT OF BUILDINGS
D	DWG.	DRAWING
E	E.O.S.	EDGE OF SLAB
E	EA.	EACH
E	EC.	ELECTRICAL CLOSET
E	EJ	EXPANSION JOINT
E	ELEC.	ELECTRICAL
E	EMER.	EMERGENCY
E	EMR	ELEVATOR MACHINE ROOM
E	ENCL.	ENCLOSURE
E	ENG MTL FAB	ENGINEERED METAL FABRICATION
E	EQ.	EQUAL
E	EQPT.	EQUIPMENT
E	ESC.	ESCALATOR
E	EVTR.	ELEVATOR
E	EXG.	EXISTING
E	EXP.	EXPOSED
E	EXT.	EXTERIOR
F	F.F.	FINISHED FLOOR
F	F.O.B.	FACE OF BUILDING
F	F.O.G.	FACE OF GLASS
F	FA	FIRE ALARM
F	FD	FLOOR DRAIN
F	FE	FIRE EXTINGUISHER
F	FEC	FIRE EXTINGUISHER CABINET
F	FLR.	FLOOR
F	FNDN.	FOUNDATION
F	FOHL	FRIENDS OF THE HIGH LINE
F	FPS	FIRE PULL STATION
F	FT.	FOOT / FEET
F	FTG.	FOOTING
F	FUTR.	FUTURE
F	FW	FIRE WARDEN PHONE

ABBREVIATIONS

G	GA.	GAUGE
G	GALV.	GALVANIZED
G	GC	GENERAL CONTRACTOR
G	GWB	GYSPUM WALL BOARD
G	GX	GENERAL EXHAUST
H	H.P.	HIGH POINT
H	HM	HOLLOW METAL
H	HORIZ.	HORIZONTAL
H	HVAC	HEATING, VENTILATING, & AIR CONDITIONING
H	HYDC	HUDSON YARDS DEVELOPMENT CORPORATION
I	IN.	INCH / INCHES
I	INCL.	INCLUDE
I	INSUL.	INSULATION
I	INT.	INTERIOR
J	JB	JAMB
J	JC	JANITOR'S CLOSET
K	KIT.	KITCHEN
K	KX	KITCHEN EXHAUST
L	L.P.	LOW POINT
L	LAM.	LAMINATED
L	LAV.	LAVATORY
L	LBS.	POUNDS
L	LIRR	LONG ISLAND RAIL ROAD
L	LVR.	LOUVER
M	M.O.E.	MAINTENANCE OF EQUIPMENT
M	MACH.	MACHINE
M	MAINT.	MAINTENANCE
M	MANU.	MANUFACTURED
M	MATL.	MATERIAL
M	MAX.	MAXIMUM
M	MECH.	MECHANICAL
M	MEZZ.	MEZZANINE
M	MGMT.	MANAGEMENT
M	MH	MANHOLE
M	MIN.	MINIMUM
M	MISC.	MISCELLANEOUS
M	MTD.	MOUNTED
M	MTL FAB	METAL FABRICATION
M	MTL.	METAL
M	MULL.	MULLION
N	NIC	NOT IN CONTRACT
N	NO.	NUMBER
N	NOM.	NOMINAL
N	NTS	NOT TO SCALE
O	O.C.	ON CENTER
O	OA	OUTSIDE AIR
O	OAI	OUTSIDE AIR INTAKE
O	OPNG.	OPENING
O	OPP.	OPPOSITE
O	OPP. HAND	OPPOSITE HAND
O	OVHD.	OVERHEAD
P	PA	PUBLIC ADDRESS
P	PART.	PARTIAL
P	PASS.	PASSENGER
P	PERF.	PERFORATED
P	PL	PROPERTY LINE
P	PLBG.	PLUMBING
P	PLT.	PLATE
P	PNL.	PANEL
P	POL.	POLISHED
P	PSF	POUNDS PER SQUARE FOOT
P	PSI	POUNDS PER SQUARE INCH
P	PTD.	PAINTED
P	PTN.	PARTITION

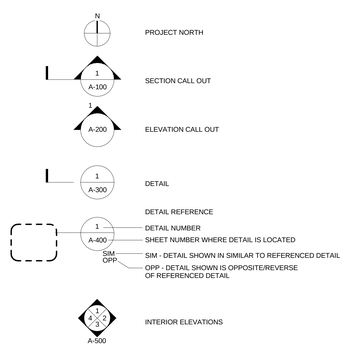
ABBREVIATIONS

Q	QTY.	QUANTITY
R	R.	RISER
R	R.O.	ROUGH OPENING
R	RA	RETURN AIR
R	RAD.	RADIUS
R	RCP	REFLECTED CEILING PLAN
R	REF.	REFER TO
R	REIN.	REINFORCED
R	RM.	ROOM
S	S.S.	STAINLESS STEEL
S	SA	SUPPLY AIR
S	SCHED.	SCHEDULE
S	SHT.	SHEET
S	SIM.	SIMILAR
S	SOE	SUPPORT OF EXCAVATION
S	SP	STAIR PRESSURIZATION
S	SPEC.	SPECIFICATION
S	SQ. FT.	SQUARE FEET
S	STC	SOUND TRANSMISSION CLASS
S	STD.	STANDARD
S	STL.	STEEL
S	STOR.	STORAGE
S	STR.	STRUCTURAL
S	SUSP.	SUSPENDED
S	SVC.	SERVICE
S	SX	SMOKE EXHAUST
S	SYM.	SYMMETRICAL
T	T	TREAD
T	T.O. STL.	TOP OF STEEL
T	T.O.S.	TOP OF SLAB
T	TEN.	TENANT
T	TOFF	TOP OF FINISHED FLOOR
T	TOPG.	TOPPING
T	TYP.	TYPICAL
U	U.O.N.	UNLESS OTHERWISE NOTED
V	V.I.F.	VERIFY IN FIELD
V	VERTI.	VERTICAL
V	VEST.	VESTIBULE
V	VOL.	VOLUME
W	W/	WITH
W	W/O	WITHOUT
W	WP	WORKING POINT

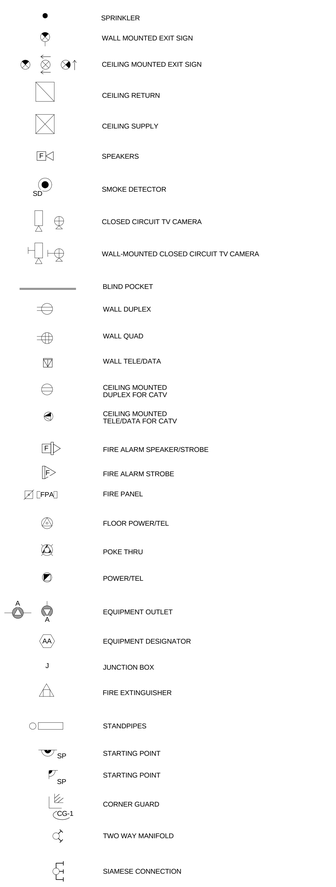
Special Inspection Item	Code / Section
Chimneys	BC 1704.24
Concrete - Cast-In-Place	BC 1704.4
Concrete Design Mix	BC 1905.3
Concrete Sampling & Testing	BC 1905.6
Site Storm Drainage and Detention Facilities Installation	BC 1704.20
Emergency & Standby Power Systems (Generators)	BC 1704.13, BC 2702
Excavations - Sheathing, Shoring, & Bracing	BC 1704.19, BC 3304.4.1
Fill Placement & In-Place Density	BC 1704.7.2, BC 1704.7.3
Fire-Resistance Rated Construction	Not listed on TR1
Fire-Resistant Penetrations & Joints	BC 1704.25
Footing & Foundation	BC 109.3.1
Fuel-Oil Storage & Piping Systems	BC 1704.16
Heating Systems	BC 1704.23
Fuel-Gas Piping (Welding)	BC 1704.18
Luminous Egress Path Markings	Not listed on TR1
Masonry	BC 1704.5
Mastic & Intumescent Fire-Resistant Coatings	Not listed on TR1
Mechanical Systems	BC 1704.15
Private On-Site Storm Water Drainage Disposal Systems	BC 1704.20
Sprayed Fire-Resistant Materials	BC 1704.11
Soils- Site Preparation	BC 1704.7.1
Soils Fill Placement and in place density	BC 1704.7.2, BC 1704.7.3
Structural Safety and Stability (Existing Buildings)	BC 1704.19
Structural Steel - Details	1074.3
Structural Steel - Erection and High Strength Bolting	BC 1704.3.2, BC 1704.3.3
Structural Steel - Welding	BC 1704.3.1
Subgrade Inspection	N/A
Soils Investigations - Borings/Test Pits	BC 1704.7.4
Underpinning	BC 1704.9.1
Wall Panels, Curtain Walls, & Veneers	BC 1704.10
Progress Inspection Items:	
Preliminary	28-116.2.1, BC 109.2
Footing & Foundation	BC 109.3.1

Energy Code Progress Inspections	Code / Section
Air sealing and insulation - visual	(IA6), (IIA6)
Electrical energy consumption	(IC1), (IIC1)
Electrical motors	(IIC7)
Exit signs	(IIC6)
Exterior lighting power	(IIC4)
Fenestration air leakage	(IA4), (IIA4)
Fenestration areas	(IA5), (IIA5)
Fenestration u-factor and product rating	(IA3), (IIA3)
HVAC and service water heating equipment	(IB3), (IIB3)
HVAC and service water heating system controls	(IB4), (IIB4)
HVAC insulation and sealing	(IB5), (IIB5)
Insulation placement and R values	(IA2), (IIA2)
Interior lighting power	(IC2), (IIC3)
Lighting controls	(IIC5)
Loading dock weather seals	(IIA8)
Maintenance information	(ID1), (IID1)
Projection factors	(IIA7)
Protection of exposed foundation insulation	(IA1), (IIA1)
Shutoff dampers	(IB2), (IIB2)
Vestibules	(IIA9)

ARCHITECTURAL GRAPHIC SYMBOLS



NON-ARCHITECTURAL GRAPHIC SYMBOLS



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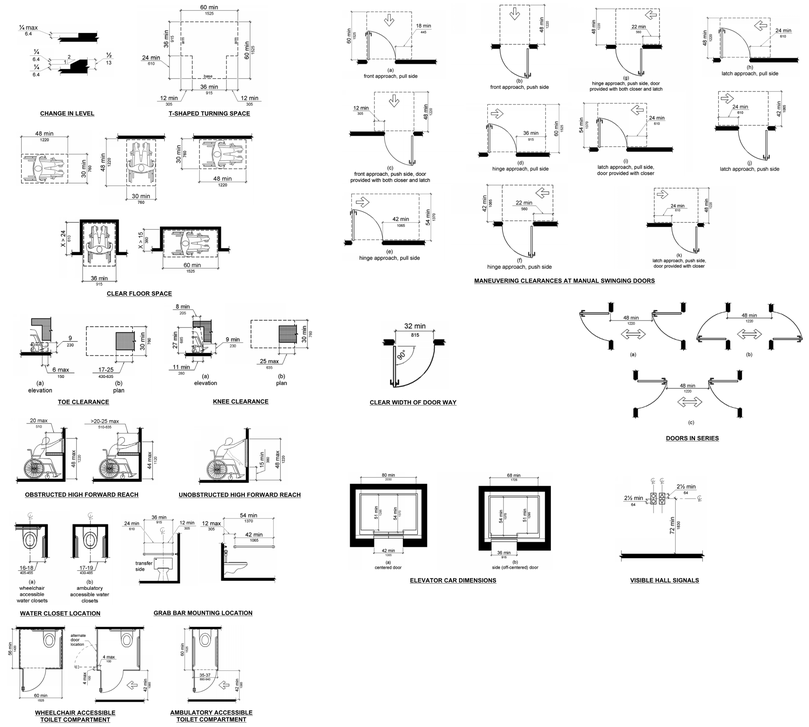

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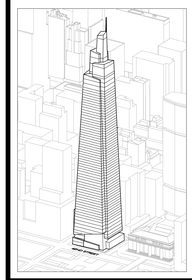

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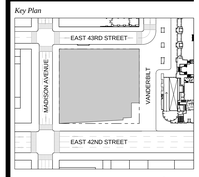
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT DOMINIC LUCIA 021449-1 STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale

Drawing Title
INDEX, ABBREVIATIONS & SYMBOLS

Drawing Number
G-004.00

SHEET 4 OF 56

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GLASS

	TYPE	FINISH	BASIS OF DESIGN
G1	INSULATED GLASS UNIT	OUTER LITE: 3/8" LOW IRON W/ LOW-E ON #2 SURAFACE 1/2" AIR SPACE: INNER LITE: 5/16" LOW IRON 1/16" PVB 5/16" LOW IRON	GUARDIAN; SUNGUARD AG50 ON ULTRAWHITE
G2	INSULATED GLASS UNIT	OUTER LITE: 3/8" LOW IRON W/ LOW-E & CUSTOM FRIT ON #2 SURFACE 1/2" AIR SPACE: INNER LITE: 5/16" LOW IRON 1/16" PVB 5/16" LOW IRON	GUARDIAN; SUNGUARD AG50 ON ULTRAWHITE
G3	MONOLITHIC GLASS	1/4" LOW IRON GLASS W/ BRONZE COLOR CERAMIC FRIT, FLOOD COAT ON #2 SURFACE	
G4	LAMINATED GLASS	3-PLY 1/2" LAMINATED LOW IRON GLASS W/ LOW-E ON #2 SURFACE	AGC INTERPANE; IPASOL GREY 70 ON IPAWHITE
G5	INSULATED GLASS UNIT	OUTER LITE: 3/8" HEAT STRENGTHENED LOW IRON 1/2" AIR SPACE: INNER LITE: 3/16" LOW IRON 1/16" PVB 3/16" LOW IRON	AGC INTERPANE
G6	INSULATED GLASS UNIT	OUTER LITE: 3/8" HEAT STRENGTHENED LOW IRON 5/8" AIR SPACE: INNER LITE: 1/4" HEAT STRENGTHENED LOW IRON 1/16" PVB 1/4" HEAT STRENGTHENED LOW IRON	AGC INTERPANE
G7	LAMINATED GLASS	5-PLY 1/2" LAMINATED LOW IRON GLASS FIN	
G8	LAMINATED GLASS	2-PLY 5/8" LAMINATED LOW IRON GLASS FIN	
G9	LAMINATED GLASS	2-PLY 1/4" LAMINATED LOW IRON GLASS	
G10	INSULATED GLASS UNIT*	OUTER LITE: FIRE RATED 3 PLY LAMINATED GLASS W/ SLIP RESISTANT COATING ON #1 SURFACE & FRIT ON #2 AIR SPACE: INNER LITE: FIRE RATED 2 PLY LAMINATED GLASS W FRIT	LITEFRAM BY VETROTECH SAINT-GOBAIN
G11	INSULATED GLASS UNIT	OUTER LITE: 3/8" LOW IRON W/ LOW-E ON #2 SURAFACE 1/2" AIR SPACE: INNER LITE: 5/16" LOW IRON 1/16" PVB 5/16" LOW IRON	AGC INTERPANE (SIMILAR LOW-E COATING TO WT1)

METAL

	TYPE	FINISH	BASIS OF DESIGN
AL1	ALUMINUM	ANODIZED ALUMINUM: LIGHT BRONZE COLOR	LINETEC
AL2	ALUMINUM	PAINTED ALUMINUM: 3-COAT METALLIC 70% KYNAR FINISH; NICKEL SILVER COLOR	PPG
AL3	ALUMINUM	PAINTED ALUMINUM: 3-COAT DURANAR FINISH; WHITE COLOR	PPG
AL4	ALUMINUM	PAINTED ALUMINUM: 3-COAT DURANAR FINISH; NOBLE GREY COLOR	PPG
AL5	ALUMINUM	ANODIZED ALUMINUM: PEFINISHED SATEEN WHITE	PPG
AL6	ALUMINUM	PAINTED ALUMINUM: 3-COAT METALLIC 70% KYNAR FINISH; BRONZE COLOR	PPG
SS1	STAINLESS STEEL	NON DIRECTIONAL FINISH	CMR
SS2	STAINLESS STEEL	DIRECTIONAL FINISH	
SS3	STAINLESS STEEL	COLORED STAINLESS STEEL: SHOT FINISH; BRONZE COLOR W/ ANTI-FINGERPRINT COATING	CMR+ TSUKIBOSHI ART
SS4	STAINLESS STEEL	516 GRADE	
STL1	STEEL	HOT DIPPED GALVANIZED STEEL, PTD	
BR1	BRONZE	DIRECTIONAL FINISH	ASTEC
BR2	BRONZE	STAMPED TEXTURE	ASTEC

STONE

	TYPE	FINISH	BASIS OF DESIGN
S1	SCHIST	FLAMED	GALAXY BLEND
S2	GRANITE	FLAMED	
S3	MARBLE	HONED	WHITE PEARL
S4	MARBLE	HONED	TENNESSEE MARBLE, ENDSLEY PINK
S5	MARBLE	HONED	PREMIUM ARCHITECTURAL STONE TBD
S6	MARBLE	TYPE OF FINISH TBD	PREMIUM ARCHITECTURAL STONE TBD

TERRA-COTTA / CERAMIC

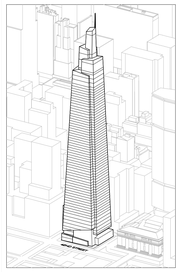
	TYPE	FINISH	BASIS OF DESIGN
TC1	TERRA-COTTA	DOUBLE GLAZED, DOUBLE FIRED TERRA-COTTA; GRADIENT COLOR EFFECT IN WHITE	BOSTON VALLEY TERRA-COTTA
TC2	TERRA-COTTA	DOUBLE GLAZED, DOUBLE FIRED TERRA-COTTA; GRADIENT COLOR EFFECT IN WARM BEIGE	BOSTON VALLEY TERRA-COTTA
TC3	CERAMIC	GLOSS FINISH	BOSTON VALLEY TERRA-COTTA

OTHERS

	TYPE	FINISH	BASIS OF DESIGN
GWB1	DRYWALL	PAINTED	
W1	WOOD	ENGINEERED OAK	
PC1	PRECAST CONCRETE	COLOR TBD	
	FEATURE WALL	GREEN PLANTING SYSTEM	

* GLASS FLOOR SYSTEM TO BE DESIGNED FURTHER

ONE VANDERBILT



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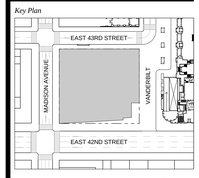
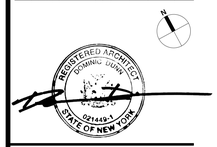
Key Plan





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Drawn By
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Drawing Title
MATERIALS & FINISHES LEGENDS

Drawing Number
G-005.00

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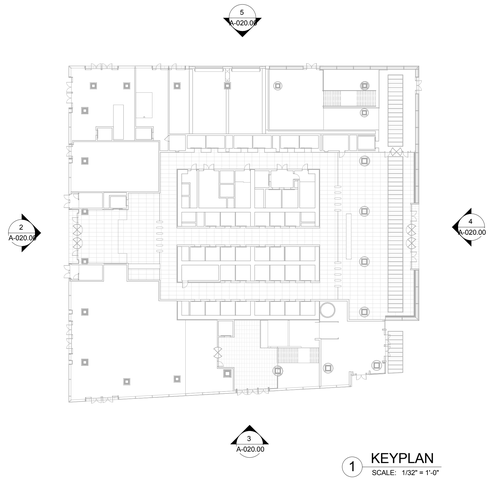
5 NORTH ELEVATION (EAST 43RD STREET)
SCALE: 1/8" = 1'-0"

4 EAST ELEVATION (VANDERBILT)
SCALE: 1/8" = 1'-0"

3 SOUTH ELEVATION (EAST 42ND STREET)
SCALE: 1/8" = 1'-0"

2 WEST ELEVATION (MADISON AVENUE)
SCALE: 1/8" = 1'-0"



1 KEYPLAN
SCALE: 1/32" = 1'-0"

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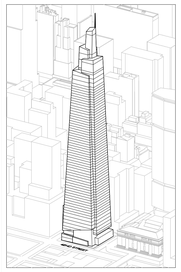

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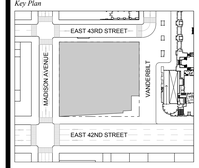

REGISTERED ARCHITECT
CHANG LIU
021449-1
STATE OF NEW YORK

Issue Date: 09-01-2015
Project No. 1943.16
Drawn By:
Scale AS NOTED

Drawing Title
BUILDING ELEVATIONS @ GRADE

Drawing Number
A-020.00

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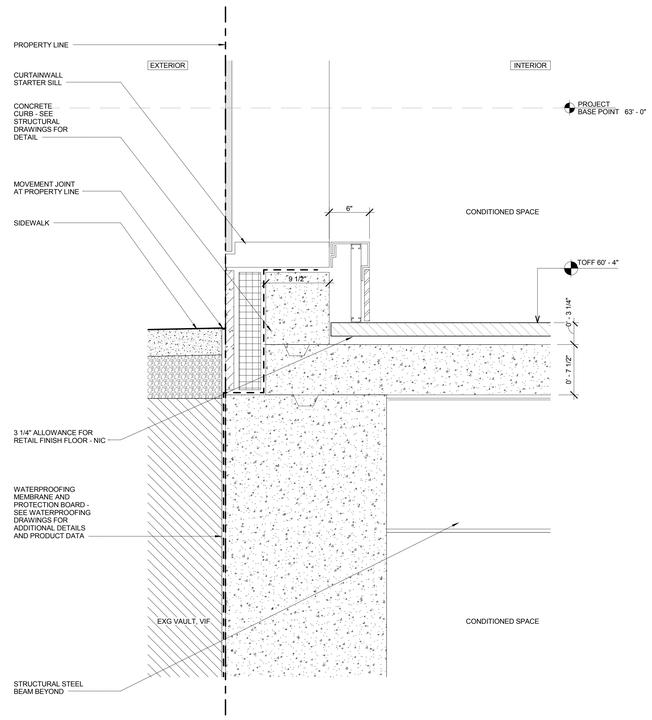
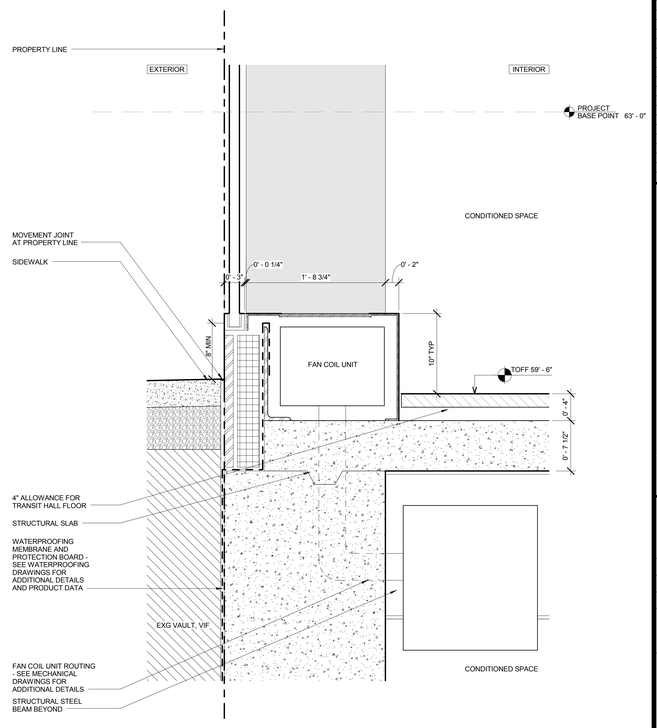


2 SECTION DETAIL - T.O. FOUNDATION WALL NORTH @ RETAIL
SCALE: 1 1/2" = 1'-0"



1 SECTION DETAIL - T.O. FOUNDATION WALL NORTH @ TRANSIT HALL
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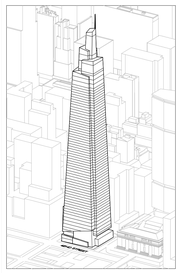
ONE VANDERBILT



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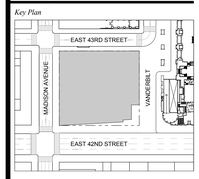

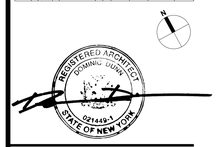

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Scale 1 1/2" = 1'-0"

Drawing Title
SECTION DETAIL - FOUNDATION - NORTH

Drawing Number
A-021.00

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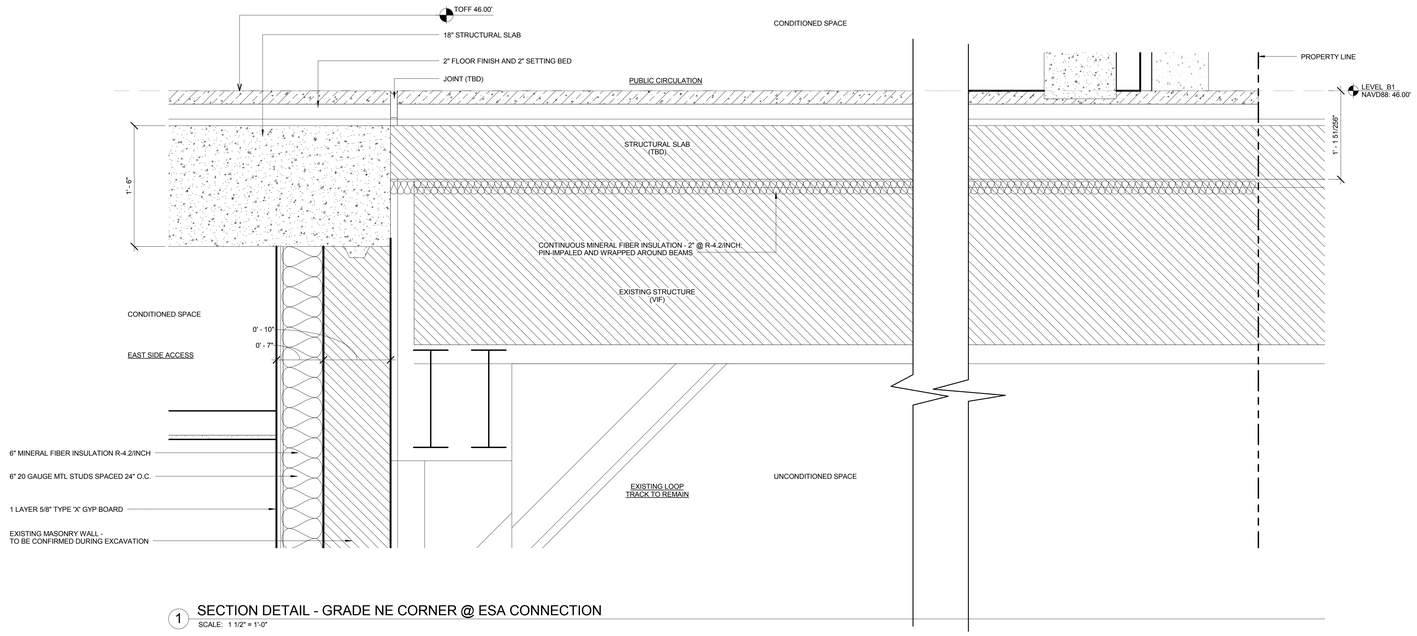
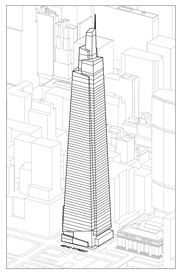


1 SECTION DETAIL - GRADE NE CORNER @ ESA CONNECTION
SCALE: 1 1/2" = 1'-0"

ONE VANDERBILT



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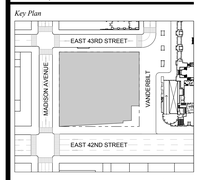
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
DOMINIC LAMPIS
021449-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1 1/2" = 1'-0"

Drawing Title
SECTION DETAIL - FOUNDATION - NORTH EAST

Drawing Number
A-022.00

SHEET 8 OF 56

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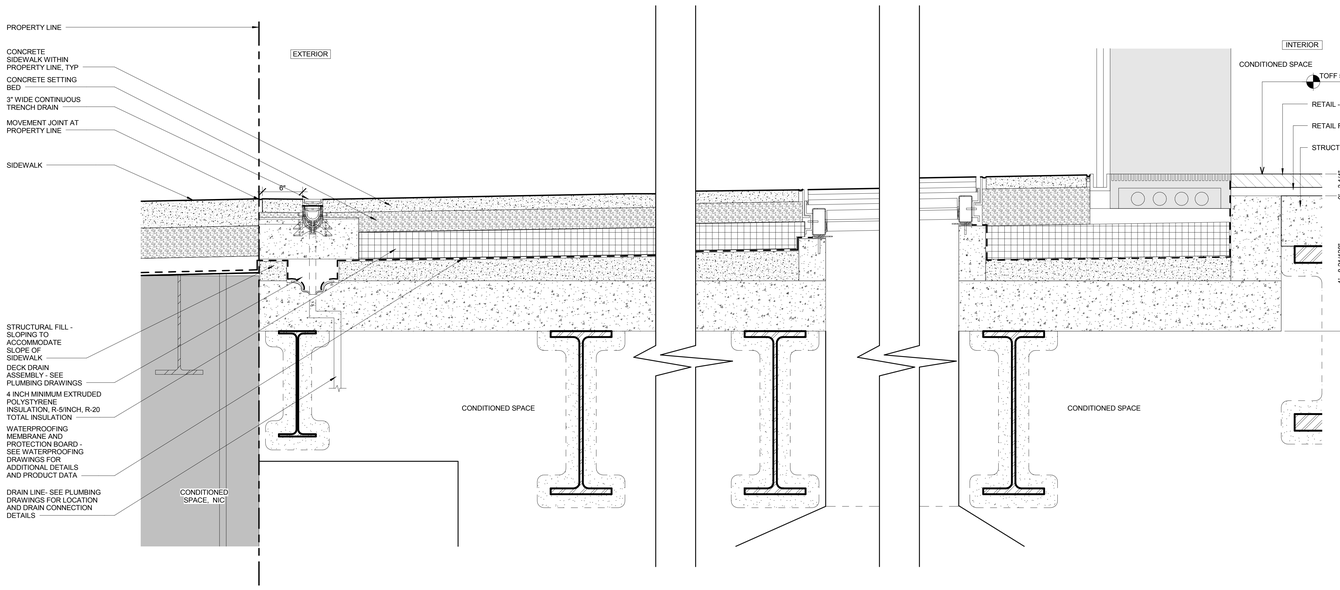
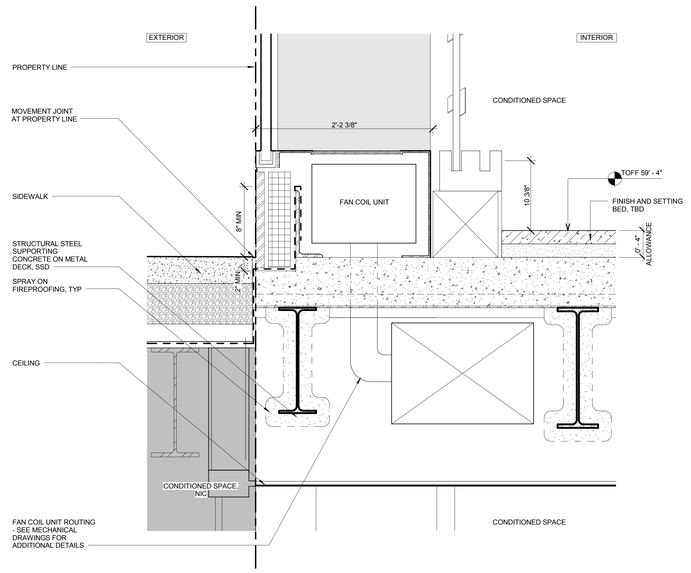
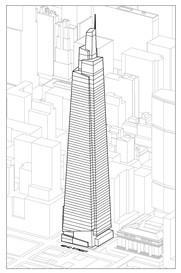


2 SECTION DETAIL - GRADE EAST @ RETAIL ENTRY DOOR
SCALE: 1 1/2" = 1'-0"



1 SECTION DETAIL - GRADE EAST @ LOBBY
SCALE: 1 1/2" = 1'-0"

ONE VANDERBILT



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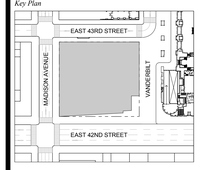
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1 1/2" = 1'-0"

Drawing Title
SECTION DETAIL - FOUNDATION - EAST

Drawing Number
A-023.00

SHEET 9 OF 56

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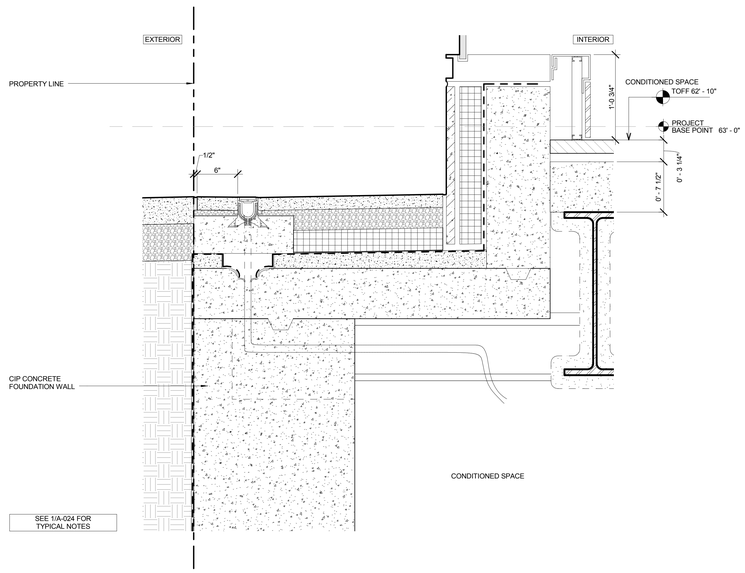
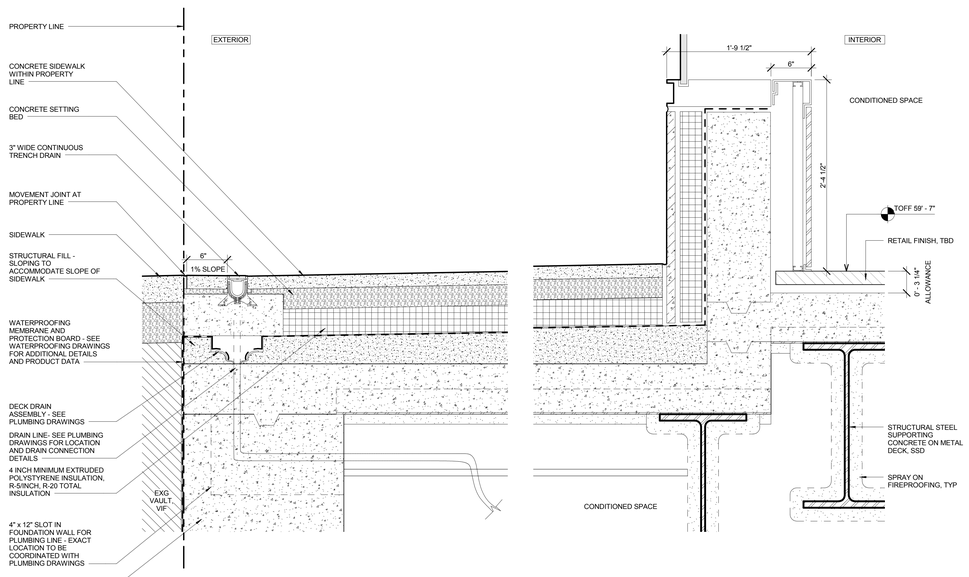
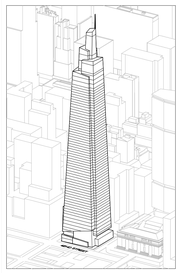


2 SECTION DETAIL - T.O. FOUNDATION WALL SOUTH @ RETAIL SW
SCALE: 1 1/2" = 1'-0"



1 SECTION DETAIL - T.O. FOUNDATION WALL SOUTH @ RETAIL SE
SCALE: 1 1/2" = 1'-0"

ONE VANDERBILT



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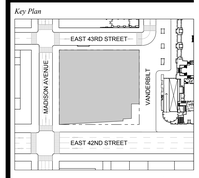
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
DOMINIC LAMANNA
021449-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1 1/2" = 1'-0"

Drawing Title
SECTION DETAIL - FOUNDATION - SOUTH

Drawing Number
A-024.00

SHEET 10 OF 56

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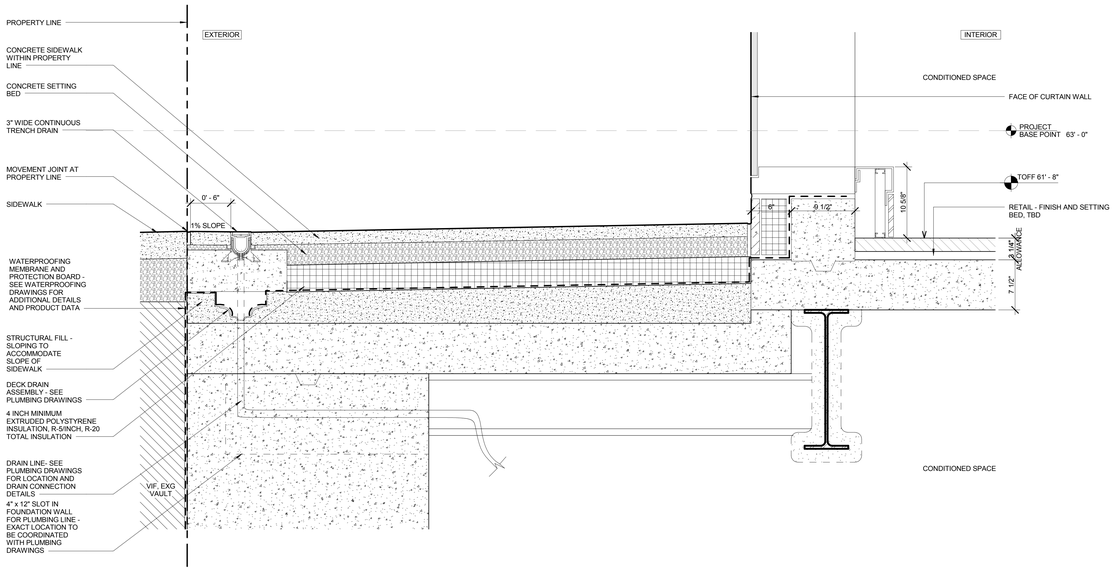

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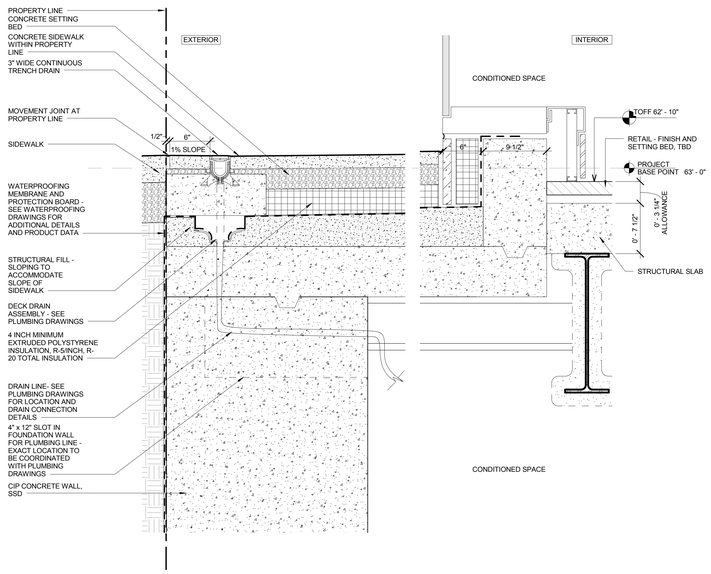

1 SECTION DETAIL - T.O. FOUNDATION WALL WEST @ RETAIL
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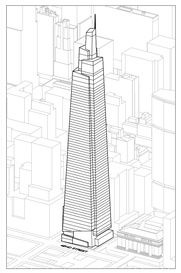
ONE VANDERBILT



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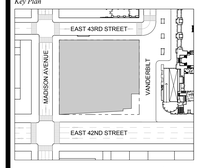
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
DOMINIC LAMPIS
021449-1
STATE OF NEW YORK

Issue Date: 09-01-2015
Project No. 1943.16
Drawn By
Scale 1 1/2" = 1'-0"

Drawing Title
SECTION DETAIL - FOUNDATION - WEST

Drawing Number
A-025.00

SHEET 11 OF 56

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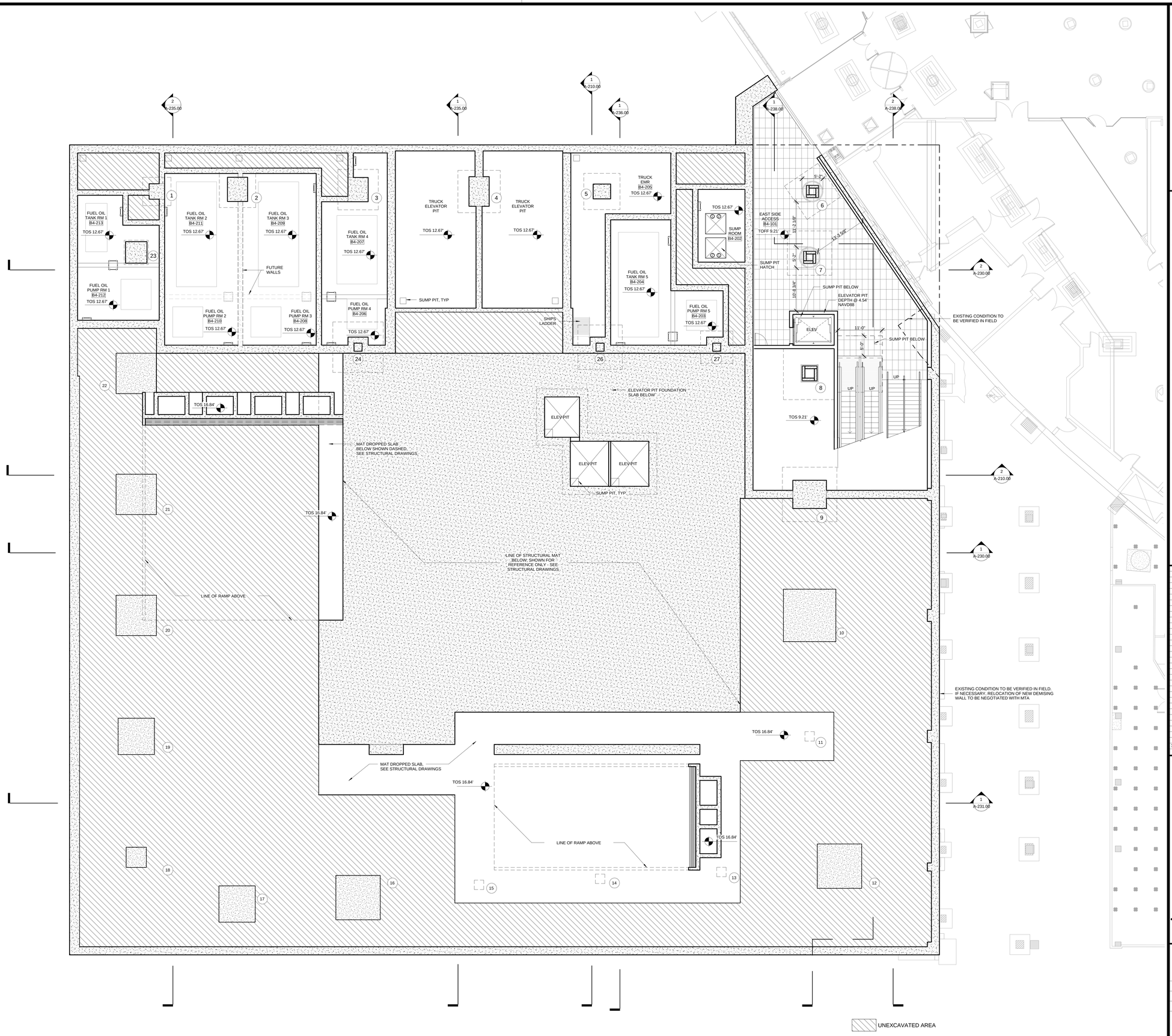

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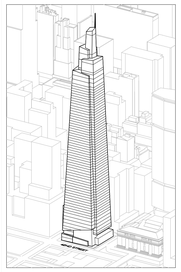

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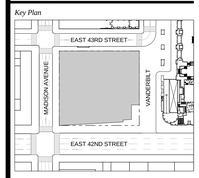
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
DOMINIC CUPPS
014445-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN B4 EAST SIDE ACCESS

Drawing Number
A-097.00

SHEET 12 OF 56

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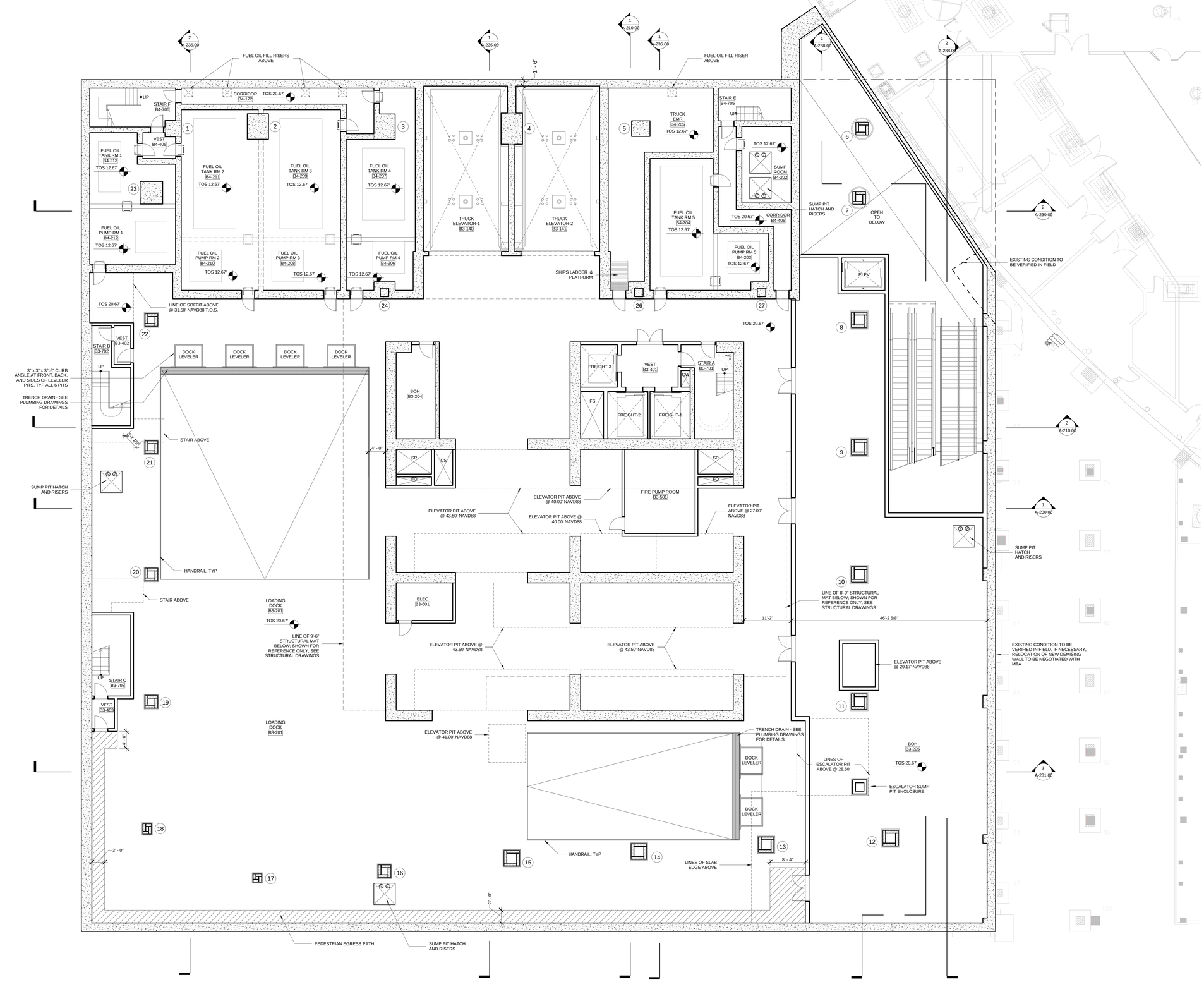
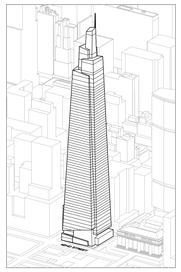


ONE VANDERBILT



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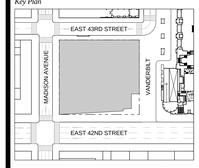
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT DOMINIC LUPPA 021449-1 STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN B3 LOADING DOCK

Drawing Number
A-098.00

SHEET 13 OF 56

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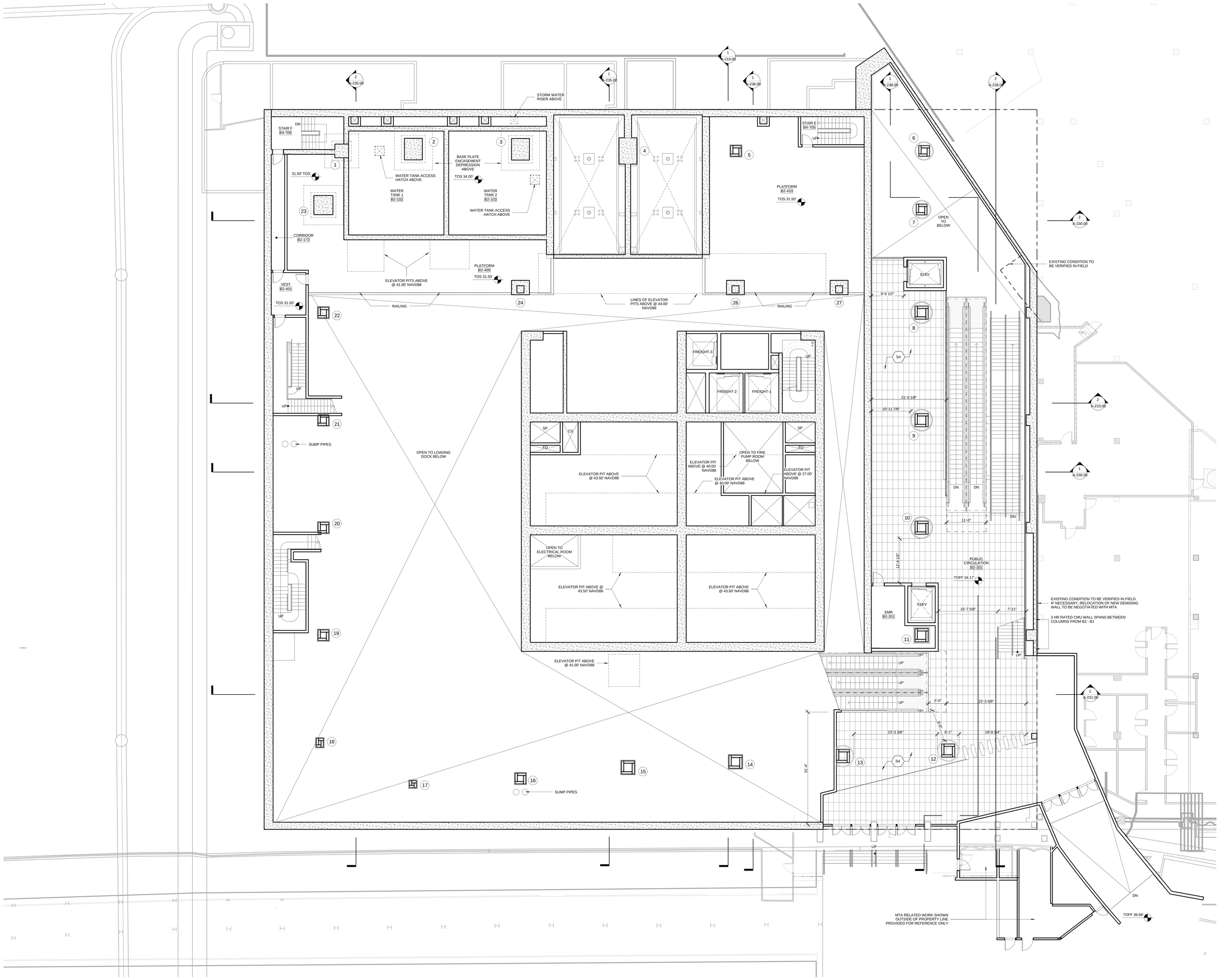

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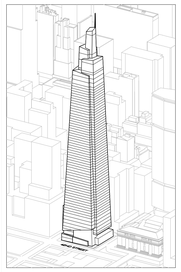

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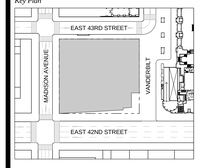
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT DOMINIC SURNO 021449-1 STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN B2 SHUTTLE PLATFORM

Drawing Number
A-099.00

SHEET 14 OF 56

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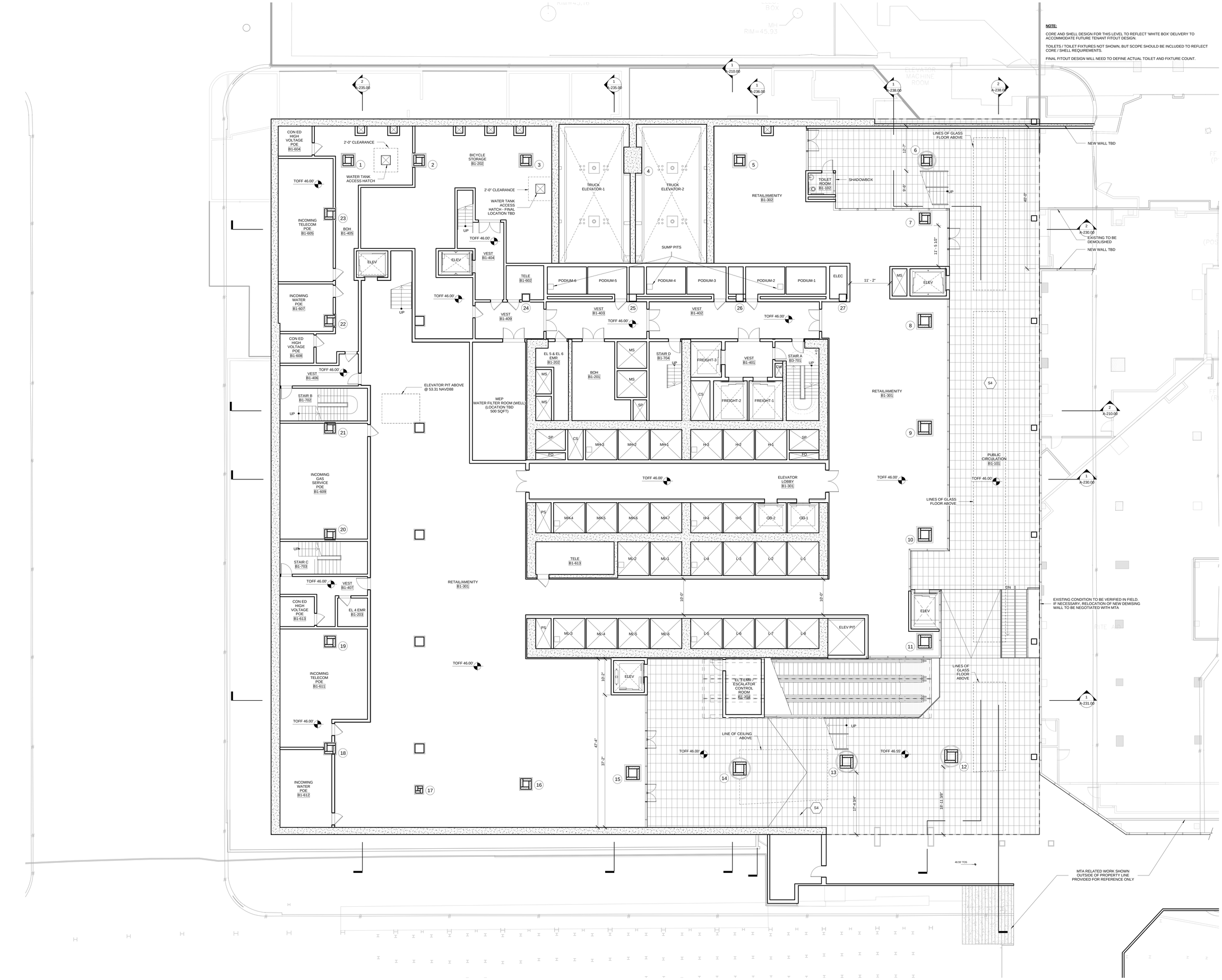
ONE VANDERBILT



NOTE:

CORE AND SHELL DESIGN FOR THIS LEVEL TO REFLECT 'WHITE BOX' DELIVERY TO ACCOMMODATE FUTURE TENANT FITOUT DESIGN.

TOILETS / TOILET FIXTURES NOT SHOWN, BUT SCOPE SHOULD BE INCLUDED TO REFLECT CORE / SHELL REQUIREMENTS.

FINAL FITOUT DESIGN WILL NEED TO DEFINE ACTUAL TOILET AND FIXTURE COUNT.

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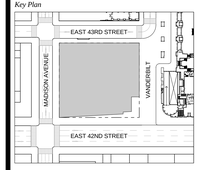
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
DOMINIC LOW
021449-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN B1 GCT CONCOURSE

Drawing Number
A-100.00

SHEET 15 OF 56

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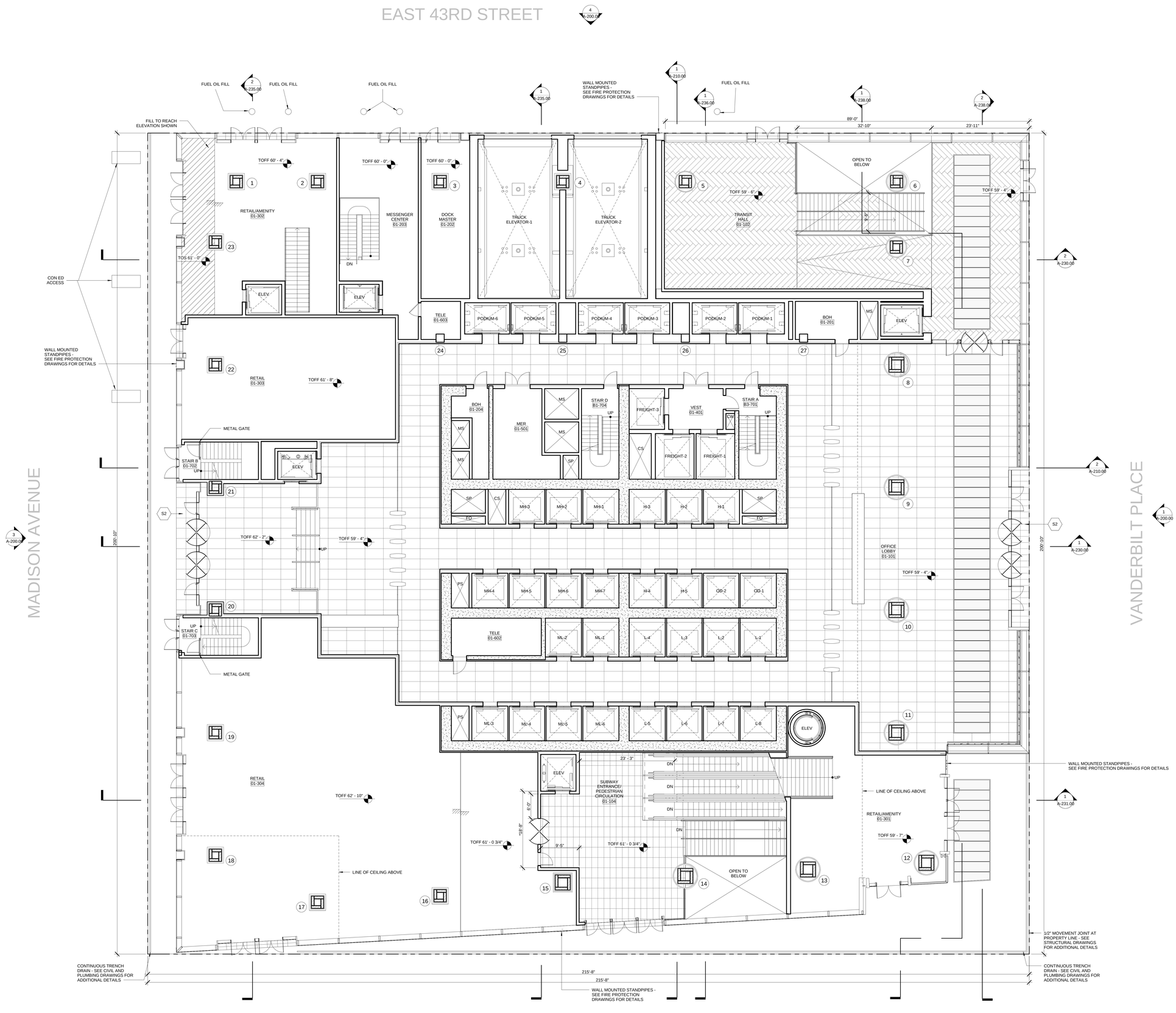

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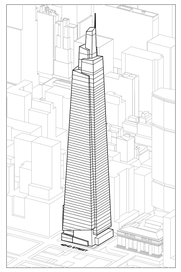

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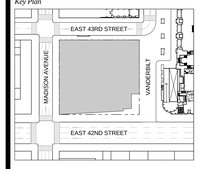
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
DOMINIC LUONGO
001449-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN 01

Drawing Number
A-101.00

SHEET 16 OF 56

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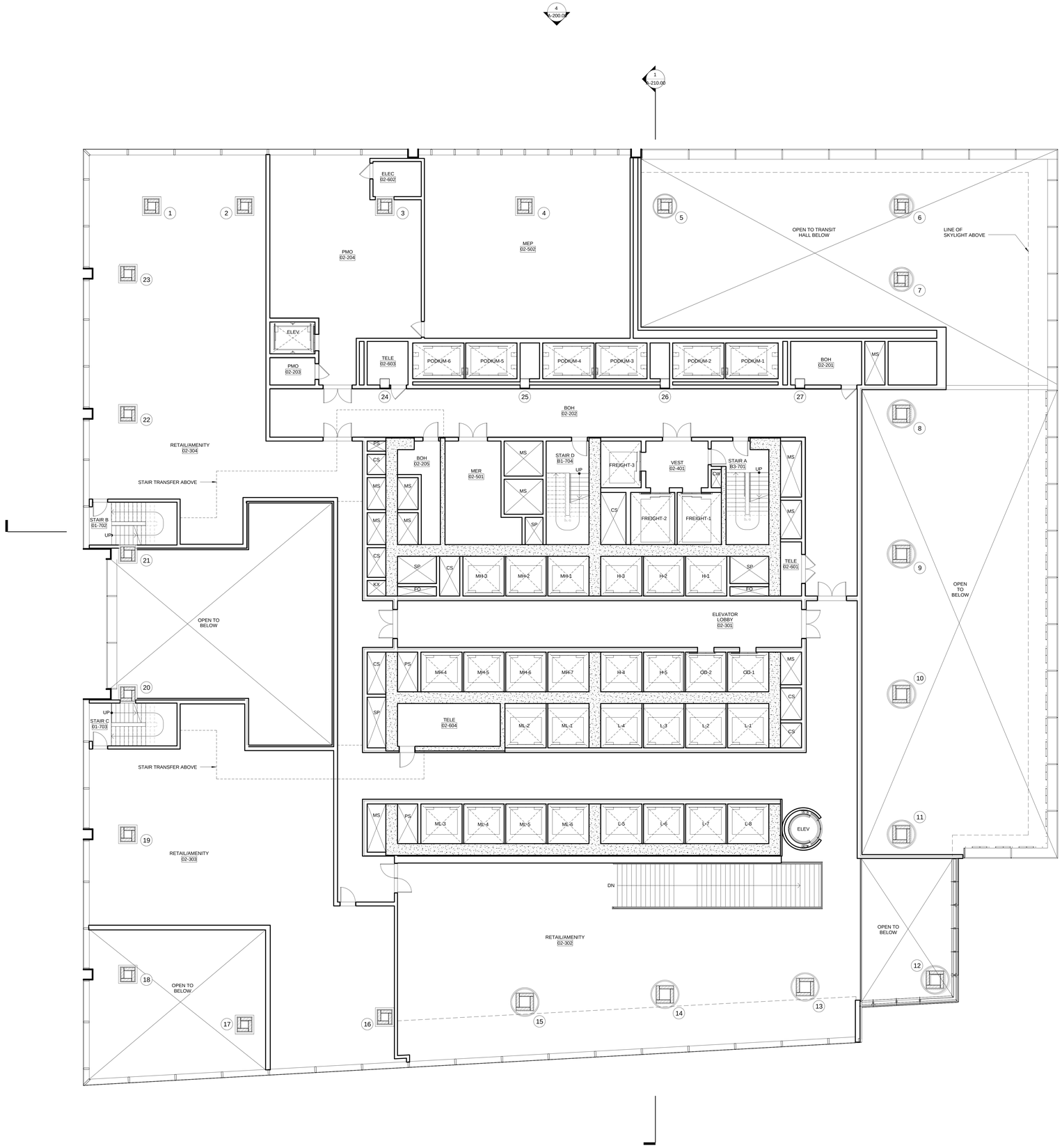
NOTE:

CORE AND SHELL DESIGN FOR THIS LEVEL TO REFLECT 'WHITE BOX' DELIVERY TO ACCOMMODATE FUTURE TENANT FITOUT DESIGN.

TOILETS / TOILET FIXTURES NOT SHOWN, BUT SCOPE SHOULD BE INCLUDED TO REFLECT CORE / SHELL REQUIREMENTS.

FINAL FITOUT DESIGN WILL NEED TO DEFINE ACTUAL TOILET AND FIXTURE COUNT.



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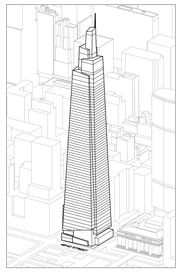

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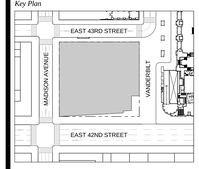
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
DOMINIC LAURA
014449-1
STATE OF NEW YORK

Issue Date: **09-01-2015**

Project No. **1943.16**

Drawn By

Scale 1/8" = 1'-0"

Drawing Title

FLOOR PLAN 02

Drawing Number

A-102.00

SHEET 17 OF 56

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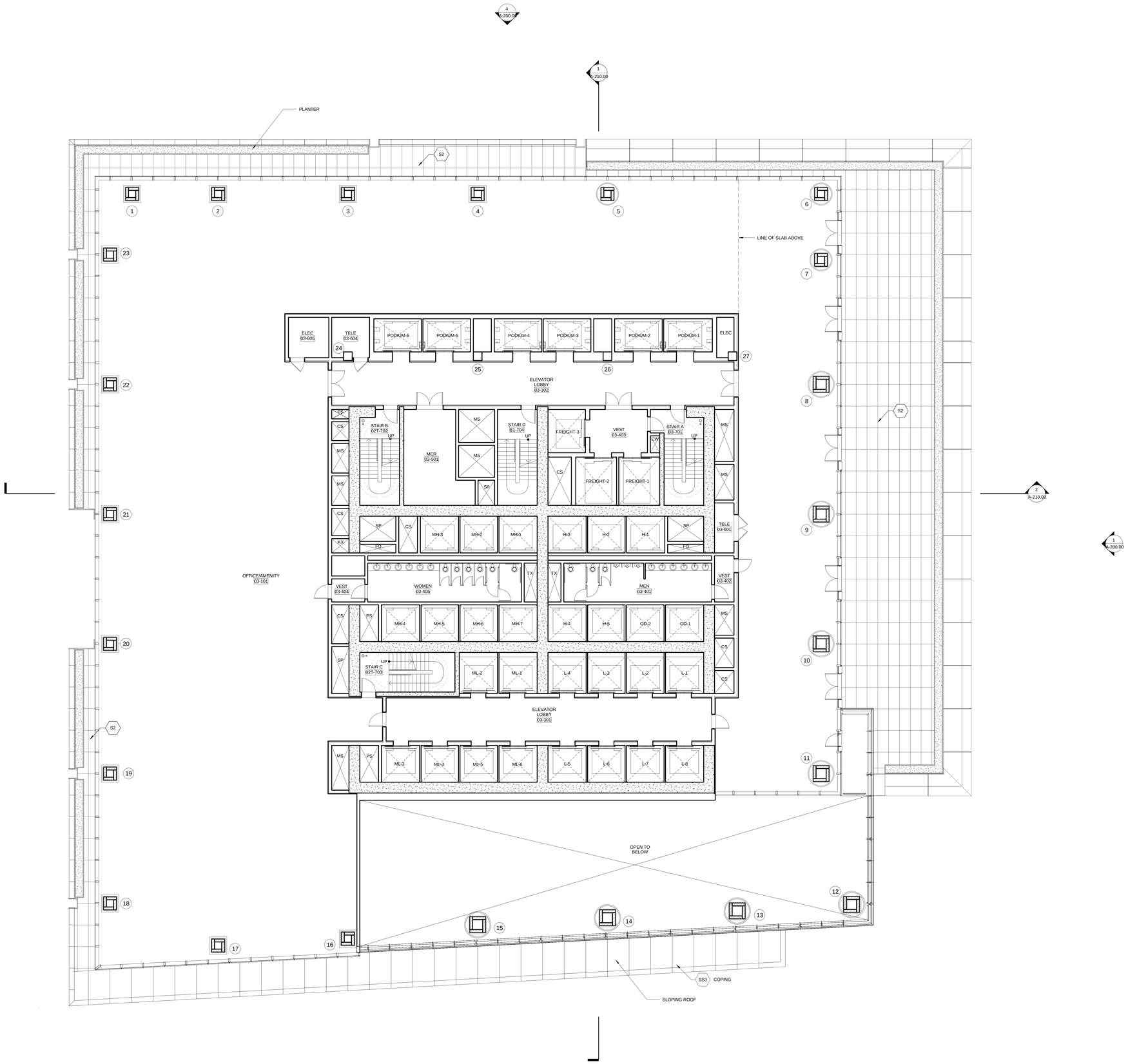

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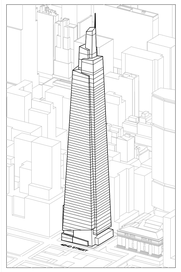

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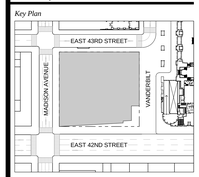
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT DOMINIC CURRY 014449-1 STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN 03
OFFICE AMENITY

Drawing Number
A-103.00

SHEET 18 OF 56

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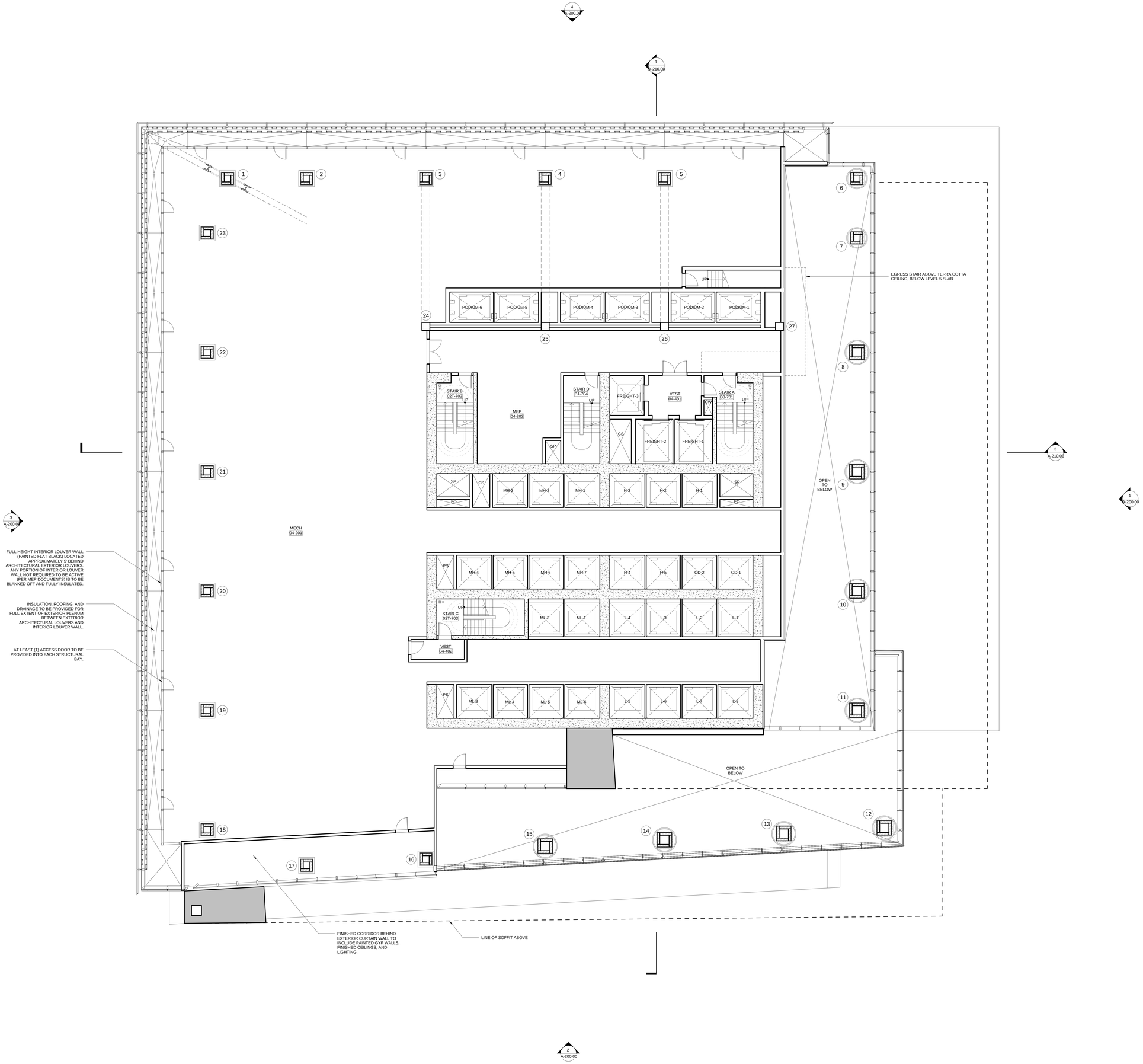

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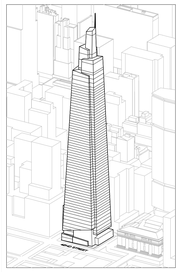

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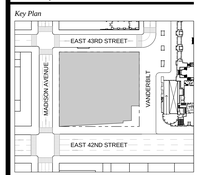
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
DOMINIC CURRY
021449-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN 04 MECHANICAL

Drawing Number
A-104.00

SHEET 19 OF 56

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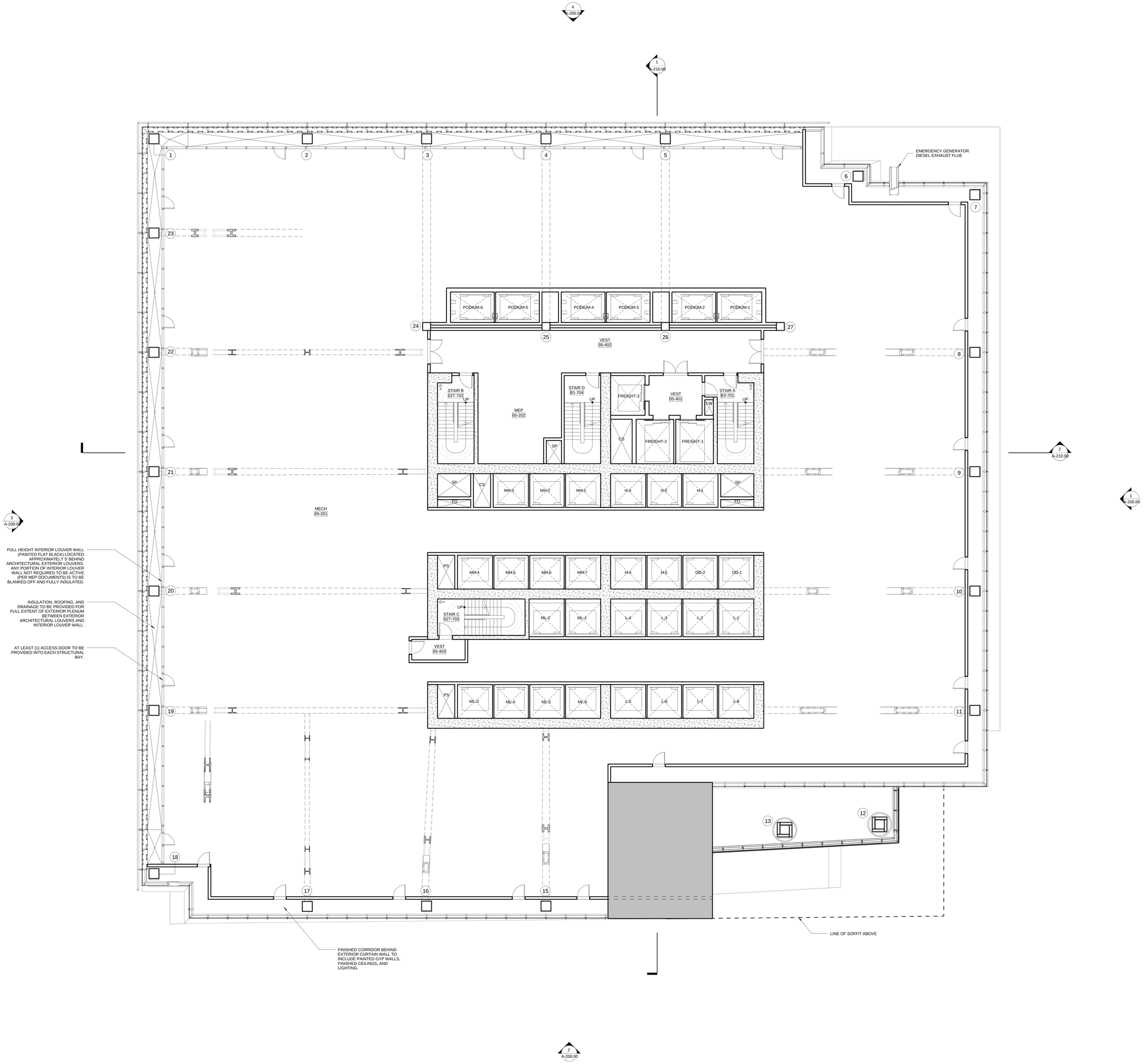

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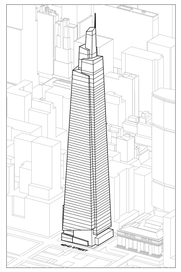

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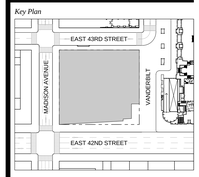
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
DOMINIC LUONG
021449-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN 05 MECHANICAL

Drawing Number
A-105.00

SHEET 20 OF 56

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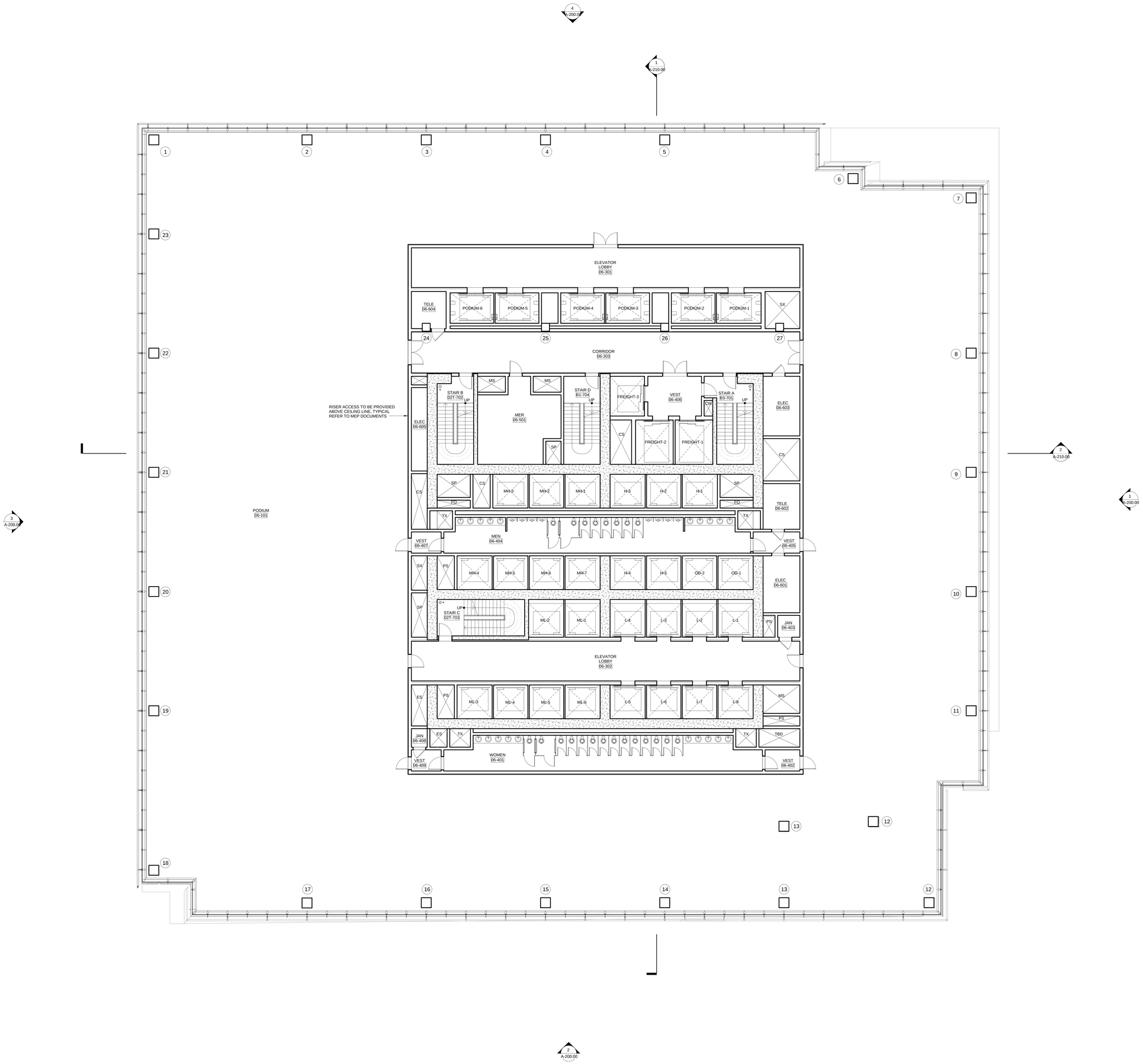

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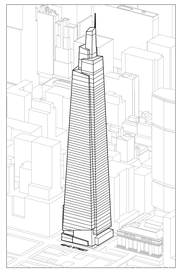

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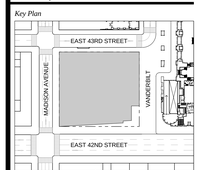
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT DOMINIC CUPPA 021449-1 STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN 06 PODIUM (LOWEST)

Drawing Number
A-106.00

SHEET 21 OF 26

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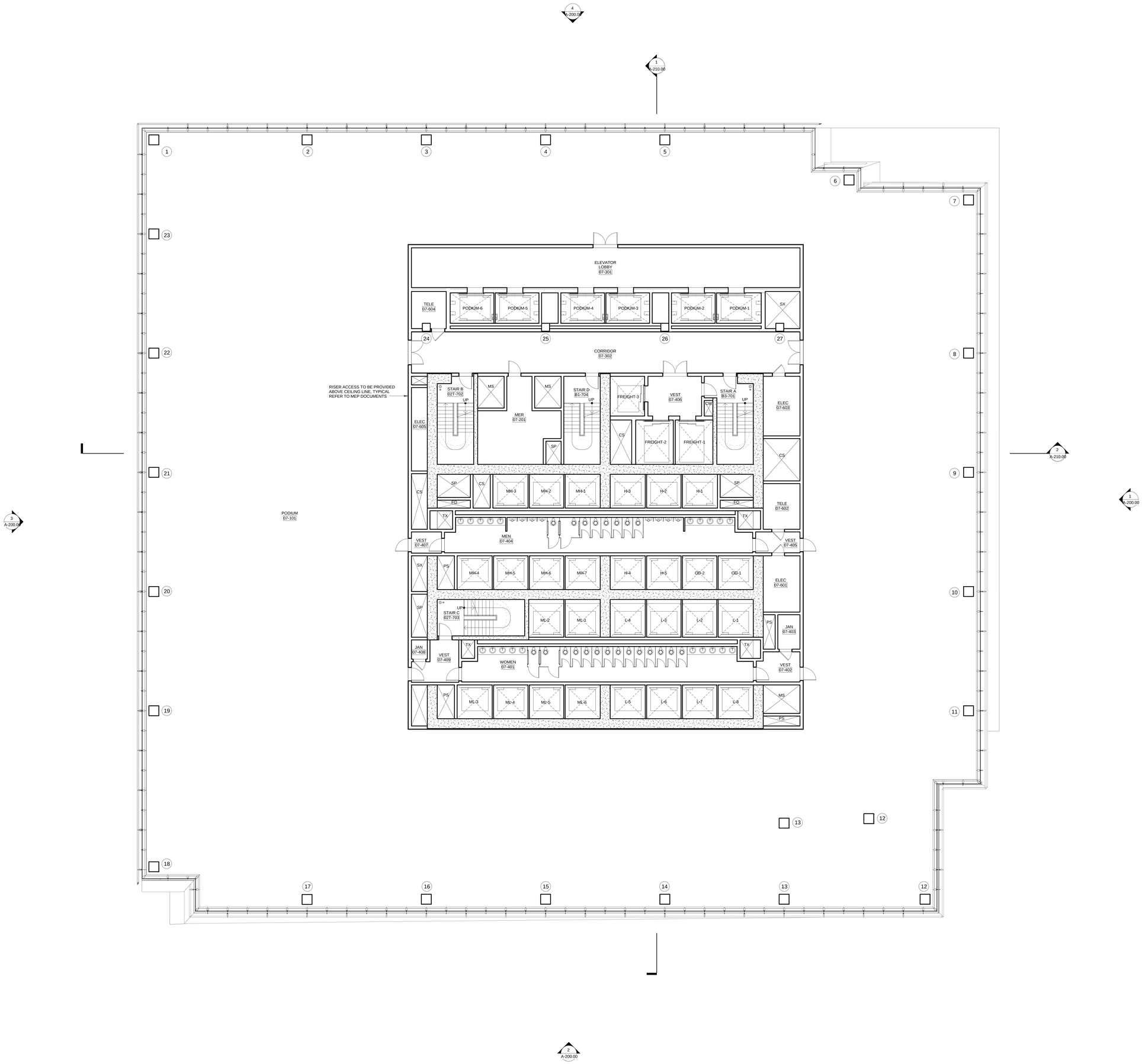

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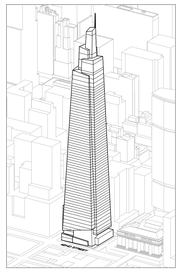

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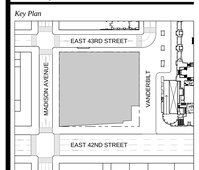
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT DOMINIC LUPIA 014449-1 STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN 07
PODIUM (TYPICAL)

Drawing Number
A-107.00

SHEET 22 OF 56

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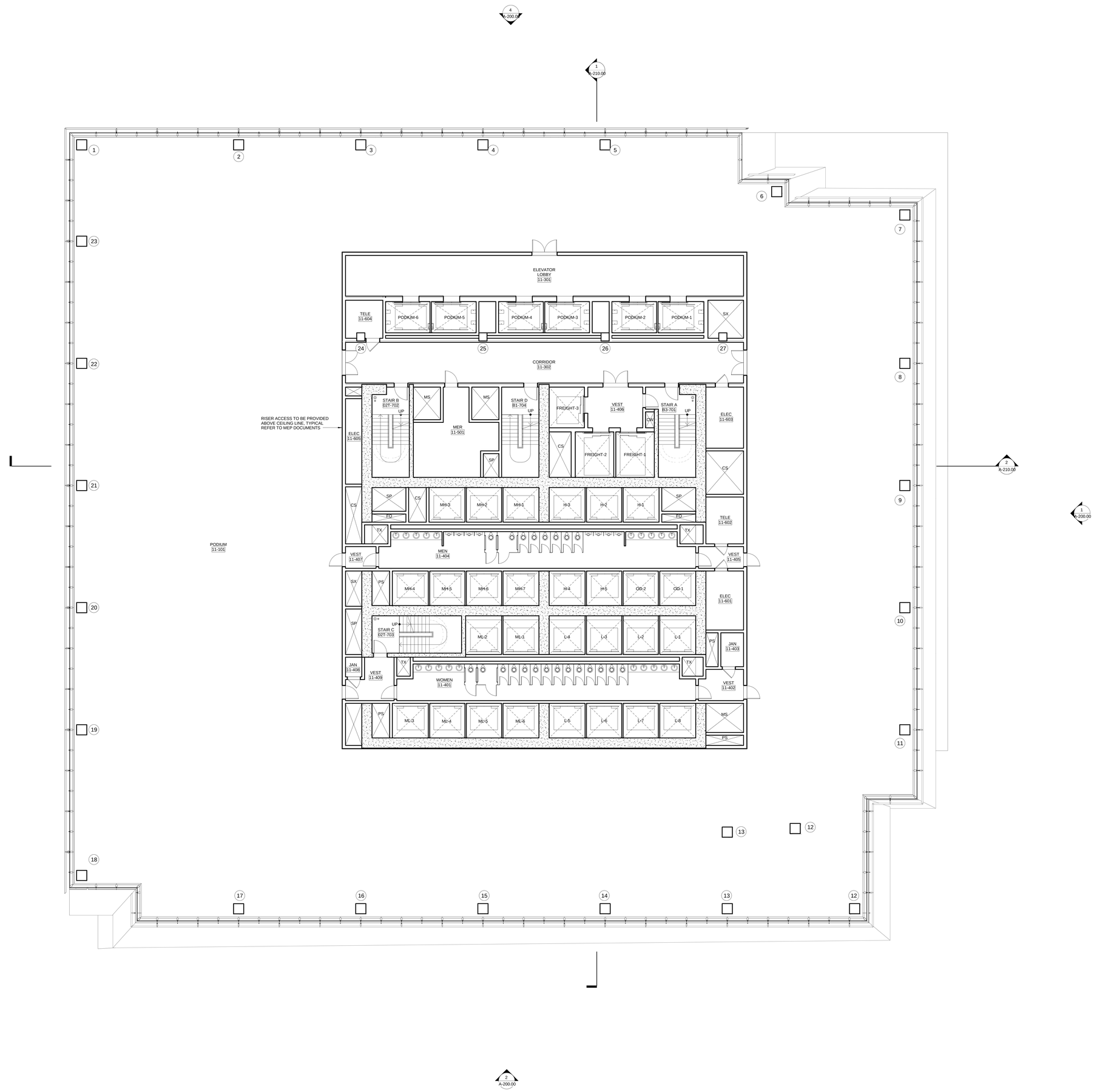

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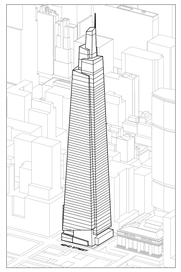

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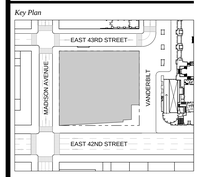
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
DOMINIC CURRAN
021419-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN 11 PODIUM (HIGHEST)

Drawing Number
A-111.00

SHEET 23 OF 56

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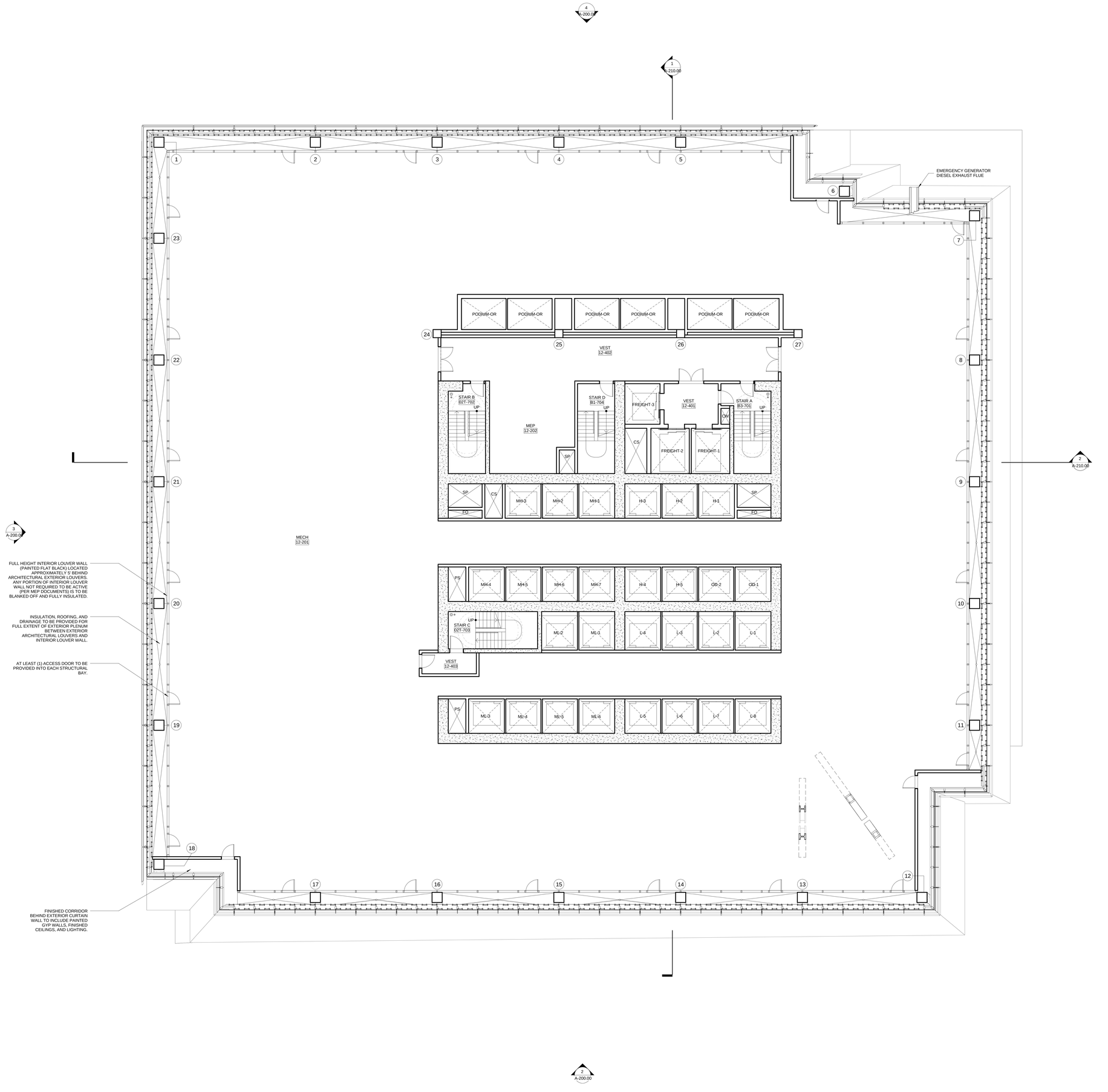

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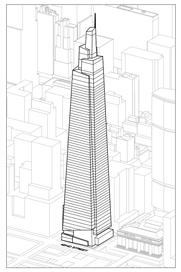

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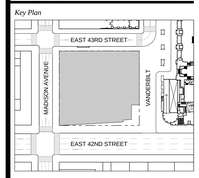
215 West 40th Street, 15th Floor
New York, NY 10018
Tel: 212.216.9506 Fax: 212.216.9619

No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
CHUNG LUNG
021449-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN 12 MECHANICAL

Drawing Number
A-112.00

SHEET 24 OF 56

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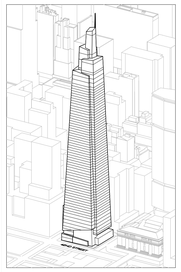
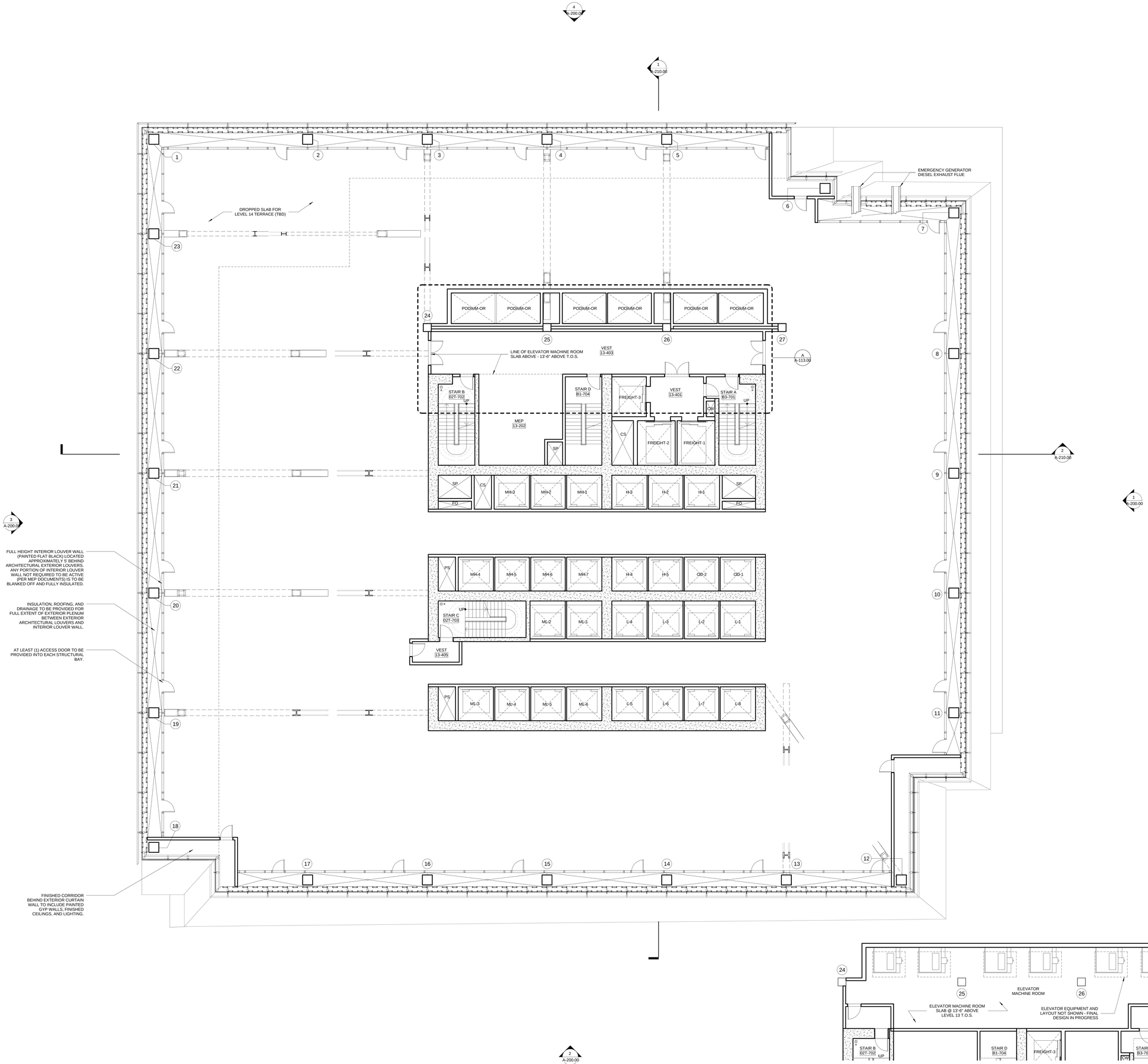
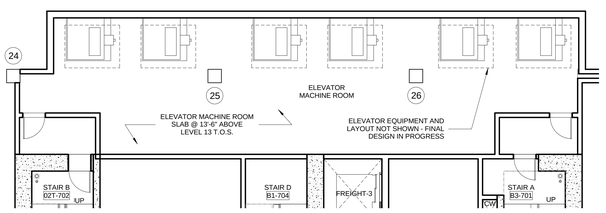
ONE VANDERBILT







A PARTIAL PLAN - ELEVATOR MACHINE ROOM

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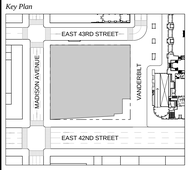
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN 13 MECHANICAL

Drawing Number
A-113.00

SHEET 25 OF 56

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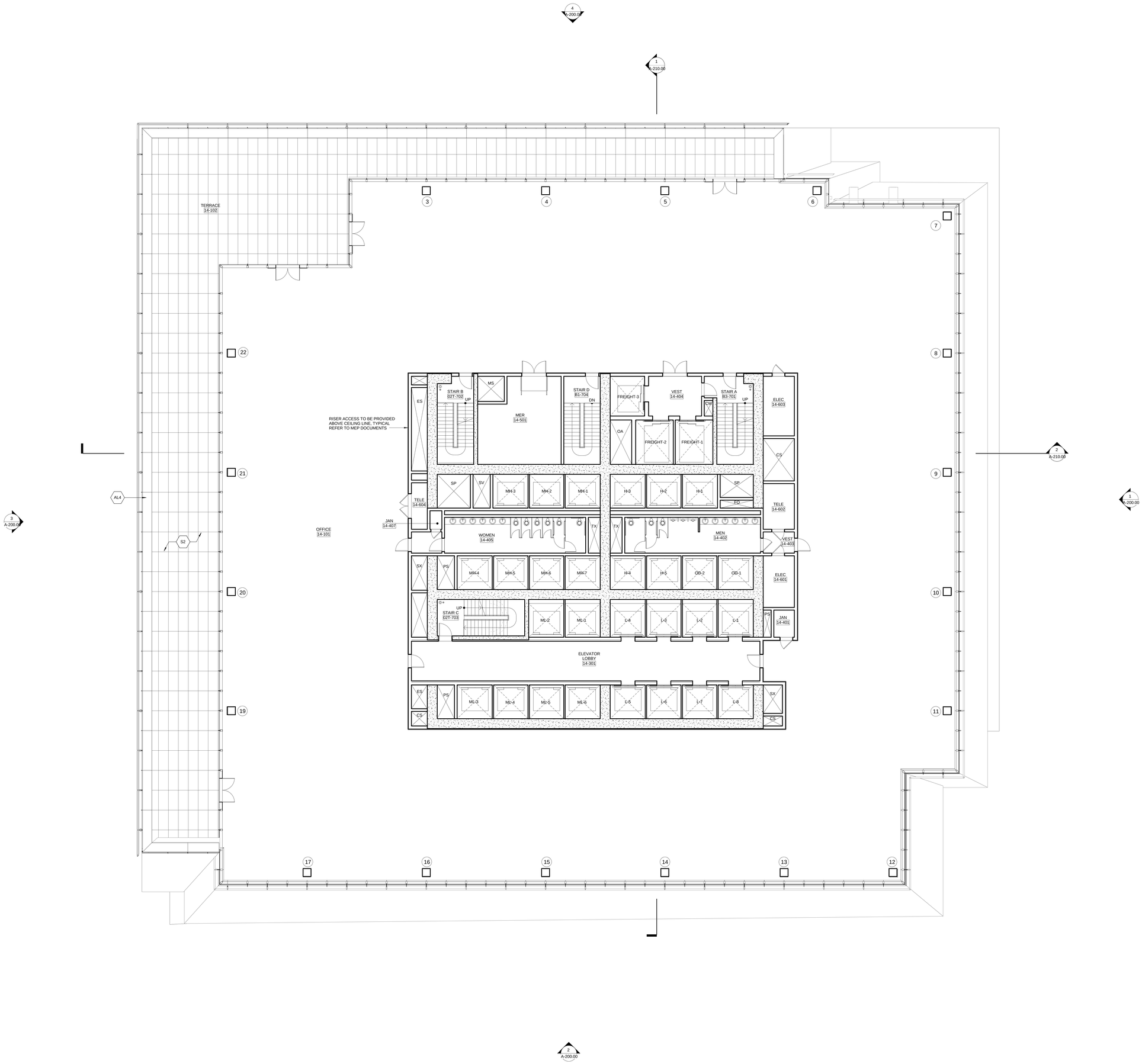

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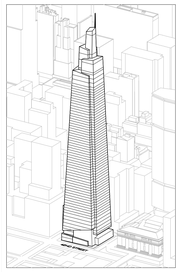

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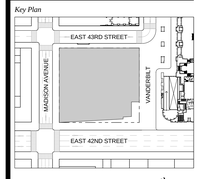
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
DOMINIC DURSO
021419-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN 14 LOW EXECUTIVE OFFICE (LOWEST)

Drawing Number
A-114.00

SHEET 26 OF 56

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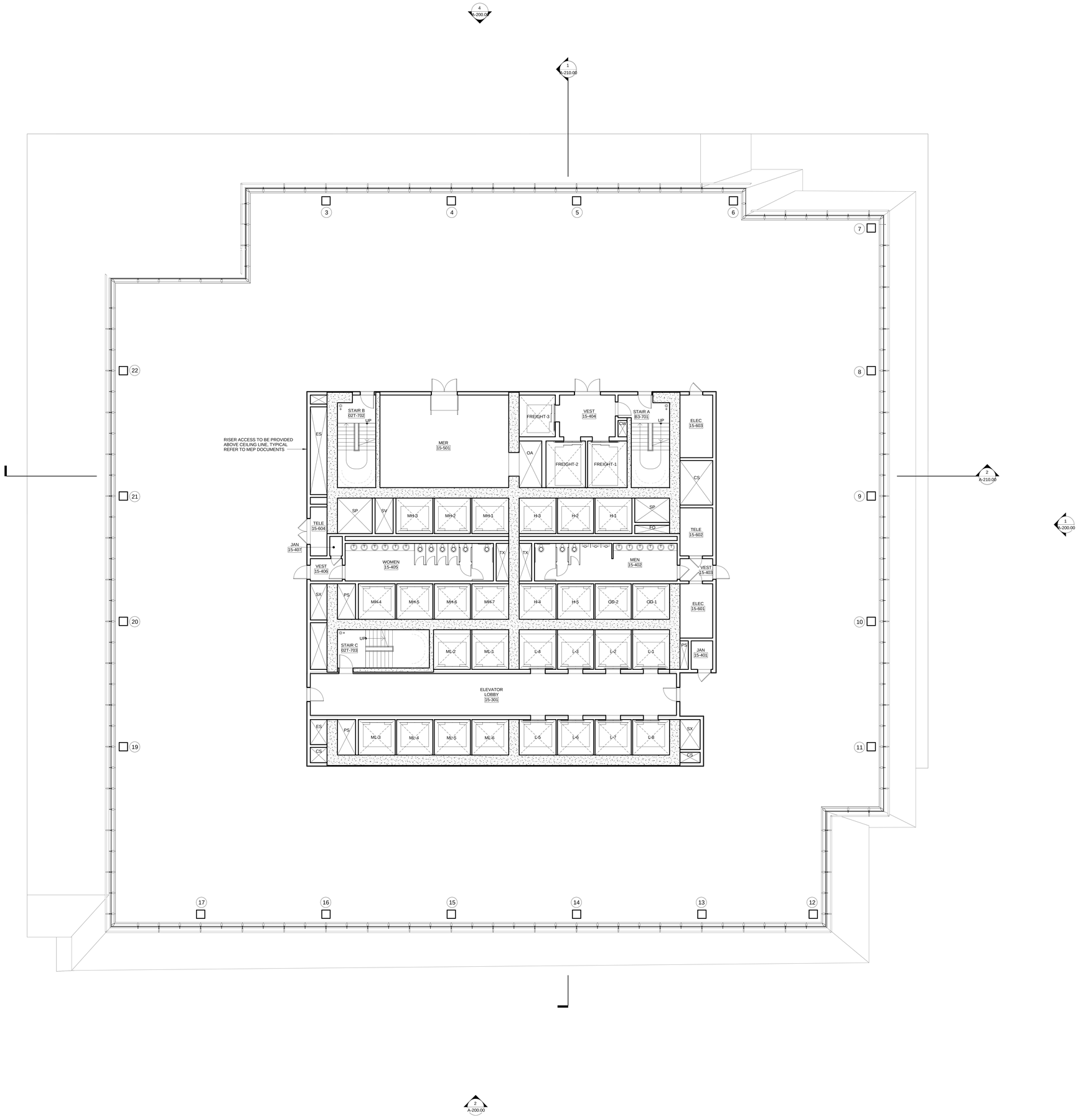

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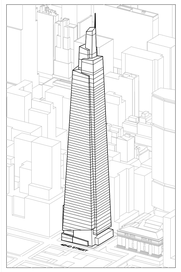

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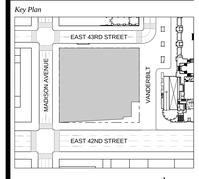
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
DOMINIC DURSO
021419-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN 15 LOW OFFICE (TYPICAL)

Drawing Number
A-115.00

SHEET 27 OF 56

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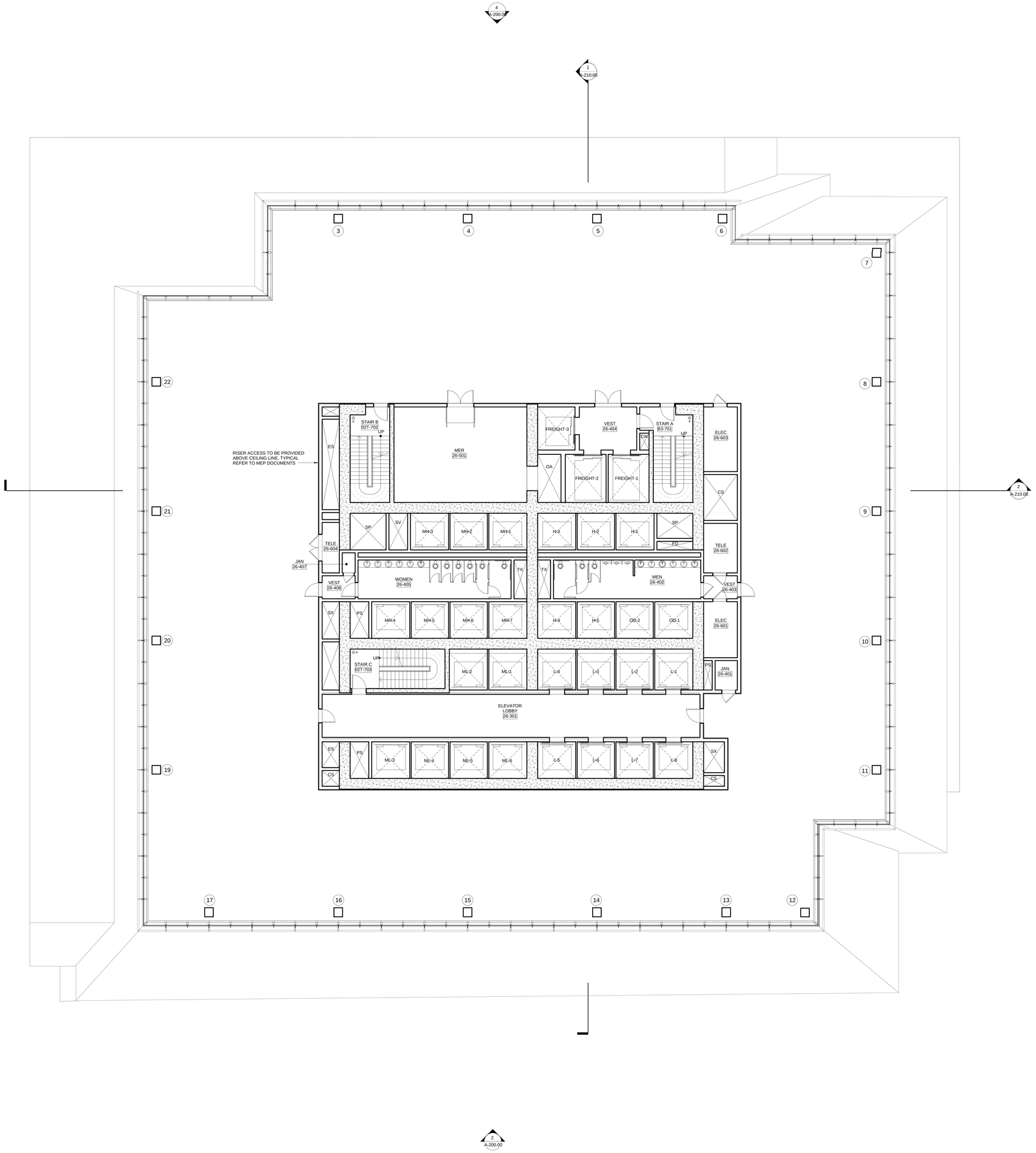

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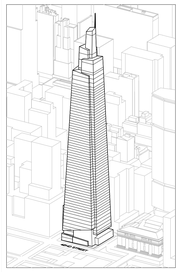

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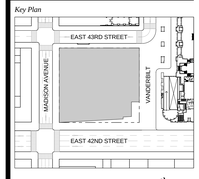
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
DOMINIC DURSI
021419-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN 26 LOW OFFICE (HIGHEST)

Drawing Number
A-126.00
SHEET 28 OF 56

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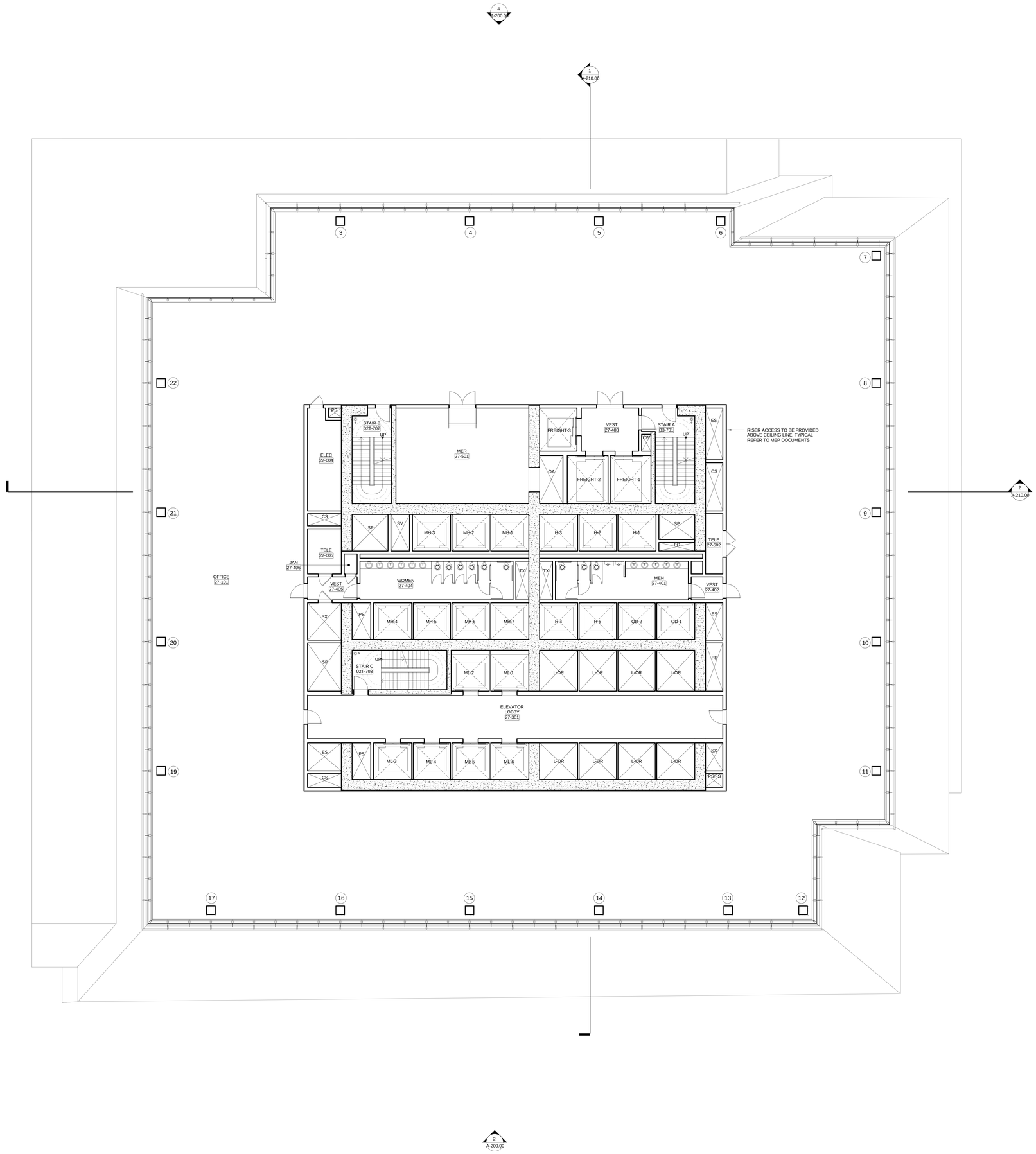

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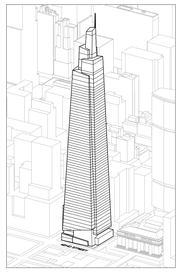

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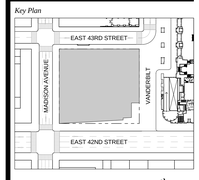
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
DOMINIC DURKIN
021419-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN 27 MID LOW OFFICE (LOWEST)

Drawing Number
A-127.00

SHEET 29 OF 56

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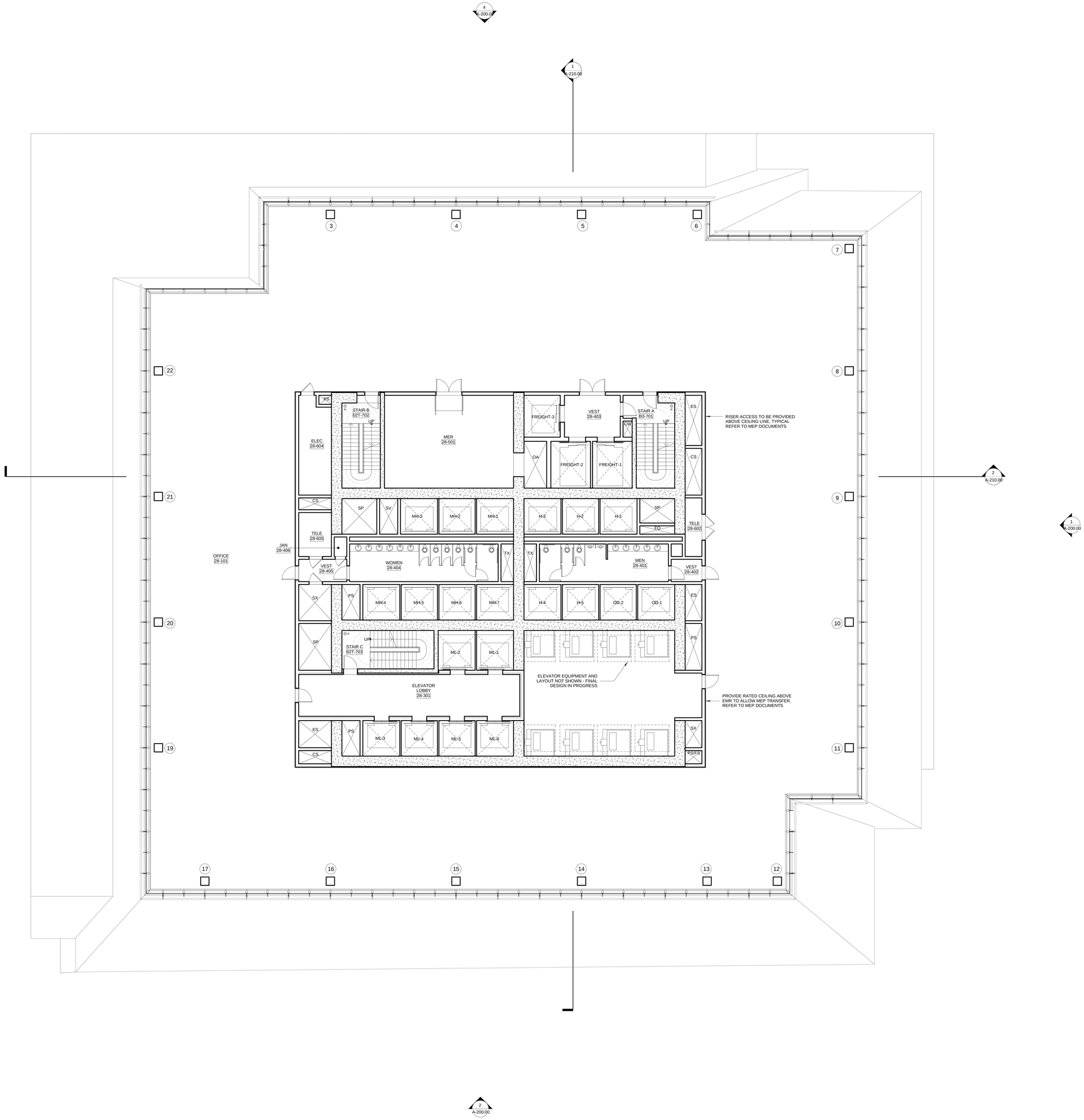

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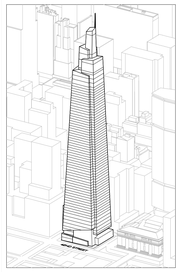

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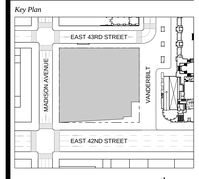
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
DOMINIC DURSI
021419-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN 28 MID LOW OFFICE

Drawing Number
A-128.00

SHEET 30 OF 56

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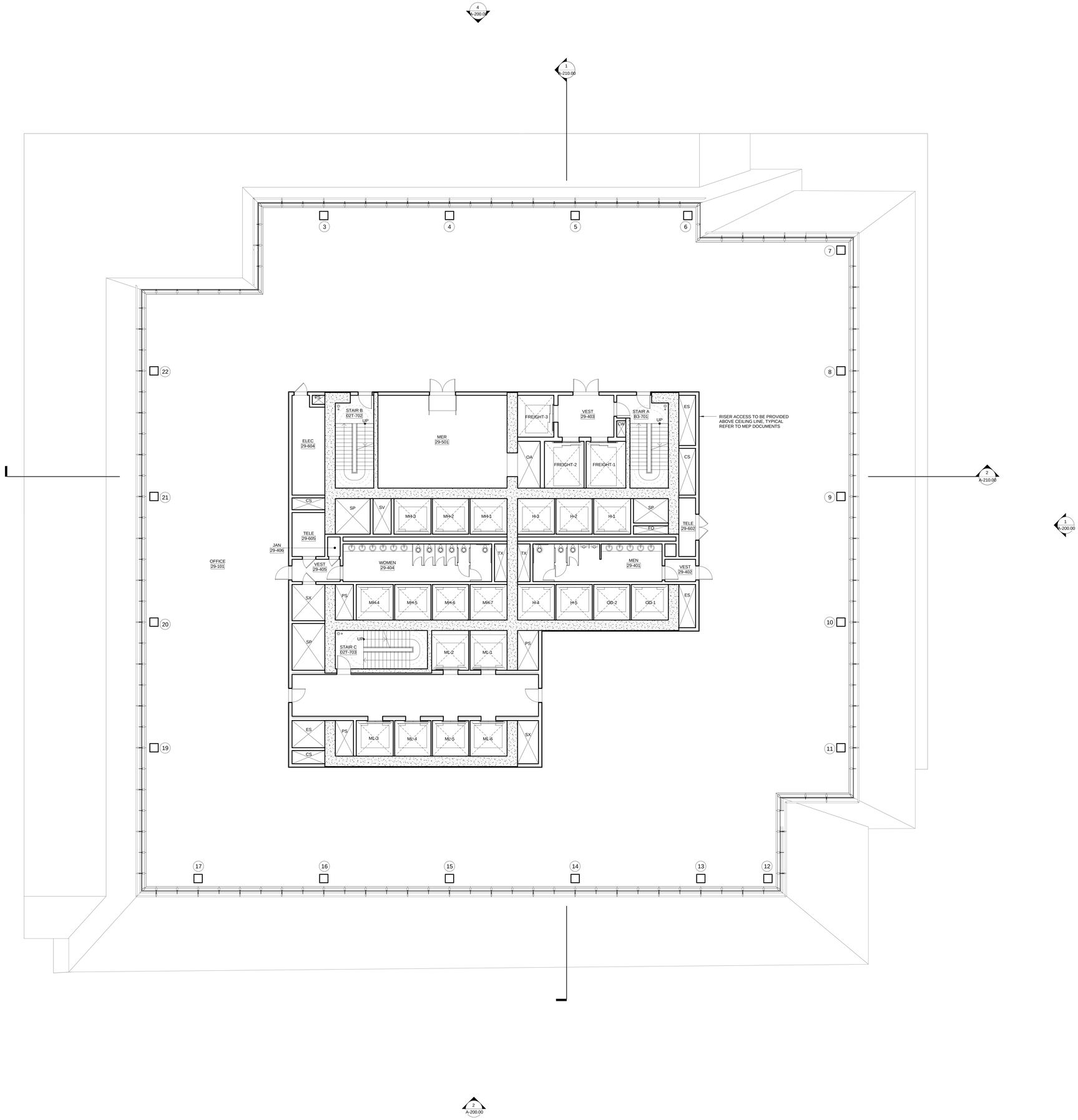

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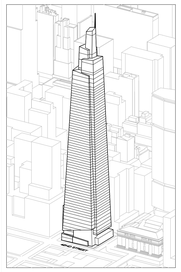

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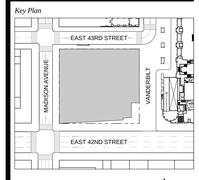
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
DOMINIC DURKIN
021419-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN 29 MID LOW OFFICE (TYPICAL)

Drawing Number
A-129.00

SHEET 31 OF 56

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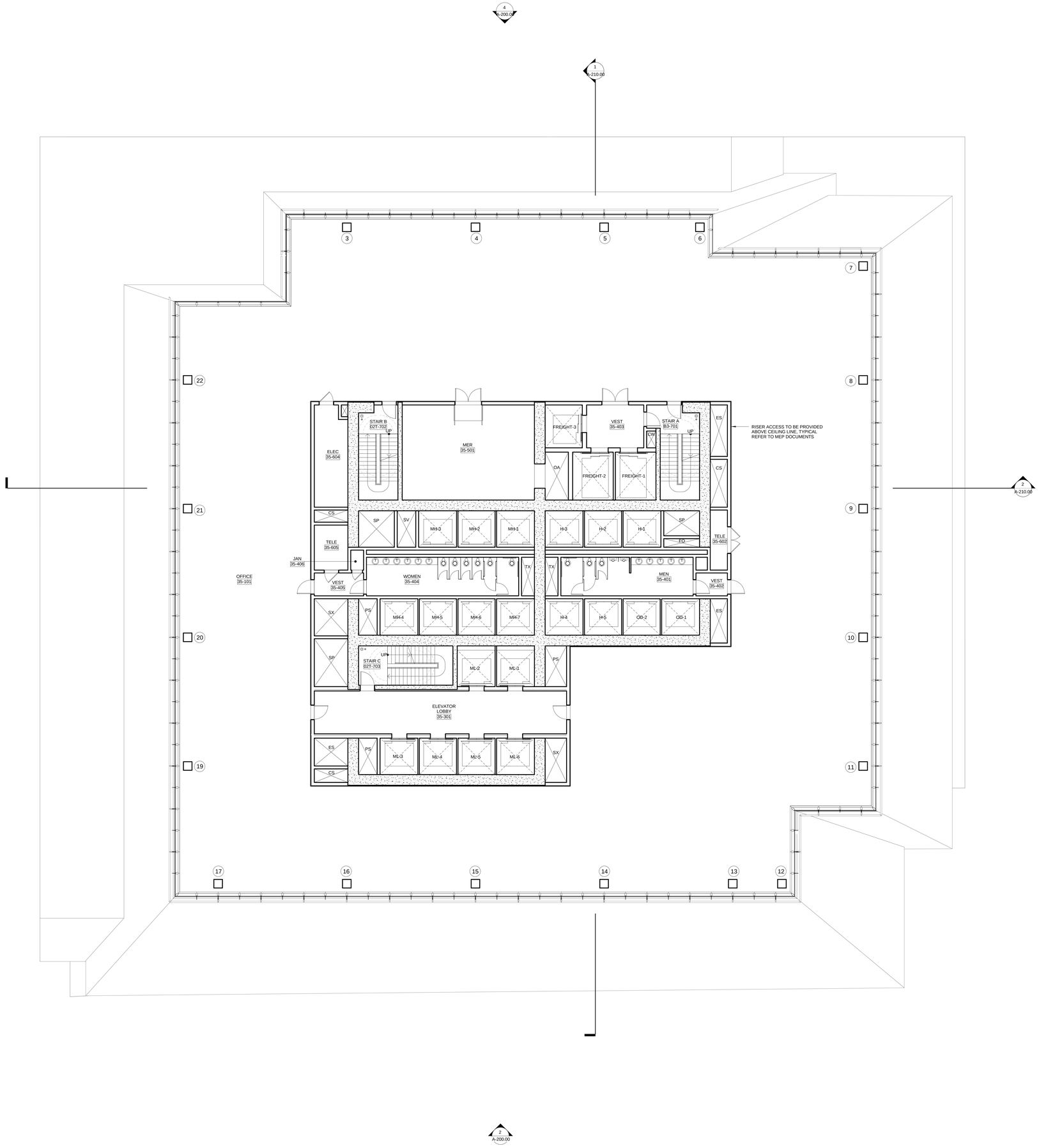
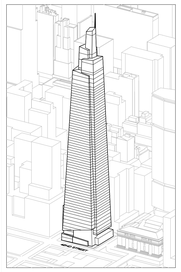


ONE VANDERBILT



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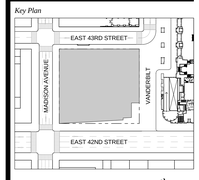
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
DOMINIC DURKIN
021419-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN 35 MID LOW EXECUTIVE OFFICE (HIGHEST)

Drawing Number
A-135.00
SHEET 32 OF 56

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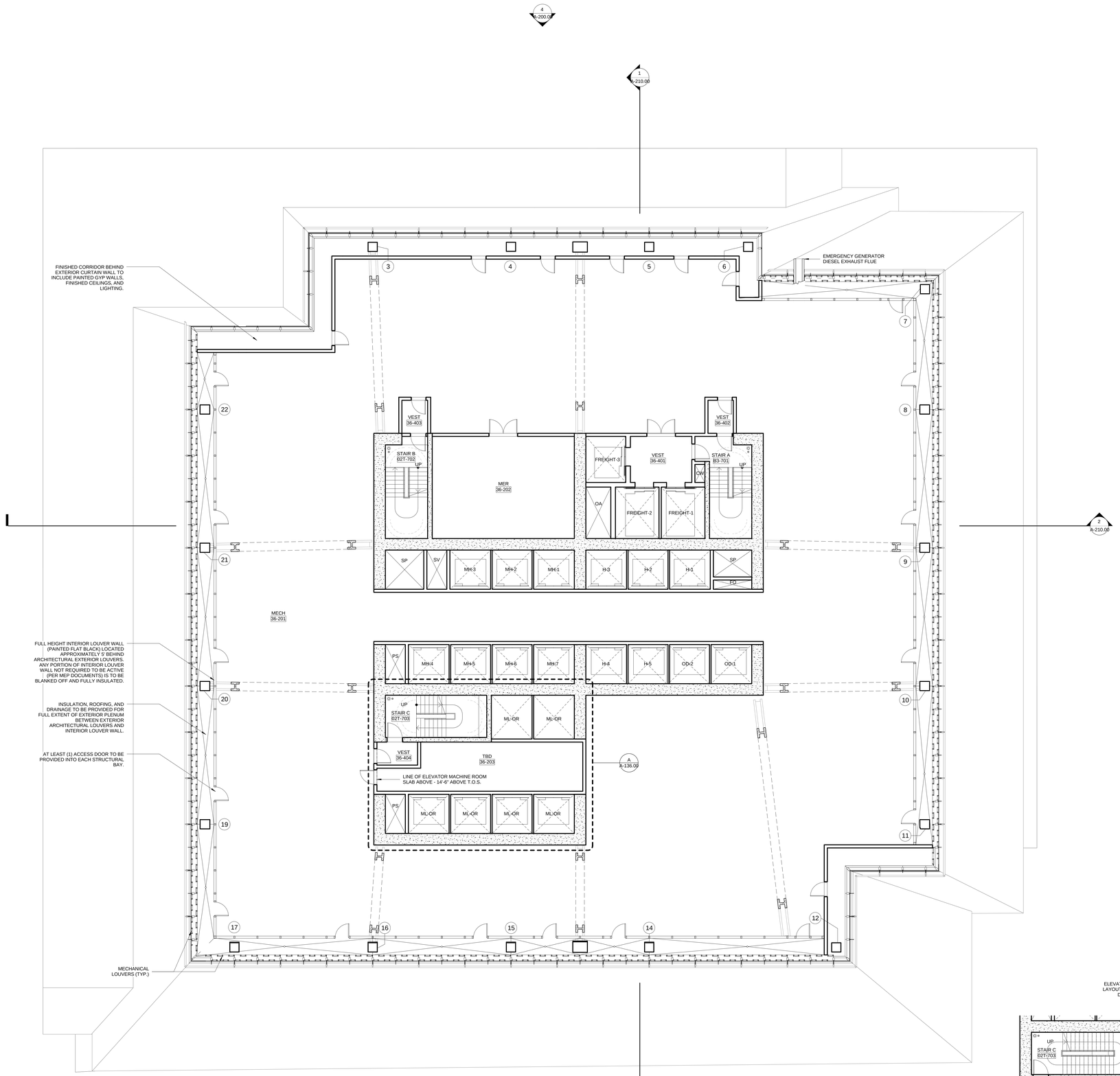
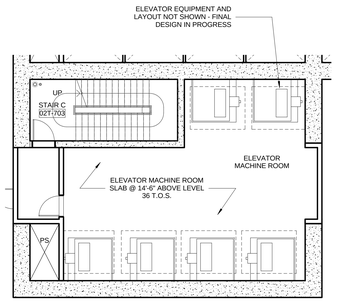
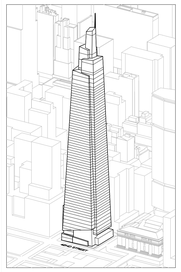




A PARTIAL PLAN - ELEVATOR MACHINE ROOM

ONE VANDERBILT



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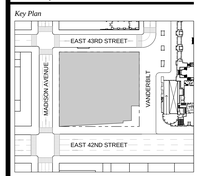
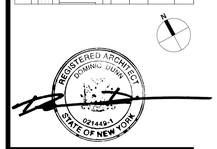
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan





Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN 36 MECHANICAL

Drawing Number
A-136.00

SHEET 33 OF 56

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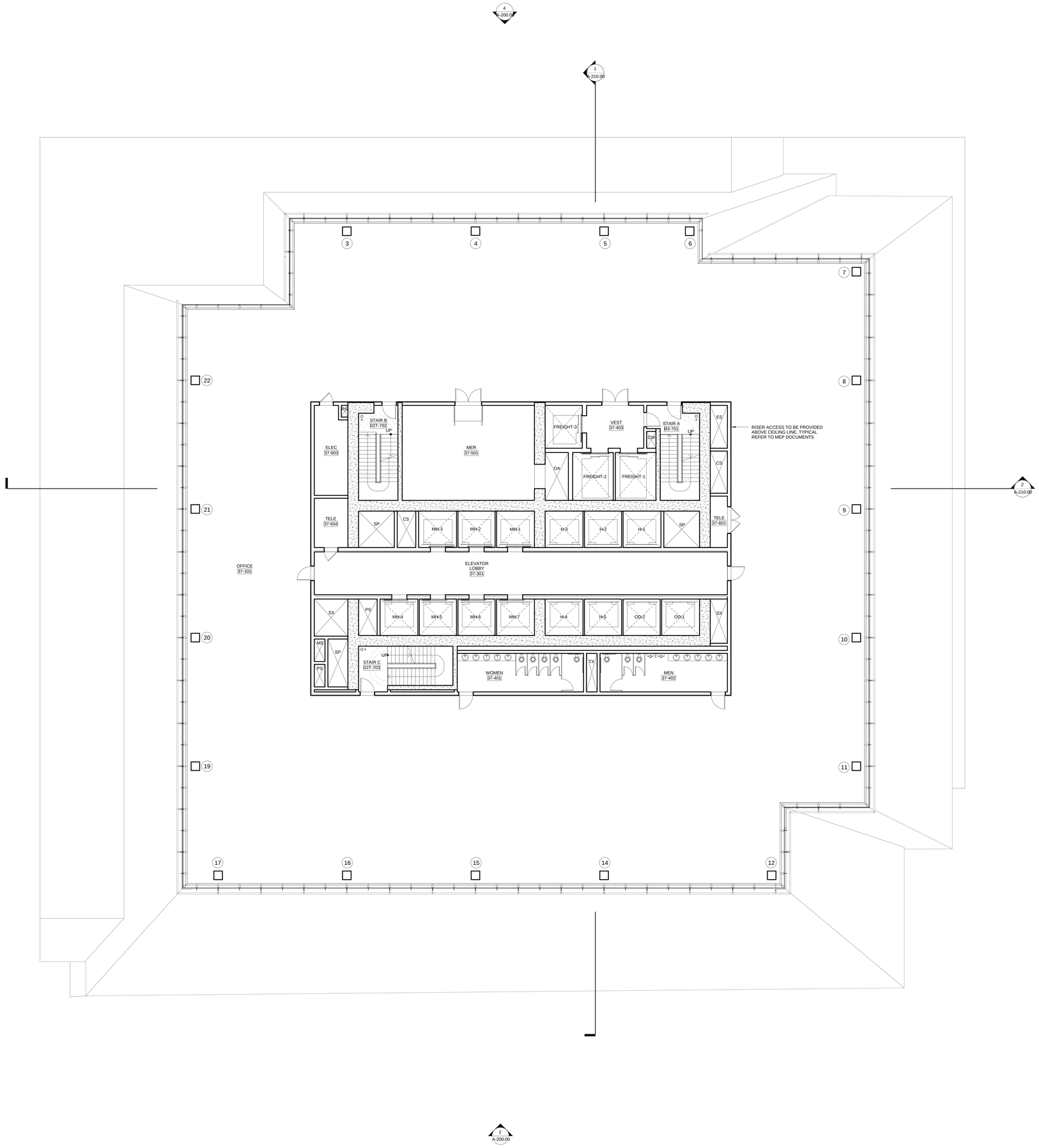

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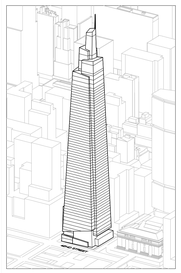

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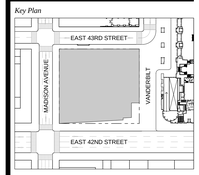
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
DOMINIC LAMPIS
021449-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN 37 MID HIGH EXECUTIVE OFFICE (LOWEST)

Drawing Number
A-137.00

SHEET 34 OF 56

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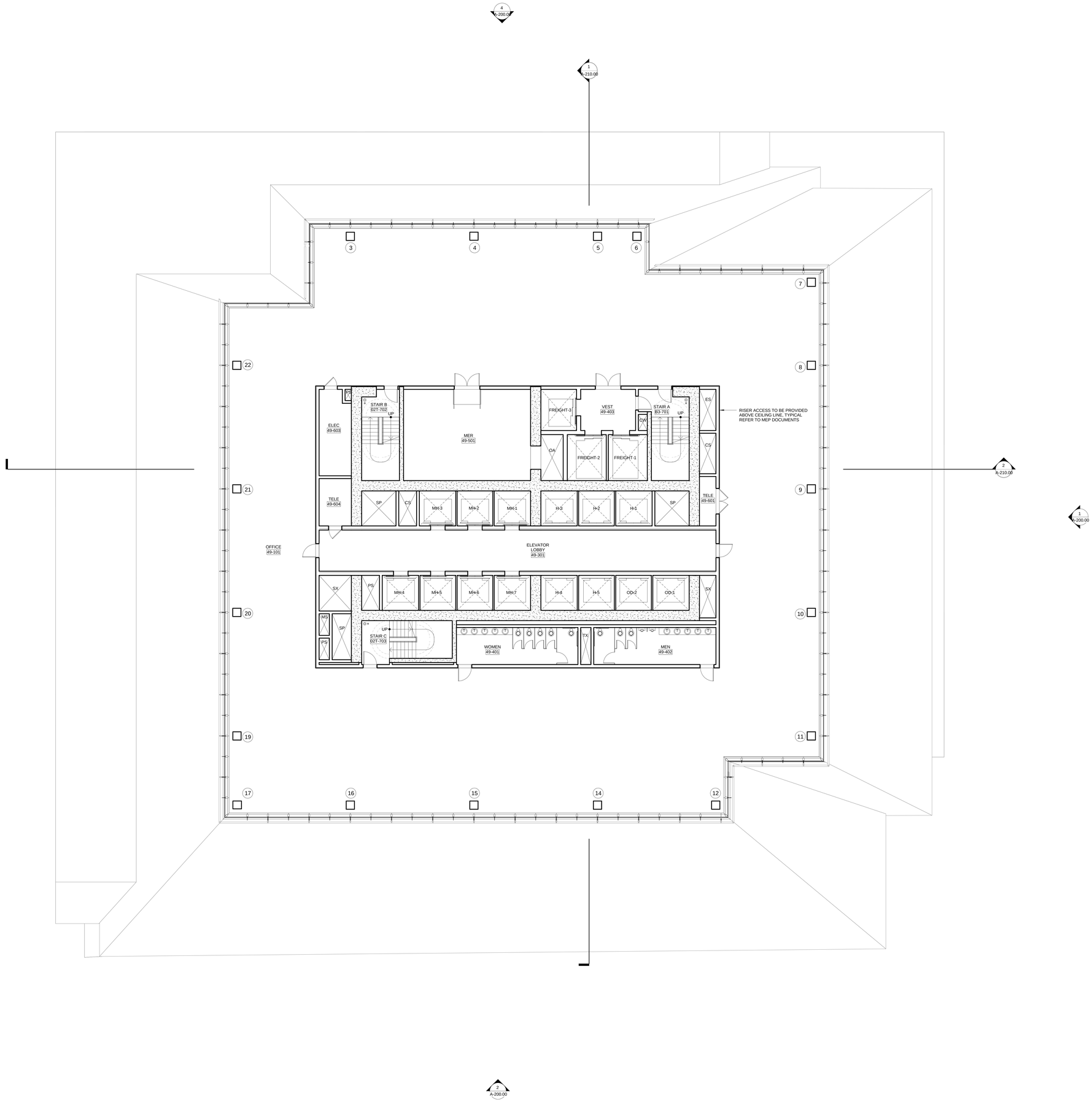

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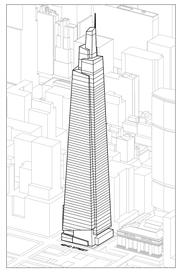

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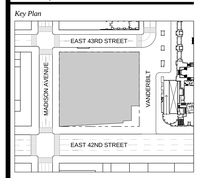
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
DOMINIC LAMPIS
021449-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN 49 MID HIGH EXECUTIVE OFFICE (HIGHEST)

Drawing Number
A-149.00

SHEET 35 OF 56

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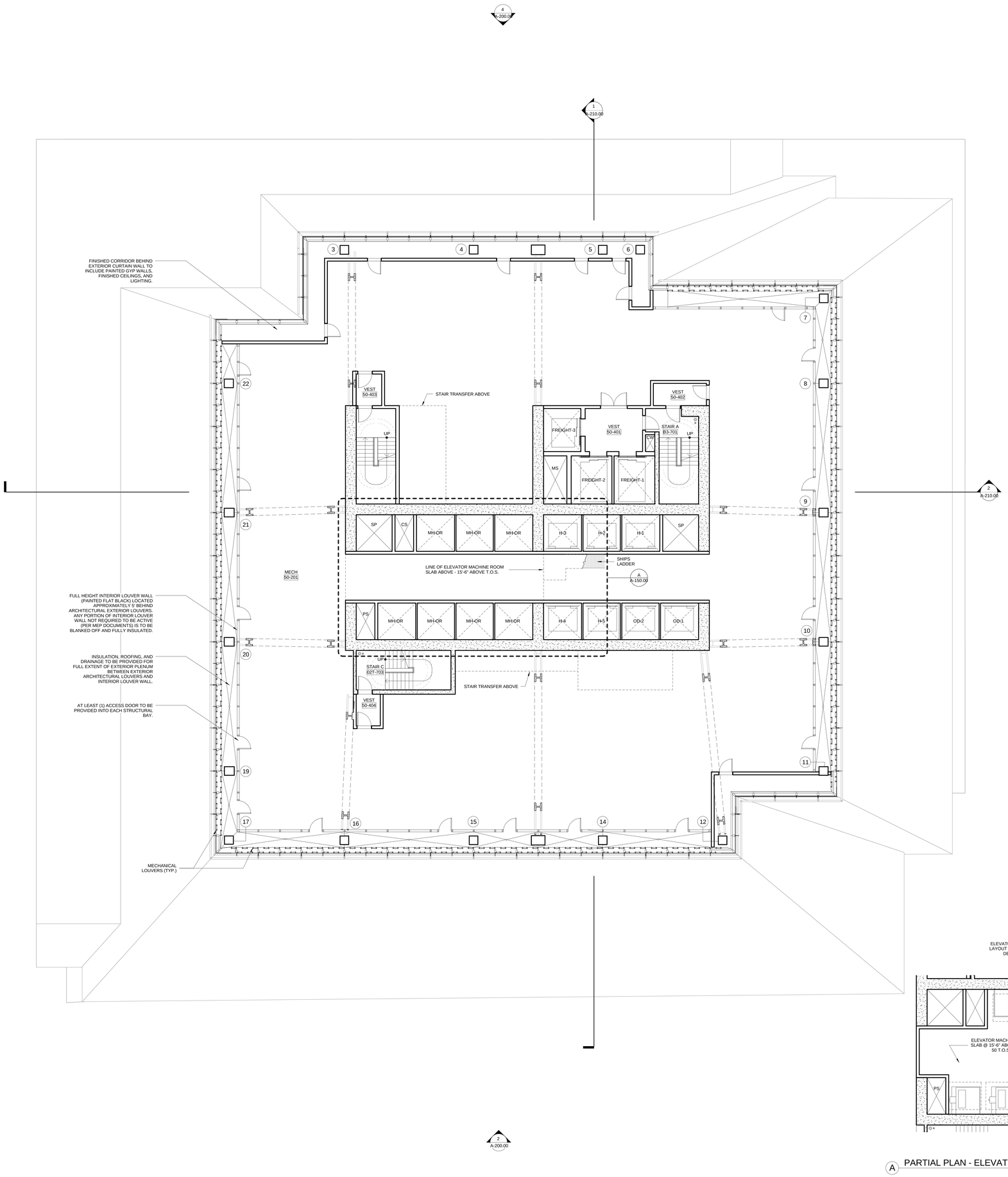
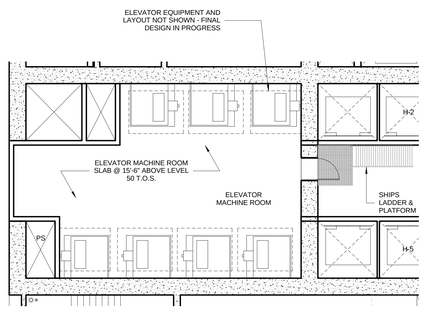
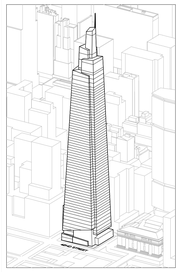




A PARTIAL PLAN - ELEVATOR MACHINE ROOM

ONE VANDERBILT



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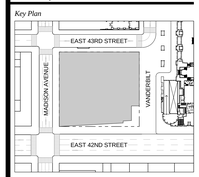
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT DOMINIC LAMPIS 021449-1 STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN 50 MECHANICAL

Drawing Number
A-150.00

SHEET 36 OF 56

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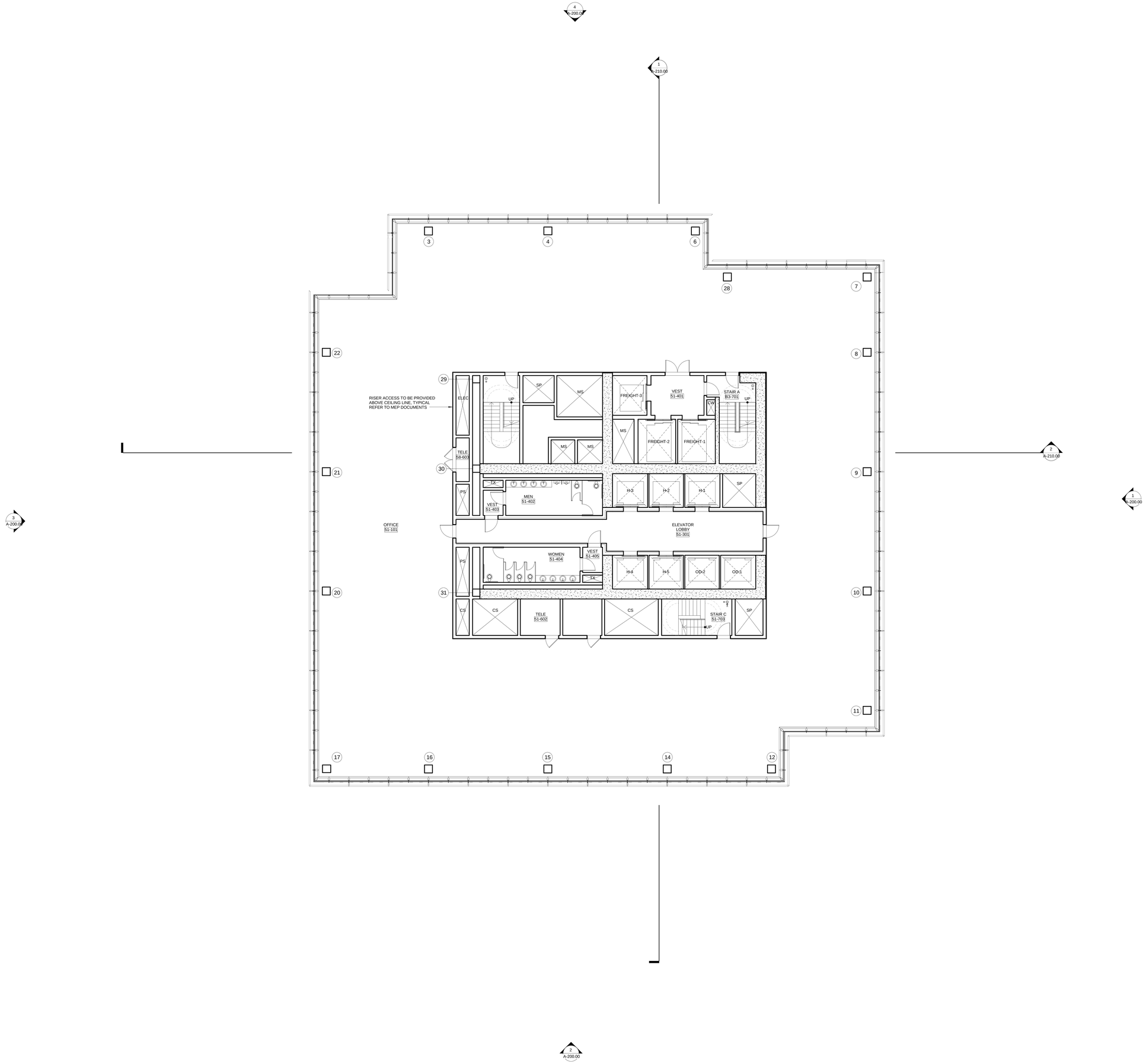

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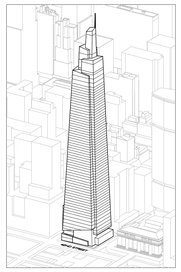

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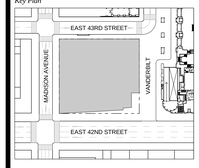
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT DOMINIC LUCIA 021449-1 STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title

FLOOR PLAN 51 HIGH EXECUTIVE OFFICE (LOWEST)

Drawing Number

A-151.00

SHEET 37 OF 56

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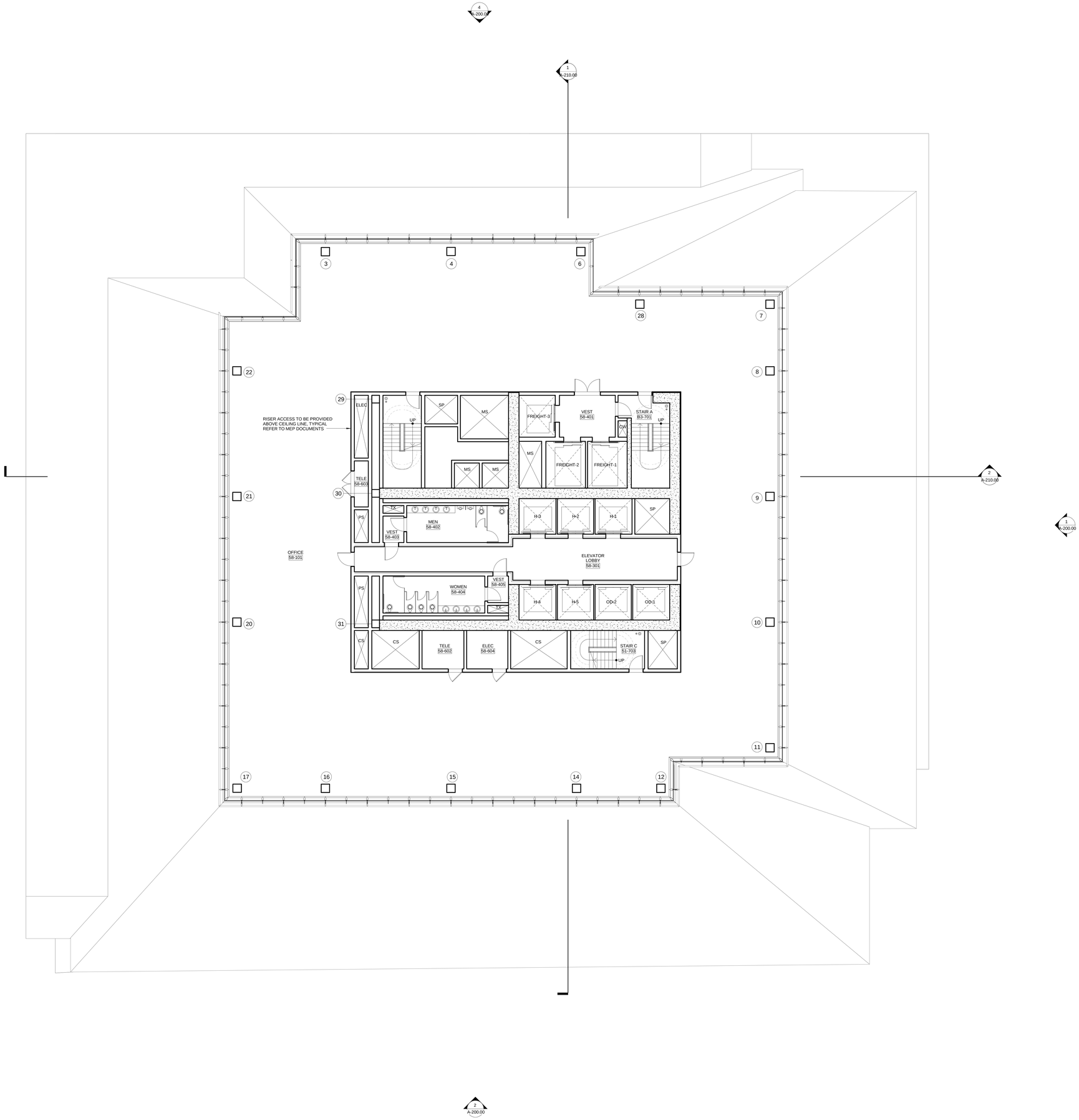
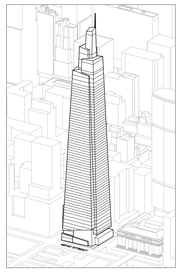


ONE VANDERBILT



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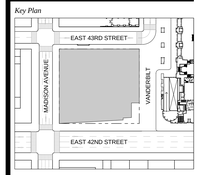
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
DOMINIC LUONGO
001149-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN 58 HIGH EXECUTIVE OFFICE (HIGHEST)

Drawing Number
A-158.00

SHEET 38 OF 56

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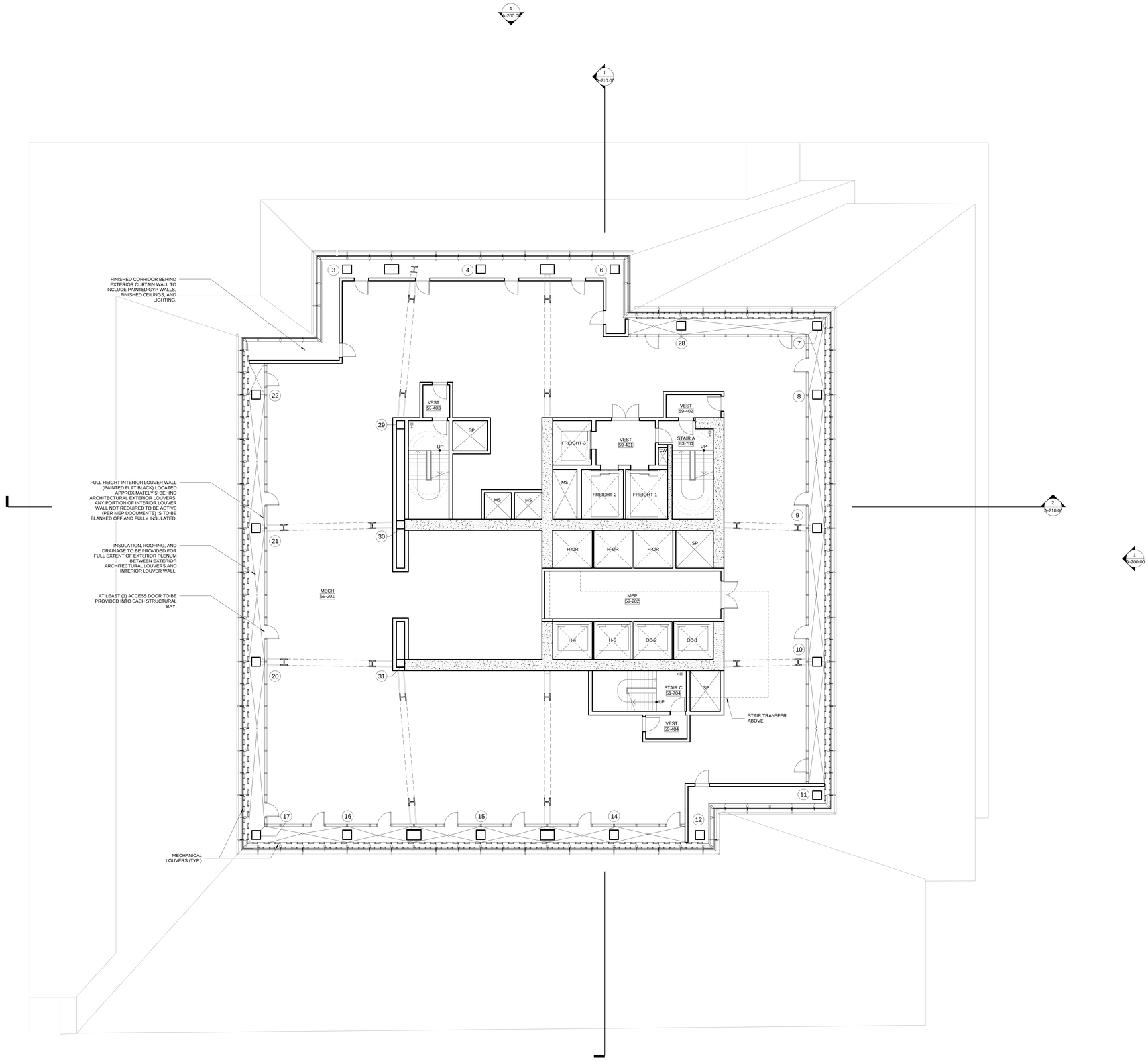
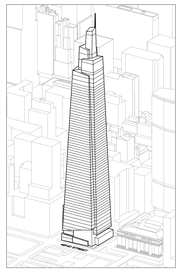


ONE VANDERBILT



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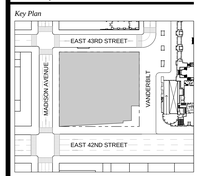
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
DOMINIC LUONG
029149-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN 59 MECHANICAL

Drawing Number
A-159.00

SHEET 39 OF 56

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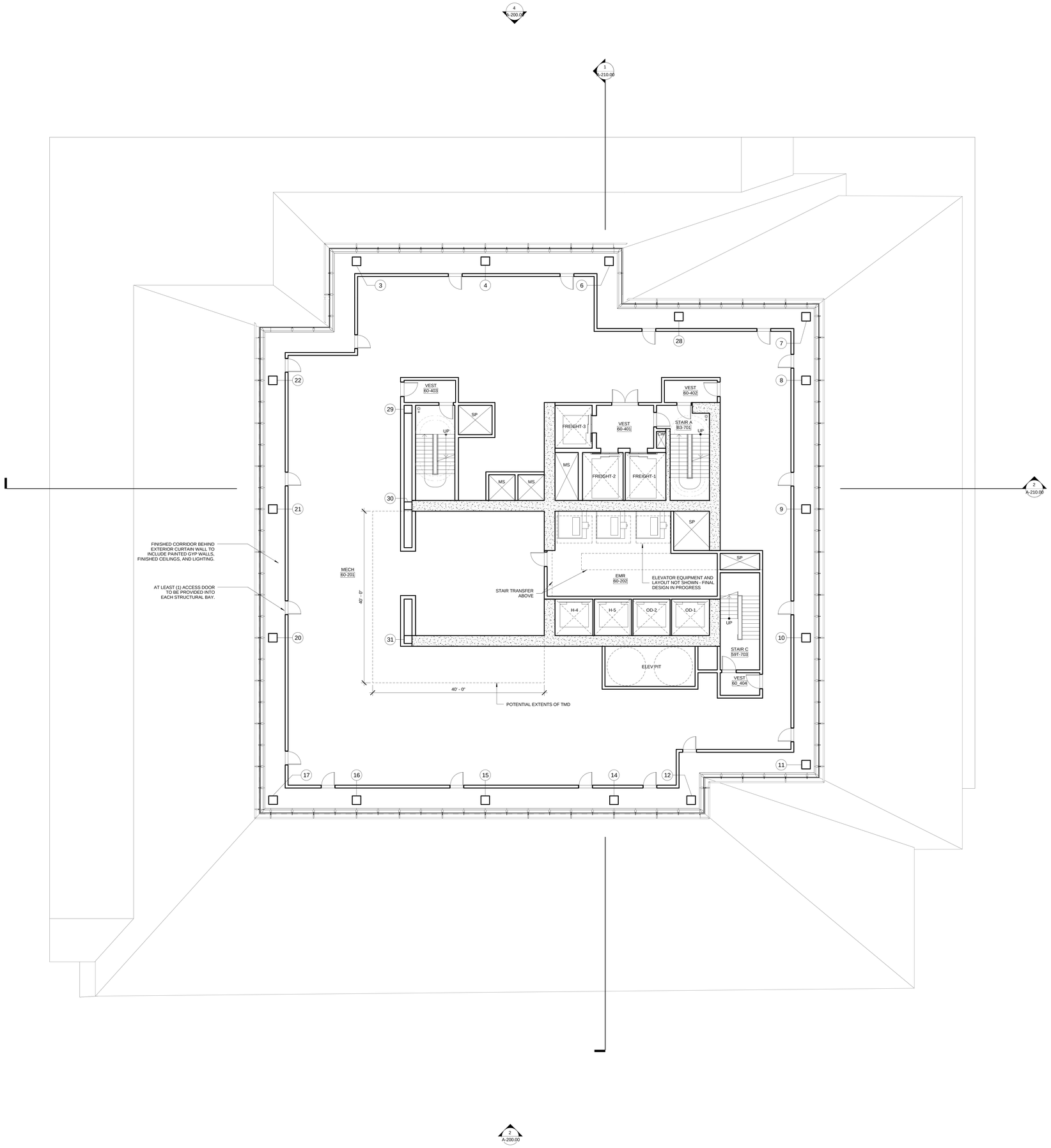

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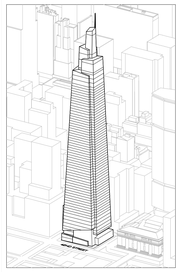

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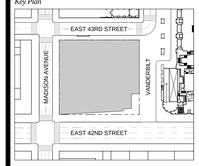
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
DOMINIC LUONGO
021449-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN 60 MECHANICAL - TMD

Drawing Number
A-160.00

SHEET 40 OF 56

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NOTE:

CORE AND SHELL DESIGN FOR THIS LEVEL TO REFLECT 'WHITE BOX' DELIVERY TO ACCOMMODATE FUTURE TENANT FITOUT DESIGN.

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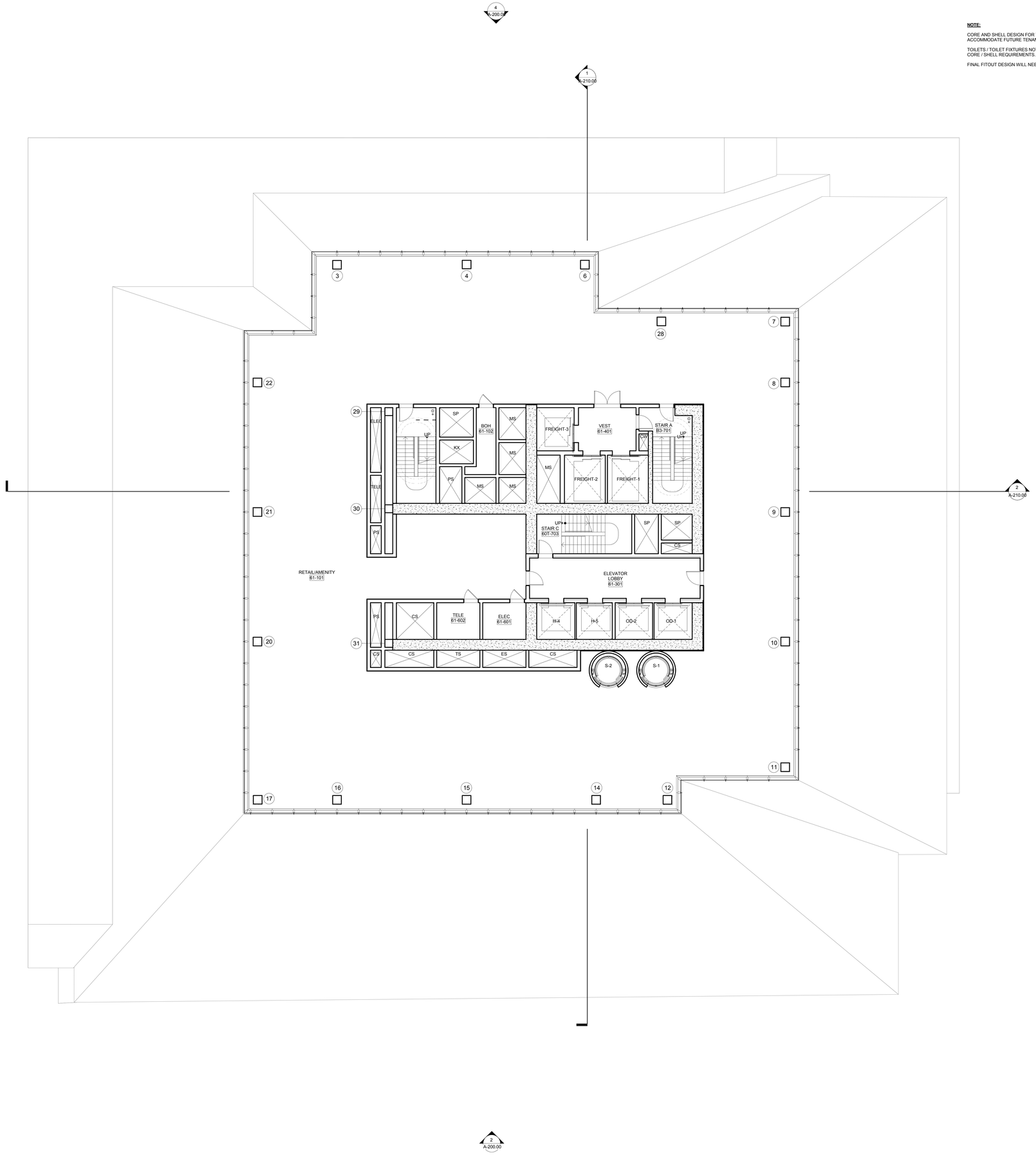
FINAL FITOUT DESIGN WILL NEED TO DEFINE ACTUAL TOILET AND FIXTURE COUNT.



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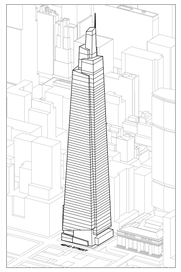

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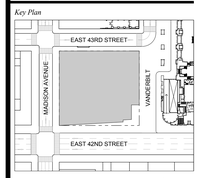
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
CHUNG LUNG
021649-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By:
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN 61
AMENITY 1

Drawing Number
A-161.00

SHEET 41 OF 56

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NOTE:

CORE AND SHELL DESIGN FOR THIS LEVEL TO REFLECT 'WHITE BOX' DELIVERY TO ACCOMMODATE FUTURE TENANT FITOUT DESIGN.

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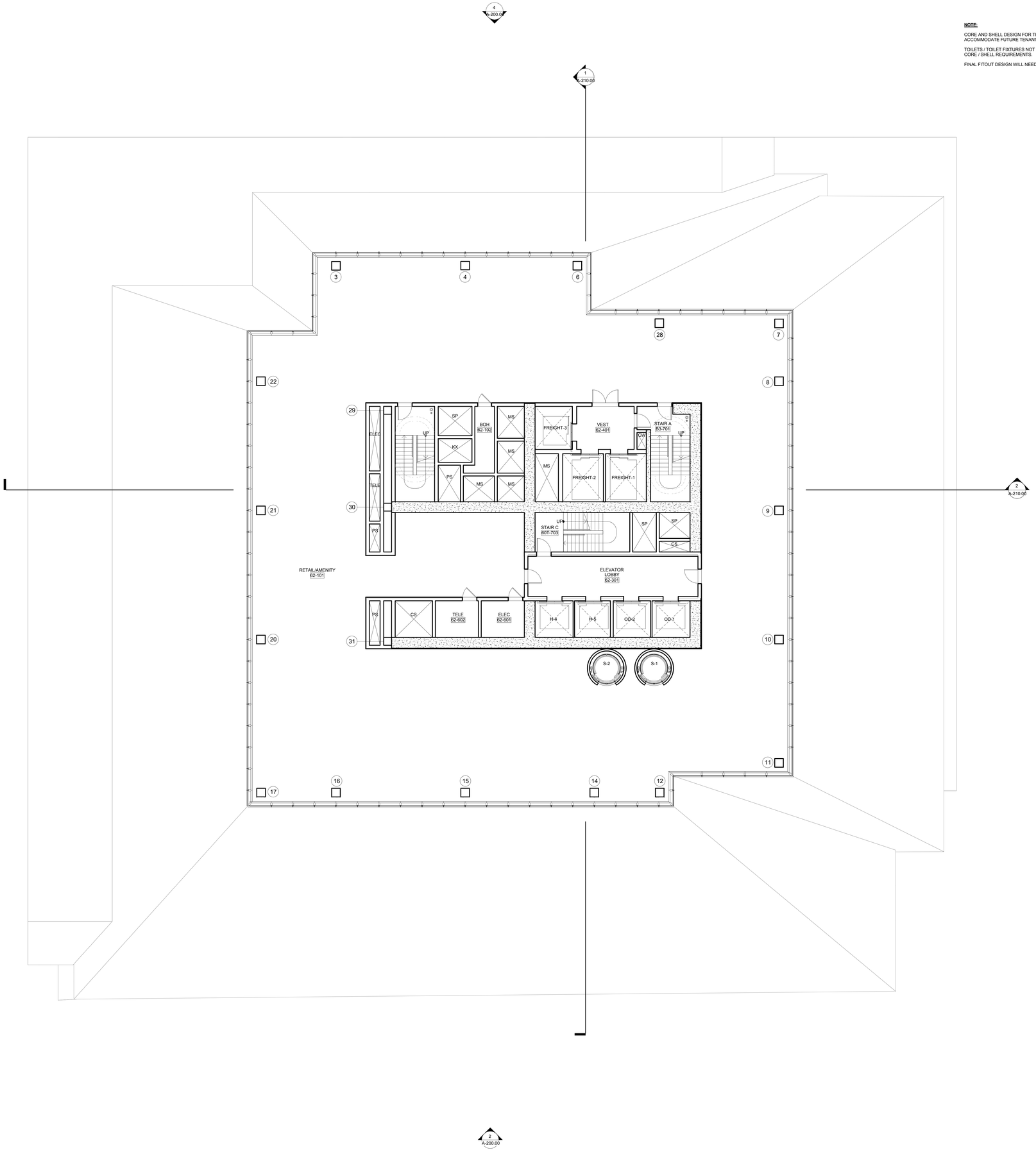

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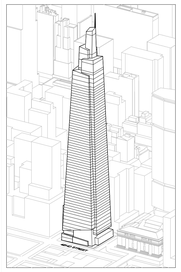

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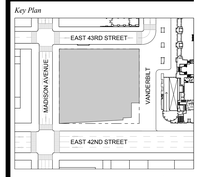
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
DOMINIC DURSI
021419-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN 62
AMENITY 2

Drawing Number
A-162.00

SHEET 42 OF 56

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NOTE:

CORE AND SHELL DESIGN FOR THIS LEVEL TO REFLECT 'WHITE BOX' DELIVERY TO ACCOMMODATE FUTURE TENANT FITOUT DESIGN.

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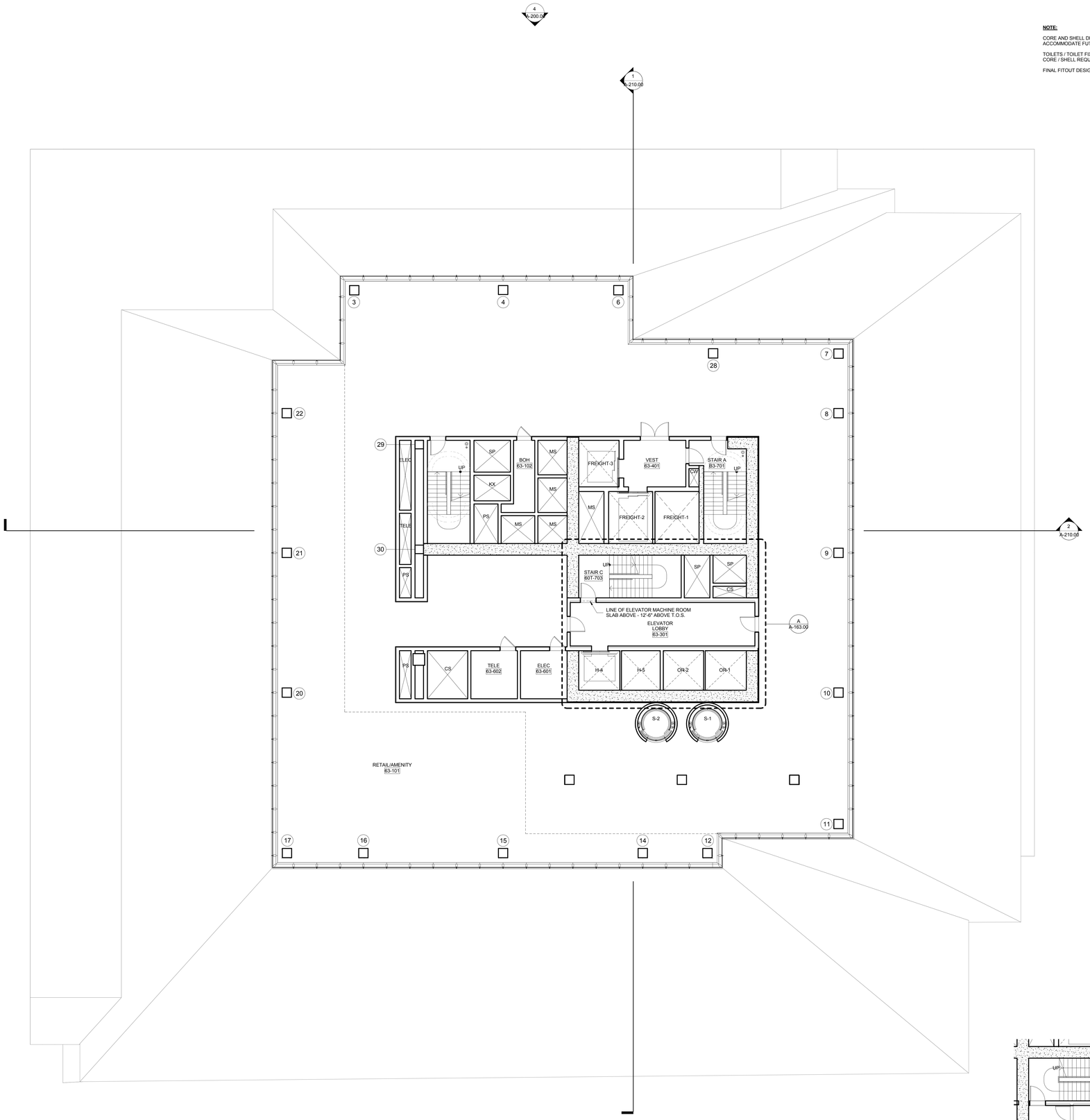
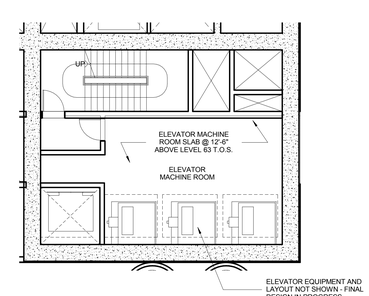
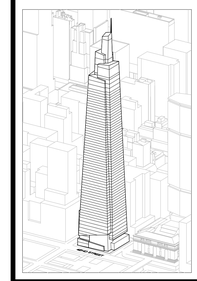




A PARTIAL PLAN - ELEVATOR MACHINE ROOM

ONE VANDERBILT



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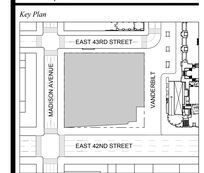
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
DOMINIC LUONGO
027149-1
STATE OF NEW YORK

Issue Date: 09-01-2015
Project No. 1943.16
Drawn By:
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN 63
AMENITY 3

Drawing Number
A-163.00

SHEET 43 OF 56

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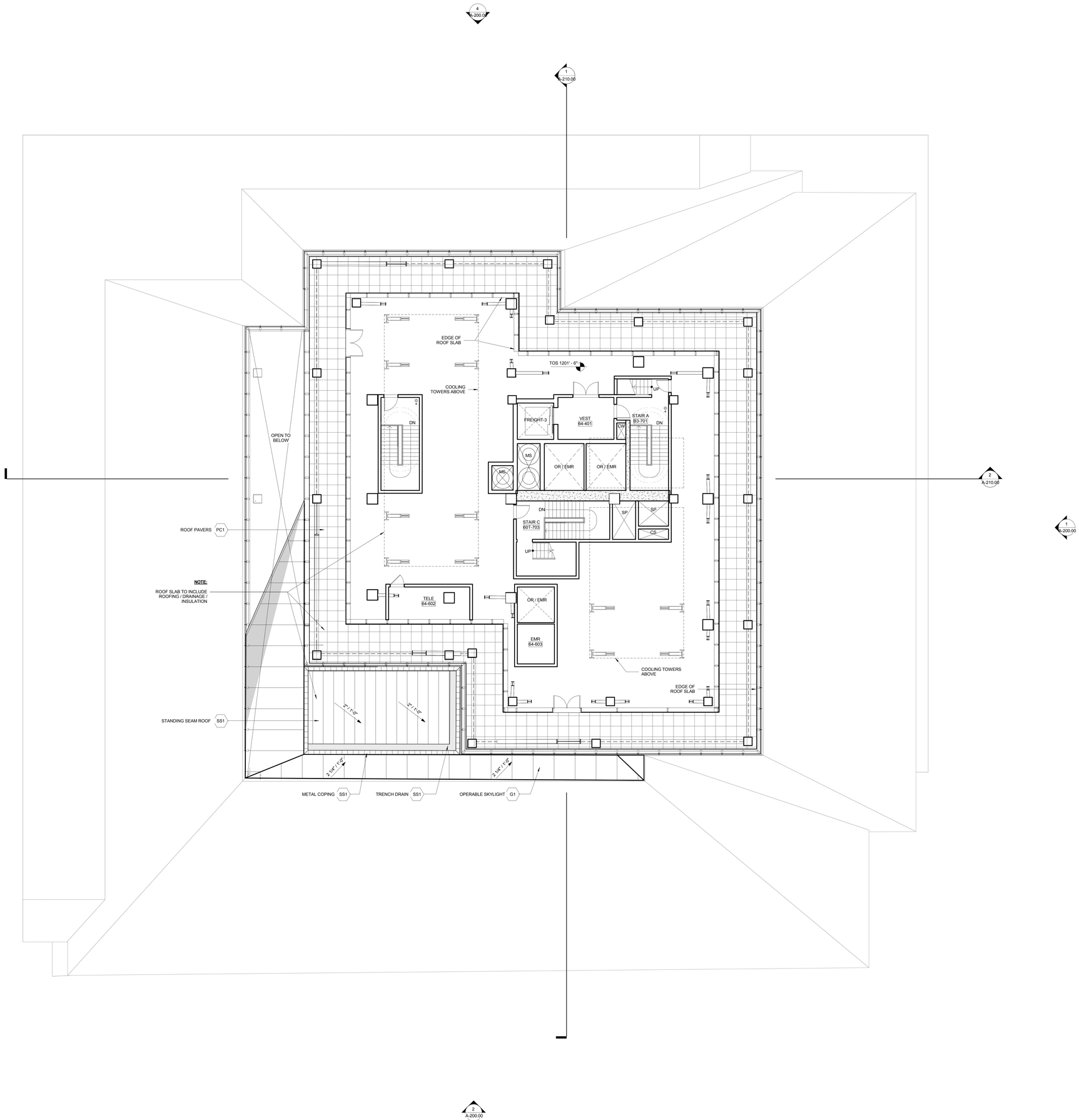

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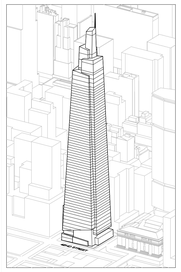

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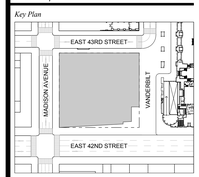
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By:
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN 64 ROOF

Drawing Number
A-164.00

SHEET 44 OF 56

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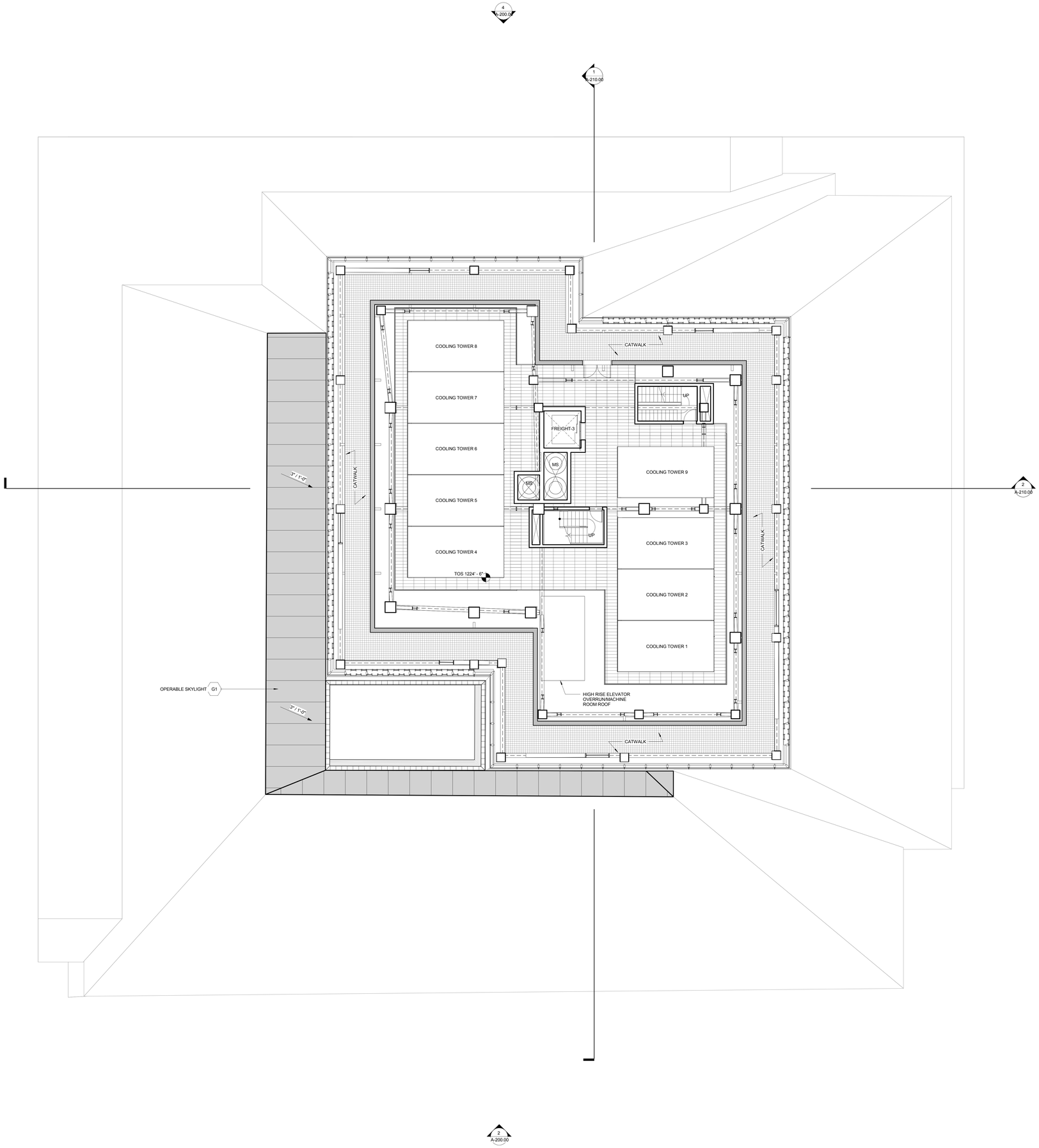

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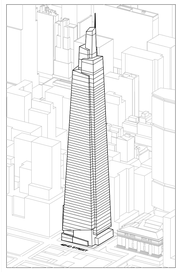

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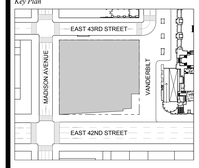
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
CHANING LUNG
021449-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By:
Scale 1/8" = 1'-0"

Drawing Title

FLOOR PLAN 64 M COOLING TOWER ACCESS

Drawing Number

A-164M.00

SHEET 45 OF 56

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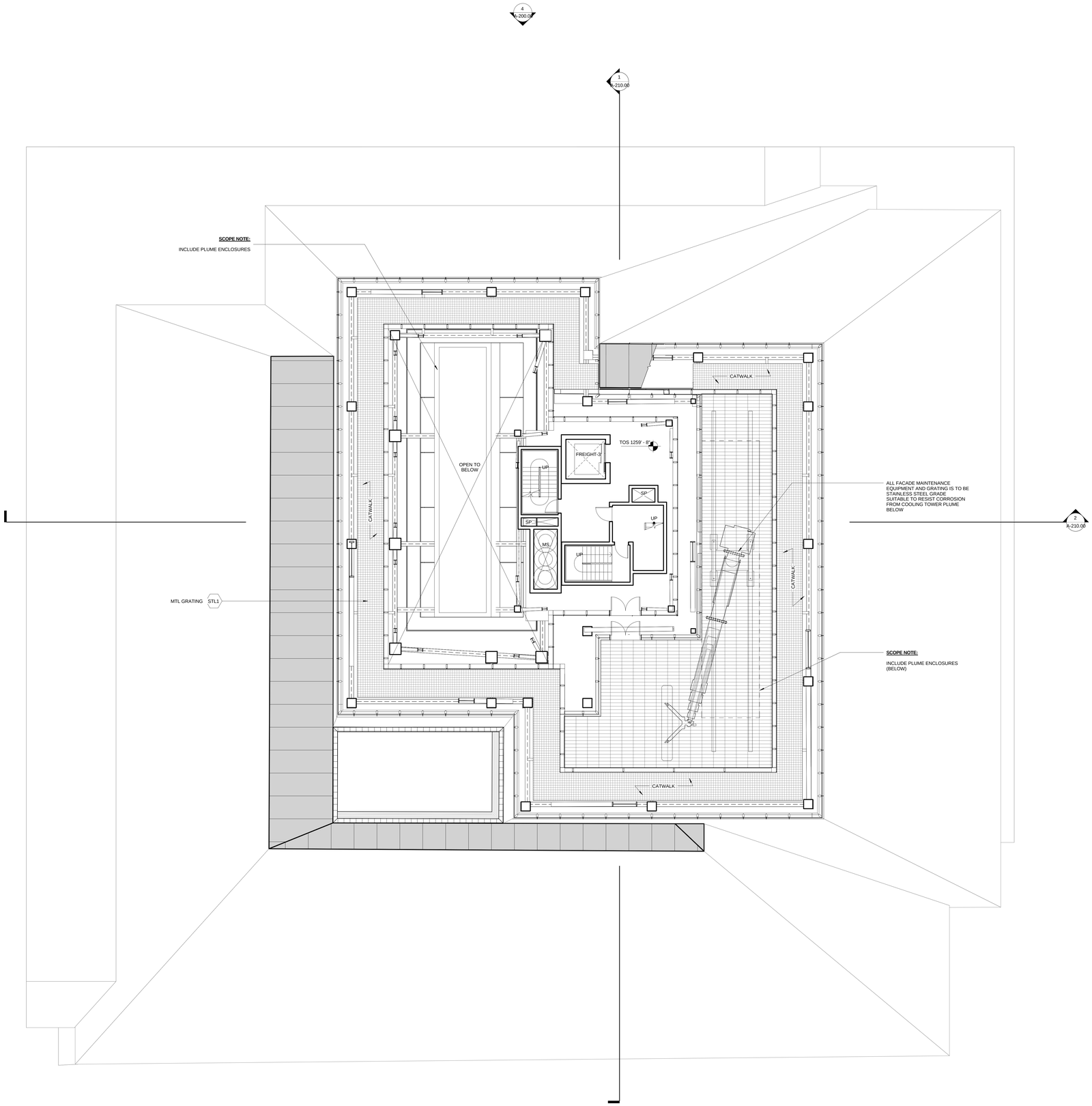

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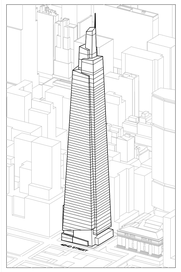

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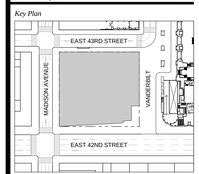
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN 65
MECHANICAL - BMU 1

Drawing Number
A-165.00

SHEET 46 OF 56

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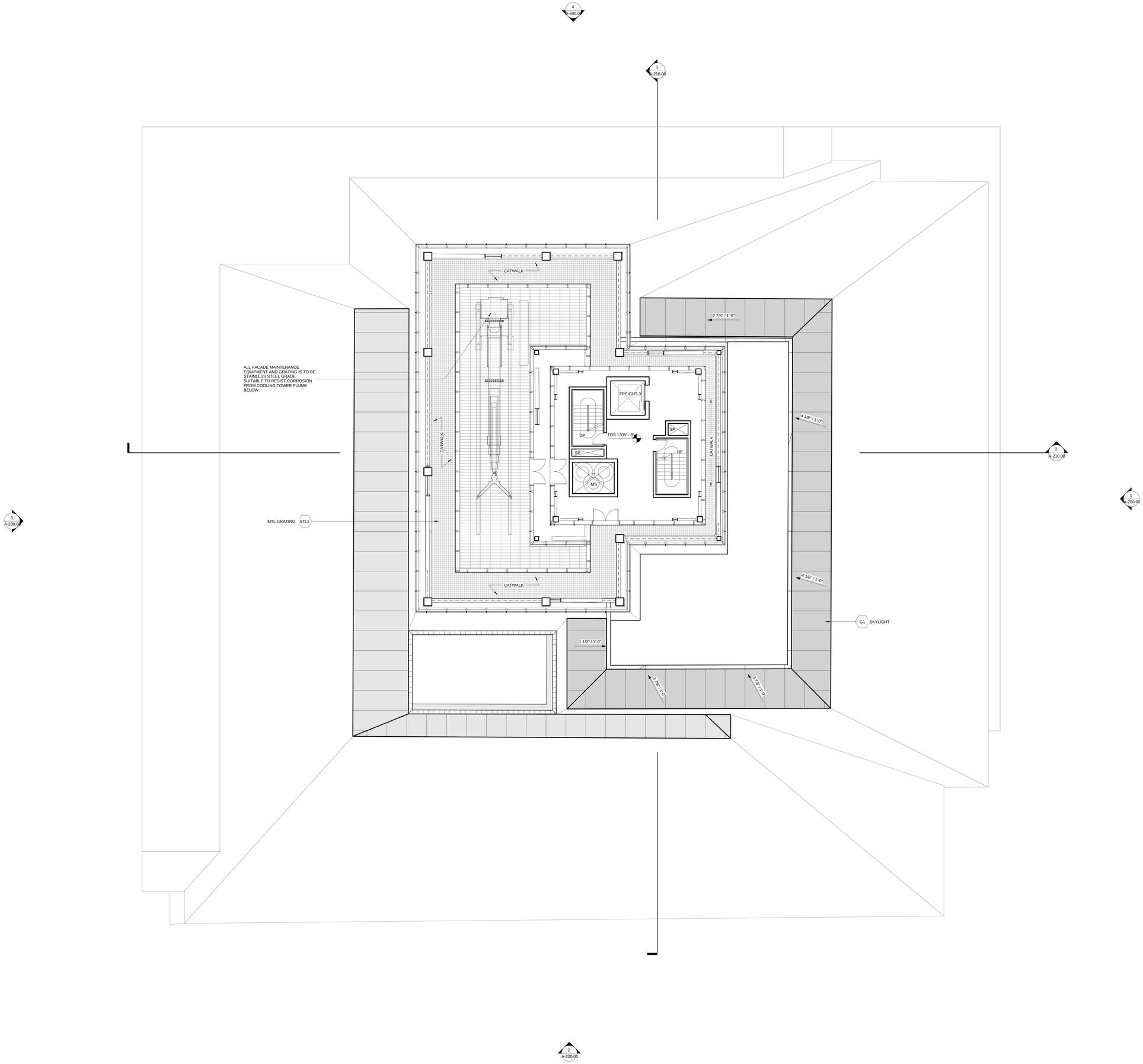

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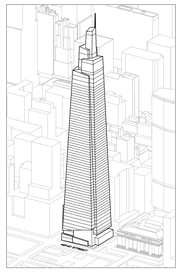

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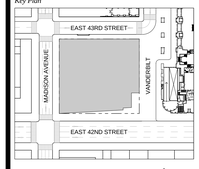
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
DOMINIC LUONG
029149-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN 66
MECHANICAL - BMU 2

Drawing Number
A-166.00

SHEET 47 OF 56

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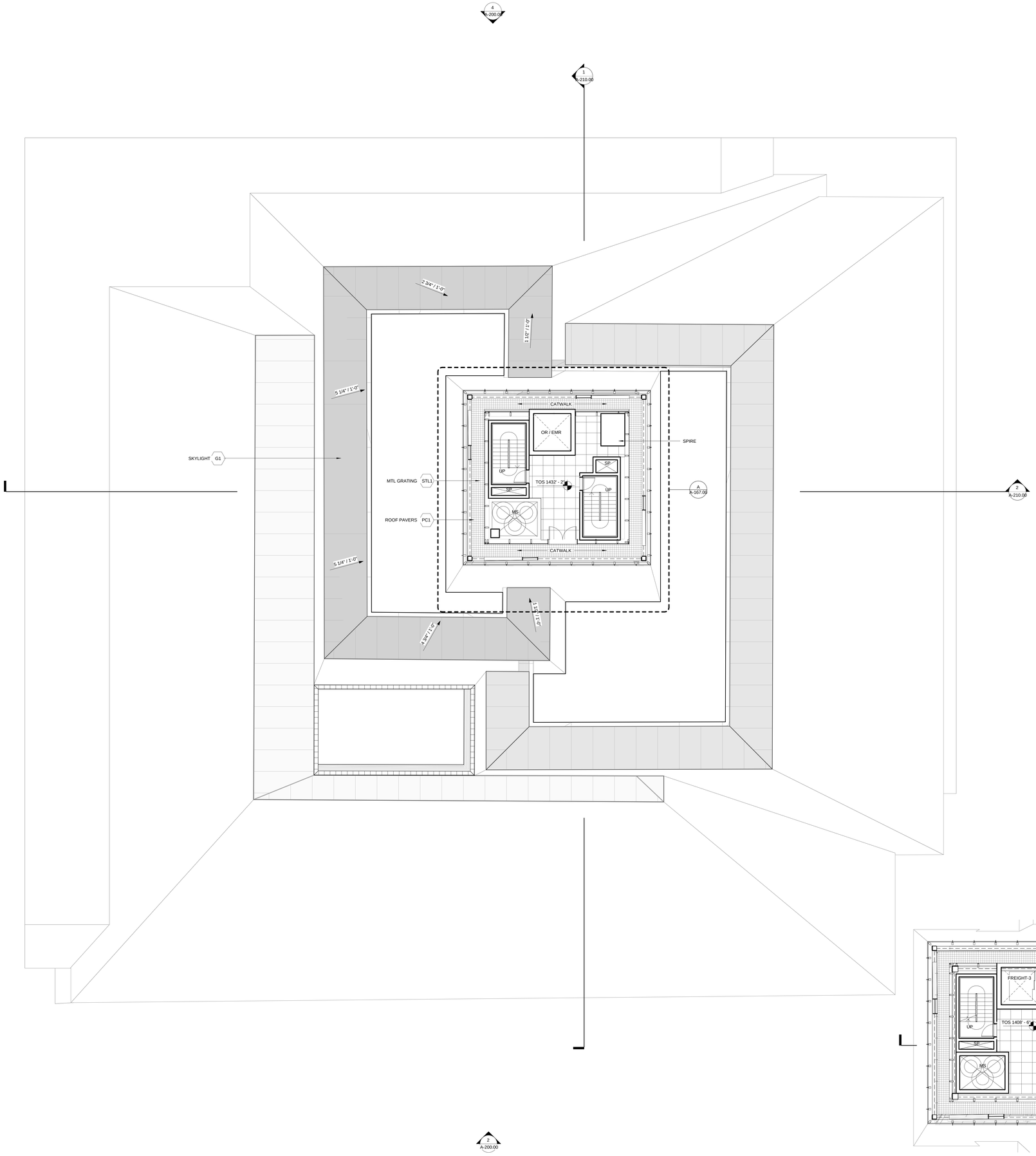
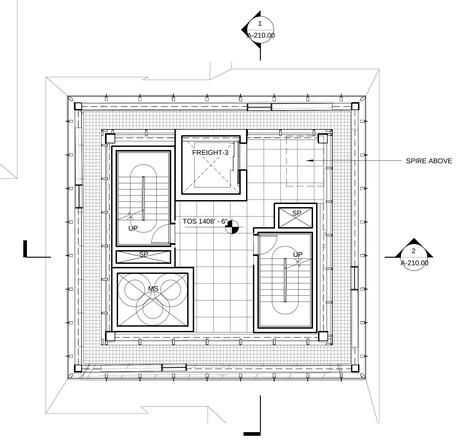
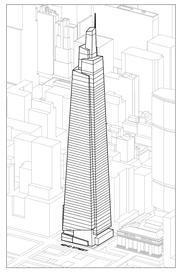




A ELEVATOR PLATFORM BELOW LEVEL 67

ONE VANDERBILT



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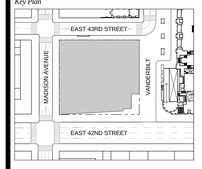
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
DOMINIC DURSI
021418-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
FLOOR PLAN 67 MECHANICAL

Drawing Number
A-167.00
SHEET 48 OF 56

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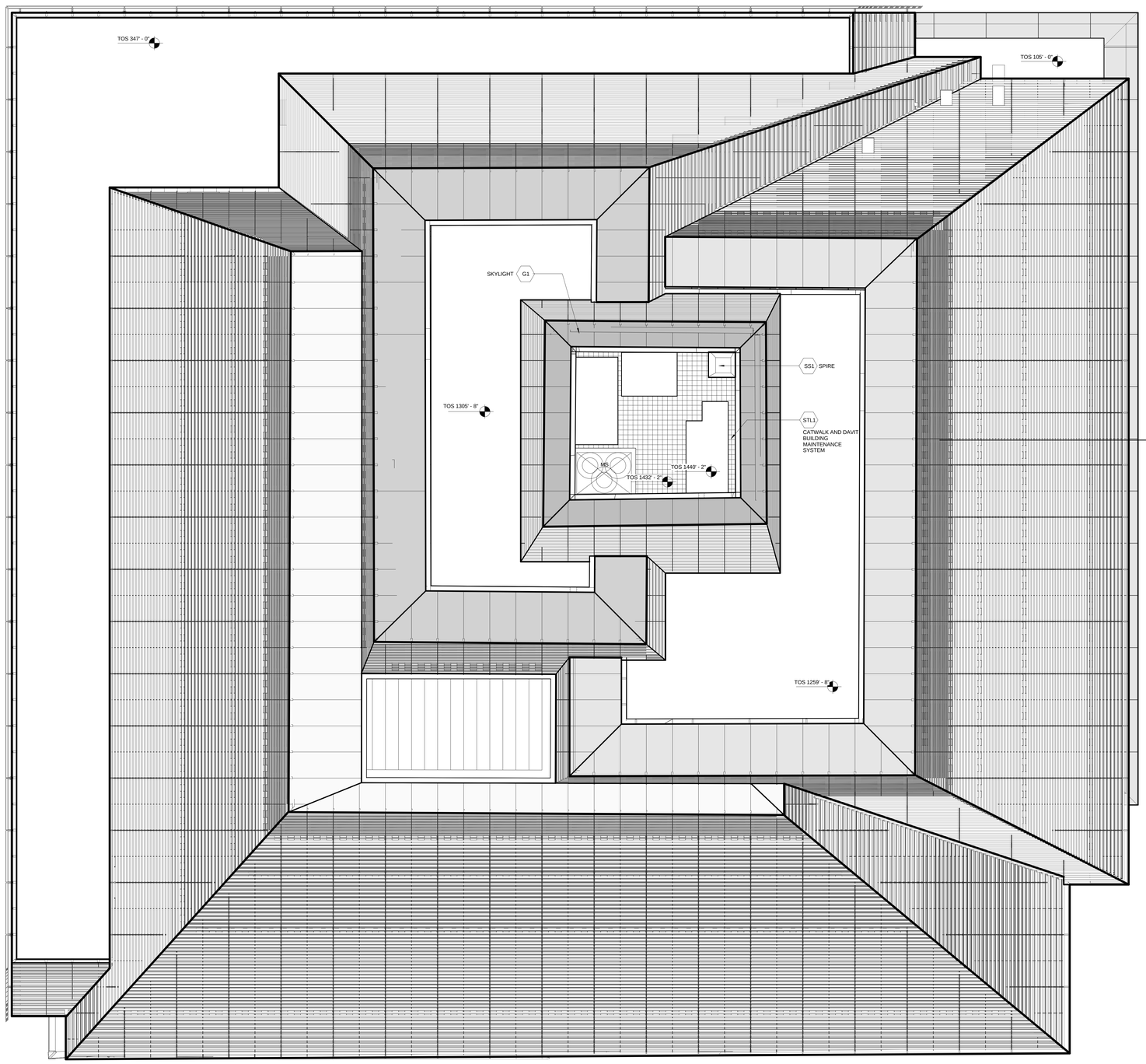

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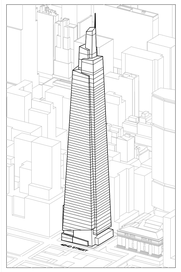

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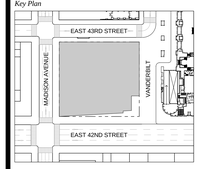
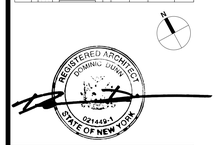
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan





Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/8" = 1'-0"

Drawing Title
CROWN

Drawing Number
A-168.00
SHEET 49 OF 56

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NOTE:

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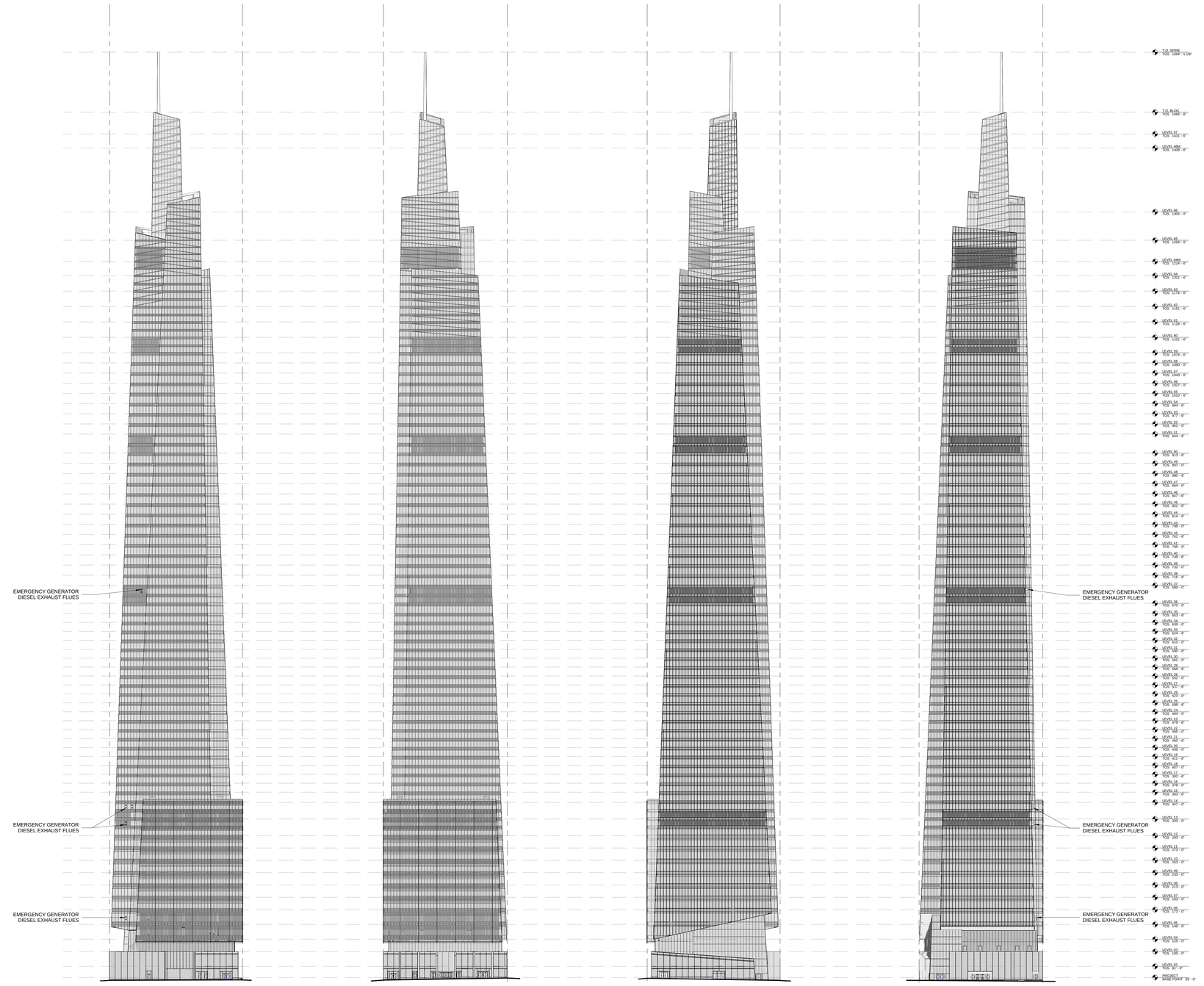
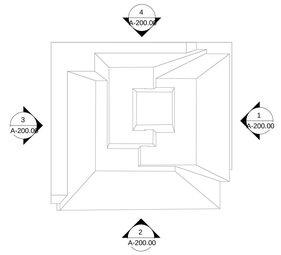


4 NORTH

3 WEST

2 SOUTH

1 EAST



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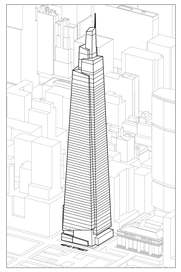

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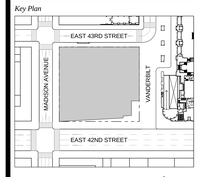
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
DOUGLAS L. KOHN
021449-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale 1/64" = 1'-0"

Drawing Title
BUILDING ELEVATIONS

Drawing Number
A-200.00

SHEET 50 OF 56

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NOTE:

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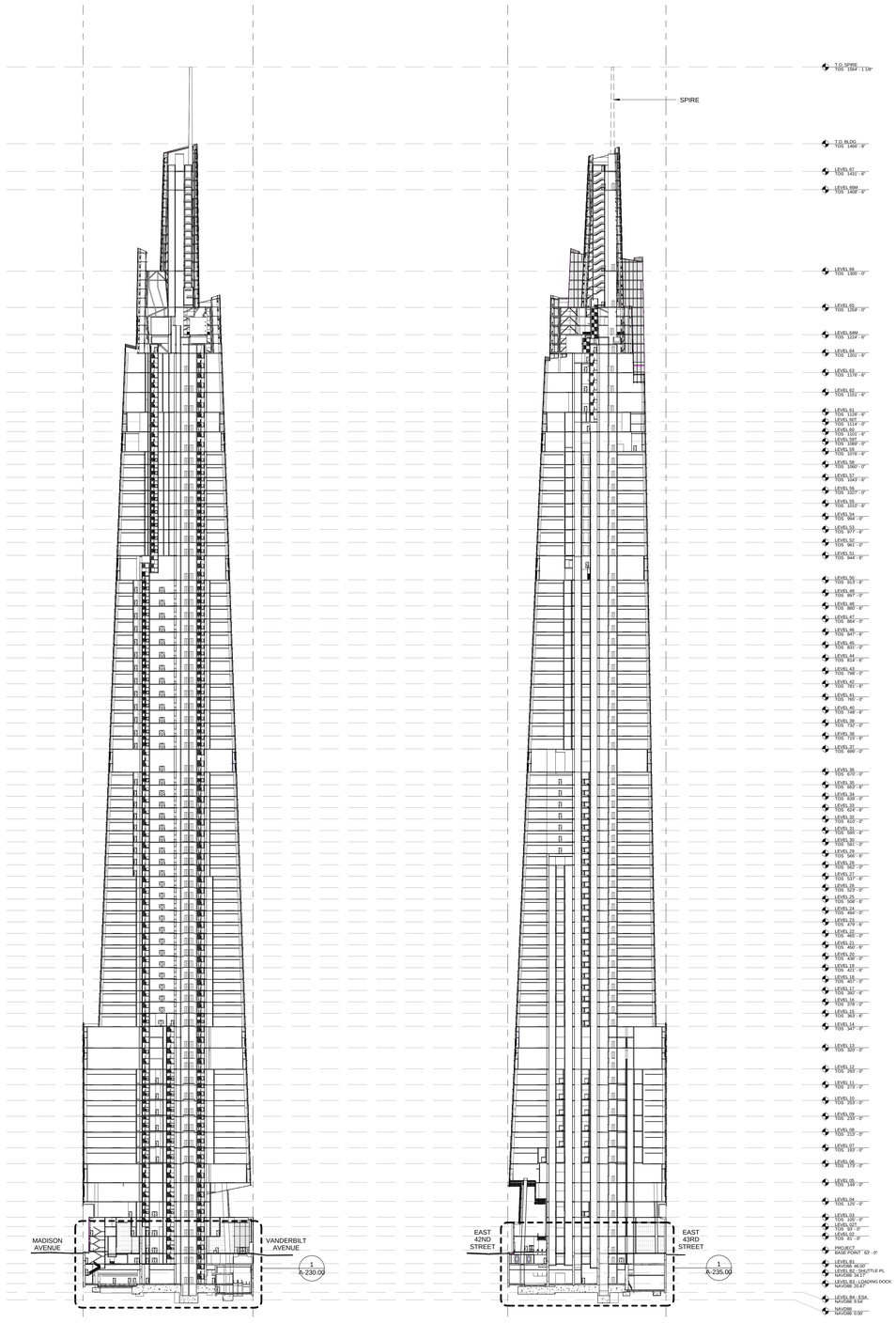
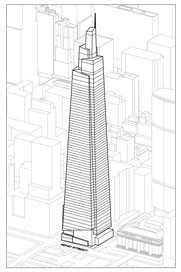


2 EAST-WEST SECTION

1 NORTH-SOUTH SECTION

ONE VANDERBILT



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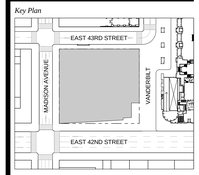
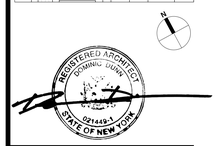
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan





Issue Date: **09-01-2015**

Project No. **1943.16**

Drawn By

Scale 1/64" = 1'-0"

Drawing Title

BUILDING SECTIONS

Drawing Number

A-210.00

SHEET 51 OF 56

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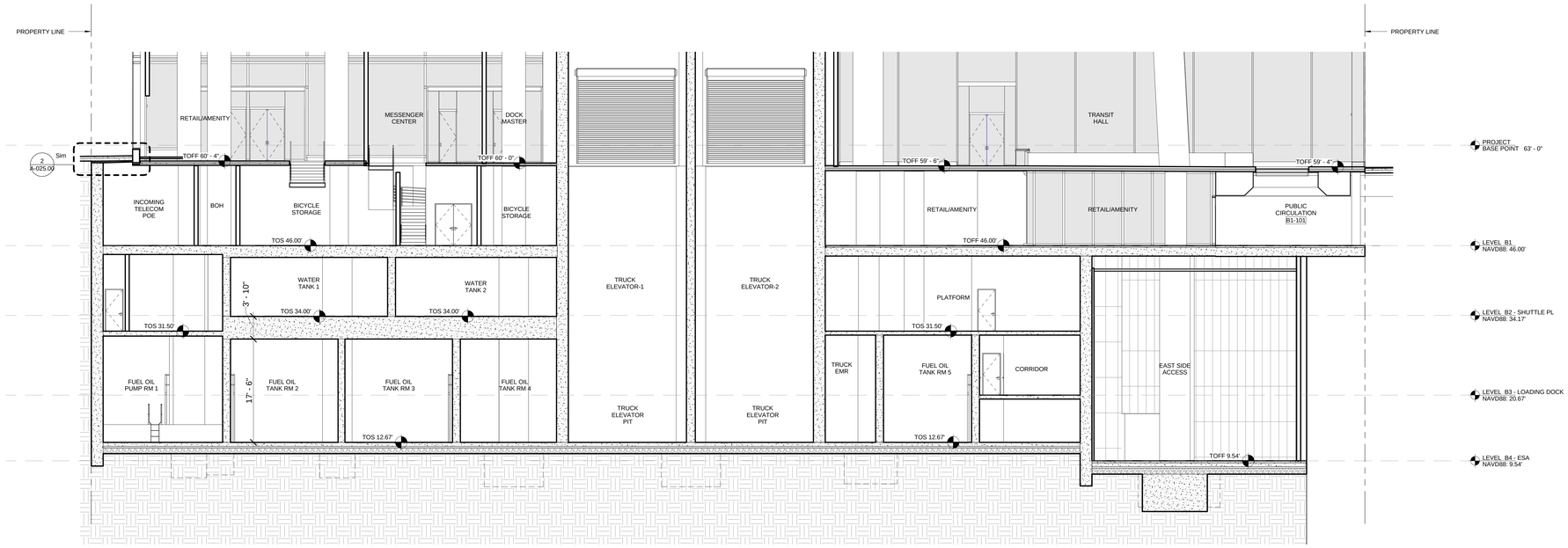

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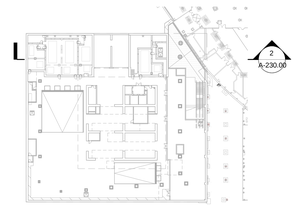

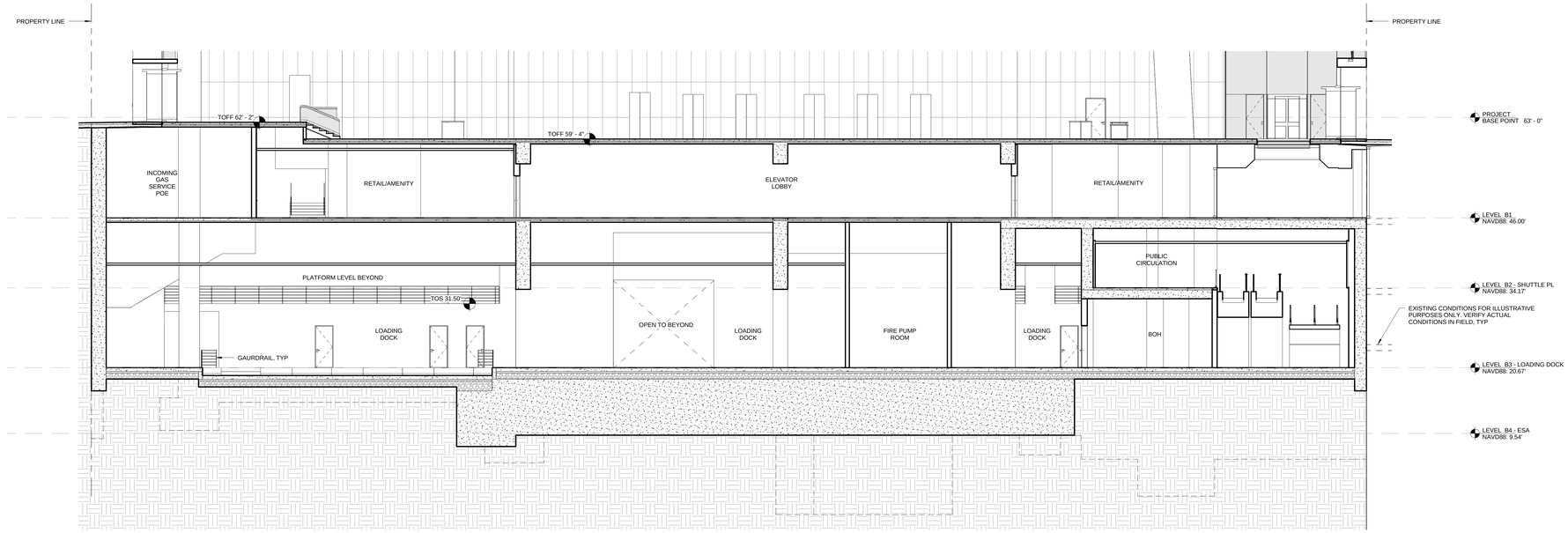

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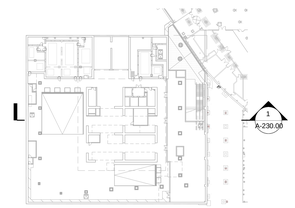

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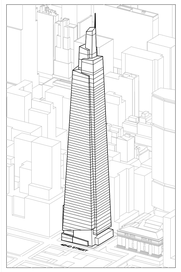

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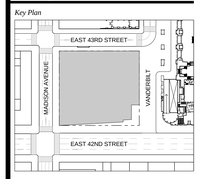
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



REGISTERED ARCHITECT
DOMINIC LAMPIS
021449-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale AS NOTED

Drawing Title
PARTIAL SECTION

Drawing Number
A-230.00
SHEET 52 OF 56

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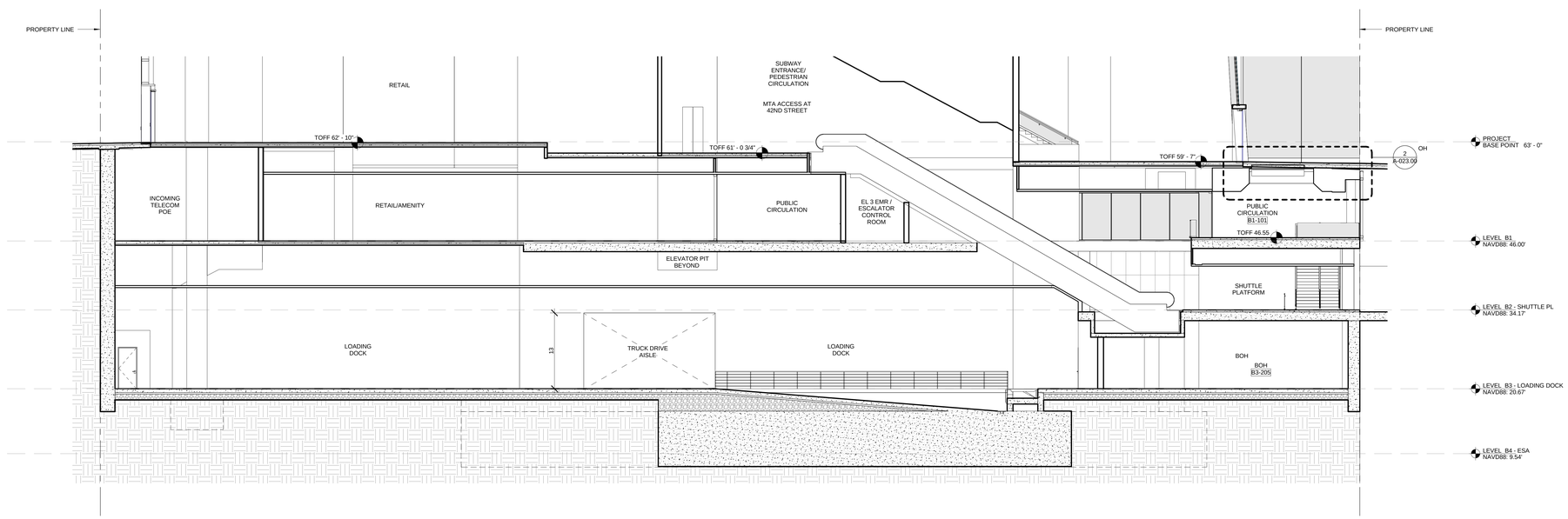
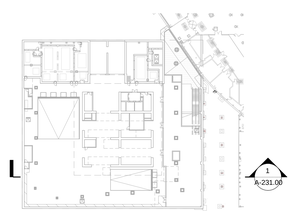


1 EAST-WEST PARTIAL SECTION LOOKING NORTH



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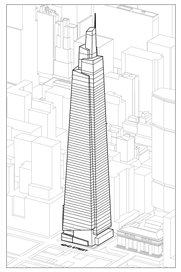

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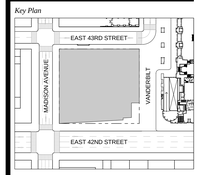
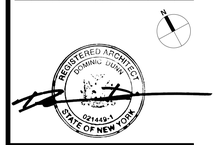
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan





Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale AS NOTED

Drawing Title
PARTIAL SECTION

Drawing Number
A-231.00

SHEET 53 OF 56

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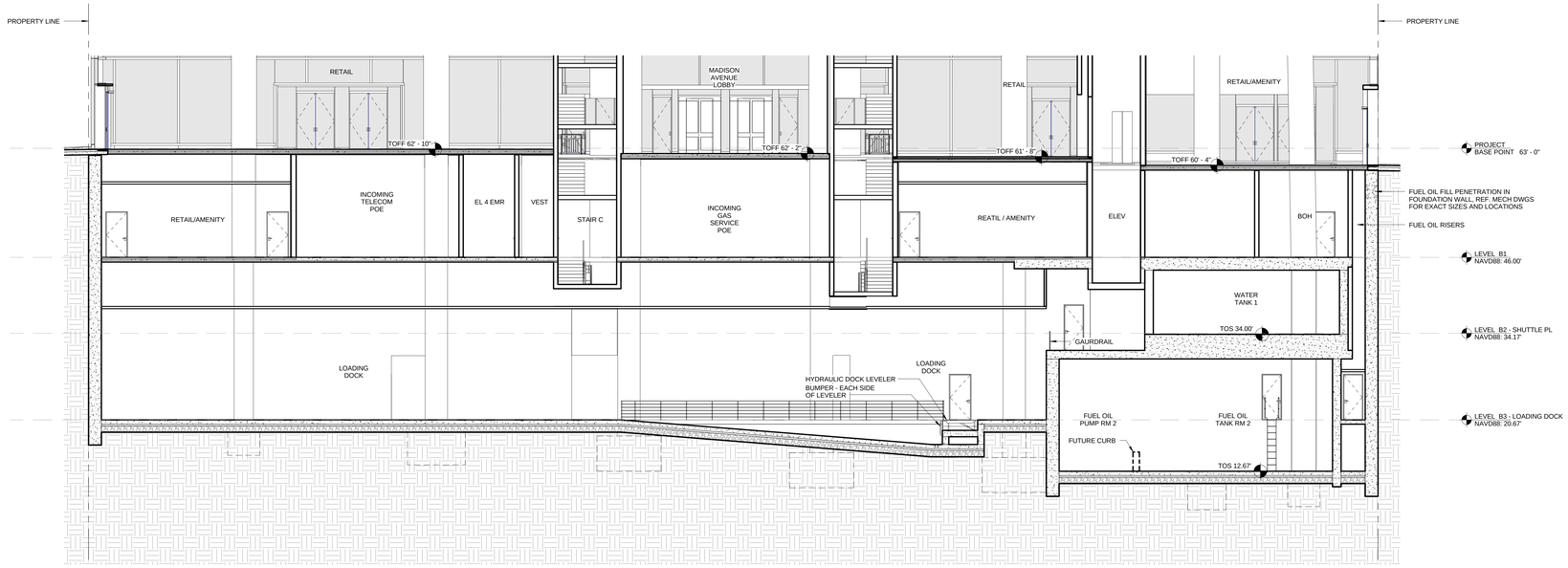

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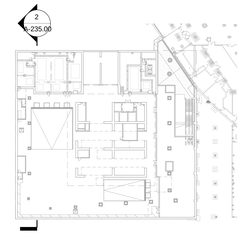

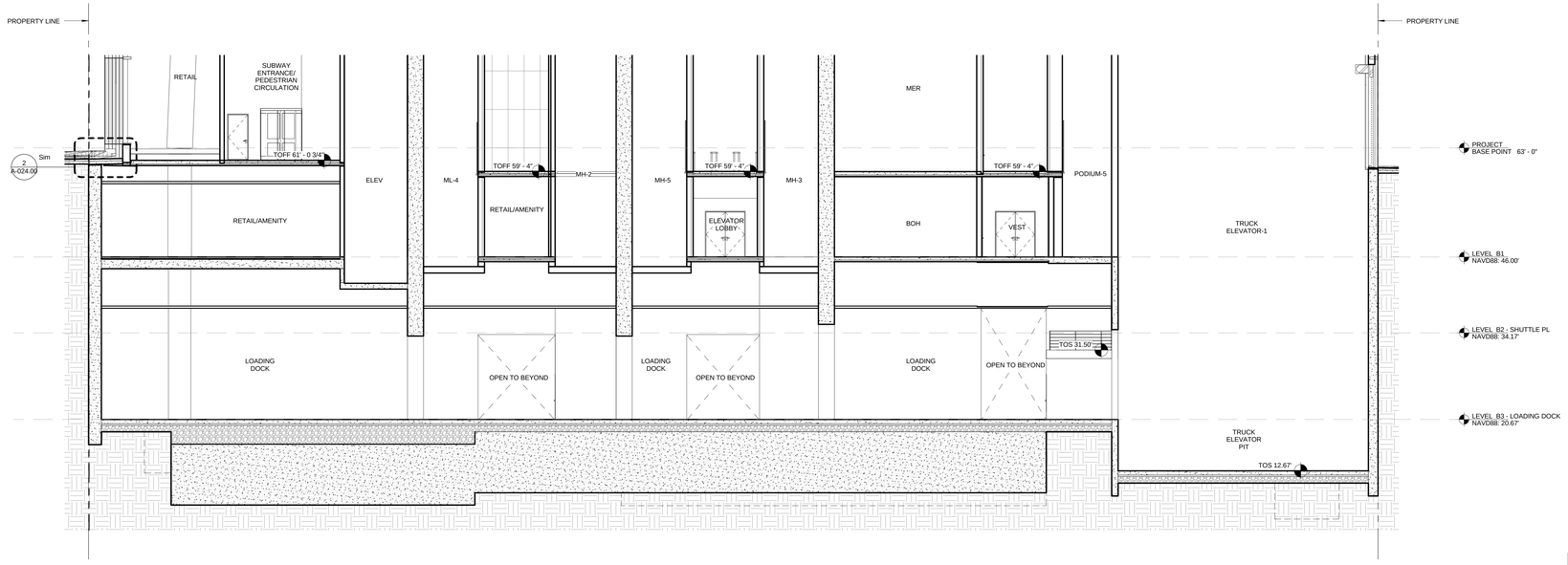

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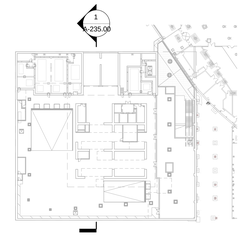

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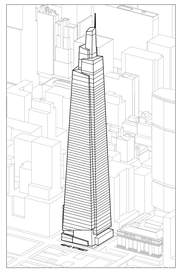

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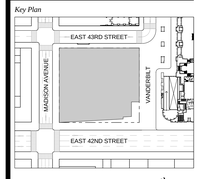
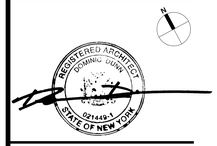
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan





Issue Date: **09-01-2015**
Project No. **1943.16**
Drawn By
Scale AS NOTED

Drawing Title
PARTIAL SECTION

Drawing Number
A-235.00
SHEET 54 OF 56

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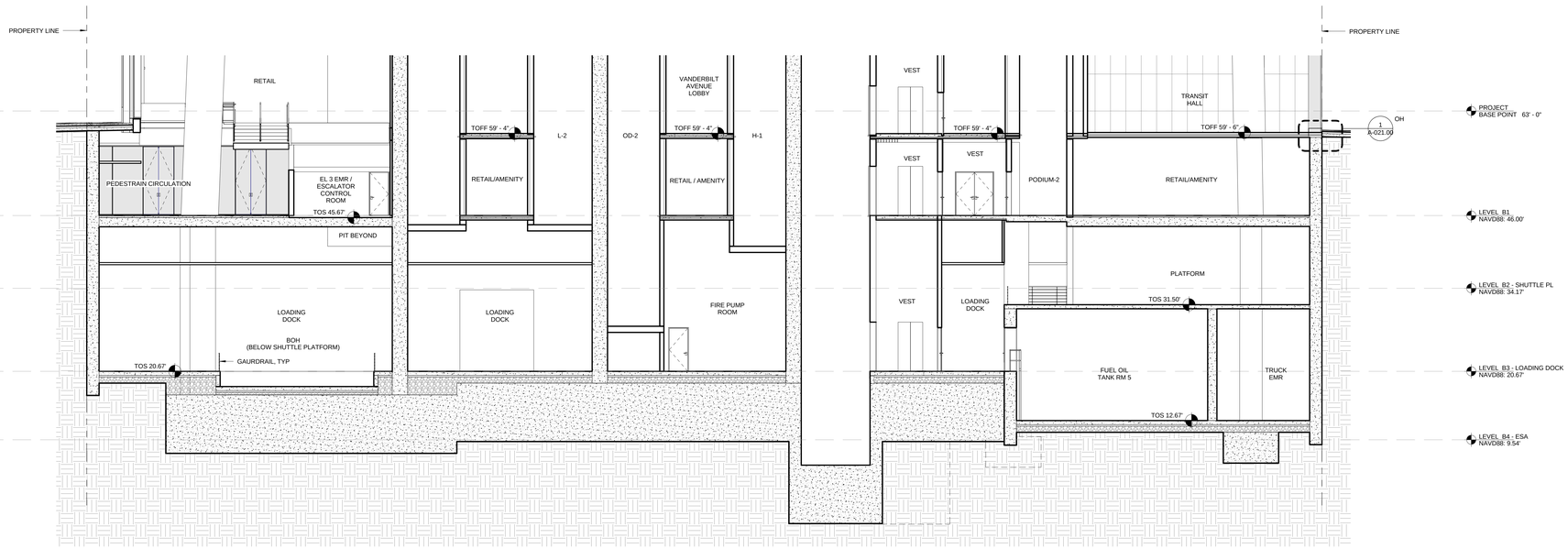

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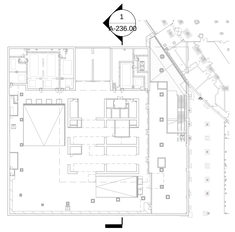

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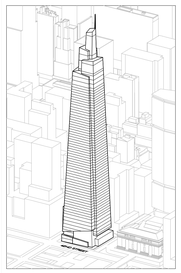

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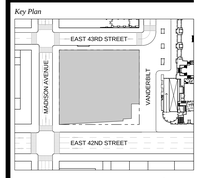

REGISTERED ARCHITECT
DOMINIC LAMPIS
021449-1
STATE OF NEW YORK

Issue Date: **09-01-2015**
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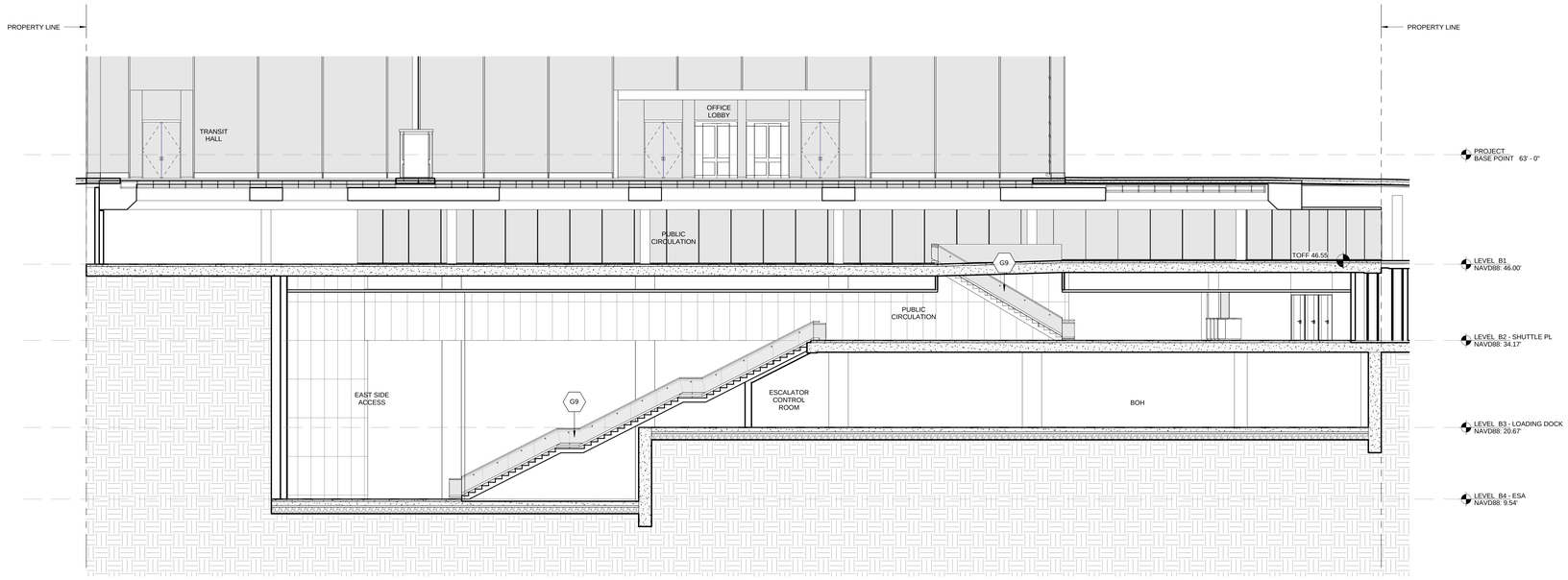

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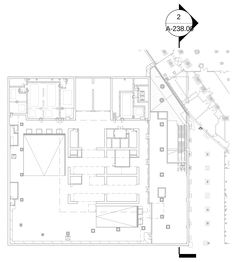

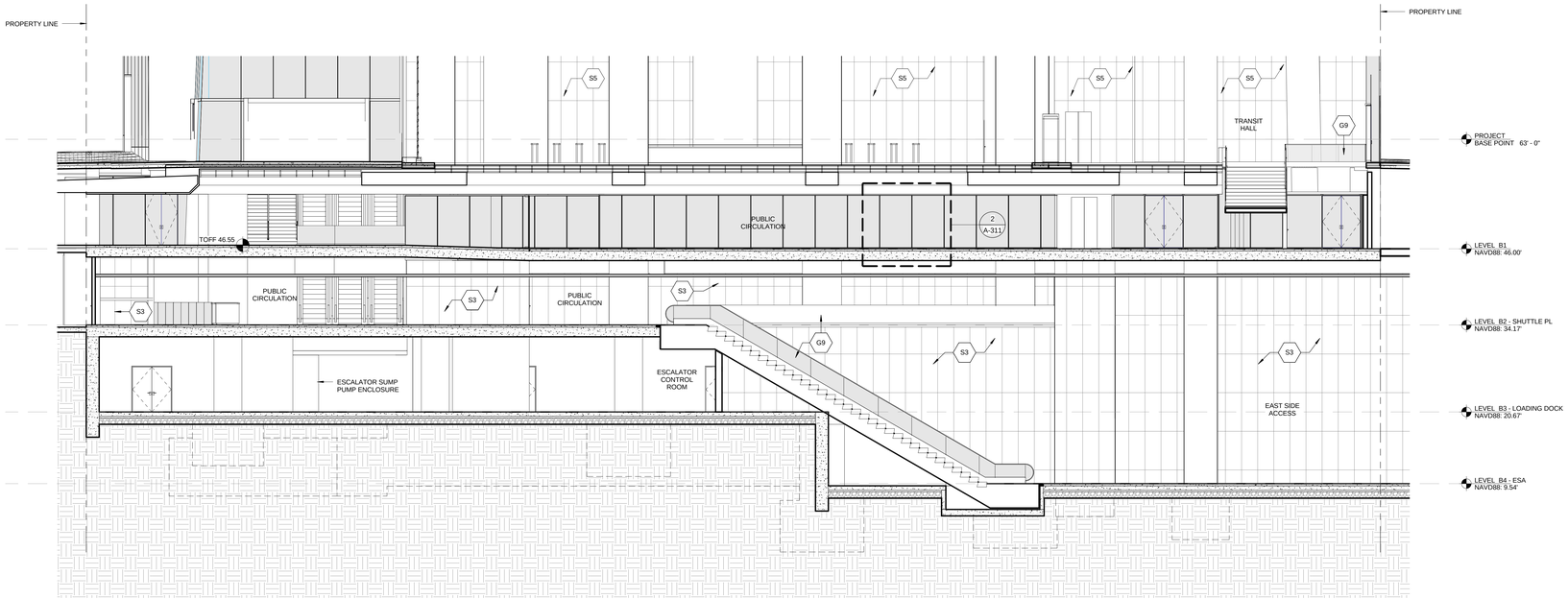

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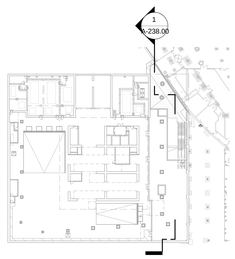

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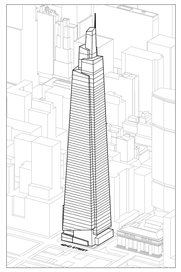

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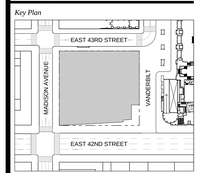

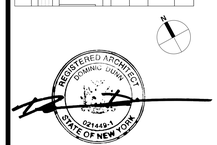

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APPENDIX 2

CITIZEN PARTICIPATION PLAN

The NYC Office of Environmental Remediation and Hines 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, Hines 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, Sarah Pong, 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 online. Internet access to view OER's document repositories is available at public libraries. This document repository is intended to house, for community review, all principal documents generated during the cleanup program including Remedial Investigation plans and reports, Remedial Action work plans and reports, and all public notices and fact sheets produced during the lifetime of the remedial project. The library nearest the Site is:

New York Public Library
5th Ave at 42nd Street
(917) 275-6975

Sunday	Closed
Monday	10:00am to 6:00pm
Tuesday	10:00am to 8:00pm
Wednesday	10:00am to 8:00pm
Thursday	10:00am to 6:00pm
Friday	10:00am to 6:00pm
Saturday	10:00am to 6:00pm

Digital Documentation: NYC OER requires the use of digital documents in our repository as a means of minimizing paper use while also increasing convenience in access and ease of use.

Issues of Public Concern: No specific issues of concern to stakeholders proximate to the project site were identified during a review of this project.

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 reviewed and approved by OER prior to distribution and mailed by the Enrollee. 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. 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 3

SUSTAINABILITY STATEMENT

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

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

Considerations have been made for the reuse of clean, non-virgin materials in the selected remedial action and redevelopment. Where appropriate, the reuse and recycling of concrete aggregate, stone and masonry derived from the Site will be considered. Importation of required clean material will be considered from local sources for reuse as backfill in areas of foundation support and drainage areas of remedial excavations. 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.

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.

Stormwater Retention: Stormwater retention improves water quality by lowering the rate of combined stormwater 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 stormwater 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 Voluntary Cleanup Program: Hines is participating in OER's Paperless Voluntary 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: Hines is participating in OER's low-energy project management program. Under this program, whenever possible, meetings are held using remote communication technologies, such as videoconferencing and teleconferencing to reduce energy consumption and traffic congestion associated with personal transportation.

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

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

APPENDIX 4

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 final remedial report. Soil screening will be performed during invasive work performed during the remedy and development phases prior to issuance of final signoff by OER.

1.2 Stockpile Methods

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

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

1.3 Characterization of Excavated Materials

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

1.4 Materials Excavation, Load-Out, and Departure

The PE/QEP overseeing the remedial action will:

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

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

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

1.5 Off-Site Materials Transport

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

Outbound truck transport routes are described in the remedial report. 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 Enrollee to each disposal facility describing the material to be disposed and requesting written acceptance of the material. This letter will state that material to be disposed is regulated material generated at an environmental remediation Site in New York City under a governmental remediation program. The letter will provide the project identity and the name and phone number of the PE/QEP or Enrollee. The letter will include as an attachment a summary of all chemical data for the material being transported; and (2) a letter from each disposal facility stating it is in receipt of the correspondence (1, above) and is approved to accept the material. These documents will be included in the final remedial report.

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

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

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

1.7 Materials Reuse On-Site

Soil and fill that is derived from the property that meets the Soil Cleanup Objectives (SCOs) established in this plan may be reused on-Site. The SCOs for on-Site reuse are listed in Section 4.2 of this cleanup plan. '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 land with comparable levels of contaminants in soil/fill material, compliant with applicable laws and regulations, and addressed pursuant to the NYC VCP agreement subject to Engineering and Institutional 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 remedial plan are followed. No material reuse is anticipated at this site.

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

1.8 Demarcation

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

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

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

1.9 Import of Backfill Soil From Off-Site Sources

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

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

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

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

- All materials received for import to the Site will be approved by a PE/QEP and will be in compliance with provisions in this remedial plan. The final remedial report 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.
- All material will be subject to source screening and chemical 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 final remedial report. 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 Stormwater Pollution Prevention

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

1.12 Contingency Plan for Unknown Contamination Sources

This contingency plan is developed for the remedial construction to address the discovery of unknown structures or contaminated media during excavation. Identification of unknown contamination source areas during invasive Site work will be promptly communicated to OER's Project Manager. Petroleum spills will be reported to the NYS DEC Spill Hotline. These findings will be included in the daily report. If previously unidentified contaminant sources are found during on-Site remedial excavation or development-related excavation, sampling will be performed on contaminated source material and surrounding soils and reported to OER. Chemical analytical testing will be performed for TAL metals, TCL volatiles and semi-volatiles, TCL pesticides and PCBs, as appropriate.

1.13 Odor, Dust, and Nuisance Control

Odor Control

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

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

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 this remedial plan.

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 5

CONSTRUCTION HEALTH AND SAFETY PLAN

CONSTRUCTION HEALTH AND SAFETY PLAN

PROJECT:
One Vanderbilt
1 Vanderbilt Avenue
Manhattan, NY

PREPARED FOR:
Hines
499 Park Avenue
New York, NY 10022

PREPARED BY:
WCD Group LLC
1350 Broadway, Suite 1904
New York, NY 10018

December 14, 2015

This document is provided for the exclusive use of WCD Group LLC and affiliates and Brookfield, Office Properties personnel, for the specific site and project herein designated, and supplements the health and safety plans implemented for other contractors or entities at the site. Use of this document or any portion thereof for work outside the scope of this project is inappropriate.

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PURPOSE

The purpose of this Construction Health and Safety Plan (CHASP) is to assign responsibilities, establish personnel protection standards and mandatory safety practices and procedures, and provide for contingencies that may arise during excavation for construction of a new building at the property located at 1 Vanderbilt Ave, New York, NY, herein referred to as the "subject property". The CHASP is intended to minimize health and safety risks resulting from the known and potential presence of hazardous materials on site.

1.0 APPLICABILITY

Work subject to this CHASP shall be all activities that disturb the existing soil on-site. The contractors and their subcontractors involved in the construction project shall provide a copy of this CHASP for their employees whose work involves any potential exposure to the on-site chemical hazards in the soils, and shall complete all work in accordance with this CHASP. Soils excavation and off-site disposal will occur during the completion of the foundation work and the foundation work waterproofing.

2.0 SITE DESCRIPTION

2.1 General Information

The Site is located in the Midtown section of Manhattan and is identified as Block 1277 and Lot(s) 20, 27, 46 and 52. Currently, the Site is undergoing interior demolition. The planned development includes the demolition of the four (4) existing structures and construction of a mixed use 68-story tower with four basement levels (B-1 through B-4) encompassing the entire property footprint with the exception of a small angled pull back of the building's frontage on the eastern edge at 42nd street, which will be included in the pedestrian sidewalk. The redevelopment will include at-grade uses including retail space, transit access, loading dock elevator, and office lobbies; below grade will include pedestrian connections into adjacent NYCTA spaces, back-of-house space, observation deck ticketing and retail space, space, loading docks and truck turnarounds.

The proposed building will occupy an approximately 43,313-square foot footprint. The foundation excavation is anticipated to extend below street grade into bedrock to accommodate cellar space for the new building's cellar. The water table is expected at approximately 25 to 28 feet below grade surface (bgs). Layout of the proposed site development is presented in Figure 1.

The Site is bounded to the north by East 43rd Street followed by high-rise commercial office buildings; to the east by Vanderbilt Avenue followed by Grand Central Terminal; to the west by Madison Avenue followed by high-rise commercial office buildings and to the south by East 42nd Street followed by the Lincoln Building. Bright Horizons Children's Day Care Center is located to the northeast in the Met Life Building.

2.2 Hazard Potential

The site was classified with an E-designation for Hazardous Materials. Previous Environmental Site Assessments note the potential presence of petroleum related contamination. The remaining historic fill on site has been sampled and several metals were detected. A portion of the Site contains soil that is defined as a Hazardous Waste due to elevated lead concentrations.

Hazard Evaluation

The most likely routes of exposure are breathing of metals or particulate-laden air released through soil disturbing activities and dermal contact. Appendix A includes specific health effects from the known on-site chemicals. The remaining sections of this CHASP address procedures (including training, air monitoring, work practices and emergency response) to reduce the potential for unnecessary and unacceptable exposure to these contaminants. The potential adverse health effects from these detected contaminates are diverse. Many of these compounds are known or suspected to result in chronic illness

from long-term exposures. However, due to the limited nature of the proposed construction, acute effects are a potential concern.

This Construction Health and Safety Plan addresses potential environmental hazards form the presence of hazardous materials. It is not intended to address the normal hazards of construction work, which are separately covered by federal local and state construction codes and regulations.

3.0 HEALTH AND SAFETY OFFICER

The Environmental Health and Safety Officer on the Site will be determined and reported to OER prior to the start of work. The HSO will be a competent person responsible for the implementation of this plan. The HSO will have completed a 40-hour training course training (up-dated by an annual refresher) that meets OHSA requirements of 20 CFR Part 1910, Occupational Safety and Health Standards. The HSO has stop-work authorization, which he will execute on his determination of an imminent safety hazard, emergency situation, or other potentially dangerous situation. If the HSO is absent from the Site, the contractor's Site Safety Officer will serve as the qualified replacement to ensure Environmental Health and Safety at the Site.

3.1 Training

All those who enter the work area while intrusive activities are being performed must recognize and understand the potential hazards to health and safety. All construction personnel upon entering the site must attend a brief training meeting, its purpose to:

- Make workers aware of potential hazards they may encounter;
- Provide the knowledge and skills necessary for them to perform the work with minimal risk to health and safety;
- Make workers aware of the purpose and limitations of safety equipment; and
- Ensure that they can safely avoid or escape from emergencies.

Each member of the construction crew will be instructed in these objectives before he/she goes onto the Site. The HSO or other suitably trained individuals will be responsible for conducting the training program. Others who enter the site must be accompanied by a suitably trained construction worker.

4.0 SOIL MANAGEMENT PLAN

The purpose of the Soil Management Plan is to present measures for managing known or potentially contaminated soils in accordance with the NYC Mayor's Office of Environmental Remediation (OER) and potentially New York State Department of Environmental Conservation (NYSDEC) requirements.

This plan is not designed to address potential geotechnical, mechanical or structural safety concerns, nor to supersede or replace any OSHA regulation and/or local and state construction code regulations.

4.1 Dust Control

To prevent the potential off-site transport of dust that may contain above-background levels of contaminants, the following dust control measures will be implemented:

- Water will be available (and used) on-site for sprinkling/wetting to suppress dust in dry weather or as necessary

All work that involves soil disturbance or otherwise generates dust will be performed utilizing methods to minimize dust generation to the extent practicable. In addition, to the particulate air monitoring requirements under the Hazardous Materials Contingencies section of this Plan, water will be available on site at all times to be used for dust suppression.

5.2 Erosion Control/Stormwater Management

Site soil erosion and sediment control measures will be implemented in accordance with the Soil Erosion and Sediment Control Plan prepared by the on-site soil excavation contractor. The plan includes a stabilized construction entrance and perimeter controls.

5.3 Soil Stockpiling

Site stockpiles shall be minimized to the extent practicable and located to eliminate the potential for off-site runoff.

5.4 Soil Testing

The soil on-site was sampled by Impact Environmental. A portion of the Site was identified a USEPA Hazardous Waste for Lead.

5.5 Transportation and Disposal

Disposal facility permits will be reviewed and material will be approved by WCD for the proposed disposal facilities prior to the start of work onsite.

WCD will review and approve a licensed hauler of hazardous material prior to the start of work. Trucks will be fitted with tailgate covers and tires washed prior to leaving the site.

5.0 HAZARDOUS MATERIALS CONTINGENCIES

6.1 Hazardous Materials Contingency Response

In the event that previously unidentified hazardous materials are discovered during excavation, the following contingency procedures will be followed. All excavation will be continuously monitored for the presence of buried tanks, drums, or other containers, sludges, or soil which shows evidence of potential contamination, such as discoloration, staining, or odors. If any of these are detected, excavation in the area will be halted, and the HSO will notify the following:

Company	Name	Phone	Cell
Hines			
WCD Group	Eric Telemaque	212-631-9000	646-529-6526
WCD Group	Josh Cupriks, CIH, CHMM	212-631-9000	609-480-2854
WCD Group	James Blaney, CHMM	212-631-9000	609-613-2004

The affected area will be cordoned off and no further work will be performed at that location until the appropriate contingency response plan described in section 6.2 is implemented. All contingency response actions will be carried out in accordance with the contingency Health and Safety procedures specified in Section 6.5.

6.2 Soil Contamination Plan

Contaminated soils which may be discovered during any subsequent foundation and waterproofing work will be treated as follows:

1. Soils will be excavated and stockpiled on-site, either in a container or in a stockpile placed on plastic sheeting and securely covered by plastic sheeting. Composite samples of the soil will be collected and analyzed for disposal. The excavated soil will then be disposed of in accordance with all applicable regulations.

2. In the event that contaminated soils are noted, post excavation samples will be collected from the sides and bottom of the excavated area. All soil samples will be properly containerized, labeled, sealed, and placed in a chilled cooler for shipment to the laboratory. A chain-of-custody will be

maintained throughout the field sampling, transport of samples to the laboratory, and during lab analysis. Analytical parameters for post excavation soil samples will be determined based on the original analysis of the contaminated soil. If post-excavation samples exceed action levels, then additional excavation will be performed.

6.3 Contingency Health and Safety Procedures

6.3.1 Site Work Zones for Contaminated Areas

During any activities involving disturbance of contaminated areas, the work area must be divided into various zones to prevent the spread of contamination, ensure that proper protective equipment is dunned, and provide an area for decontamination. The Exclusion Zone is defined as the area where potentially contaminated materials are located. The Contamination Reduction Zone (CR2) is the area where decontamination procedures take place and is located next to the Exclusion Zone. The Support Zone is the zone area where support facilities, such as vehicles, a field phone, fire extinguisher, and first aid supplies are located. The emergency staging area (part of the Support Zone) is the area where all workers on-site would assemble in the event of an emergency. These zones shall be designated daily, depending on that day's activities. All field personnel will be informed of the location of these zones before work begins.

Control measures such as "Caution" tape and traffic cones will be placed around the perimeter of the work area when work is being done in the areas of concern to prevent entrance onto the area with exposed soil.

6.3.2 Air Monitoring in Contaminated Areas

An Organic Vapor Meter (OVM), a type of photo ionization detector (PID), will be used to perform air monitoring during sampling and excavation work at areas where VOCs have been detected. A Dustrak® dust monitor or equivalent will be used to measure concentration of total particulate matter during the excavation in contaminated areas. Results of the air monitoring will be used to determine the appropriate response action, if needed.

Real time air monitoring for volatile organic compounds will be done with the OVM/PTD whenever soil removal or sampling is performed in areas contaminated with VOCs. Measurements will be taken prior to the commencement of work and for at least 1 minute every 60 minutes during the work. The OVM will be calibrated with isobutylene in accordance with the manufacturer's recommendations. These measurements will be made as close to the workers as practicable and at the breathing height of the workers. The HSO shall set up the equipment and confirm that they are working properly. His/her designee may oversee the air measurements during the day. The initial measurement for the day will be performed before the start of work and will establish the background level for that day. The final measurement for the day will be performed after the end of work. The action levels and required responses are listed in Table 1 below.

Table 1 – Action Levels and Required Responses

Instrument	Action Level (Note 1)	Response Action
OVM	<10 ppm in breathing zone.	**Level D or D-Modified** (Requires coveralls and steel toe boots). (As applicable: chemical resistant gloves, chemical resistant boot covers, hard hat, safety glasses, face shield or escape mask).
	10 - 20 ppm	**Level C** (Requires full face or half face respirator, hooded chemical resistant two piece Tyvek suit or overalls, chemical resistant inner and outer gloves, chemical resistant boot covers, steel toe and shank boots) (As applicable: hardhat, face shield or escape mask)
	>20 ppm	**Stop work.** Resume work when source of vapors is abated and readings are less than 20 ppm above background
Particulate monitor	<5 mg/m³	**Level D**
	5 - 125 mg/m³	**Level C** Apply dust suppression measures. If less than 2.5 mg/rn³, resume work using Level D. Otherwise, upgrade, Level C.
	>125 mg/m³	Stop work. Apply additional dust suppression measures. Resume work when less than 125 mg/rn³ and maintain **Level C.**

6.0 EMERGENCY RESPONSE

The construction crew will be equipped with emergency equipment, such as a first aid kit and disposable eye washes. In the case of a medical emergency, the HSO will determine the nature of the emergency and he/she will have someone call for an ambulance, if needed. If the nature of the injury is not serious i.e. the person can moved without expert emergency medical personnel he/she should be driven to a hospital by on-site personnel. There will be an on-site field phone. In the event of an on-site emergency, the Environmental Site Safety Officer shall contact the Site Safety Manger Augustine Clery and notify Brookfield. The on-site supervisor shall make all arrangements to evacuate injured personnel from the site.

The location of the nearest hospital (see Appendix E), is New York University Medical Center located at 560 First Ave, New York, NY, 10016.

PERTINENT CHASP INFORMATION

New York University Medical Center	212-562-4141
Ambulance, Fire and Police Department	911
Local Poison Control	212-447-8224 1-800-222-1222`
NYSDEC Spill Hotline	800-457-7362
NYCDEP Hotline	718-DEP-HELP

DIRECTIONS TO NEW YORK UNIVERSITY MEDICAL CENTER

By Car

1 Vanderbilt Ave
New York, NY 10017

1. Head northeast on Vanderbilt Ave toward E 43rd St — 272 ft
2. Turn left onto E 43rd St — 0.1 mi
3. Turn left at the 2nd cross street onto 5th Ave — 0.5 mi
4. Turn left onto E 34th St — 0.3 mi
5. Turn right onto Lexington Ave — 0.2 mi
6. Turn left onto E 30th St — 0.4 mi
7. Use the middle lane to turn left onto 1st Avenue — 436 ft
   Destination will be on the right

New York University Medical Center Emergency Medicine
560 1st Avenue, New York, NY 10016

8.0 ACKNOWLEDGEMENT OF THE CHASP

Below is an affidavit that must be signed by all workers who enter the site. A copy of the CHASP must be on-site at all times and will be kept by the HSO.

AFFIDAVIT

I, _____ (name), of _____ (company), have read The Construction Health and Safety Plan (CHASP) for 1 Vanderbilt Avenue, New York, NY. I agree to conduct all on-site work in accordance with the requirements set forth in this CHASP and understand that failure to comply with this CHASP could lead to my injury/ and/ or removal from the site.

Signed:		Company:		Date:	
Signed:		Company:		Date:	
Signed:		Company:		Date:	
Signed:		Company:		Date:	
Signed:		Company:		Date:	
Signed:		Company:		Date:	

Appendix A

POTENTIAL HEALTH EFFECTS FROM ON-SITE CONTAMINANTS

Appendix B

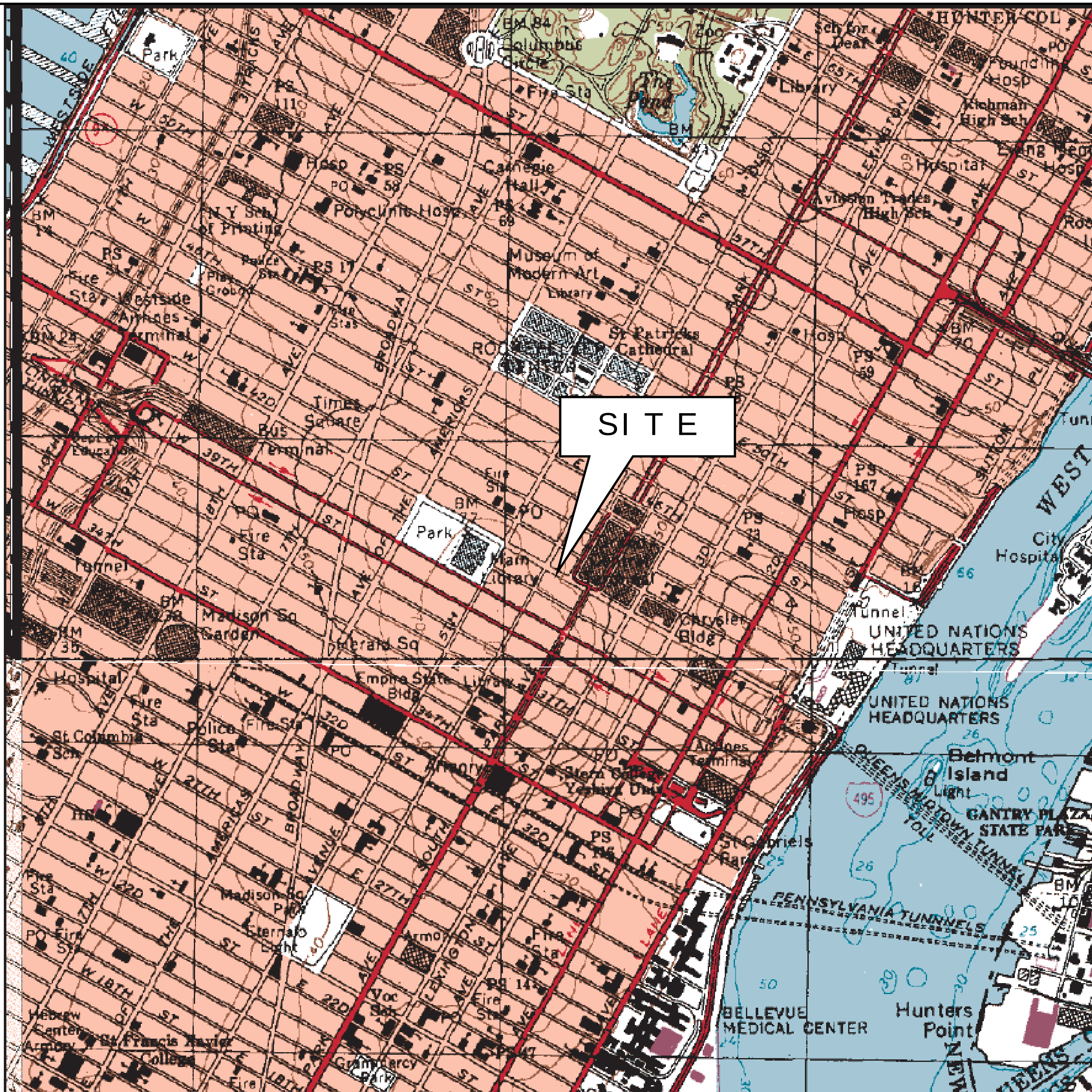
WEST NILE VIRUS/ST. LOUIS ENCEPHALITIS PREVENTION

Appendix C

INCIDENT REPORT

Appendix D

EMERGENCY HAND SIGNALS



WCD GROUP

WCD Group
1350 Broadway, Suite 1904
New York, NY 10018
Phone: 212.631.9000
Fax: 212.631.8066
www.wcdgroup.com

Client:

Hines
499 Park Avenue, 12th Floor
New York, NY 10022

Project Location:

317 and 327 Madison Avenue
48 East 43rd Street
51 East 42nd Street
New York, NY 10017

Project No.:

14-6882

Title:

SITE LOCATION MAP

FIGURE 1

Source: USGS Central Park Quadrangle, 7.5 Minute Series, Central Park NY-NJ 2013

AMERADA HESS CORPORATION

NFPA 704 (Section 16)

MATERIAL SAFETY DATA SHEET

No. 2 Fuel Oil **MSDS No. 0088**

1. CHEMICAL PRODUCT and COMPANY INFORMATION (rev. Jan-98)

Amerada Hess Corporation
1 Hess Plaza
Woodbridge, NJ 07095-0961

02

EMERGENCY TELEPHONE NUMBER (24 hrs): **CHEMTREC** **(800) 424-9300**
COMPANY CONTACT (business hours): Corporate Safety (732) 750-6000
SYNONYMS: #2 Heating Oil; 2 Oil; Off-road Diesel Fuel

See Section 16 for abbreviations and acronyms.

2. COMPOSITION and INFORMATION ON INGREDIENTS (rev. Sep-98)

INGREDIENT NAME	EXPOSURE LIMITS	CONCENTRATION PERCENT BY WEIGHT
#2 Fuel Oil CAS NUMBER: 68476-30-2	OSHA PEL-TWA: 5 mg/m^3 as mineral oil mist ACGIH TLV-TWA: 1997 NOIC - 100 mg/m^3, skin, A3	100
Naphthalene CAS NUMBER: 91-20-3	OSHA PEL-TWA: 10 ppm ACGIH TLV-TWA/STEL: 10 / 15 ppm, A4	Typically 0.1

A complex combination of hydrocarbons with carbon numbers in the range C9 and higher produced from the distillation of petroleum crude oil.

3. HAZARDS IDENTIFICATION (rev. Jan-98; Tox-98)

EMERGENCY OVERVIEW
CAUTION!
OSHA/NFPA COMBUSTIBLE LIQUID - SLIGHT TO MODERATE IRRITANT - EFFECTS CENTRAL NERVOUS SYSTEM - HARMFUL OR FATAL IF SWALLOWED

Moderate fire hazard. Avoid breathing vapors or mists. May cause dizziness and drowsiness. May cause moderate eye irritation and skin irritation. Long-term, repeated exposure may cause skin cancer.

If ingested, do NOT induce vomiting, as this may cause chemical pneumonia (fluid in the lungs).

EYES
Contact with eyes may cause mild irritation.

SKIN
Practically non-toxic if absorbed following acute (single) exposure. May cause skin irritation with prolonged or repeated contact. Liquid may be absorbed through the skin in toxic amounts if large areas of skin are repeatedly exposed.

INGESTION
The major health threat of ingestion occurs from the danger of aspiration (breathing) of liquid drops into the lungs, particularly from vomiting. Aspiration may result in chemical pneumonia (fluid in the lungs), severe lung damage, respiratory failure and even death.

Ingestion may cause gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea, and central nervous system (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest, and death may occur.

INHALATION
Excessive exposure may cause irritations to the nose, throat, lungs and respiratory tract. Central nervous system (brain) effects may include headache, dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure, and death.

WARNING: the burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels of combustion products, including carbon monoxide, and inadequate oxygen levels, which may cause unconsciousness, suffocation, and death.

CHRONIC EFFECTS and CARCINOGENICITY
Similar products have produced skin cancer and systemic toxicity in laboratory animals following repeated applications. The significance of these results to human exposures has not been determined - see Section 11Toxicological Information.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE
Irritation from skin exposure may aggravate existing open wounds, skin disorders, and dermatitis (rash).

4. FIRST AID MEASURES (rev. Jan-98; Tox-98)

EYES
In case of contact with eyes, immediately flush with clean, low-pressure water for at least 15 min. Hold eyelids open to ensure adequate flushing. Seek medical attention.

SKIN
Remove contaminated clothing. Wash contaminated areas thoroughly with soap and water or with waterless hand cleanser. Obtain medical attention if irritation or redness develops.

INGESTION
DO NOT INDUCE VOMITING. Do not give liquids. Obtain immediate medical attention. If spontaneous vomiting occurs, lean victim forward to reduce the risk of aspiration. Monitor for breathing difficulties. Small amounts of material which enter the mouth should be rinsed out until the taste is dissipated.

INHALATION
Remove person to fresh air. If person is not breathing, provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.

5. FIRE FIGHTING MEASURES (rev. Sep-94)

FLAMMABLE PROPERTIES:

FLASH POINT:	100 °F (38 °C) minimum PMCC
AUTOIGNITION POINT:	494 °F (257 °C)
OSHA/NFPA FLAMMABILITY CLASS:	2 (COMBUSTIBLE)
LOWER EXPLOSIVE LIMIT (%):	0.6
UPPER EXPLOSIVE LIMIT (%):	7.5

FIRE AND EXPLOSION HAZARDS
OSHA and NFPA Class 2 COMBUSTIBLE LIQUID (see Section 14 for transportation classification). Vapors may be ignited rapidly when exposed to heat, spark, open flame or other source of ignition. When mixed with air and exposed to an ignition source, flammable vapors can burn in the open or explode in confined spaces. Being heavier than air, vapors may travel long distances to an ignition source and flash back. Runoff to sewer may cause fire or explosion hazard.

EXTINGUISHING MEDIA
SMALL FIRES: Any extinguisher suitable for Class B fires, dry chemical, CO2, water spray, fire fighting foam, or Halon.

LARGE FIRES: Water spray, fog or fire fighting foam. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers.

FIRE FIGHTING INSTRUCTIONS
Small fires in the incipient (beginning) stage may typically be extinguished using handheld portable fire extinguishers and other fire fighting equipment.

Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH/MSHA- approved pressure-demand self-contained breathing apparatus with full facepiece and full protective clothing.

Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water. For massive fires the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied fire fighting foam.

See Section 16 for the NFPA 704 Hazard Rating.

6. ACCIDENTAL RELEASE MEASURES (rev. Jan-98)

ACTIVATE FACILITY'S SPILL CONTINGENCY OR EMERGENCY RESPONSE PLAN.

Evacuate nonessential personnel and remove or secure all ignition sources. Consider wind direction; stay upwind and uphill, if possible. Evaluate the direction of product travel, diking, sewers, etc. to confirm spill areas. Spills may infiltrate subsurface soil and groundwater; professional assistance may be necessary to determine the extent of subsurface impact.

Carefully contain and stop the source of the spill, if safe to do so. Protect bodies of water by diking, absorbents, or absorbent boom, if possible. Do not flush down sewer or drainage systems, unless system is designed and permitted to handle such material. The use of fire fighting foam may be useful in certain situations to reduce vapors. The proper use of water spray may effectively disperse product vapors or the liquid itself, preventing contact with ignition sources or areas/equipment that require protection.

Take up with sand or other oil absorbing materials. Carefully shovel, scoop or sweep up into a waste container for reclamation or disposal. Response and clean-up crews must be properly trained and must utilize proper protective equipment (see Section 8).

7. HANDLING and STORAGE (rev. Jan-98)

HANDLING PRECAUTIONS

Handle as a combustible liquid. Keep away from heat, sparks, excessive temperatures and open flame! No smoking or open flame in storage, use or handling areas. Bond and ground containers during product transfer to reduce the possibility of static-initiated fire or explosion.

Special slow load procedures for "switch loading" must be followed to avoid the static ignition hazard that can exist when this product is loaded into tanks previously containing low flash point products (such as gasoline) - see API Publication 2003, "Protection Against Ignitions Arising Out Of Static, Lightning and Stray Currents."

STORAGE PRECAUTIONS

Keep containers closed and clearly labeled. Use approved vented storage containers. Empty product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition.

Store in a well-ventilated area. This storage area should comply with NFPA 30 "Flammable and Combustible Liquid Code". Avoid storage near incompatible materials. The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 "Cleaning Mobile Tanks In Flammable and Combustible Liquid Service" and API RP 2015 "Cleaning Petroleum Storage Tanks."

WORK/HYGIENIC PRACTICES

Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure. Use good personal hygiene practices. Avoid repeated and/or prolonged skin exposure. Wash hands before eating, drinking, smoking, or using toilet facilities. Do not use as a cleaning solvent or harsh abrasive skin cleaners for washing this product from exposed skin areas. Waterless hand cleaners are effective. Promptly remove contaminated clothing and launder before reuse.

Use care when laundering to prevent the formation of flammable vapors which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves.

8. EXPOSURE CONTROLS and PERSONAL PROTECTION (rev. Jan-98)

ENGINEERING CONTROLS

Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces.

EYE/FACE PROTECTION

Safety glasses or goggles are recommended where there is a possibility of splashing or spraying.

SKIN PROTECTION

Gloves constructed of nitrile, neoprene, or PVC are recommended. Chemical protective clothing such as of E.I. DuPont TyChem®, Saranex® or equivalent recommended based on degree of exposure. Note: The resistance of specific material may vary from product to product as well as with degree of exposure. Consult manufacturer specifications for further information.

RESPIRATORY PROTECTION

A NIOSH/MSHA-approved air-purifying respirator with organic vapor cartridges or canister may be permissible under certain circumstances where airborne concentrations are or may be expected to exceed exposure limits or for odor or irritation. Protection provided by air-purifying respirators is limited. Refer to OSHA 29 CFR 1910.134, ANSI Z88.2-1992, NIOSH Respirator Decision Logic, and the manufacturer for additional guidance on respiratory protection selection.

Use a positive pressure, air-supplied respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres, or any other circumstance where an air-purifying respirator may not provide adequate protection.

9. PHYSICAL and CHEMICAL PROPERTIES (rev. Jul-98)

APPEARANCE

Red or reddish/orange colored (dyed) liquid

ODOR

Mild, petroleum distillate odor

BASIC PHYSICAL PROPERTIES

BOILING RANGE:	340 to 700 °F (171 to 371 °C)
VAPOR PRESSURE:	0.009 psia @ 70 °F (21 °C)
VAPOR DENSITY (air = 1):	> 1.0
SPECIFIC GRAVITY (H_2O = 1):	AP 0.87
PERCENT VOLATILES:	100 %
EVAPORATION RATE:	Slow; varies with conditions
SOLUBILITY (H_2O):	Negligible

10. STABILITY and REACTIVITY (rev. Sep-94)

STABILITY: Stable. Hazardous polymerization will not occur

CONDITIONS TO AVOID

Avoid high temperatures, open flames, sparks, welding, smoking and other ignition sources.

INCOMPATIBLE MATERIALS

Keep away from strong oxidizers; Viton ®; Fluorel ®

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke).

11. TOXICOLOGICAL PROPERTIES (rev. Jan-98; Tox-98)

ACUTE TOXICITY

Acute Oral LD50 (rat): 14.5 ml/kg
Acute Dermal LD50 (rabbit): > 5 ml/kg
Guinea Pig Sensitization: negative
Primary dermal irritation: moderately irritating (Draize mean irritation score - 3.98 rabbits)
Draize eye irritation: mildly irritating (Draize score, 48 hours, unwashed - 2.0 rabbits)

CHRONIC EFFECTS AND CARCINOGENICITY

Carcinogenic: IARC: NO NTP: NO OSHA: NO ACGIH: 1997 NOIC: A3
Dermal carcinogenicity: positive - mice

Studies have shown that similar products produce skin tumors in laboratory animals following repeated applications without washing or removal. The significance of this finding to human exposure has not been determined. Other studies with active skin carcinogens have shown that washing the animal's skin with soap and water between applications reduced tumor formation.

This product is similar to Diesel Fuel. IARC classifies whole diesel fuel exhaust particulates as probably carcinogenic to humans (Group 2A) and NIOSH regards it as a potential cause of occupational lung cancer based on animal studies and limited evidence in humans.

MUTAGENICITY (genetic effects)

Material of similar composition has been positive in a mutagenicity study.

12. ECOLOGICAL INFORMATION (rev. Jan-98)

Keep out of sewers, drainage areas and waterways. Report spills and releases, as applicable, under Federal and State regulations.

13. DISPOSAL CONSIDERATIONS (rev. Jan-98)

Consult federal, state and local waste regulations to determine appropriate disposal options.

14. TRANSPORTATION INFORMATION (rev. Jan-98)

PROPER SHIPPING NAME:	FUEL OIL, NO. 2
HAZARD CLASS & PACKING GROUP:	3, PG III
DOT IDENTIFICATION NUMBER:	NA 1993
DOT SHIPPING LABEL:	FLAMMABLE LIQUID

May be reclassified for transportation as a COMBUSTIBLE LIQUID under conditions of DOT 49 CFR 173.120(b)(2).

15. REGULATORY INFORMATION (rev. Sep-98)

U.S. FEDERAL, STATE, and LOCAL REGULATORY INFORMATION

This product and its constituents listed herein are on the EPA TSCA Inventory. Any spill or uncontrolled release of this product, including any substantial threat of release, may be subject to federal, state and/or local reporting requirements. This product and/or its constituents may also be subject to other regulations at the state and/or local level. Consult those regulations applicable to your facility/operation.

CLEAN WATER ACT (OIL SPILLS)

Any spill or release of this product to "navigable waters" (essentially any surface water, including certain wetlands) or adjoining shorelines sufficient to cause a visible sheen or deposit of a sludge or emulsion must be reported immediately to the National Response Center (1-800-424-8802) or, if not practical, the U.S. Coast Guard with follow-up to the National Response Center, as required by U.S. Federal Law. Also contact appropriate state and local regulatory agencies as required.

CERCLA SECTION 103 and SARA SECTION 304 (RELEASE TO THE ENVIRONMENT)
The CERCLA definition of hazardous substances contains a "petroleum exclusion" clause which exempts crude oil, refined, and unrefined petroleum products and any indigenous components of such. However, other federal reporting requirements (e.g., SARA Section 304 as well as the Clean Water Act if the spill occurs on navigable waters) may still apply.

SARA SECTION 311/312 - HAZARD CLASSES

ACUTE HEALTH	CHRONIC HEALTH	FIRE	SUDDEN RELEASE OF PRESSURE	REACTIVE
X	X	X	--	--

SARA SECTION 313 - SUPPLIER NOTIFICATION
This product does not contain toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372.

CANADIAN REGULATORY INFORMATION (WHMIS)
Class B, Division 3(Combustible Liquid); Class D, Division 2, Subdivision B (Toxic by other means)

16. OTHER INFORMATION (rev. Sep-98)

NFPA® HAZARD RATING	HEALTH:	0	Negligible
	FIRE:	2	Moderate
	REACTIVITY:	0	Negligible
HMIS® HAZARD RATING	HEALTH:	1 *	Slight
	FIRE:	2	Moderate
	REACTIVITY:	0	Negligible
			* Chronic

SUPERSEDES MSDS DATED: 07/01/98

ABBREVIATIONS:

AP = Approximately	< = Less than	> = Greater than
N/A = Not Applicable	N/D = Not Determined	ppm = parts per million

ACRONYMS:

ACGIH	American Conference of Governmental Industrial Hygienists
AIHA	American Industrial Hygiene Association
ANSI	American National Standards Institute (212) 642-4900
API	American Petroleum Institute (202) 682-8000
CERCLA	Comprehensive Emergency Response, Compensation, and Liability Act
DOT	U.S. Department of Transportation [General info: (800) 467-4922]
EPA	U.S. Environmental Protection Agency
HMIS	Hazardous Materials Information System
IARC	International Agency For Research On Cancer
MSHA	Mine Safety and Health Administration
NFPA	National Fire Protection Association (617) 770-3000
NIOSH	National Institute of Occupational Safety and Health
NOIC	Notice of Intended Change (proposed change to ACGIH TLV)
NTP	National Toxicology Program
OPA	Oil Pollution Act of 1990
OSHA	U.S. Occupational Safety & Health Administration
PEL	Permissible Exposure Limit (OSHA)
RCRA	Resource Conservation and Recovery Act
REL	Recommended Exposure Limit (NIOSH)
SARA	Superfund Amendments and Reauthorization Act of 1986 Title III
SCBA	Self-Contained Breathing Apparatus
SPCC	Spill Prevention, Control, and Countermeasures
STEL	Short-Term Exposure Limit (generally 15 minutes)
TLV	Threshold Limit Value (ACGIH)
TSCA	Toxic Substances Control Act
TWA	Time Weighted Average (8 hr.)

WEEL	Workplace Environmental Exposure Level (AIHA)	WHMIS	Canadian Workplace Hazardous Materials Information System

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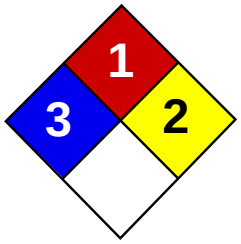
Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material, even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in their use of the material.



Health	3
Fire	1
Reactivity	2
Personal Protection	E

Material Safety Data Sheet
Arsenic MSDS

Section 1: Chemical Product and Company Identification

Product Name: Arsenic

Catalog Codes: SLA1006

CAS#: 7440-38-2

RTECS: CG0525000

TSCA: TSCA 8(b) inventory: Arsenic

CI#: Not applicable.

Synonym:

Chemical Name: Arsenic

Chemical Formula: As

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Arsenic	7440-38-2	100

Toxicological Data on Ingredients: Arsenic: ORAL (LD50): Acute: 763 mg/kg [Rat]. 145 mg/kg [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant), of eye contact (irritant).

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to kidneys, lungs, the nervous system, mucous membranes. Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

Skin Contact: Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

Serious Skin Contact: Not available.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: Not available.

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Some metallic oxides.

Fire Hazards in Presence of Various Substances: Flammable in presence of open flames and sparks, of heat, of oxidizing materials.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards:
Material in powder form, capable of creating a dust explosion. When heated to decomposition it emits highly toxic fumes.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill: Use appropriate tools to put the spilled solid in a convenient waste disposal container.

Large Spill:
Use a shovel to put the material into a convenient waste disposal container. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable

protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, acids, moisture.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection: Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 0.01 from ACGIH (TLV) [United States] [1995] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Lustrous solid.)

Odor: Not available.

Taste: Not available.

Molecular Weight: 74.92 g/mole

Color: Silvery.

pH (1% soln/water): Not applicable.

Boiling Point: Not available.

Melting Point: Sublimation temperature: 615°C (1139°F)

Critical Temperature: Not available.

Specific Gravity: 5.72 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility: Insoluble in cold water, hot water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Reactive with oxidizing agents, acids, moisture.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Inhalation. Ingestion.

Toxicity to Animals: Acute oral toxicity (LD50): 145 mg/kg [Mouse].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH. Causes damage to the following organs: kidneys, lungs, the nervous system, mucous membranes.

Other Toxic Effects on Humans:
Very hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Not available.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are as toxic as the original product.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: CLASS 6.1: Poisonous material.

Identification: : Arsenic UNNA: UN1558 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Arsenic California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Arsenic Pennsylvania RTK: Arsenic Massachusetts RTK: Arsenic TSCA 8(b) inventory: Arsenic

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada):
CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R22- Harmful if swallowed. R45- May cause cancer.

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 1

Reactivity: 2

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 3

Flammability: 1

Reactivity: 2

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

Section 16: Other Information

References:
-Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987. -Liste des produits purs tératogènes, mutagènes, cancérogènes. Répertoire toxicologique de la Commission de la Santé et de la Sécurité du Travail du Québec. -Material safety data sheet emitted by: la Commission de la Santé et de la Sécurité du Travail du Québec. -SAX, N.I. Dangerous Properties of Indutrial Materials. Toronto, Van Nostrand Reinold, 6e ed. 1984. -The Sigma-Aldrich Library of Chemical Safety Data, Edition II. -Guide de la loi et du règlement sur le transport des marchandises dangeureuses au canada. Centre de conformité internatinal Ltée. 1986.

Other Special Considerations: Not available.

Created: 10/09/2005 04:16 PM

Last Updated: 06/09/2012 12:00 PM

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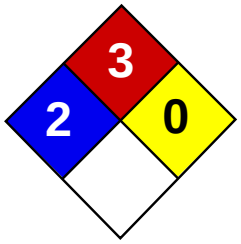

Health	2
Fire	3
Reactivity	0
Personal Protection	H

Material Safety Data Sheet
Benzene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Benzene

Catalog Codes: SLB1564, SLB3055, SLB2881

CAS#: 71-43-2

RTECS: CY1400000

TSCA: TSCA 8(b) inventory: Benzene

CI#: Not available.

Synonym: Benzol; Benzine

Chemical Name: Benzene

Chemical Formula: C6-H6

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Benzene	71-43-2	100

Toxicological Data on Ingredients: Benzene: ORAL (LD50): Acute: 930 mg/kg [Rat]. 4700 mg/kg [Mouse]. DERMAL (LD50): Acute: >9400 mg/kg [Rabbit]. VAPOR (LC50): Acute: 10000 ppm 7 hours [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of eye contact (irritant), of inhalation. Hazardous in case of skin contact (irritant, permeator), of ingestion. Inflammation of the eye is characterized by redness, watering, and itching.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH, 1 (Proven for human.) by IARC. MUTAGENIC EFFECTS: Classified POSSIBLE for human. Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female [POSSIBLE]. The substance is toxic to blood, bone marrow, central nervous system (CNS). The substance may be toxic to liver, Urinary System. Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. WARM water MUST be used. Get medical attention immediately.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 497.78°C (928°F)

Flash Points: CLOSED CUP: -11.1°C (12°F). (Setaflash)

Flammable Limits: LOWER: 1.2% UPPER: 7.8%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:
Highly flammable in presence of open flames and sparks, of heat. Slightly flammable to flammable in presence of oxidizing materials. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. Explosive in presence of oxidizing materials, of acids.

Fire Fighting Media and Instructions:
Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog.

Special Remarks on Fire Hazards:
Extremely flammable liquid and vapor. Vapor may cause flash fire. Reacts on contact with iodine heptafluoride gas. Dioxygenyl tetrafluoroborate is as very powferful oxidant. The addition of a small particle to small samples of benzene, at ambient temperature, causes ignition. Contact with sodium peroxide with benzene causes ignition. Benzene ignites in contact with powdered chromic anhydride. Virgorous or incandescent reaction with hydrogen + Raney nickel (above 210 C) and bromine trifluoride.

Special Remarks on Explosion Hazards:
Benzene vapors + chlorine and light causes explosion. Reacts explosively with bromine pentafluoride, chlorine, chlorine trifluoride, diborane, nitric acid, nitryl perchlorate, liquid oxygen, ozone, silver perchlorate. Benzene + pentafluoride and methoxide (from arsenic pentafluoride and potassium methoxide) in trichlorotrifluoroethane causes explosion. Interaction

of nitryl perchlorate with benzene gave a slight explosion and flash. The solution of permanganic acid (or its explosive anhydride, dimaganese heptoxide) produced by interaction of permanganates and sulfuric acid will explode on contact with benzene. Peroxodisulfuric acid is a very powferful oxidant. Uncontrolled contact with benzene may cause explosion. Mixtures of peroxomonsulfuric acid with benzene explodes.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids.

Storage:
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 0.5 STEL: 2.5 (ppm) from ACGIH (TLV) [United States] TWA: 1.6 STEL: 8 (mg/m3) from ACGIH (TLV) [United States] TWA: 0.1 STEL: 1 from NIOSH TWA: 1 STEL: 5 (ppm) from OSHA (PEL) [United States] TWA: 10 (ppm) from OSHA (PEL) [United States] TWA: 3 (ppm) [United Kingdom (UK)] TWA: 1.6 (mg/m3) [United Kingdom (UK)] TWA: 1 (ppm) [Canada] TWA: 3.2 (mg/m3) [Canada] TWA: 0.5 (ppm) [Canada]Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor:
Aromatic. Gasoline-like, rather pleasant. (Strong.)

Taste: Not available.

Molecular Weight: 78.11 g/mole

Color: Clear Colorless. Colorless to light yellow.

pH (1% soln/water): Not available.

Boiling Point: 80.1 (176.2°F)

Melting Point: 5.5°C (41.9°F)

Critical Temperature: 288.9°C (552°F)

Specific Gravity: 0.8787 @ 15 C (Water = 1)

Vapor Pressure: 10 kPa (@ 20°C)

Vapor Density: 2.8 (Air = 1)

Volatility: Not available.

Odor Threshold: 4.68 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 2.1

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether, acetone.

Solubility:
Miscible in alcohol, chloroform, carbon disulfide oils, carbon tetrachloride, glacial acetic acid, diethyl ether, acetone. Very slightly soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources, incompatibles.

Incompatibility with various substances: Highly reactive with oxidizing agents, acids.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Benzene vapors + chlorine and light causes explosion. Reacts explosively with bromine pentafluoride, chlorine, chlorine trifluoride, diborane, nitric acid, nitryl perchlorate, liquid oxygen, ozone, silver perchlorate. Benzene + pentafluoride and methoxide (from arsenic pentafluoride and potassium methoxide) in trichlorotrifluoroethane causes explosion. Interaction of nitryl perchlorate with benzene gave a slight explosion and flash. The solution of permanganic acid (or its explosive anhydride, dimaganese heptoxide) produced by interaction of permanganates and sulfuric acid will explode on contact with benzene. Peroxodisulfuric acid is a very powferful oxidant. Uncontrolled contact with benzene may cause explosion. Mixtures of peroxomonsulfuric acid with benzene explodes.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 930 mg/kg [Rat]. Acute dermal toxicity (LD50): >9400 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 10000 7 hours [Rat].

Chronic Effects on Humans:

CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH, 1 (Proven for human.) by IARC. MUTAGENIC EFFECTS: Classified POSSIBLE for human. Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female [POSSIBLE]. Causes damage to the following organs: blood, bone marrow, central nervous system (CNS). May cause damage to the following organs: liver, Urinary System.

Other Toxic Effects on Humans:
Very hazardous in case of inhalation. Hazardous in case of skin contact (irritant, permeator), of ingestion.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans:
May cause adverse reproductive effects (female fertility, Embryotoxic and/or foetotoxic in animal) and birth defects. May affect genetic material (mutagenic). May cause cancer (tumorigenic, leukemia)) Human: passes the placental barrier, detected in maternal milk.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Causes skin irritation. It can be absorbed through intact skin and affect the liver, blood, metabolism,and urinary system. Eyes: Causes eye irritation. Inhalation: Causes respiratory tract and mucous membrane irritation. Can be absorbed through the lungs. May affect behavior/Central and Peripheral nervous systems (somnolence, muscle weakness, general anesthetic, and other symptoms similar to ingestion), gastrointestinal tract (nausea), blood metabolism, urinary system. Ingestion: May be harmful if swallowed. May cause gastrointestinal tract irritation including vomiting. May affect behavior/Central and Peripheral nervous systems (convulsions, seizures, tremor, irritability, initial CNS stimulation followed by depression, loss of coordination, dizziness, headache, weakness, pallor, flushing), respiration (breathlessness and chest constriction), cardiovascular system, (shallow/rapid pulse), and blood.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Benzene UNNA: 1114 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Benzene California prop. 65 (no significant risk level): Benzene: 0.007 mg/day (value) California prop. 65: This product contains the following ingredients

for which the State of California has found to cause cancer which would require a warning under the statute: Benzene Connecticut carcinogen reporting list.: Benzene Connecticut hazardous material survey.: Benzene Illinois toxic substances disclosure to employee act: Benzene Illinois chemical safety act: Benzene New York release reporting list: Benzene Rhode Island RTK hazardous substances: Benzene Pennsylvania RTK: Benzene Minnesota: Benzene Michigan critical material: Benzene Massachusetts RTK: Benzene Massachusetts spill list: Benzene New Jersey: Benzene New Jersey spill list: Benzene Louisiana spill reporting: Benzene California Director's list of Hazardous Substances: Benzene TSCA 8(b) inventory: Benzene SARA 313 toxic chemical notification and release reporting: Benzene CERCLA: Hazardous substances.: Benzene: 10 lbs. (4.536 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R11- Highly flammable. R22- Harmful if swallowed. R38- Irritating to skin. R41- Risk of serious damage to eyes. R45- May cause cancer. R62- Possible risk of impaired fertility. S2- Keep out of the reach of children. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S39- Wear eye/face protection. S46- If swallowed, seek medical advice immediately and show this container or label. S53- Avoid exposure - obtain special instructions before use.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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Last Updated: 06/09/2012 12:00 PM

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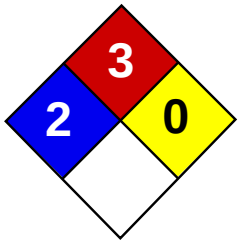

Health	2
Fire	3
Reactivity	0
Personal Protection	H

Material Safety Data Sheet
Ethylbenzene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Ethylbenzene

Catalog Codes: SLE2044

CAS#: 100-41-4

RTECS: DA0700000

TSCA: TSCA 8(b) inventory: Ethylbenzene

CI#: Not available.

Synonym: Ethyl Benzene; Ethylbenzol; Phenylethane

Chemical Name: Ethylbenzene

Chemical Formula: C8H10

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Ethylbenzene	100-41-4	100

Toxicological Data on Ingredients: Ethylbenzene: ORAL (LD50): Acute: 3500 mg/kg [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant, permeator).

Potential Chronic Health Effects:
Slightly hazardous in case of skin contact (irritant, sensitizer). CARCINOGENIC EFFECTS: Classified 2B (Possible for human.) by IARC. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. WARM water MUST be used. Get medical attention.

Skin Contact: Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

Serious Skin Contact: Not available.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 432°C (809.6°F)

Flash Points:
CLOSED CUP: 15°C (59°F). (Tagliabue.) OPEN CUP: 26.667°C (80°F) (Cleveland) (CHRIS, 2001) CLOSED CUP: 12.8 C (55 F) (Bingham et al, 2001; NIOSH, 2001) CLOSED CUP: 21 C (70 F) (NFPA)

Flammable Limits: LOWER: 0.8% - 1.6%UPPER: 6.7% - 7%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances: Highly flammable in presence of open flames and sparks, of heat.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. Slightly explosive in presence of heat.

Fire Fighting Media and Instructions:
Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog.

Special Remarks on Fire Hazards:
Vapor may travel considerable distance to source of ignition and flash back. Vapors may form explosive mixtures with air. When heated to decomposition it emits acrid smoke and irritating fumes.

Special Remarks on Explosion Hazards: Vapors may form explosive mixtures in air.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Avoid contact with eyes. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents.

Storage:
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame). Sensitive to light. Store in light-resistant containers.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 100 STEL: 125 (ppm) from OSHA (PEL) [United States] TWA: 435 STEL: 545 from OSHA (PEL) [United States] TWA: 435 STEL: 545 (mg/m3) from NIOSH [United States] TWA: 100 STEL: 125 (ppm) from NIOSH [United States] TWA: 100 STEL: 125 (ppm) from ACGIH (TLV) [United States] TWA: 100 STEL: 125 (ppm) [United Kingdom (UK)] TWA: 100 STEL: 125 (ppm) [Belgium] TWA: 100 STEL: 125 (ppm) [Finland] TWA: 50 (ppm) [Norway] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Sweetish. Gasoline-like. Aromatic.

Taste: Not available.

Molecular Weight: 106.16 g/mole

Color: Colorless.

pH (1% soln/water): Not available.

Boiling Point: 136°C (276.8°F)

Melting Point: -94.9 (-138.8°F)

Critical Temperature: 617.15°C (1142.9°F)

Specific Gravity: 0.867 (Water = 1)

Vapor Pressure: 0.9 kPa (@ 20°C)

Vapor Density: 3.66 (Air = 1)

Volatility: 100% (v/v).

Odor Threshold: 140 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 3.1

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether.

Solubility:
Easily soluble in diethyl ether. Very slightly soluble in cold water or practically insoluble in water. Soluble in all proportions in Ethyl alcohol. Soluble in Carbon tetrachloride, Benzene. Insoluble in Ammonia. Slightly soluble in Chloroform. Solubility in Water: 169 mg/l @ 25 deg. C.; 0.014 g/100 ml @ 15 deg. C.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ingnition sources (flames, sparks, static), incompatible materials, light

Incompatibility with various substances: Reactive with oxidizing agents.

Corrosivity: Not considered to be corrosive for metals and glass.

Special Remarks on Reactivity:
Can react vigorously with oxidizing materials. Sensitive to light.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Inhalation.

Toxicity to Animals: Acute oral toxicity (LD50): 3500 mg/kg [Rat].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified 2B (Possible for human.) by IARC. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. May cause damage to the following organs: central nervous system (CNS).

Other Toxic Effects on Humans:
Hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant, permeator).

Special Remarks on Toxicity to Animals:
Lethal Dose/Conc 50% Kill: LD50 [Rabbit] - Route: Skin; Dose: 17800 ul/kg Lowest Published Lethal Dose/Conc: LDL[Rat] - Route: Inhalation (vapor); Dose: 4000 ppm/4 H

Special Remarks on Chronic Effects on Humans:
May cause adverse reproductive effects and birth defects (teratogenic) based on animal test data. May cause cancer based on animals data. IARC evidence for carcinogenicity in animals is sufficient. IARC evidence of carcinogenicity in humans inadequate. May affect genetic material (mutagenic).

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Can cause mild skin irritation. It can be absorbed through intact skin. Eyes: Contact with vapor or liquid can cause severe eye irritation depending on concentration. It may also cause conjunctivitis. At a vapor exposure level of 85 - 200 ppm , it is mildly and transiently irritating to the eyes; 1000 ppm causes further irritation and tearing; 2000 ppm results in immediate and severe irritation and tearing; 5,000 ppm is intolerable (ACGIH, 1991; Clayton and Clayton, 1994). Standard draize test for eye irritation using 500 mg resulted in severe irritation (RTECS) Inhalation: Exposure to high concentrations can cause nasal, mucous membrane and respiratory tract irritation and can also result in chest constriction and, trouble breathing, respiratory failure, and even death. It can also affect behavior/Central Nervous System. The effective dose for CNS depression in experimental animals was 10,000 ppm (ACGIH, 1991). Symptoms of CNS depression include

headache, nausea, weakness, dizziness, vertigo, irritability, fatigue, lightheadedness, sleepiness, tremor, loss of coordination, judgement and conciousness, coma, and death. It can also cause pulmonary edema. Inhalation of 85 ppm can produce fatigue, insomnia, headache, and mild irritation of the respiratory tract (Haley & Berndt, 1987). Ingestion: Do not drink, pipet or siphon by mouth. May cause gastroinestinal/digestive tract irritation with Abdominal pain, nausea, vomiting. Ethylbenzene is a pulmonary aspiration hazard. Pulmonary aspiration of even small amounts of the liquid may cause fatal pneumonitis. It may also affect behavior/central nervous system with

Section 12: Ecological Information

Ecotoxicity:
Ecotoxicity in water (LC50): 14 mg/l 96 hours [Fish (Trout)] (static). 12.1 mg/l 96 hours [Fish (Fathead Minnow)] (flow-through)]. 150 mg/l 96 hours [Fish (Blue Gill/Sunfish)] (static). 275 mg/l 96 hours [Fish (Sheepshead Minnow)]. 42.3 mg/l 96 hours [Fish (Fathead Minnow)](soft water). 87.6mg/l 96 hours [Shrimp].

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Ethylbenzene UNNA: 1175 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
Connecticut hazardous material survey.: Ethylbenzene Illinois toxic substances disclosure to employee act: Ethylbenzene Illinois chemical safety act: Ethylbenzene New York release reporting list: Ethylbenzene Rhode Island RTK hazardous substances: Ethylbenzene Pennsylvania RTK: Ethylbenzene Minnesota: Ethylbenzene Massachusetts RTK: Ethylbenzene Massachusetts spill list: Ethylbenzene New Jersey: Ethylbenzene New Jersey spill list: Ethylbenzene Louisiana spill reporting: Ethylbenzene California Director's List of Hazardous Substances: Ethylbenzene TSCA 8(b) inventory: Ethylbenzene TSCA 4(a) proposed test rules: Ethylbenzene TSCA 8(d) H and S data reporting: Ethylbenzene: Effective Date: 6/19/87; Sunset Date: 6/19/97 SARA 313 toxic chemical notification and release reporting: Ethylbenzene

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC). CLASSE D-2B: Material causing other toxic effects (TOXIC).

DSCL (EEC):
R11- Highly flammable. R20- Harmful by inhalation. S16- Keep away from sources of ignition - No smoking. S24/25- Avoid contact with skin and eyes. S29- Do not empty into drains.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References:
-Manufacturer's Material Safety Data Sheet. -Fire Protection Guide to Hazardous Materials, 13th ed., Nationial Fire Protection Association (NFPA) -Registry of Toxic Effects of Chemical Substances (RTECS) -Chemical Hazard Response Information System (CHRIS) -Hazardous Substance Data Bank (HSDB) -New Jersey Hazardous Substance Fact Sheet -Ariel Global View -Reprotext System

Other Special Considerations: Not available.

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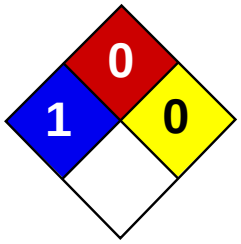

Health	1
Fire	0
Reactivity	0
Personal Protection	E

Material Safety Data Sheet
Lead MSDS

Section 1: Chemical Product and Company Identification

Product Name: Lead

Catalog Codes: SLL1291, SLL1669, SLL1081, SLL1459, SLL1834

CAS#: 7439-92-1

RTECS: OF7525000

TSCA: TSCA 8(b) inventory: Lead

CI#: Not available.

Synonym: Lead Metal, granular; Lead Metal, foil; Lead Metal, sheet; Lead Metal, shot

Chemical Name: Lead

Chemical Formula: Pb

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Lead	7439-92-1	100

Toxicological Data on Ingredients: Lead LD50: Not available. LC50: Not available.

Section 3: Hazards Identification

Potential Acute Health Effects: Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation.

Potential Chronic Health Effects:
Slightly hazardous in case of skin contact (permeator). CARCINOGENIC EFFECTS: Classified A3 (Proven for animal.) by ACGIH, 2B (Possible for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to blood, kidneys, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

Skin Contact: Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

Serious Skin Contact: Not available.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation: Not available.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: Not available.

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Some metallic oxides.

Fire Hazards in Presence of Various Substances: Non-flammable in presence of open flames and sparks, of shocks, of heat.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards: When heated to decomposition it emits highly toxic fumes of lead.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill:
Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill:
Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable

protective clothing. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection: Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 0.05 (mg/m3) from ACGIH (TLV) [United States] TWA: 0.05 (mg/m3) from OSHA (PEL) [United States] TWA: 0.03 (mg/m3) from NIOSH [United States] TWA: 0.05 (mg/m3) [Canada]Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Metal solid.)

Odor: Not available.

Taste: Not available.

Molecular Weight: 207.21 g/mole

Color: Bluish-white. Silvery. Gray

pH (1% soln/water): Not applicable.

Boiling Point: 1740°C (3164°F)

Melting Point: 327.43°C (621.4°F)

Critical Temperature: Not available.

Specific Gravity: 11.3 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility: Insoluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials, excess heat

Incompatibility with various substances: Reactive with oxidizing agents.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Can react vigorously with oxidizing materials. Incompatible with sodium carbide, chlorine trifluoride, trioxane + hydrogen peroxide, ammonium nitrate, sodium azide, disodium acetylide, sodium acetylide, hot concentrated nitric acid, hot concentrated hydrochloric acid, hot concentrated sulfuric acid, zirconium.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Inhalation. Ingestion.

Toxicity to Animals:
LD50: Not available. LC50: Not available.

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified A3 (Proven for animal.) by ACGIH, 2B (Possible for human.) by IARC. May cause damage to the following organs: blood, kidneys, central nervous system (CNS).

Other Toxic Effects on Humans: Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans:
Acute Potential: Skin: Lead metal granules or dust: May cause skin irritation by mechanical action. Lead metal foil, shot or sheets: Not likely to cause skin irritation Eyes: Lead metal granules or dust: Can irritate eyes by mechanical action. Lead metal foil, shot or sheets: No hazard. Will not cause eye irritation. Inhalation: In an industrial setting, exposure to lead mainly occurs from inhalation of dust or fumes. Lead dust or fumes: Can irritate the upper respiratory tract (nose, throat) as well as the bronchi and lungsby mechanical action. Lead dust can be absorbed through the respiratory system. However, inhaled lead does not accumulate in the lungs. All of an inhaled dose is eventually abssorbed or transferred to the gastrointestinal tract. Inhalation effects of exposure to fumes or dust of inorganic lead may not develop quickly. Symptoms may include metallic taste, chest pain, decreased physical fitness, fatigue, sleep disturbance, headache, irritability, reduces memory, mood and personality changes, aching bones and muscles, constipation, abdominal pains, decreasing appetite. Inhalation of large amounts may lead to ataxia, deliriuim, convulsions/seizures, coma, and death. Lead metal foil, shot, or sheets: Not an inhalation hazard unless metal is heated. If metal is heated, fumes will be released. Inhalation of these fumes may cause "fume metal fever", which is characterized by flu-like symptoms. Symptoms may include metallic taste, fever, nausea, vomiting, chills, cough, weakness, chest pain, generalized muscle pain/aches, and increased white blood cell count. Ingestion: Lead metal granules or dust: The symptoms of lead poisoning include abdominal pain or cramps (lead cholic), spasms, nausea, vomiting, headache, muscle weakness, hallucinations, distorted perceptions, "lead line" on the gums, metallic taste, loss of appetite, insomnia, dizziness and other symptoms similar to that of inhalation. Acute poisoning may result in high lead levels in the blood and urine, shock, coma and death in extreme cases. Lead metal foil, shot or sheets: Not an ingestion hazard for usual industrial handling.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Not a DOT controlled material (United States).

Identification: Not applicable.

Special Provisions for Transport: Not applicable.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Lead California prop. 65: This product contains the following ingredients for which the State of California has found to cause reproductive harm (female) which would require a warning under the statute: Lead California prop. 65: This product contains the following ingredients for which the State of California has found to cause reproductive harm (male) which would require a warning under the statute: Lead California prop. 65 (no significant risk level): Lead: 0.0005 mg/day (value) California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Lead California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Lead Connecticut hazardous material survey.: Lead Illinois toxic substances disclosure to employee act: Lead Illinois chemical safety act: Lead New York release reporting list: Lead Rhode Island RTK hazardous substances: Lead Pennsylvania RTK: Lead

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada): CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R20/22- Harmful by inhalation and if swallowed. R33- Danger of cumulative effects. R61- May cause harm to the unborn child. R62- Possible risk of impaired fertility. S36/37- Wear suitable protective clothing and gloves. S44- If you feel unwell, seek medical advice (show the label when possible). S53- Avoid exposure - obtain special instructions before use.

HMIS (U.S.A.):

Health Hazard: 1

Fire Hazard: 0

Reactivity: 0

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 1

Flammability: 0

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 08:21 PM

Last Updated: 06/09/2012 12:00 PM

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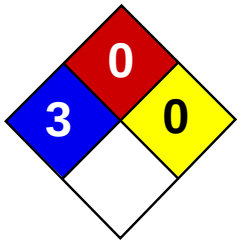

Health	3
Fire	0
Reactivity	0
Personal Protection	

Material Safety Data Sheet
Mercury MSDS

Section 1: Chemical Product and Company Identification

Product Name: Mercury

Catalog Codes: SLM3505, SLM1363

CAS#: 7439-97-6

RTECS: OV4550000

TSCA: TSCA 8(b) inventory: Mercury

CI#: Not applicable.

Synonym: Quick Silver; Colloidal Mercury; Metallic Mercury; Liquid Silver; Hydragyrum

Chemical Name: Mercury

Chemical Formula: Hg

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Mercury	7439-97-6	100

Toxicological Data on Ingredients: Mercury LD50: Not available. LC50: Not available.

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Hazardous in case of skin contact (corrosive, permeator). Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Severe over-exposure can result in death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:
Hazardous in case of skin contact (permeator). CARCINOGENIC EFFECTS: Classified A5 (Not suspected for human.) by ACGIH. 3 (Not classifiable for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to blood, kidneys, liver, brain, peripheral nervous system, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation.

Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. WARM water MUST be used. Get medical attention immediately.

Skin Contact:
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances: Not applicable.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards:
When thrown into mercury vapor, boron phosphodiiodide ignites at once. Flame forms with chlorine jet over mercury surface at 200 deg to 300 deg C. Mercury undergoes hazardous reactions in the presence of heat and sparks or ignition.

Special Remarks on Explosion Hazards:
A violent exothermic reaction or possible explosion occurs when mercury comes in contact with lithium and rubidium. CHLORINE DIOXIDE & LIQUID HG, WHEN MIXED, EXPLODE VIOLENTLY. Mercury and Ammonia can produce an

explosive compound. A mixture of the dry carbonyl and oxygen will explode on vigorous shaking with mercury. Methyl azide in the presence of mercury was shown to be potentially explosive.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Corrosive liquid. Poisonous liquid. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep container dry. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, metals.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area. Do not store above 25°C (77°F).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Boots.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 0.025 from ACGIH (TLV) [United States] SKIN TWA: 0.05 CEIL: 0.1 (mg/m3) from OSHA (PEL) [United States] Inhalation TWA: 0.025 (mg/m3) [United Kingdom (UK)] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid. (Heavy liquid)

Odor: Odorless.

Taste: Not available.

Molecular Weight: 200.59 g/mole

Color: Silver-white

pH (1% soln/water): Not available.

Boiling Point: 356.73°C (674.1°F)

Melting Point: -38.87°C (-38°F)

Critical Temperature: 1462°C (2663.6°F)

Specific Gravity: 13.55 (Water = 1)

Vapor Pressure: Not available.

Vapor Density: 6.93 (Air = 1)

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility: Very slightly soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials

Incompatibility with various substances: Reactive with oxidizing agents, metals.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Ground mixtures of sodium carbide and mercury, aluminum, lead, or iron can react vigorously. A violent exothermic reaction or possible explosion occurs when mercury comes in contact with lithium and rubidium. Incompatible with boron diiodophosphide; ethylene oxide; metal oxides, metals(aluminum, potassium, lithium, sodium, rubidium); methyl azide; methylsilane, oxygen; oxidants(bromine, peroxyformic acid, chlorine dioxide, nitric acid, tetracarbonynickel, nitromethane, silver perchlorate, chlorates, sulfuric acid, nitrates,); tetracarbonylnickel, oxygen, acetylinic compounds, ammonia, ethylene oxide, methylsiliane, calcium,

Special Remarks on Corrosivity:
The high mobility and tendency to dispersion exhibited by mercury, and the ease with which it forms alloys (amalga) with many laboratory and electrical contact metals, can cause severe corrosion problems in laboratories. Special precautions: Mercury can attack copper and copper alloy materials.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:
LD50: Not available. LC50: Not available.

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified A5 (Not suspected for human.) by ACGIH. 3 (Not classifiable for human.) by IARC. May cause damage to the following organs: blood, kidneys, liver, brain, peripheral nervous system, central nervous system (CNS).

Other Toxic Effects on Humans:
Very hazardous in case of skin contact (irritant), of ingestion, of inhalation. Hazardous in case of skin contact (corrosive, permeator).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans:

May affect genetic material. May cause cancer based on animal data. Passes through the placental barrier in animal. May cause adverse reproductive effects(paternal effects- spermatogenesis; effects on fertility - fetotoxicity, post-implantation mortality), and birth defects.

Special Remarks on other Toxic Effects on Humans:

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Class 8: Corrosive material

Identification: : Mercury UNNA: 2809 PG: III

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Mercury California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Mercury Connecticut hazardous material survey.: Mercury Illinois toxic substances disclosure to employee act: Mercury Illinois chemical safety act: Mercury New York acutely hazardous substances: Mercury Rhode Island RTK hazardous substances: Mercury Pennsylvania RTK: Mercury Minnesota: Mercury Massachusetts RTK: Mercury New Jersey: Mercury New Jersey spill list: Mercury Louisiana spill reporting: Mercury California Director's List of Hazardous Substances.: Mercury TSCA 8(b) inventory: Mercury SARA 313 toxic chemical notification and release reporting: Mercury CERCLA: Hazardous substances.: Mercury: 1 lbs. (0.4536 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC). CLASS E: Corrosive liquid.

DSCL (EEC):
R23- Toxic by inhalation. R33- Danger of cumulative effects. R38- Irritating to skin. R41- Risk of serious damage to eyes. R50/53- Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. S2- Keep out of the

reach of children. S7- Keep container tightly closed. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S39- Wear eye/face protection. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). S46- If swallowed, seek medical advice immediately and show this container or label. S60- This material and its container must be disposed of as hazardous waste. S61- Avoid release to the environment. Refer to special instructions/Safety data sheets.

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 0

Reactivity: 0

Personal Protection:

National Fire Protection Association (U.S.A.):

Health: 3

Flammability: 0

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Face shield.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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Last Updated: 06/09/2012 12:00 PM

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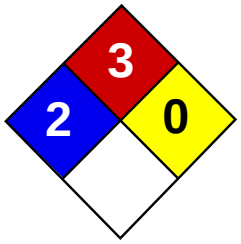

Health	2
Fire	3
Reactivity	0
Personal Protection	H

Material Safety Data Sheet
Toluene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Toluene

Catalog Codes: SLT2857, SLT3277

CAS#: 108-88-3

RTECS: XS5250000

TSCA: TSCA 8(b) inventory: Toluene

CI#: Not available.

Synonym: Toluol, Tolu-Sol; Methylbenzene; Methacide; Phenylmethane; Methylbenzol

Chemical Name: Toluene

Chemical Formula: C6-H5-CH3 or C7-H8

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Toluene	108-88-3	100

Toxicological Data on Ingredients: Toluene: ORAL (LD50): Acute: 636 mg/kg [Rat]. DERMAL (LD50): Acute: 14100 mg/kg [Rabbit]. VAPOR (LC50): Acute: 49000 mg/m 4 hours [Rat]. 440 ppm 24 hours [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to blood, kidneys, the nervous system, liver, brain, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 480°C (896°F)

Flash Points: CLOSED CUP: 4.4444°C (40°F). (Setaflash) OPEN CUP: 16°C (60.8°F).

Flammable Limits: LOWER: 1.1% UPPER: 7.1%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:
Flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
Flammable liquid, insoluble in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray or fog.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards:
Toluene forms explosive reaction with 1,3-dichloro-5,5-dimethyl-2,4-imidazolididione; dinitrogen tetraoxide; concentrated nitric acid, sulfuric acid + nitric acid; N2O4; AgClO4; BrF3; Uranium hexafluoride; sulfur dichloride. Also forms an explosive mixture with tetranitromethane.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Toxic flammable liquid, insoluble or very slightly soluble in water. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents.

Storage:
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 200 STEL: 500 CEIL: 300 (ppm) from OSHA (PEL) [United States] TWA: 50 (ppm) from ACGIH (TLV) [United States] SKIN TWA: 100 STEL: 150 from NIOSH [United States] TWA: 375 STEL: 560 (mg/m3) from NIOSH [United States] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Sweet, pungent, Benzene-like.

Taste: Not available.

Molecular Weight: 92.14 g/mole

Color: Colorless.

pH (1% soln/water): Not applicable.

Boiling Point: 110.6°C (231.1°F)

Melting Point: -95°C (-139°F)

Critical Temperature: 318.6°C (605.5°F)

Specific Gravity: 0.8636 (Water = 1)

Vapor Pressure: 3.8 kPa (@ 25°C)

Vapor Density: 3.1 (Air = 1)

Volatility: Not available.

Odor Threshold: 1.6 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 2.7

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether, acetone.

Solubility:
Soluble in diethyl ether, acetone. Practically insoluble in cold water. Soluble in ethanol, benzene, chloroform, glacial acetic acid, carbon disulfide. Solubility in water: 0.561 g/l @ 25 deg. C.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources (flames, sparks, static), incompatible materials

Incompatibility with various substances: Reactive with oxidizing agents.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Incompatible with strong oxidizers, silver perchlorate, sodium difluoride, Tetranitromethane, Uranium Hexafluoride. Frozen Bromine Trifluoride reacts violently with Toluene at -80 deg. C. Reacts chemically with nitrogen oxides, or halogens to form nitrotoluene, nitrobenzene, and nitrophenol and halogenated products, respectively.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 636 mg/kg [Rat]. Acute dermal toxicity (LD50): 14100 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 440 24 hours [Mouse].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC. May cause damage to the following organs: blood, kidneys, the nervous system, liver, brain, central nervous system (CNS).

Other Toxic Effects on Humans:
Hazardous in case of skin contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

Special Remarks on Toxicity to Animals:
Lowest Published Lethal Dose: LDL [Human] - Route: Oral; Dose: 50 mg/kg LCL [Rabbit] - Route: Inhalation; Dose: 55000 ppm/40min

Special Remarks on Chronic Effects on Humans:
Detected in maternal milk in human. Passes through the placental barrier in human. Embryotoxic and/or foetotoxic in animal. May cause adverse reproductive effects and birth defects (teratogenic). May affect genetic material (mutagenic)

Special Remarks on other Toxic Effects on Humans:

Acute Potential Health Effects: Skin: Causes mild to moderate skin irritation. It can be absorbed to some extent through the skin. Eyes: Cauess mild to moderate eye irritation with a burning sensation. Splash contact with eyes also causes conjunctivitis, blepharospasm, corneal edema, corneal abraisons. This usually resolves in 2 days. Inhalation: Inhalation of vapor may cause respiratory tract irritation causing coughing and wheezing, and nasal discharge. Inhalation of high concentrations may affect behavior and cause central nervous system effects characterized by nausea, headache, dizziness, tremors, restlessness, lightheadedness, exhilaration, memory loss, insomnia, impaired reaction time, drowsiness, ataxia, hallucinations, somnolence, muscle contraction or spasticity, unconsciousness and coma. Inhalation of high concentration of vapor may also affect the cardiovascular system (rapid heart beat, heart palpitations, increased or decreased blood pressure, dysrhythmia,), respiration (acute pulmonary edema, respiratory depression, apnea, asphyxia), cause vision disturbances and dilated pupils, and cause loss of appetite. Ingestion: Aspiration hazard. Aspiration of Toluene into the lungs may cause chemical pneumonitis. May cause irritation of the digestive tract with nausea, vomiting, pain. May have effects similar to that of acute inhalation. Chronic Potential Health Effects: Inhalation and Ingestion: Prolonged or repeated exposure via inhalation may cause central nervous system and cardiovascular symptoms similar to that of acute inhalation and ingestion as well liver damage/failure, kidney damage/failure (with hematuria, proteinuria, oliguria, renal tubular acidosis), brain damage, weight loss, blood (pigmented or nucleated red blood cells, changes in white blood cell count), bone marrow changes, electrolyte imbalances (Hypokalemia, Hypophostatemia), severe, muscle weakness and Rhabdomyolysis. Skin: Repeated or prolonged skin contact may cause defatting dermatitis.

Section 12: Ecological Information

Ecotoxicity:
Ecotoxicity in water (LC50): 313 mg/l 48 hours [Daphnia (daphnia)]. 17 mg/l 24 hours [Fish (Blue Gill)]. 13 mg/l 96 hours [Fish (Blue Gill)]. 56 mg/l 24 hours [Fish (Fathead minnow)]. 34 mg/l 96 hours [Fish (Fathead minnow)]. 56.8 ppm any hours [Fish (Goldfish)].

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Toluene UNNA: 1294 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Toluene California prop. 65 (no significant risk level): Toluene: 7 mg/day (value) California prop. 65 (acceptable daily intake level): Toluene: 7 mg/day (value) California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Toluene Connecticut hazardous material survey.: Toluene Illinois

toxic substances disclosure to employee act: Toluene Illinois chemical safety act: Toluene New York release reporting list: Toluene Rhode Island RTK hazardous substances: Toluene Pennsylvania RTK: Toluene Florida: Toluene Minnesota: Toluene Michigan critical material: Toluene Massachusetts RTK: Toluene Massachusetts spill list: Toluene New Jersey: Toluene New Jersey spill list: Toluene Louisiana spill reporting: Toluene California Director's List of Hazardous Substances.: Toluene TSCA 8(b) inventory: Toluene TSCA 8(d) H and S data reporting: Toluene: Effective date: 10/04/82; Sunset Date: 10/0/92 SARA 313 toxic chemical notification and release reporting: Toluene CERCLA: Hazardous substances.: Toluene: 1000 lbs. (453.6 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R11- Highly flammable. R20- Harmful by inhalation. S16- Keep away from sources of ignition - No smoking. S25- Avoid contact with eyes. S29- Do not empty into drains. S33- Take precautionary measures against static discharges.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 08:30 PM

Last Updated: 06/09/2012 12:00 PM

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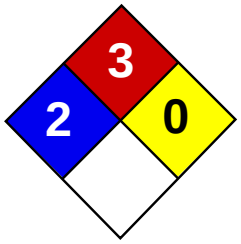

Health	2
Fire	3
Reactivity	0
Personal Protection	H

Material Safety Data Sheet
Xylenes MSDS

Section 1: Chemical Product and Company Identification

Product Name: Xylenes

Catalog Codes: SLX1075, SLX1129, SLX1042, SLX1096

CAS#: 1330-20-7

RTECS: ZE2100000

TSCA: TSCA 8(b) inventory: Xylenes

CI#: Not available.

Synonym: Xylenes; Dimethylbenzene; xylol; methyltoluene

Chemical Name: Xylenes (o-, m-, p- isomers)

Chemical Formula: C6H4(CH3)2

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Xylenes	1330-20-7	100

Toxicological Data on Ingredients: Xylenes: ORAL (LD50): Acute: 4300 mg/kg [Rat]. 2119 mg/kg [Mouse]. DERMAL (LD50): Acute: >1700 mg/kg [Rabbit].

Section 3: Hazards Identification

Potential Acute Health Effects: Hazardous in case of skin contact (irritant, permeator), of eye contact (irritant), of ingestion, of inhalation.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: 3 (Not classifiable for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to blood, kidneys, liver, mucous membranes, bone marrow, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 464°C (867.2°F)

Flash Points: CLOSED CUP: 24°C (75.2°F). (Tagliabue.) OPEN CUP: 37.8°C (100°F).

Flammable Limits: LOWER: 1% UPPER: 7%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:
Highly flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Slightly explosive in presence of open flames and sparks, of heat.

Fire Fighting Media and Instructions:
Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

Special Remarks on Fire Hazards: Vapors may travel to source of ignition and flash back.

Special Remarks on Explosion Hazards:
Vapors may form explosive mixtures with air. Containers may explode when heated. May polymerize explosively when heated. An attempt to chlorinate xylene with 1,3-Dichloro-5,5-dimethyl-2,4-imidazolidindione (dichlorohydrantoin) caused a violent explosion

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined

areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids.

Storage:
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 100 (ppm) [Canada] TWA: 435 (mg/m3) [Canada] TWA: 434 STEL: 651 (mg/m3) from ACGIH (TLV) [United States] TWA: 100 STEL: 150 (ppm) from ACGIH (TLV) [United States] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Sweetish.

Taste: Not available.

Molecular Weight: 106.17 g/mole

Color: Colorless. Clear

pH (1% soln/water): Not available.

Boiling Point: 138.5°C (281.3°F)

Melting Point: -47.4°C (-53.3°F)

Critical Temperature: Not available.

Specific Gravity: 0.864 (Water = 1)

Vapor Pressure: 0.9 kPa (@ 20°C)

Vapor Density: 3.7 (Air = 1)

Volatility: Not available.

Odor Threshold: 1 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 3.1

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility:
Insoluble in cold water, hot water. Miscible with absolute alcohol, ether, and many other organic liquids.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources, incompatibles

Incompatibility with various substances: Reactive with oxidizing agents, acids.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Store away from acetic acid, nitric acid, chlorine, bromine, and fluorine.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 2119 mg/kg [Mouse]. Acute dermal toxicity (LD50): >1700 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 5000 4 hours [Rat].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: 3 (Not classifiable for human.) by IARC. May cause damage to the following organs: blood, kidneys, liver, mucous membranes, bone marrow, central nervous system (CNS).

Other Toxic Effects on Humans: Hazardous in case of skin contact (irritant, permeator), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals:
Lowest Lethal Dose: LDL [Human] - Route: Oral; Dose: 50 mg/kg LCL [Man] - Route: Oral; Dose: 10000 ppm/6H

Special Remarks on Chronic Effects on Humans:
Detected in maternal milk in human. Passes through the placental barrier in animal. Embryotoxic and/or foetotoxic in animal. May cause adverse reproductive effects (male and femael fertility (spontaneous abortion and fetotoxicity)) and birth defects based animal data.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Causes skin irritation. Can be absorbed through skin. Eyes: Causes eye irritation. Inhalation: Vapor causes respiratory tract and mucous membrane irritation. May affect central nervous system and behavior (General anesthetic/CNS depressant with effects including headache, weakness, memory loss, irritability, dizziness, giddiness, loss of coordination and judgement, respiratory depression/arrest or difficulty breathing, loss of appetite, nausea, vomiting, shivering, and possible coma and death). May also affects blood, sense organs, liver, and peripheral nerves. Ingestion: May cause gastrointestinal irritation including abdominal pain, vomiting, and nausea. May also affect liver and urinary system/ kidneys. May cause effects similar to those of acute inhalation. Chronic Potential Health Effects: Chronic inhalation may affect the urinary system (kidneys) blood (anemia), bone marrow (hyperplasia of bone marrow) brain/behavior/Central Nervous system. Chronic inhalation may alsocause mucosal bleeding. Chronic ingestion may affect the liver and metabolism (loss of appetite) and may affect urinary system (kidney damage)

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Xylenes UNNA: 1307 PG: III

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
Connecticut hazardous material survey.: Xylenes Illinois chemical safety act: Xylenes New York acutely hazardous substances: Xylenes Rhode Island RTK hazardous substances: Xylenes Pennsylvania RTK: Xylenes Minnesota: Xylenes Michigan critical material: Xylenes Massachusetts RTK: Xylenes Massachusetts spill list: Xylenes New Jersey: Xylenes New Jersey spill list: Xylenes Louisiana spill reporting: Xylenes California Director's List of Hazardous Substances: Xylenes TSCA 8(b) inventory: Xylenes SARA 302/304/311/312 hazardous chemicals: Xylenes SARA 313 toxic chemical notification and release reporting: Xylenes CERCLA: Hazardous substances.: Xylenes: 100 lbs. (45.36 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R10- Flammable. R21- Harmful in contact with skin. R36/38- Irritating to eyes and skin. S2- Keep out of the reach of children. S36/37- Wear suitable protective clothing and gloves. S46- If swallowed, seek medical advice immediately and show this container or label.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/11/2005 12:54 PM

Last Updated: 06/09/2012 12:00 PM

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WEST NILE VIRUS/ST. LOUIS ENCEPHALITIS PREVENTION

The following section is based upon information provided by the CDC Division of Vector-Borne Infectious Diseases; Symptoms of West Nile Virus include fever, headache, and body aches, occasionally with skin rash and swollen lymph glands, with most infections being mild. More severe infection may be marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis, and, rarely, death. Most infections of St. Louis encephalitis ate mild without apparent symptoms other than fever with headache. More severe infection is marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, occasional convulsions (especially infants) and spastic (but rarely flaccid) paralysis. The only way to avoid infection of West Nile Virus and St. Louis encephalitis is to avoid mosquito bites. To reduce the chance of mosquito contact:

- Stay indoors at dawn, dusk, and in the early evening.
- Wear long-sleeved shirts and long pants whenever you are outdoors,
- Spray clothing with repellents containing permethrin or DEET (N, N-diethyl-meta-toluamide), since mosquitoes may bite through thin clothing.
- Apply insect repellent sparingly to exposed skin. An effective repellent will contain 35% DEET. DEET in high concentrations (greater than 35%) provides no additional protection.
- Repellents may irritate the eyes and mouth.
- Whenever you use an insecticide or insect repellent, be sure to read and follow the manufacturer’s directions for use, as printed on the product.

WEEKLY SAFETY REPORT FORM

Week Ending: _____ Project Name/Number: _____

Report Date: _____ Project Manager Name: _____

Summary of any violations of procedures occurring that week:

_____

_____

_____

Summary of any job related injuries, illnesses, or near misses that week:

_____

_____

_____

Summary of air monitoring data that week (include sample analyses, action levels exceeded, and actions taken):

_____

_____

_____

Comments:

_____

_____

_____

Name: _____ Company: _____

Signature: _____ Title: _____

INCIDENT REPORT FORM

Date of Report: _____

Injured: _____

Employer: _____

Site: _____ Site Location: _____

Report Prepared By: _____ _____
Signature Title

ACCIDENT/INCIDENT CATEGORY (Check all that applies)

___Injury	___Illness	___Near Miss
___Property Damage	___Fire	___Chemical Exposure
___On-Site Equipment	___Motor Vehicle	___Electrical
___Mechanical	___Spill	___Other

DATE AND TIME OF ACCIDENT/INCIDENT: Narrative report of Accident/Incident: Identify: 1) actions leading to or contributing to the accident/incident; 2) the accident/incident occurrence; and 3) actions following the accident/incident.

_____

_____

_____

_____

_____

_____

WITNESS TO ACCIDENT/INCIDENT:

Name: _____ Company: _____

Address: _____ Phone No.: _____

Name: _____ Company: _____

Address: _____ Phone No.: _____

INJURED – ILL:

Name: _____ SSN:_____ Age: _____

Address: _____

Length of Service: _____ Time on Present Job: _____

Time/Classification: _____

SEVERITY OF INJURY OR ILLNESS:

____Disabling ____Non-Disabling ____ Fatality

____Medical Treatment ____First Air Only

ESTIMATED NUMBER OF DAYS AWAY FROM JOB: _____

NATURE OF INJUREY OR ILLNESS:

_____

_____

_____

_____

CLASSIFICATION OF INJURY:

____Abrasions ____Dislocations ____Punctures

____Bites ____Faint/Dizziness ____Radiation Burns

____Blisters ____Fractures ____Respiratory Allergy

____Bruises ____Frostbite ____Sprains

____Chemical Burns ____Heat Burns ____Toxic Resp. Exposure

____Cold Exposure ____Heat Exhaustion ____Toxic Ingestion

____Concussion ____Heat Stroke ____Dermal Allergy

____Lacerations

Part of Body Affected: _____

Degree of Disability: _____

Date Medical Care was Received:_____

Where Medical Care was Received: _____

Address (if off-site): _____

(If two or more injuries, record on separate sheets)

PROPERTY DAMAGE:

Description of Damage: _____

_____

Cost of Damage: $ _____

ACCIDENT/INCIDENT LOCATION: _____

ACCIDENT/INCIDENT ANALYSIS: Causative agent most directly related to accident/incident (Object, substance, material, machinery, equipment, conditions)

_____

_____

_____

_____

Was weather a factor? _____

Unsafe mechanical/physical/environmental condition at time of accident/incident (Be specific):

_____

_____

_____

Personal factors (Attitude, knowledge or skill, reaction time, fatigue):

_____

_____

_____

ON-SITE ACCIDENTS/INCIDENTS:

Level of personal protection equipment required in Site Safety Plan:

_____

_____

_____

Modifications:

_____

Was injured using required equipment?:

_____

_____

_____

If not, how did actual equipment use differ from plan?:

_____

_____

_____

ACTION TAKEN TO PREVENT RECURRENCE**:** (Be specific. What has or will be done? When will it be done? Who is the responsible party to insure that the correction is made?

_____

_____

_____

_____

ACCIDENT/INCIDENT REPORT REVIEWED BY:

SSO Name Printed	SSO Signature

OTHERS PARTICIPATING IN INVESTIGATION:

Signature	Title
Signature	Title
Signature	Title

ACCIDENT/INCIDENT FOLLOW-UP:

Date: _____

Outcome of accident/incident

_____

_____

_____

_____

Physician's recommendations: _____

_____

_____

_____

_____

Date injured returned to work: _____

Follow-up performed by:

_____ _____

Signature Title

ATTACH ANY ADDITIONAL INFORMATION TO THIS FORM

EMERGENCY SIGNALS

In most cases, field personnel will carry portable radios for communication. If this is the case, a transmission that indicates an emergency will take priority over all other transmissions. All other site radios will yield the frequency to the emergency transmissions.

Where radio communications is not available, the following air-horn and/or hand signals will be used:

EMERGENCY HAND SIGNALS

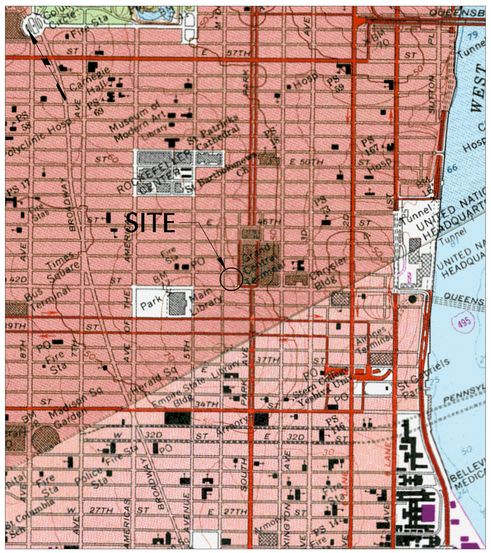
OUT OF AIR, CAN'T BREATHE	**Hand Gripping Throat**
LEAVE AREA IMMEDIATELY, NO DEBATE!	**(No Picture) Grip partner's Wrist or place both hands around waist**
NEED ASSISTANCE!	**Hands on top of head**
OKAY! - I'M ALL RIGHT! - I UNDERSTAND!	**Thumbs up**
NO! – NEGATIVE	**Thumbs down**

APPENDIX 6
WATERPROOFING / VAPOR BARRIER PLANS AND DETAILS ALONG WITH MANUFACTURER SPECIFICATIONS

ONE VANDERBILT AVENUE
NEW YORK, NEW YORK

WATERPROOFING

LANGAN

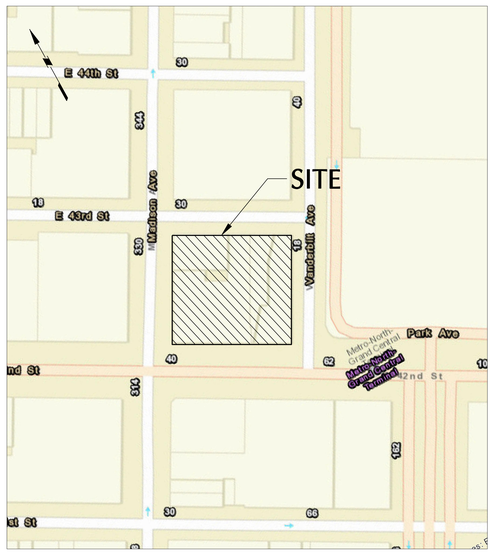


SOURCE: USGS CENTRAL PARK AND BROOKLYN QUADRANGLE MAPS, 1968, PHOTOREVISED 1979.

VICINITY MAP
N.T.S.

DRAWING LIST

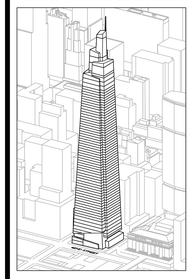
DRAWING	TITLE
WP-001	TITLE SHEET AND DRAWING LIST
WP-101	WATERPROOFING PLAN
WP-201	WATERPROOFING SECTIONS
WP-202	WATERPROOFING SECTIONS
WP-203	WATERPROOFING SECTIONS
WP-204	WATERPROOFING SECTIONS
WP-205	WATERPROOFING SECTIONS
WP-206	WATERPROOFING SECTIONS
WP-301	WATERPROOFING DETAILS
WP-302	WATERPROOFING DETAILS



SOURCE: ESRI, DIGITALGLOBE, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEX, GETMAPPING, AEROGRID, IGN, IGP, SWISSTOPO AND THE GIS USER COMMUNITY

SITE MAP
N.T.S.

ONE VANDERBILT



Developer
SL Green
420 Lexington Avenue, 18th Floor
New York, NY 10170
Tel: 212.356.4149 Fax: 212.216.1796

Development Advisor
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499 Park Avenue
New York, NY 10022
Tel: 212.230.2300 Fax: 212.230.2276

Architect

Structural Engineer
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469 Seventh Avenue, Suite 900
New York, NY 10018
Tel: 212.986.3700 Fax: 212.687.6467

Mechanical, Electrical, Plumbing, Fire Protection
Jaros Baum & Bolles
80 Pine Street
New York, NY 10013
Tel: 212.530.9300 Fax: 212.269.5894

Civil / Geotechnical Engineer
Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
21 Penn Plaza, 360 West 31 Street, 8th Floor
New York, NY 10001
Tel: 212.479.5400 Fax: 212.479.5444

Vertical Transportation
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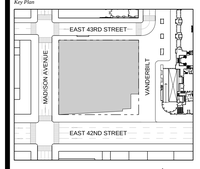
1	DOCUMENT ISSUANCE NO. 1	10-16-2015

Key Plan



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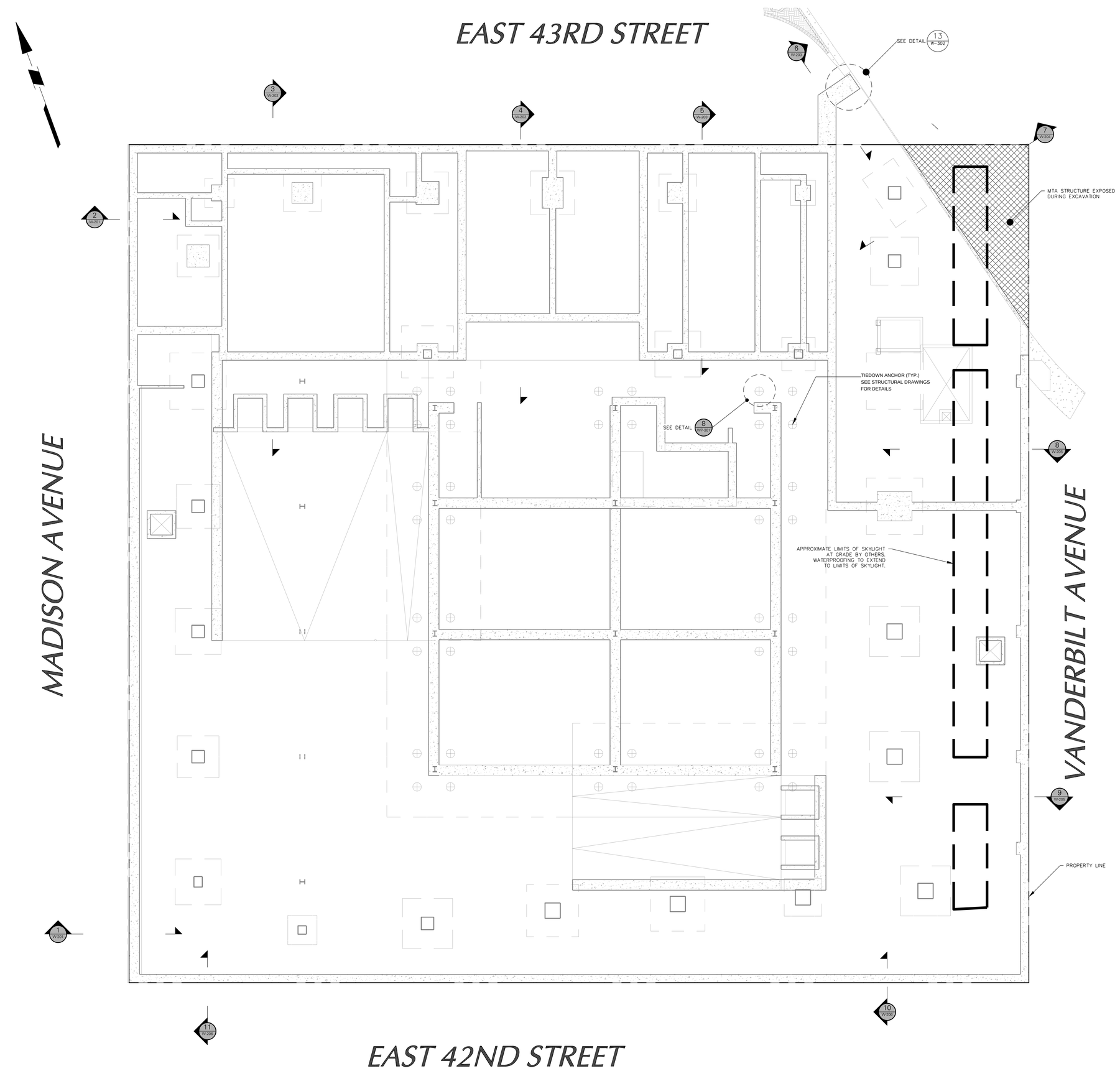
Issue Date: 10-16-2015
Project No. 170140501
Drawn By SM
Scale

Drawing Title

TITLE SHEET AND DRAWING LIST

Drawing Number

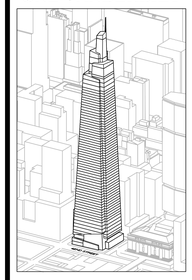
WP-001



GENERAL NOTES

1. BASE PLAN TAKEN FROM DRAWING F0-100.00 PREPARED BY SEVERUD ASSOCIATES CONSULTING ENGINEERS, TITLED "FOUNDATION AND B4 LEVEL PLAN," DATED 29 MAY 2015.
2. REFER TO CONTRACT SPECIFICATIONS FOR WATERPROOFING TYPES AND LOCATIONS (E.G., WALLS, SLABS, ETC.).
3. ALL WATERPROOFING MEMBERS TO BE INSTALLED PER MANUFACTURERS SPECIFICATIONS.
4. MINIMUM 3-INCH OVERLAP AT ALL MEMBRANE TIE-INS. REFER TO W-301 FOR TRANSITION DETAILS.
5. WATERPROOFING SHALL BE INSTALLED TO PROVIDE A CONTINUOUS "BATHTUB" MEMBRANE WATERPROOFING SYSTEM TO THE TOP OF FOUNDATION WALLS. ALL EXTERIOR FOUNDATION WALLS, SLABS, PITS, SUMPS, ETC. SHALL BE WATERPROOFED.
6. ALL BELOW-GRADE HORIZONTAL WATERPROOFING SHALL BE PREPRUFE 300R WATERPROOFING MEMBRANE.
7. ALL ABOVE-GRADE HORIZONTAL WATERPROOFING SHALL BE BITUTHENE 4000 WATERPROOFING MEMBRANE.
8. ALL VERTICAL WATERPROOFING SHALL BE BITUTHENE 4000 WATERPROOFING MEMBRANE.
9. REFER TO SECTION 071000 OF THE PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS PERTAINING TO WATERPROOFING.

ONE VANDERBILT



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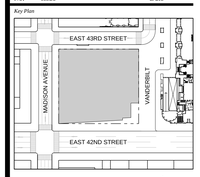

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Issue Date: 10-16-2015
Project No. 170140801
Drawn By SM
Scale

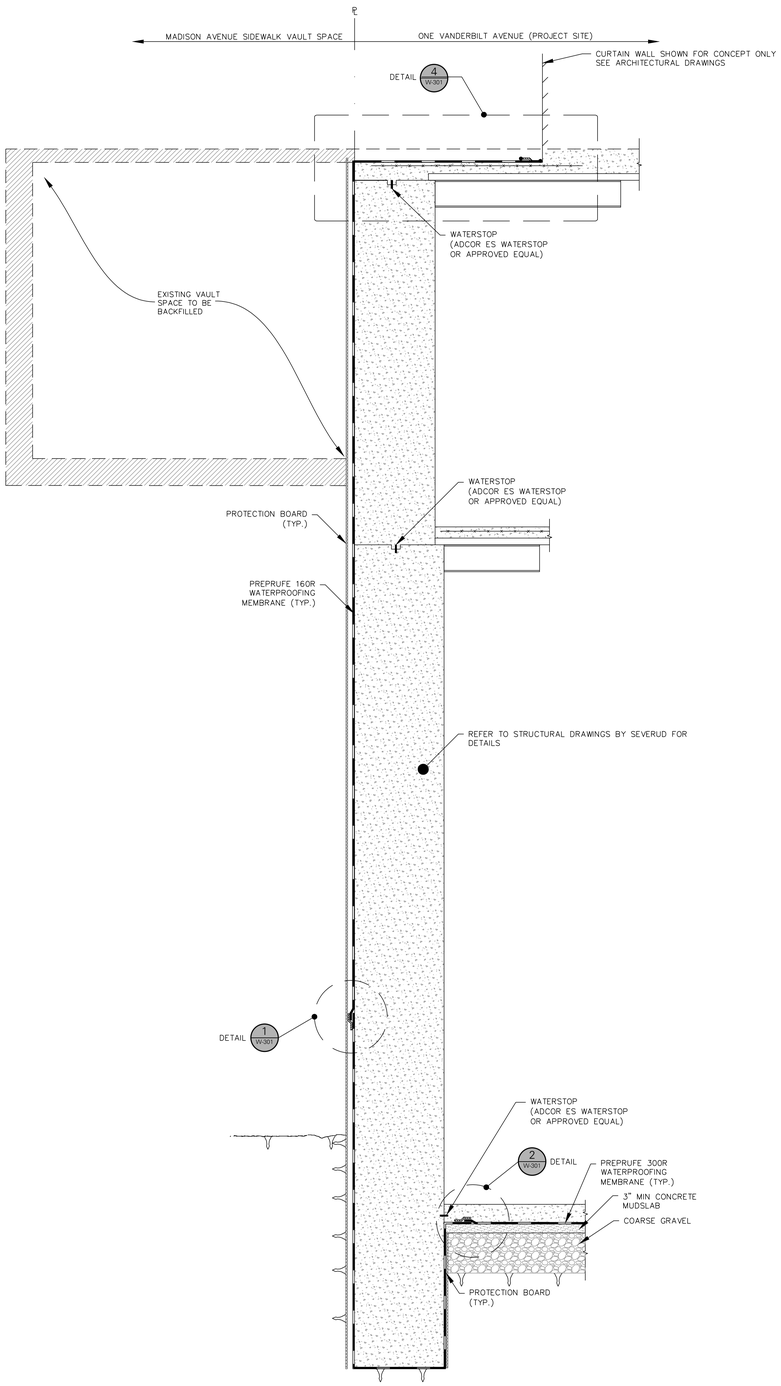
Drawing Title

WATERPROOFING PLAN

Drawing Number

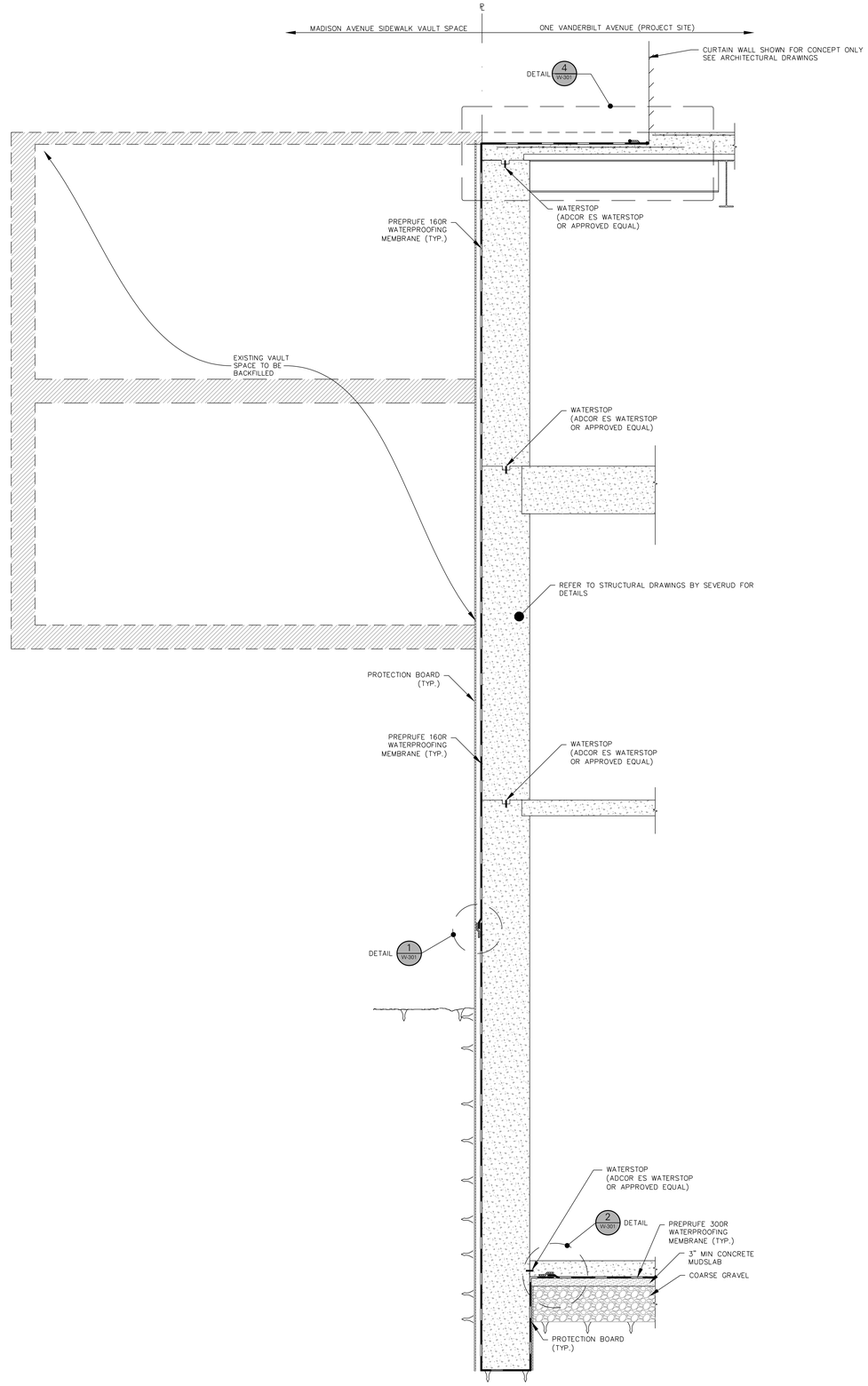
WP-101

0 8 16
SCALE IN FEET



SECTION 1

(ALONG MADISON AVENUE)



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(ALONG MADISON AVENUE)

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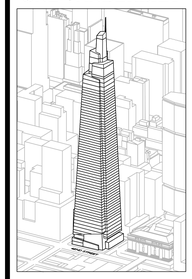

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No.	Issue	Date
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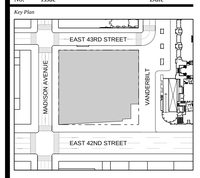
Key Plan



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Project No. **170140501**
Drawn By **SM**
Scale

Drawing Title

WATERPROOFING SECTIONS

Drawing Number

WP-201

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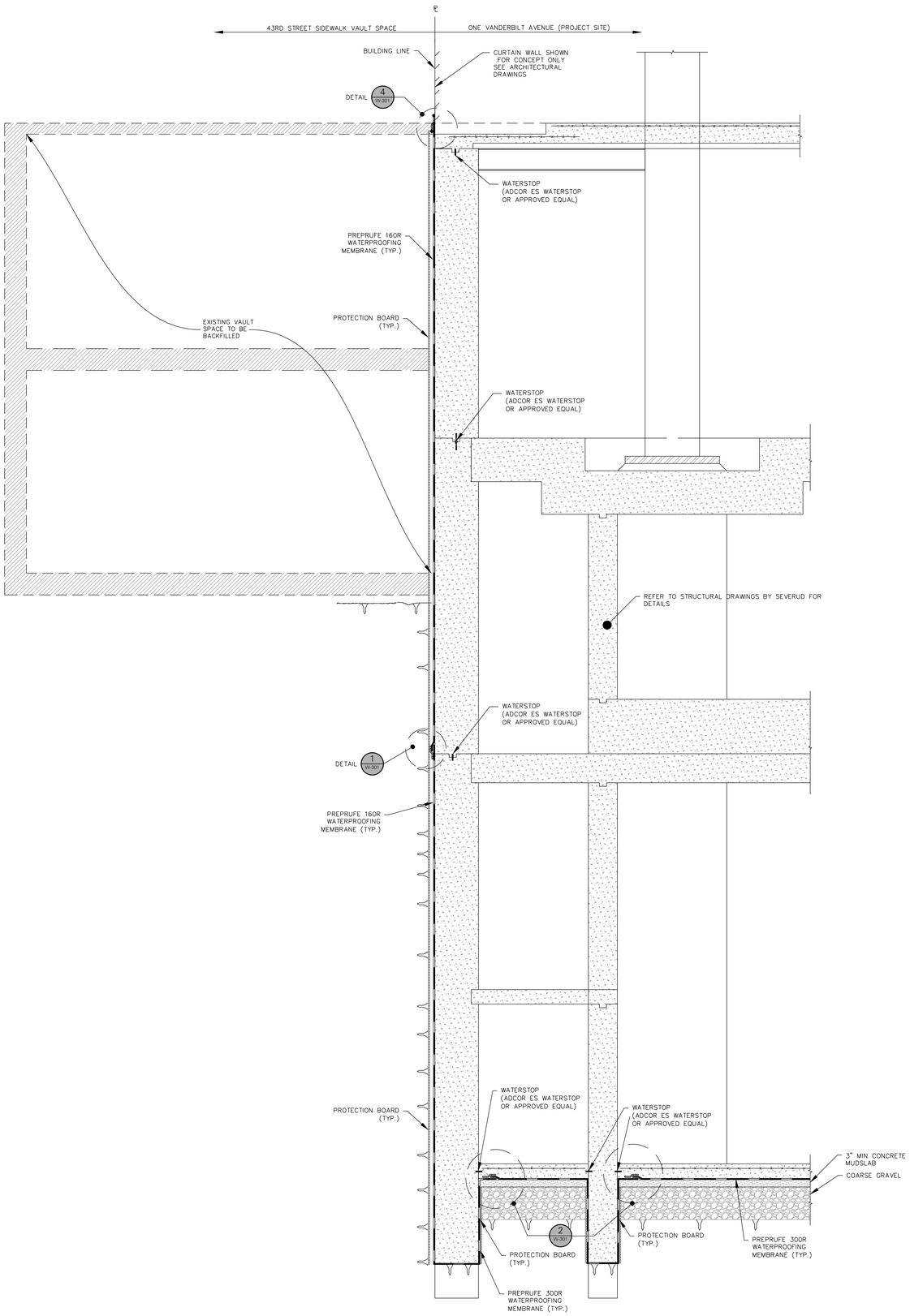
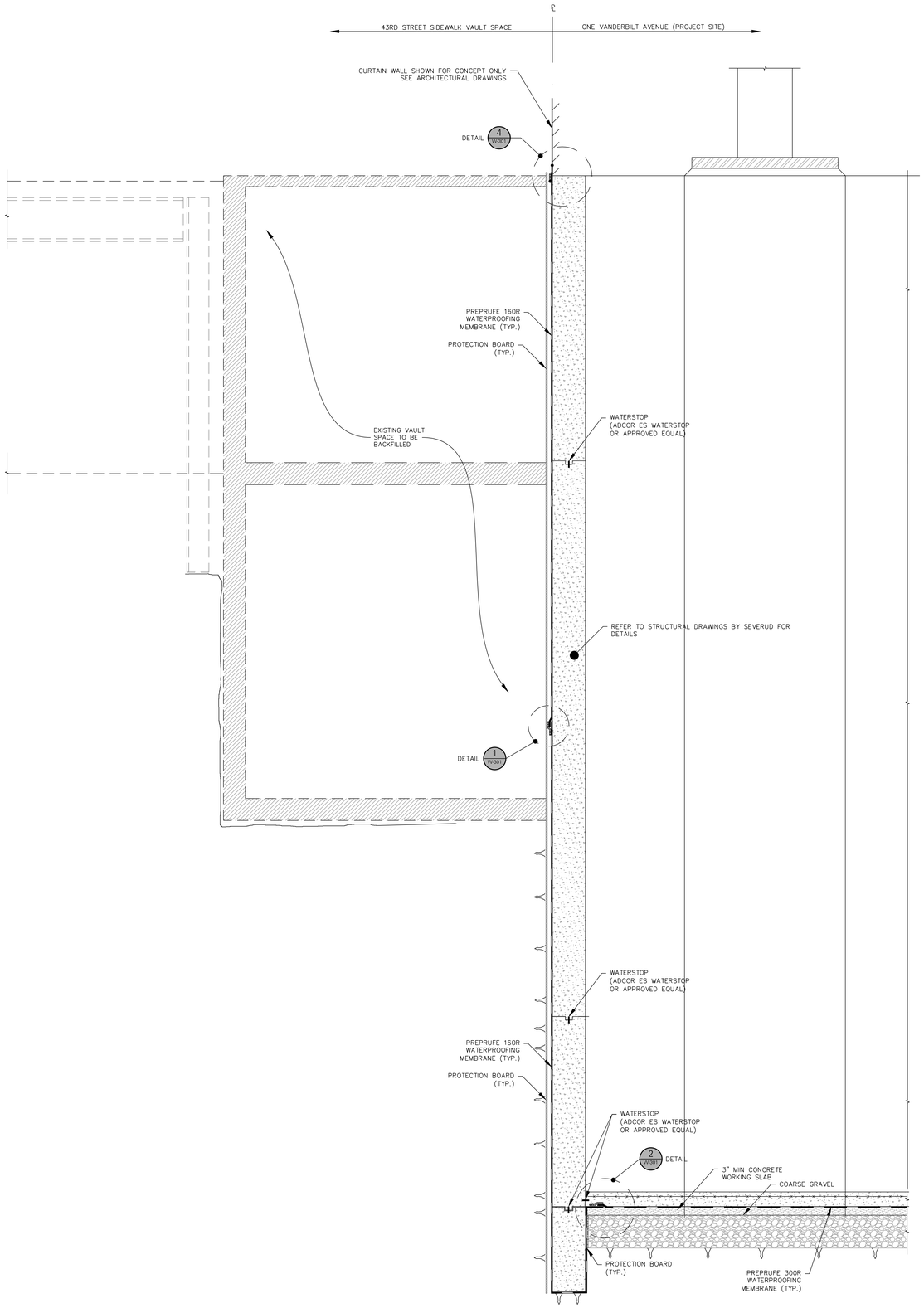


SECTION 3

(ALONG EAST 43RD STREET)



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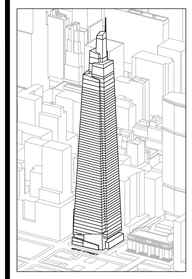

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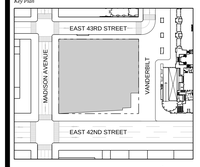

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Issue Date:	**10-16-2015**
Project No.	**170140801**
Drawn By	**SM**
Scale	

Drawing Title

WATERPROOFING SECTIONS

Drawing Number

WP-202

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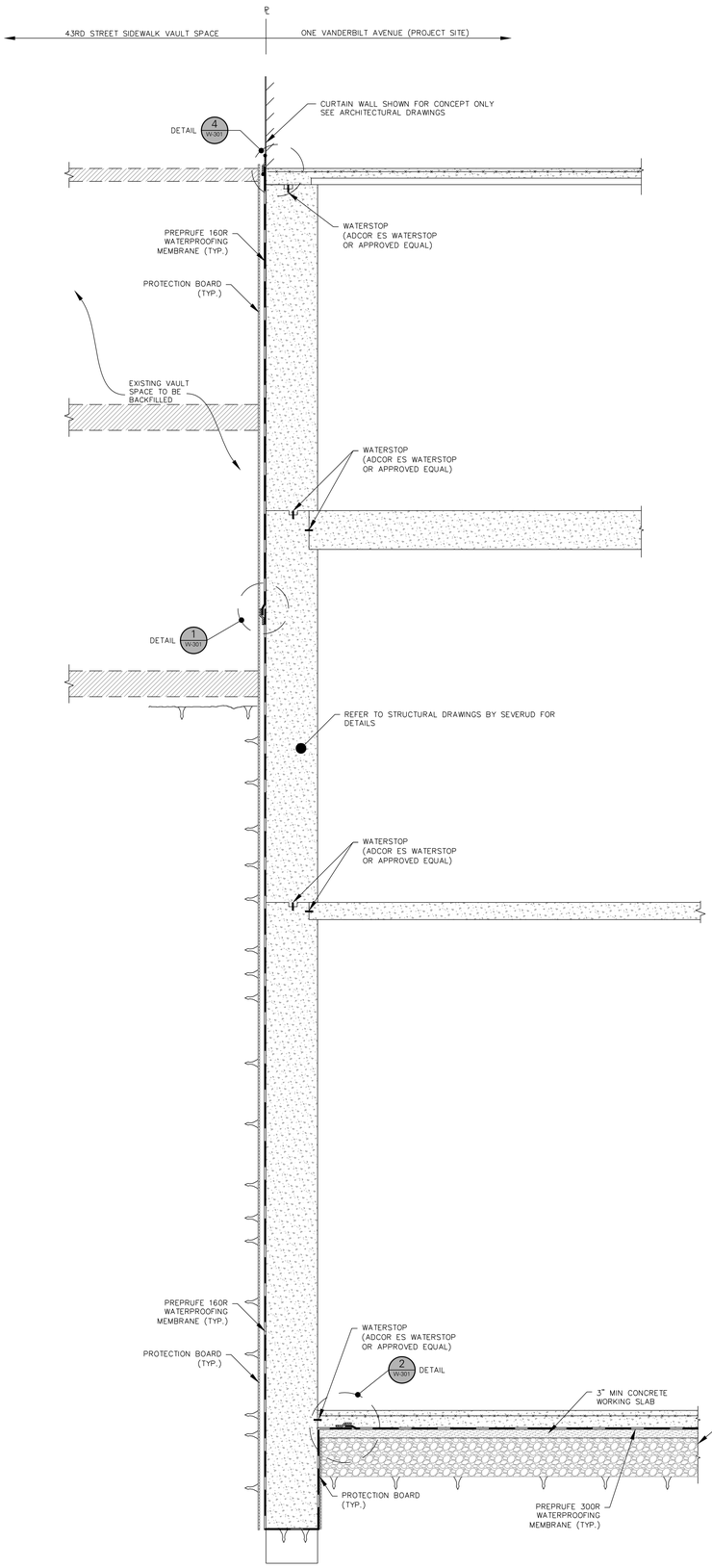

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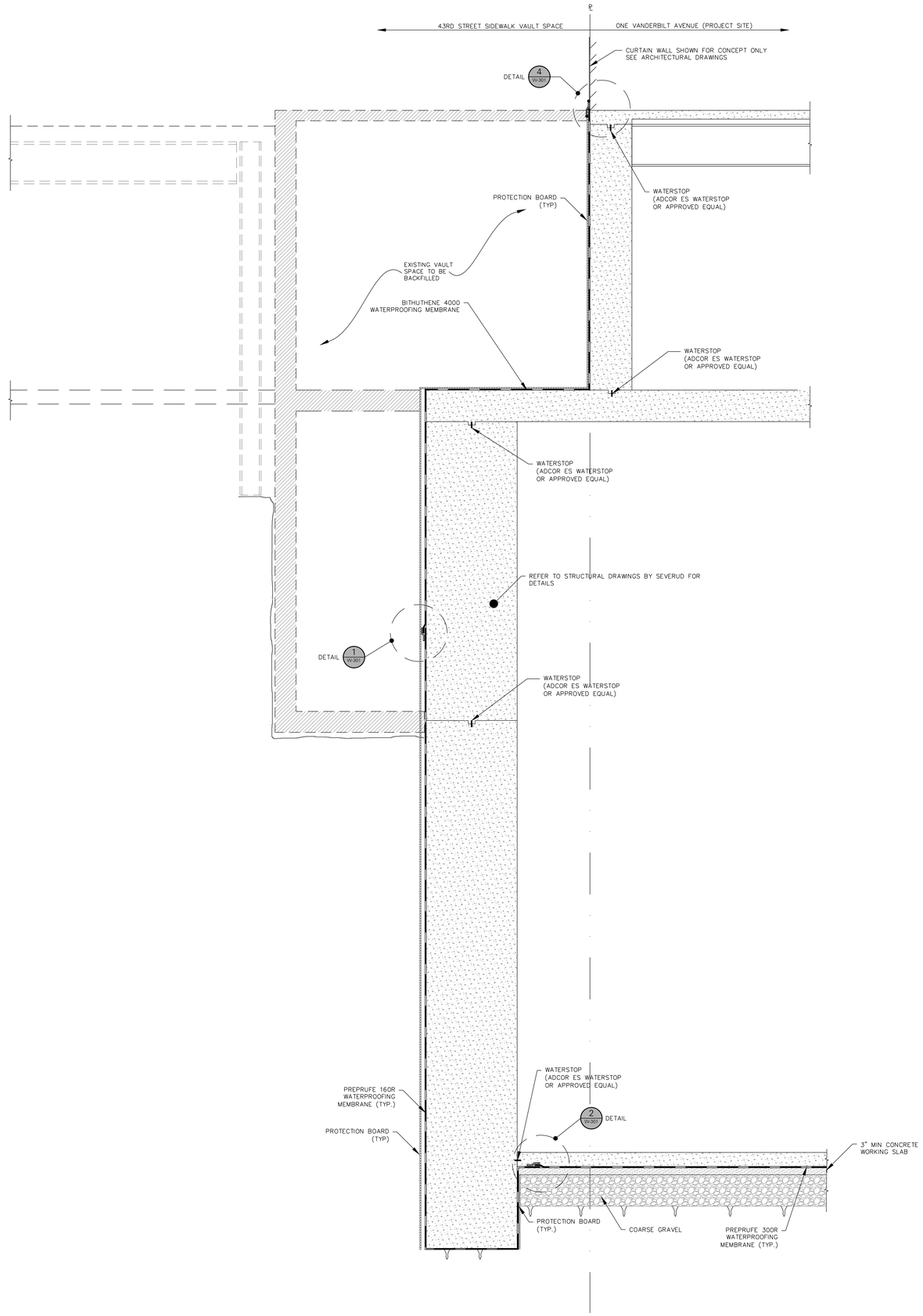

SECTION 6

(ALONG EAST 43RD STREET)

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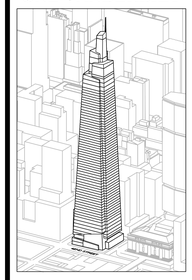

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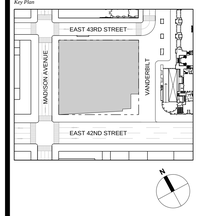
Key Plan



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Project No. 170140501
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Drawing Title
WATERPROOFING SECTIONS

Drawing Number
WP-203

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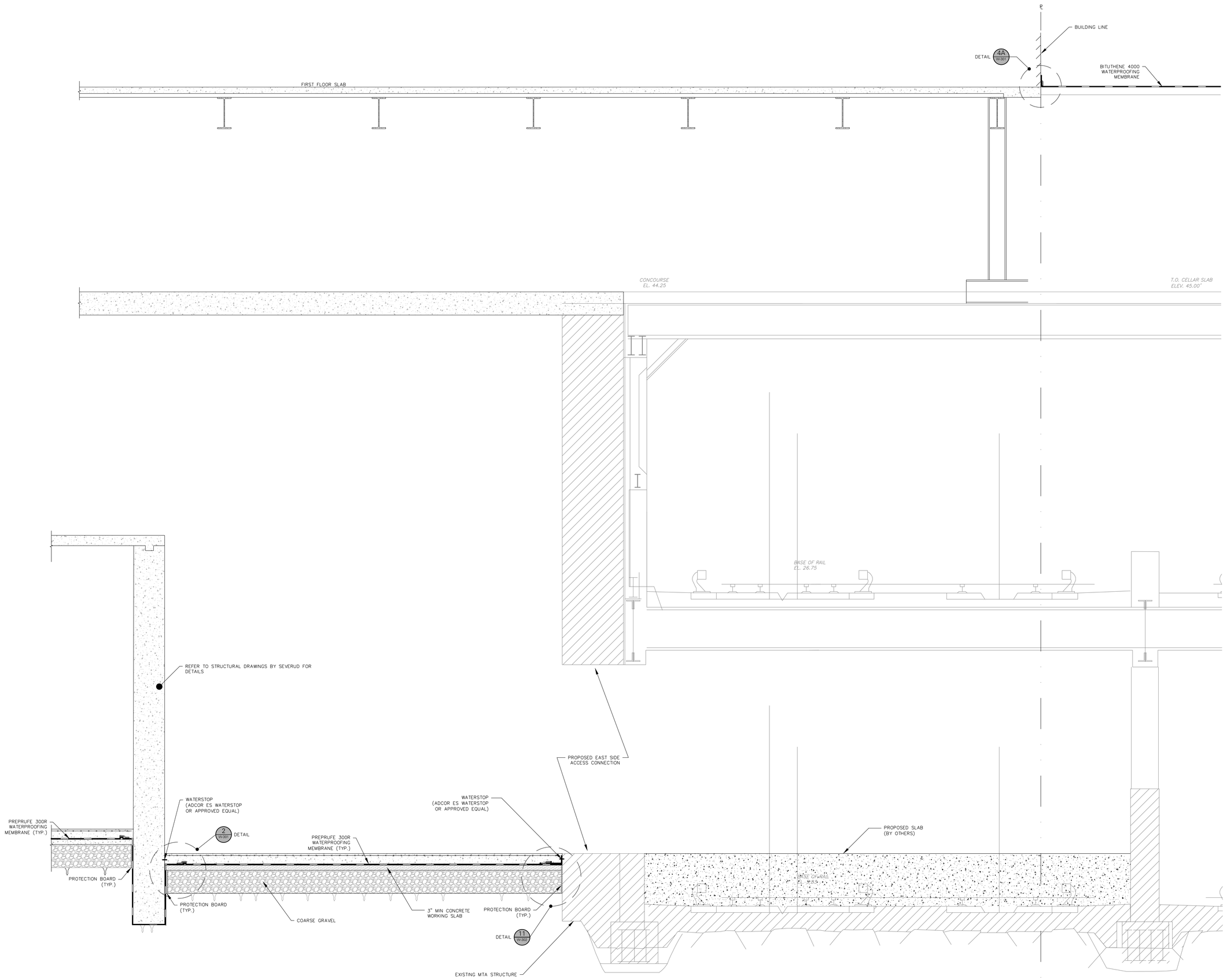

SECTION 7

(ALONG EAST 43RD STREET)

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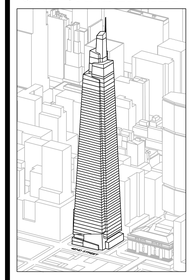

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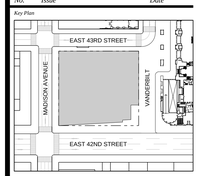

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Issue Date: 10-16-2015
Project No. 170140801
Drawn By SM
Scale

Drawing Title
WATERPROOFING SECTIONS

Drawing Number
WP-204

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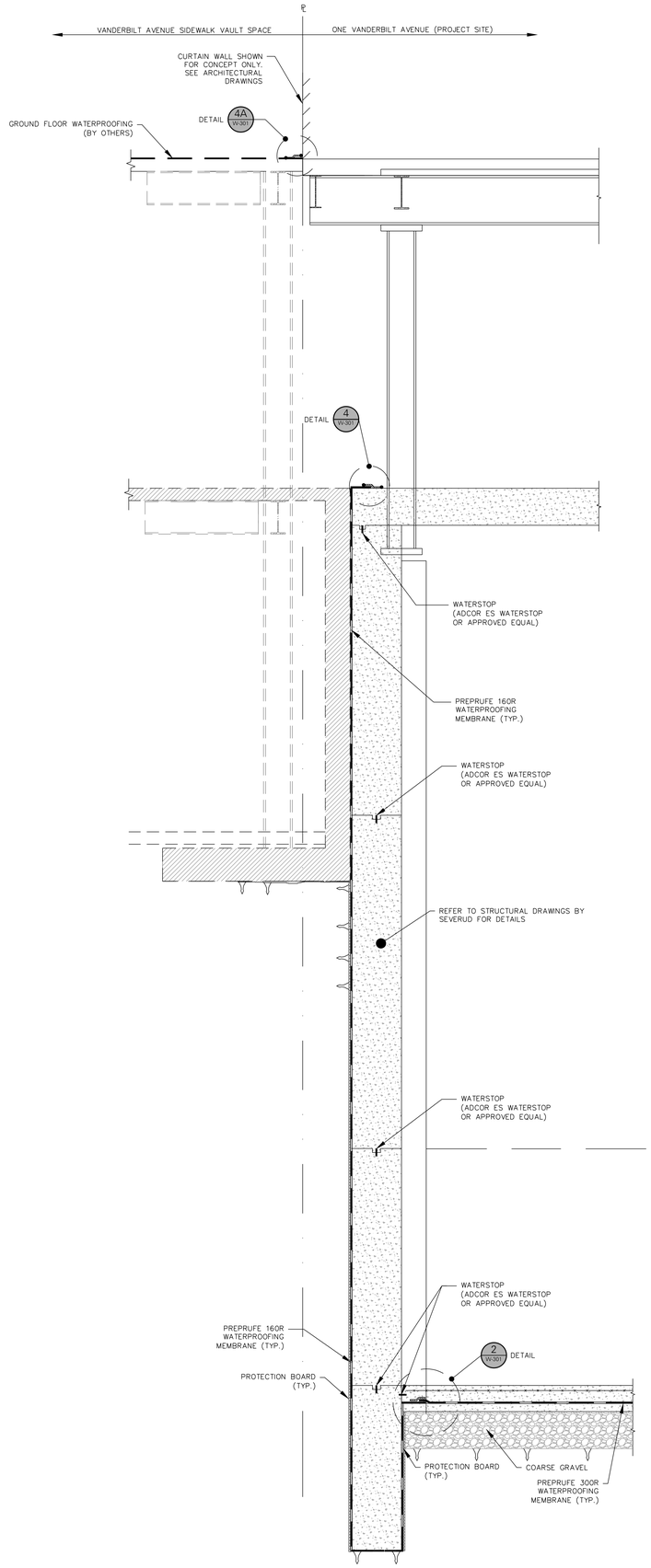
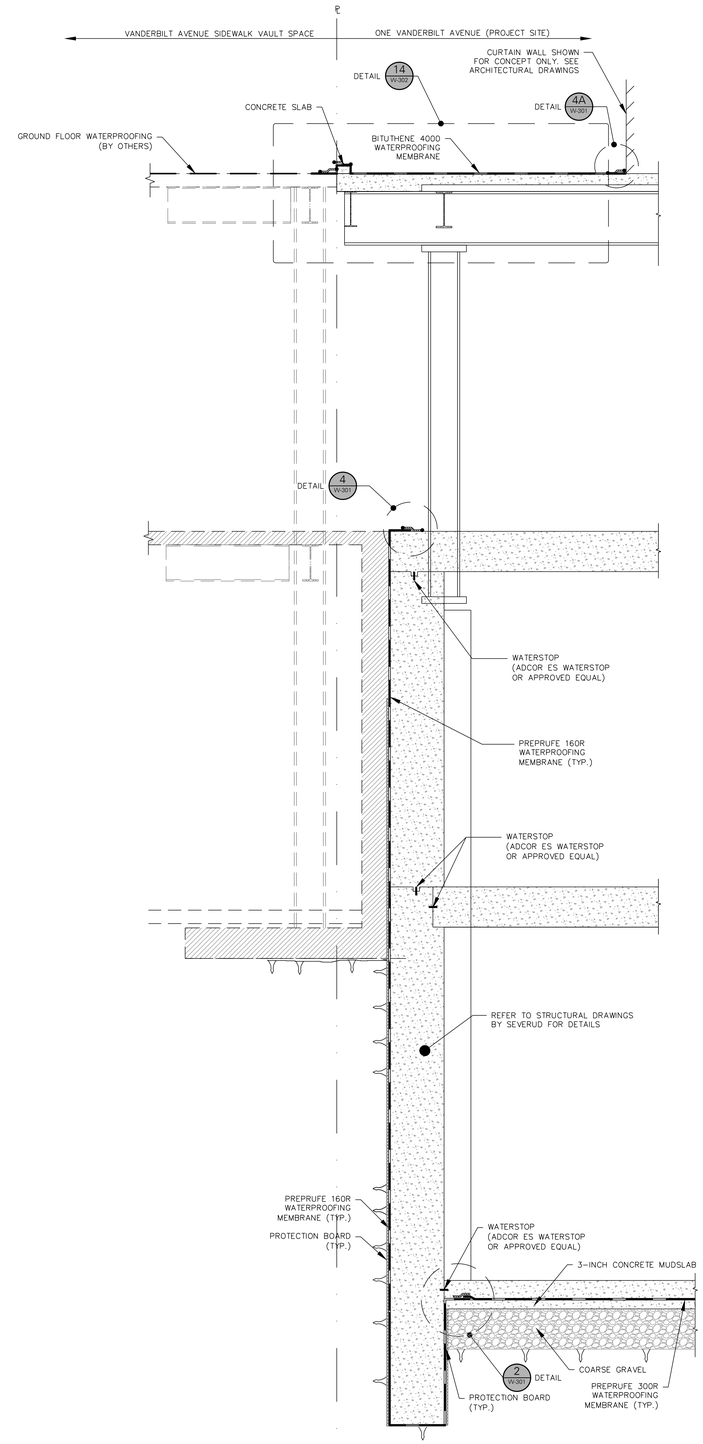


SECTION 8

(ALONG VANDERBILT AVENUE)



SECTION 9

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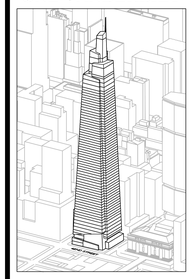

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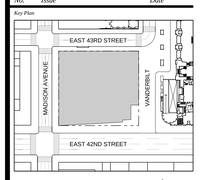
Key Plan



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Project No. 170140601
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Drawing Title
WATERPROOFING SECTIONS

Drawing Number
WP-205

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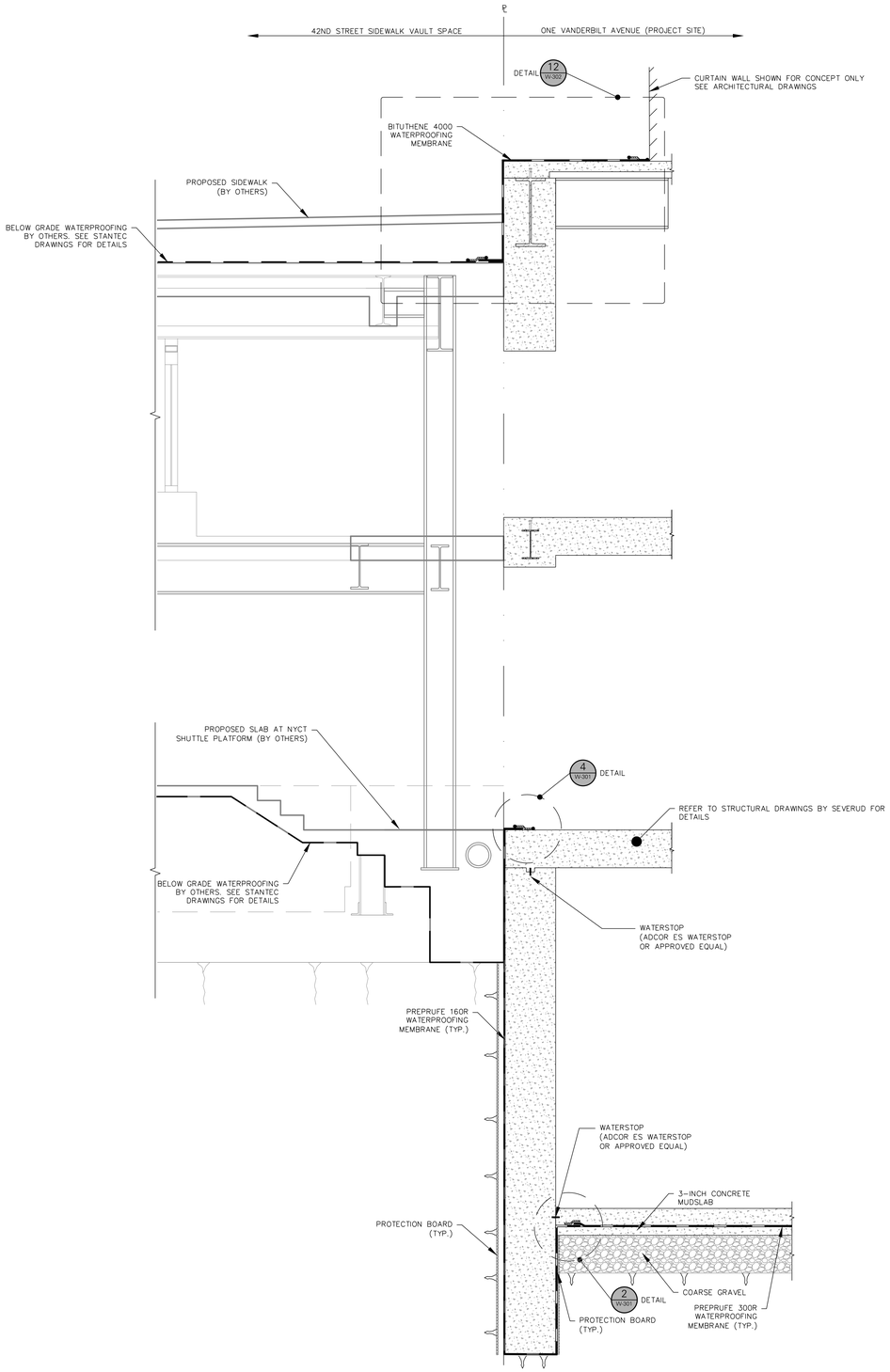
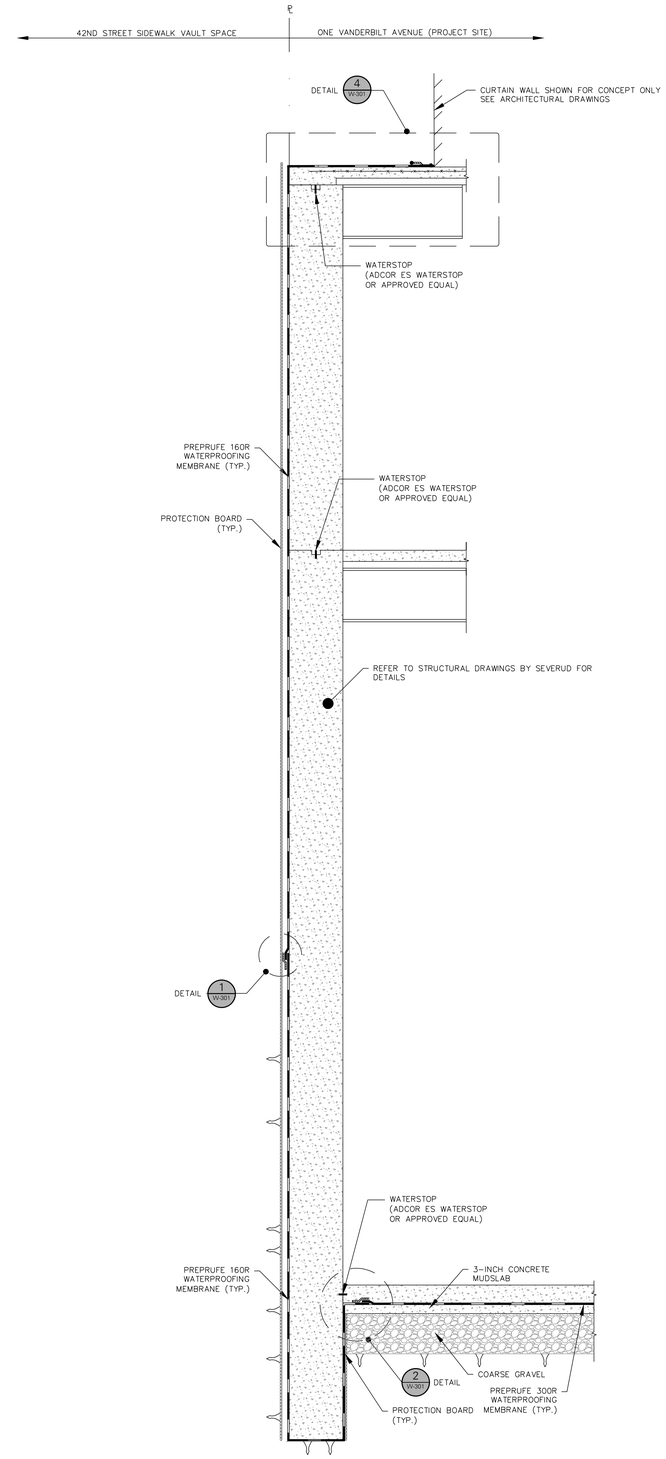


SECTION 10

(ALONG EAST 42ND STREET)



SECTION 11

(ALONG EAST 42ND STREET)

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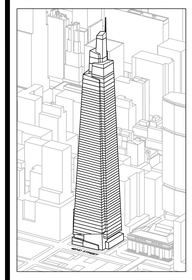

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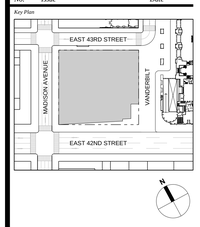
1	DOCUMENT ISSUANCE NO. 1	10-16-2015

Key Plan



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Issue Date: 10-16-2015
Project No. 170140501
Drawn By SM
Scale

Drawing Title

WATERPROOFING SECTIONS

Drawing Number

WP-206

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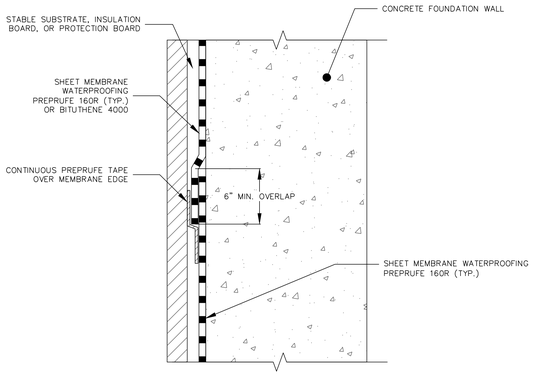
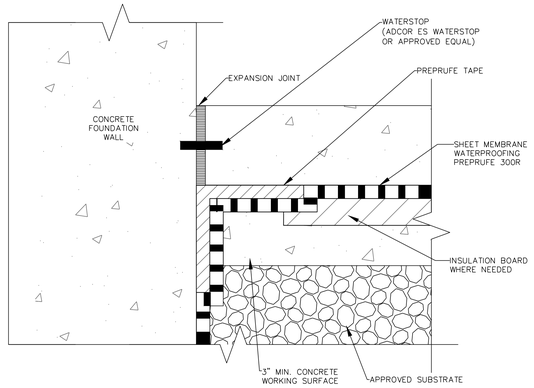
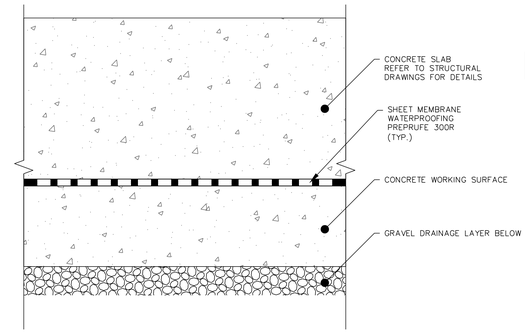


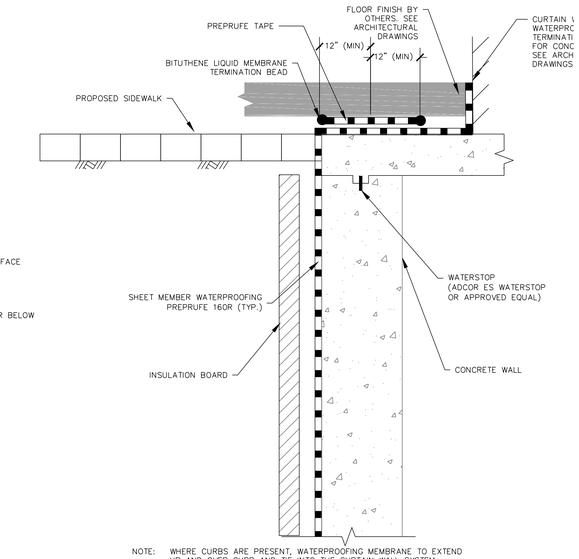
1 W-301 WATERPROOFING SEAM SECTION
SCALE: 1-1/2" = 1'-0"



2 W-301 WATERPROOFING SLAB SECTION
SCALE: 3" = 1'-0"

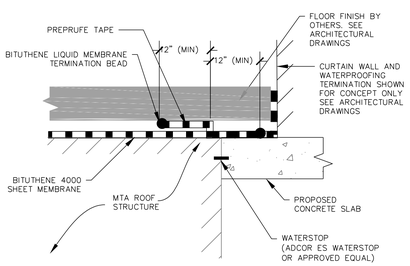


3 W-301 WATERPROOFING SLAB SECTION
SCALE: 1-1/2" = 1'-0"



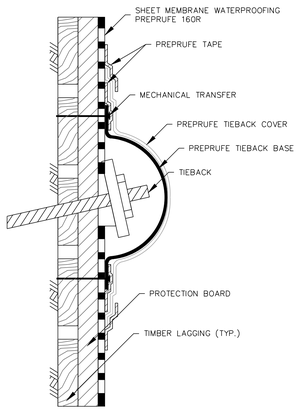
NOTE: WHERE CURBS ARE PRESENT, WATERPROOFING MEMBRANE TO EXTEND UP AND OVER CURB AND TIE INTO THE CURTAIN WALL SYSTEM

4 W-301 WATERPROOFING GRADE TERMINATION
SCALE: 1-1/2" = 1'-0"

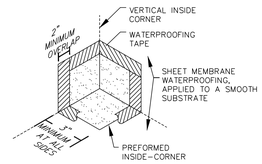


NOTE: WHERE CURBS ARE PRESENT, WATERPROOFING MEMBRANE TO EXTEND UP AND OVER CURB AND TIE INTO THE CURTAIN WALL SYSTEM

4A W-301 WATERPROOFING GRADE TERMINATION
SCALE: NTS



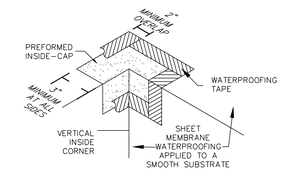
5 W-301 ROCK ANCHOR COVER
SCALE: 1-1/2" = 1'-0"



INSTALLATION INSTRUCTIONS:
1. REMOVE RELEASE-LINER FROM BOTH SIDES OF INSIDE-CORNER AND INSTALL TIGHT AGAINST SHEET MEMBRANE.
2. ENSURE THE INSIDE-CORNER COVERS THE SHEET MEMBRANE BY A MINIMUM OF 3 IN. ON ALL SIDES.
3. APPLY WATERPROOFING TAPE CENTERED OVER ALL EDGES OF THE INSIDE-CORNER. ROLL FIRMLY IN PLACE, REMOVE RELEASE-LINER AND DISCARD.

NOTES:
A. SHEET MEMBRANE WATERPROOFING SEAMS NOT SHOWN FOR CLARITY.
B. WATERPROOFING TAPE SHOULD OVERLAP ONTO SURFACES OF TAPE, MEMBRANE, CORNER/CAP, ETC. A MINIMUM OF 2 IN.

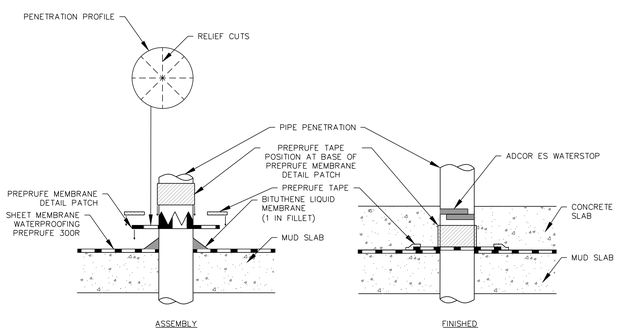
6 W-301 PREFABRICATED CORNER PATCH
SCALE: NTS



INSTALLATION INSTRUCTIONS:
1. REMOVE RELEASE-LINER FROM BOTH SIDES OF INSIDE-CAP AND INSTALL TIGHT AGAINST MEMBRANE.
2. ENSURE THE INSIDE-CAP COVERS THE MEMBRANE BY A MINIMUM OF 3 IN. ON ALL SIDES.
3. APPLY WATERPROOFING TAPE CENTERED OVER ALL EDGES OF THE INSIDE CAP. ROLL FIRMLY IN PLACE, REMOVE RELEASE-LINER AND DISCARD.

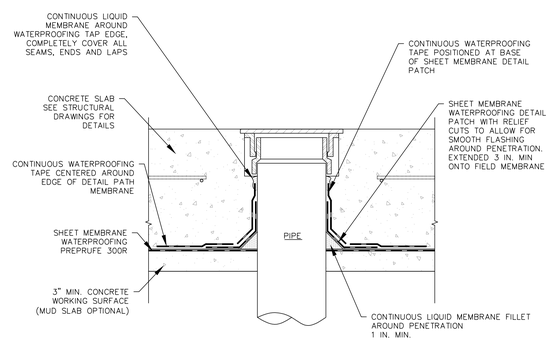
NOTES:
A. MEMBRANE SEAMS NOT SHOWN FOR CLARITY.
B. WATERPROOFING TAPE SHOULD OVERLAP ONTO SURFACES OF TAPE, MEMBRANE, CORNER/CAP, ETC. A MINIMUM OF 2 IN.

7 W-301 PREFABRICATED CORNER CAP
SCALE: NTS



FOOTNOTE:
ALL PENETRATIONS TO BE GROUTED. A MINIMUM OF 6 INCHES IS REQUIRED BETWEEN PENETRATIONS TO ENSURE PROPER DETAILING. AVOID PLACEMENT OF MULTIPLE PENETRATIONS.

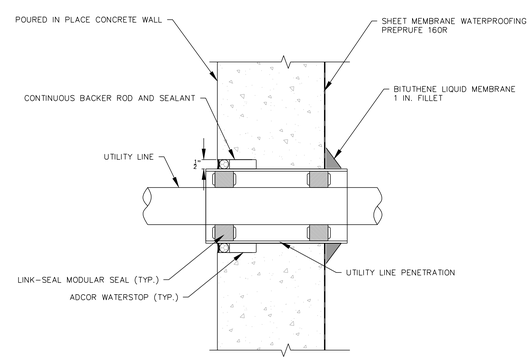
8 W-301 PIPE PENETRATION
SCALE: 3/4" = 1'-0"



NOTE:

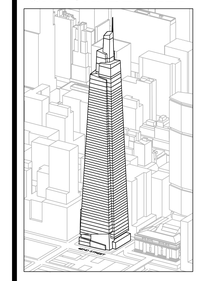
REFER TO PLUMBING DRAWINGS AND SPECIFICATIONS FOR PIPING AND CLEANOUT LOCATIONS.

9 W-301 UTILITY LINE SLAB PENETRATION
SCALE: 1-1/2" = 1'-0"



10 W-301 UTILITY LINE PIPE PENETRATION
SCALE: 1" = 1'-0"

ONE VANDERBILT



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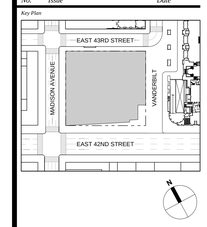
No.	Issue	Date
1	DOCUMENT ISSUANCE NO. 1	10-16-2015

Key Plan



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Project No. 170140801
Drawn By SM
Scale

Drawing Title
WATERPROOFING DETAILS

Drawing Number
WP-301

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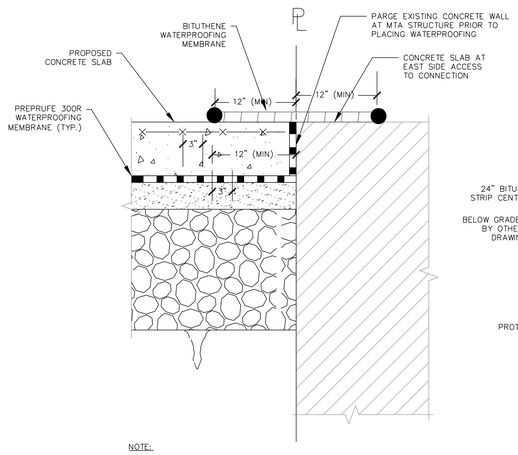
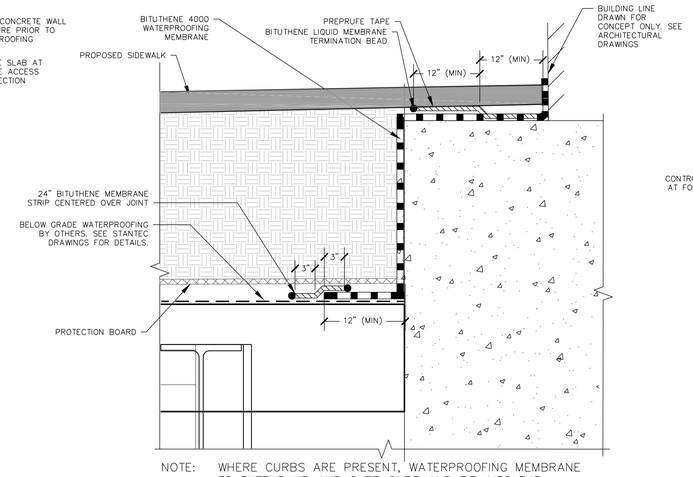


NOTE:

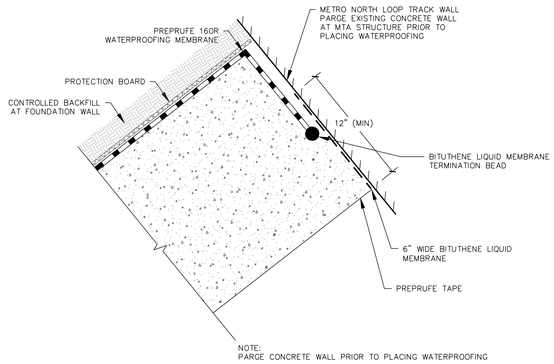
PARGE EXISTING CONCRETE WALL PRIOR TO PLACING WATERPROOFING.

11 W-302 TERMINATION AT EAST SIDE ACCESS CONNECTION
SCALE: 1-1/2" = 1'-0"

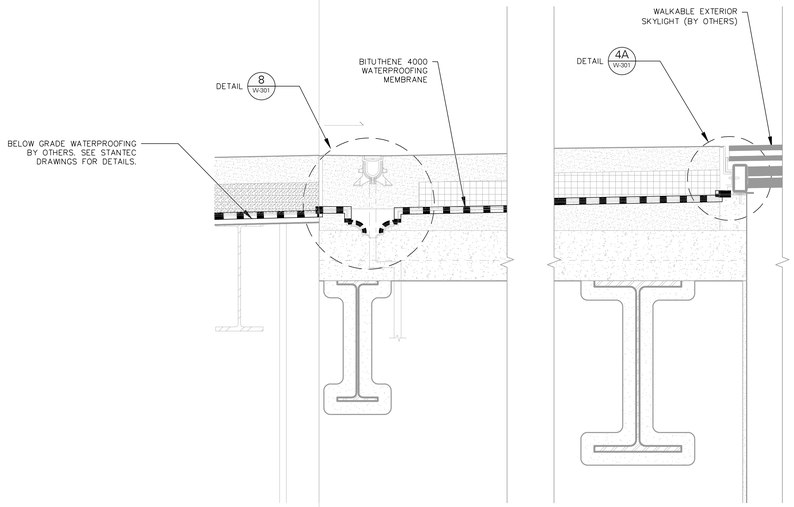


NOTE: WHERE CURBS ARE PRESENT, WATERPROOFING MEMBRANE TO EXTEND UP AND OVER CURB AND TIE INTO THE CURTAIN WALL SYSTEM

12 W-302 TRANSITION AT ADJACENT MTA ROOF STRUCTURE
SCALE: 1-1/2" = 1'-0"

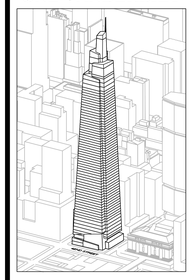


13 W-302 TERMINATION AT METRO NORTH LOOP TRACK WALL
SCALE: 1" = 1'-0"



14 W-302 EXTERIOR SKYLIGHT SECTION DETAIL
SCALE: 1 1/2" = 1'-0"

ONE VANDERBILT



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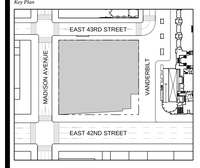
Key Plan



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Project No. 170140501
Drawn By SM
Scale

Drawing Title

WATERPROOFING DETAILS

Drawing Number

WP-302

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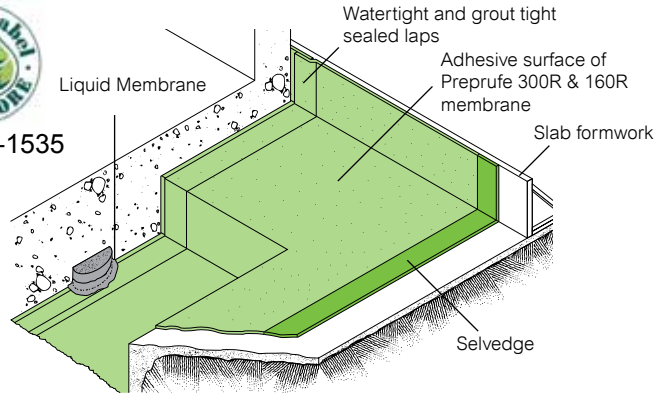
Preprufe® 300R & 160R

Pre-applied waterproofing membranes that bond integrally to poured concrete for use below slabs or behind basement walls on confined sites

040-013-1535



Advantages

- Forms a unique integral seal to concrete poured against it. This prevents water migration and makes it unaffected by ground settlement beneath slabs.
- Fully-adhered watertight laps and detailing
- Provides a barrier to water, moisture and gas – physically isolates the structure from the surrounding ground.
- BBA Certified for basement Grades 2, 3, & 4 to BS 8102:1990
- Zero permeance to moisture
- Solar reflective - reduced temperature gain
- Simple and quick to install, requiring no priming or fillets.
- Can be applied to permanent formwork - allows maximum use of confined sites.
- Self protecting - can be trafficked immediately after application and ready for immediate placing of reinforcement.
- Unaffected by wet conditions - cannot activate prematurely.
- Inherently waterproof, non-reactive system:
  - not reliant on confining pressures or hydration
  - unaffected by freeze/thaw, wet/dry cycling
- Chemically resistant, effective in all types of soils and waters - protects structure from salt or sulphate attack.

Description

Preprufe® 300R & 160R membranes are unique composite sheets comprising a thick HDPE film, an aggressive pressure sensitive adhesive and a weather resistant protective coating.
Unlike conventional non-adhering membranes, which are vulnerable to water ingress tracking between the unbonded membrane and structure, the unique Preprufe seal to concrete prevents any ingress or migration of water around the structure.

The Preprufe R System includes:

- Preprufe 300R - heavy-duty grade for use below slabs and on rafts (i.e. mud slabs). Designed to accept the placing of heavy reinforcement using conventional concrete spacers.
- Preprufe 160R - thinner grade for lighter applications and reverse tanking (i.e. blindside zero property line) applications against permanent formwork such as soil retention systems.
- Preprufe Tape LT - for covering cut edges, roll ends, penetrations and detailing (temperatures between -4°C and +30°C).
- Preprufe Tape HC - as above for use in Hot Climates (minimum10°C).
- Liquid Membrane - for sealing around penetrations, etc.

Preprufe 300R & 160R membranes are applied either horizontally to smooth prepared concrete or well rolled and compacted sand or crushed stone blinding; or vertically to permanent formwork or adjoining structures. Concrete is then cast directly against the adhesive side of the membranes. The specially developed Preprufe adhesive layers work together to form a continuous and integral seal to the structure.

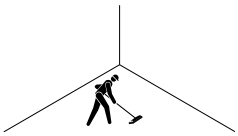
Preprufe can be returned up the inside face of slab formwork but is not recommended for conventional twin-sided formwork on walls, etc. Use Bituthene self-adhesive membrane or Procor fluid applied membrane to walls after removal of formwork for a fully bonded system to all structural surfaces.

BBA BRITISH BOARD OF AGREMENT
CERTIFICATE No.

Installation

Preprufe® 300R & 160R membranes are supplied in rolls 1.2m wide, with a selvedge on one side to provide self-adhered laps for continuity between rolls. The rolls of Preprufe membrane and Preprufe Tape are interwound with a disposable plastic release liner which must be removed before placing reinforcement and concrete.

Substrate Preparation



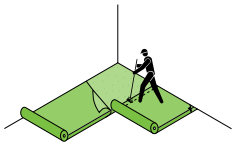
All Surfaces - It is essential to create a sound and solid substrate to eliminate movement during the concrete pour. Substrates must be regular and smooth with no gaps or voids greater than 12 mm. Grout around all penetrations such as utility conduits, etc. for stability.

Horizontal Blinding - Monolithic concrete blinding or mud slab is preferred. The blinding must be free of loose aggregate and sharp protrusions. An angular profiled blinding is recommended rather than a sloping or rounded substrate. The surface does not need to be dry, but standing water must be removed.

Vertical Sheet Piling - Use concrete, plywood, insulation or other approved facing to sheet piling to provide support to the membrane. Board systems such as timber lagging must be close butted to provide support and not more than 12 mm out of alignment.

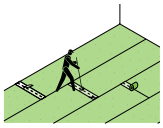
Membrane Installation

Preprufe can be applied at temperatures of -4ºC or above. During cold or damp conditions, the selvedge and tape adhesive can be gently warmed using a hot air gun or similar to remove moisture or condensation and improve initial adhesion.



Horizontal Substrates - Place the membrane HDPE film side to the substrate with printed coated side up facing towards the concrete pour. End laps should be staggered to avoid a build up of layers. Leave plastic release liner in position until overlap procedure is completed. Accurately position succeeding sheets to overlap the previous sheet 75 mm along the marked selvedge. Ensure the underside of the succeeding sheet is clean, dry and free from contamination before attempting to overlap. Peel back the plastic release liner from between the overlaps as the two layers are bonded together. Ensure a continuous bond is achieved without creases and roll firmly with a heavy roller. Completely remove the plastic liner to expose the protective coating. Any initial tack will quickly disappear.

Vertical Substrates - Mechanically fasten the membrane vertically using fixings (i.e. fasteners) appropriate to the substrate with the printed coated side facing towards the concrete pour. The membrane may be installed in any convenient length. Secure the top of the membrane using a batten such as a termination bar or fixing 50 mm below the top edge. Fixings can be made through the selvedge so that the membrane lays flat and allows firmly rolled overlaps. Immediately remove the plastic release liner. Any additional fixings must be covered with a patch of Preprufe Tape. Ensure the underside of the succeeding sheet is clean, dry and free from contamination before attempting to overlap. Roll firmly to ensure a watertight seal. Roll Ends and Cut Edges - Overlap all roll ends and cut edges by a minimum 75 mm and ensure the area is clean and free from contamination, wiping with a damp cloth if necessary. Allow to dry and apply Preprufe Tape LT (or HC in hot climates) centered over the lap and roll firmly. Immediately remove printed plastic release liner from the tape.

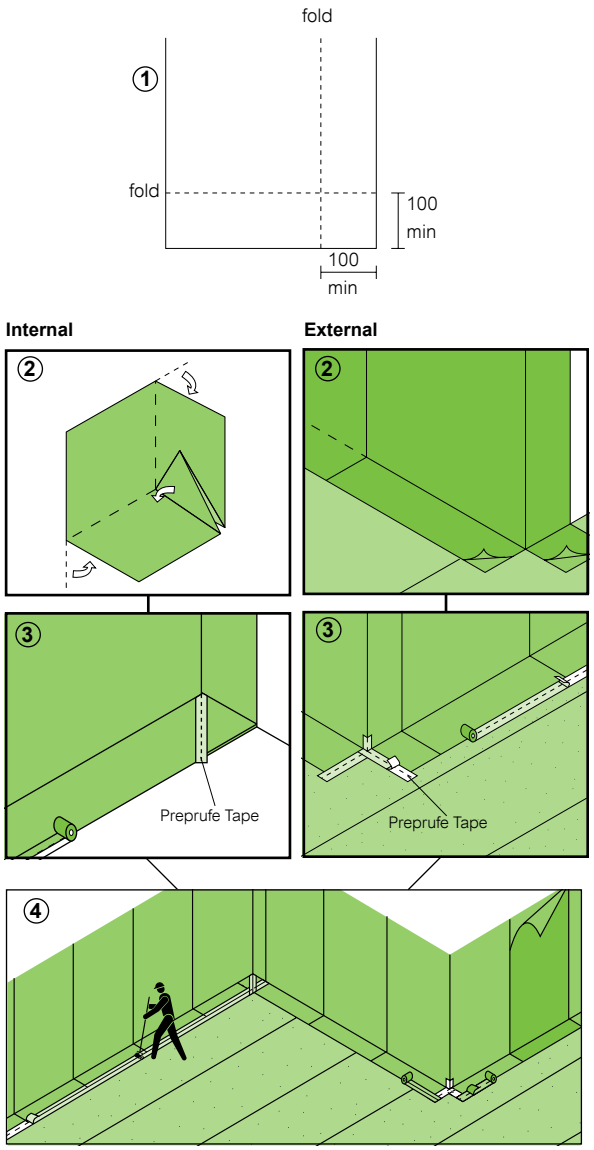


Penetrations

Use the following steps to seal around penetrations such as service pipes, piles, lightning conductors, etc.
Grout around the penetration if the penetration is not stable. Scribe membrane tight to the penetration. If the membrane is not within 12mm of the penetration, apply Preprufe Tape to

Corners

Internal and external corners should be formed as shown in the diagrams returning the membrane a minimum of 100mm and sealing with Preprufe Tape. Ensure that the apex of the corner is covered and sealed with tape and roll firmly. Crease and fold the membrane to ensure a close fit to the substrate profile and avoid hollows.



cover the gap. Wrap the penetration with Preprufe Tape by positioning the tape 12 mm above the membrane.
Mix and apply Bituthene Liquid Membrane around the penetrations using a fillet to provide a watertight seal between the Preprufe membrane and Preprufe Tape.

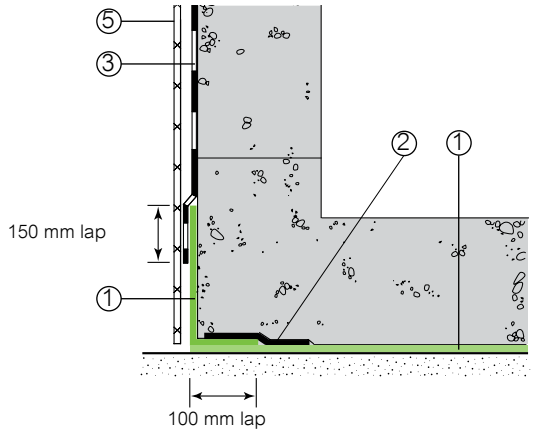
Membrane Repair

Inspect the membrane before installation of reinforcement steel, formwork and final placement of concrete. The membrane can be easily cleaned by jet washing if required. Repair damage by wiping the area with a damp cloth to ensure the area is clean and free from dust, and allow to dry. Apply Preprufe Tape centered over the damaged area and roll firmly. Any areas of damaged adhesive should be covered with Preprufe Tape. Remove printed plastic release liner from tape. Where exposed selvedge has lost adhesion or laps have not been sealed, ensure the area is clean and dry and cover with fresh Preprufe Tape, rolling firmly. Alternatively, use a hot air gun or similar to activate adhesive and firmly roll lap to achieve continuity.

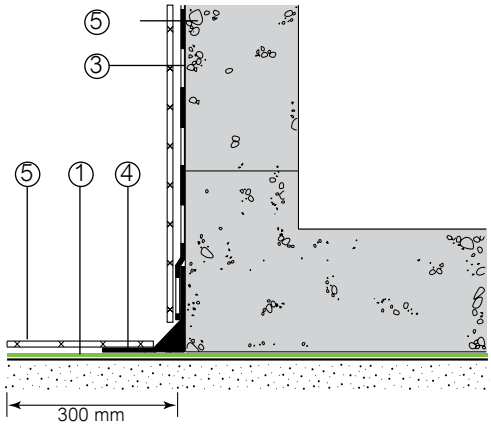
Pouring of Concrete

Ensure the plastic release liner is removed from all areas of Preprufe R membrane and Tape. It is recommended that concrete be poured within 56 days (42 days in hot climates) of application of the membrane. Concrete must be placed and compacted carefully to avoid damage to the membrane. Never use a sharp object to consolidate the concrete.

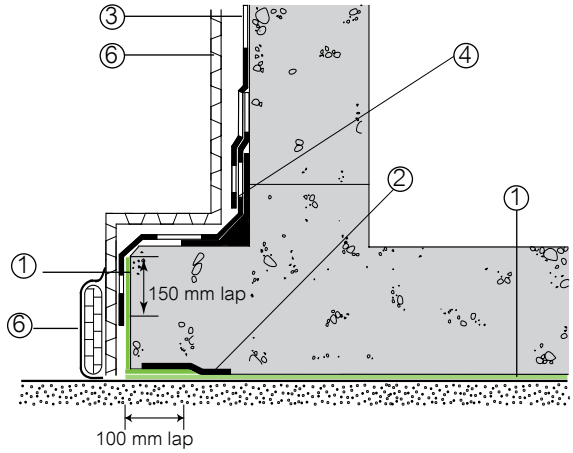
Wall base detail



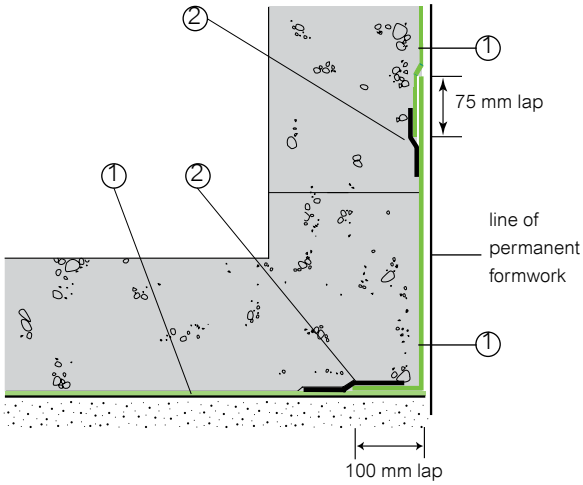
Alternative wall base detail for early shutter removal



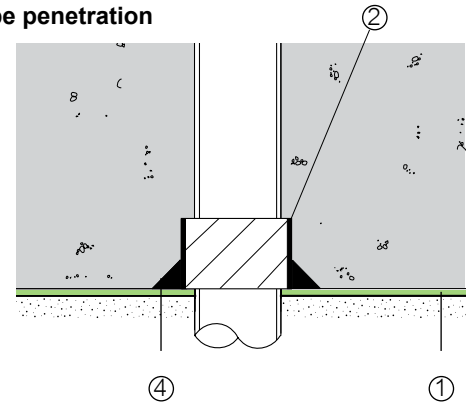
Wall base with toe detail showing drainage option



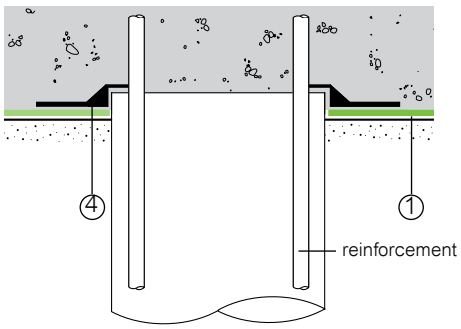
Wall base detail against permanent shutter



Pipe penetration



Pile detail



1	Preprufe	3	Bituthene® or Procor®	5	Protection
2	Preprufe Tape	4	Liquid Membrane	6	Hydroduct®

Details shown are typical illustrations and not working details. For assistance with detailing and problem solving please contact Grace Technical Department.

Physical Properties

Property	Typical Value		Test Method
	300R	160R	
Colour	White		
Thickness*	1.2 mm	0.8 mm	ASTM D3767
Peel Adhesion to Concrete	880 N/m		ASTM D903 modified
Resistance to Hydrostatic Head	>70 m		ASTM D5385 modified
Low Temperature Flexibility	<-23°C		ASTM D1970
Puncture Resistance	990 N	445 N	ASTM E 154
Elongation	300% minimum		ASTM D412 modified
Tensile Strength, Film	27.6 Mpa		ASTM D412
Crack Cycling @ -23°C	Pass		ASTM C 836

Typical test values represent average values from samples tested. Test methods noted may be modified.
* Nominal thickness refers to the thickness of the membrane without release liner.

Supply

Preprufe	300R	160R	Tape LT or HC*
Thickness (nominal)	1.2 mm	0.8 mm	-
Roll size	1.2x30.0 m	1.2x35.0 m	100 mmx15.0 m
Roll area	36.0 m^2	42 m^2	-
Roll weight	50 kg	42 kg	2 kg
Min. edge/end laps	75 mm	75 mm	75 mm

* LT denotes Low Temperature (between -4˚C and +30˚C)
HC denotes Hot Climates (>+10˚C)

Ancillary Products
Liquid Membrane, 5.7 litre

Removal of Formwork

Preprufe membranes can be applied to removable formwork, such as slab perimeters, elevator and lift pits, etc. Once the concrete is poured the formwork must remain in place until the concrete has gained sufficient compressive strength to develop the surface bond. Preprufe membranes are not recommended for conventional twin-sided wall forming systems.

A minimum concrete compressive strength of 10 N/mm^2 (1500 psi) is recommended prior to stripping formwork supporting Preprufe membranes. Premature stripping may result in displacement of the membrane and/or spalling of the concrete.

As a guide, to reach the minimum compressive strength stated above, a structural concrete mix with an ultimate strength of 40 N/mm^2 (6000 psi) will typically require a cure time of approximately 6 days at an average ambient temperature of 4ºC, or 2 days at 21ºC.

Specification Clauses

Preprufe 300R or 160R shall be applied with its adhesive face presented to receive fresh concrete to which it will integrally bond. Only Grace Construction Products approved membranes shall be bonded to Preprufe 300R &160R. All Preprufe 300R &160R system materials shall be supplied by Grace Construction Products, and applied strictly in accordance with their instructions. Specimen performance and formatted clauses are also available.

Health and Safety

Refer to relevant Material Safety data sheet. Complete rolls should be handled by a minimum of two persons.

Grace Technical Services

For assistance with working drawings for projects and additional technical advice, please contact Grace Technical Services.

www.grace.com/construction

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Bituthene, Hydroduct, Preprufe and Procor are registered trademarks of W. R. Grace & Co.-Conn.

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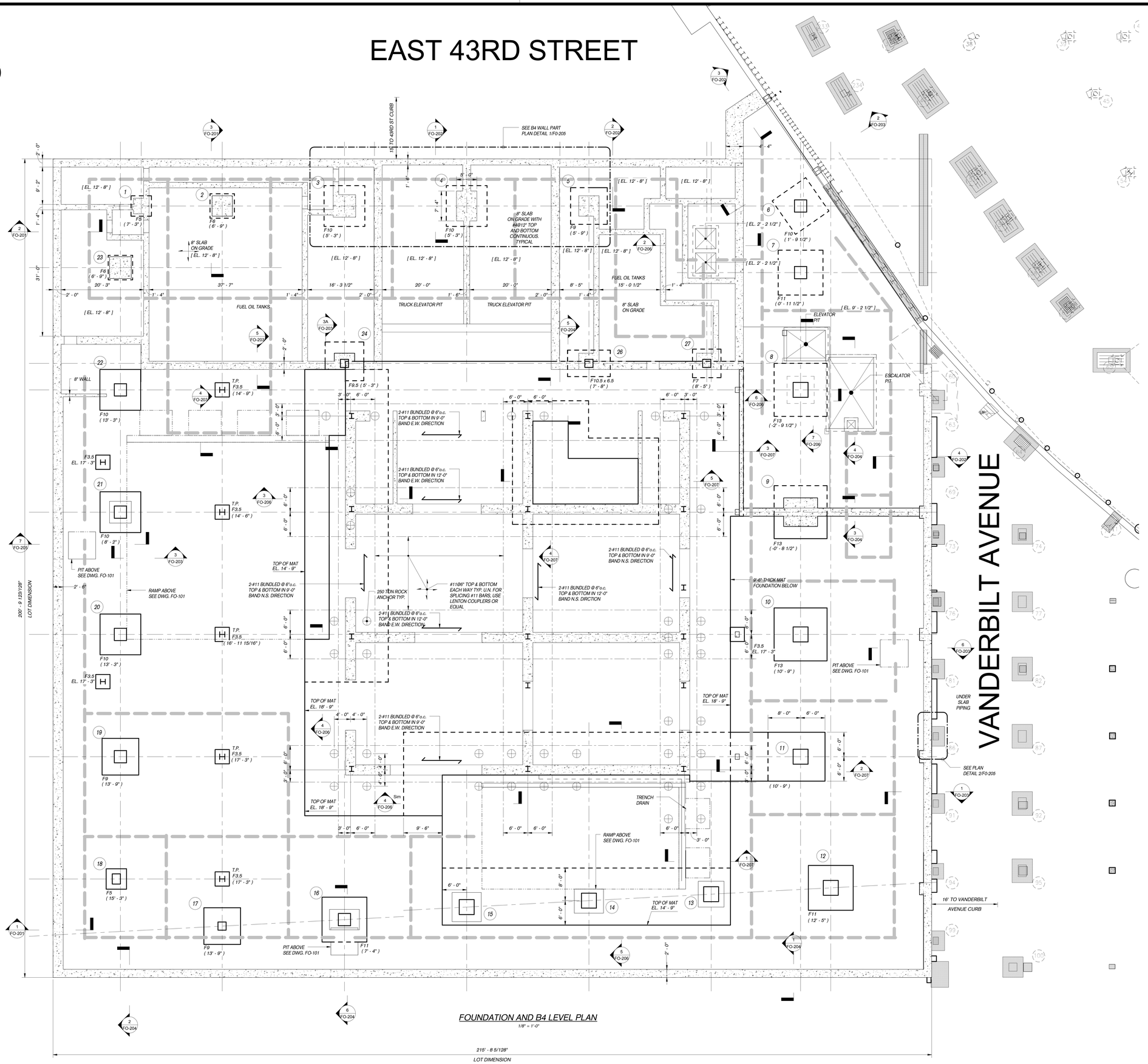
APPENDIX 7

Site Wide Cover System Plans

EAST 43RD STREET



FOUNDATION AND B4 LEVEL PLAN
1/8" = 1'-0"

EAST 42ND STREET

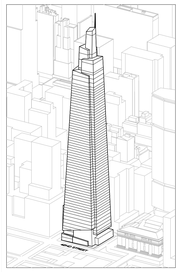
LEVEL B4 AND FOUNDATION PLAN

1. REFERENCE FOR ALL ELEVATIONS IS LEVEL NAVD88 EL. 0'-0"
2. TOP OF FOUNDATION MAT IS AT ELEVATION 18'-9" UNLESS OTHERWISE NOTED.
3. BOTTOM OF FOOTING ELEVATION IS NOTED THUS (x...), RELATIVE TO REFERENCE ELEVATION.
4. INVERT ELEVATION IS NOTED THUS <x...>, RELATIVE TO REFERENCE ELEVATION.
5. SYMBOLS:
   - 8" SLAB ON GRADE — INDICATES 8" CONC. SLAB ON GRADE WITH #4 @ 12" T. & B. EA. WAY.
   - INDICATES ROCK ANCHOR. SEE PLAN FOR LOCATION AND CAPACITY.
6. FOOTINGS SHALL BEAR ON UNDISTURBED ROCK HAVING A SAFE MINIMUM BEARING CAPACITY OF SIXTY (60) TONS PER SQ. FT. (CLASS 1a IN ACCORDANCE WITH THE NEW YORK CITY BUILDING CODE).
7. BOTTOM OF FOOTING ELEVATION SHOWN IS HIGHEST POSSIBLE FOR 60 TSF ROCK. ACTUAL ELEVATION MAY CHANGE DEPENDING ON CONDITION OF BEARING SURFACE REVEALED BY EXCAVATION.
8. ALL BEARING SURFACES SHALL BE EXAMINED BY THE ARCHITECT (OR ARCHITECT'S REPRESENTATIVE) PRIOR TO PLACING FOOTINGS OR REINFORCEMENT.
9. FOOTINGS SHALL BE CONCENTRIC WITH COLUMN OR BUTTRESS ABOVE UNLESS OTHERWISE NOTED. FOR COORDINATES OF CENTERLINES SEE DWG. S-010.
10. SLOPE BETWEEN BOTTOM OF ADJACENT FOOTINGS, ELEVATOR PIT SLABS, SUMP PITS, ETC. SHALL BE NO STEEPER THAN ONE VERTICAL TO ONE HORIZONTAL.
11. ALL CONCRETE FOR FOUNDATION SHALL BE NORMAL WEIGHT SEE DWG. S-701 FOR REQUIRED STRENGTHS.
12. FOUNDATION WALLS SHALL BE PLACED IN ALTERNATE PANELS NOT TO EXCEED 60 FEET IN LENGTH. CONSTRUCTION JOINTS SHALL BE PLACED AT POINTS OF MINIMUM SHEAR, GENERALLY AT MID-SPAN AND THREE FEET MINIMUM FROM EDGE OF BUTTRESS. ALLOW 7 DAYS MINIMUM BETWEEN PLACING OF ADJACENT PANELS. HORIZONTAL JOINTS WILL BE PERMITTED ONLY AS SHOWN ON SECTIONS AND DETAILS.
13. FOUNDATION WALLS SHALL BE TEMPORARILY BRACED AGAINST EARTH PRESSURE, WIND AND OTHER FORCES UNTIL SLABS, METAL DECK, BEAMS OR COLUMNS DESIGNED TO BRACE THE FINISHED STRUCTURE HAVE BEEN INSTALLED AND HAVE ATTAINED THEIR REQUIRED STRENGTH.
14. SEE DWGS. FO-201 THRU FO-207 FOR FOUNDATION SECTIONS AND DETAILS.
15. SEE DWGS. S301 THRU S308 FOR LATERAL FRAME AND SHEAR WALL ELEVATIONS AND DETAILS.
16. SEE DWGS. S-251 AND S-252 FOR TYPICAL FOUNDATION DETAILS.
17. SEE DWGS. S601 THRU S603 FOR COLUMN SCHEDULE.
18. SEE DWGS. S701 FOR GENERAL NOTES.
19. SEE DWGS. S702 THRU S703 FOR LOADING SCHEDULE AND FLOOR CONSTRUCTION DETAILS.
20. COORDINATE SIZE, LOCATION AND INVERT ELEVATION OF WALL SLEEVES WITH MECHANICAL AND TELECOMMUNICATIONS DRAWINGS. SEE DWG. S-252 FOR TYPICAL SLEEVE DETAIL.
21. COORDINATE CON ED VAULTS WITH CON ED DWGS.
22. COORDINATE ELEVATOR PIT BEAM LOCATIONS WITH ELEVATOR CONTRACTOR.
23. COORDINATE NYCT/MTA SUBWAY PASSAGE WITH NYCT DWGS.
24. NO TEMPORARY OR PERMANENT ATTACHMENTS OR PENETRATIONS SHALL BE MADE TO NYCT/MTA STRUCTURES.
25. SEE TEMPORARY SUPPORT OF EXCAVATION SUPPORT DWGS PREPARED BY LANGAN CONSULTING ENGINEERS. FOR NYCT/MTA GENERAL NOTES AND STANDARD INSURANCE CLAUSES SEE FO-301.
26. SEE SPECIFICATIONS AND CIVIL DRAWINGS FOR UNDERSLAB DRAINAGE SYSTEM.
27. SEE DWGS. S401 THRU S404 FOR CONCRETE CORE PLANS AND DETAILS.
28. SEE ELECTRICAL DRAWINGS FOR UNDERSLAB LIGHTNING PROTECTION GROUNDING PLATES.
29. COORDINATE WATERPROOFING WITH CIVIL DRAWINGS.

FOOTING SCHEDULE
(ALLOWABLE ROCK BEARING = 60 TONS/SQ. FT.)

MARK	SIZE	DEPTH (INCHES)	BOTTOM REINF. EACH WAY (U.O.N.)	REMARKS
F3.5	3'-6" x 3'-6"	18	4 - #5	-
F5	5'-0" x 5'-0"	42	8 - #9	-
F6	6'-0" x 6'-0"	48	10 - #9	-
F7	7'-0" x 7'-0"	50	16 - #9	-
F8	8'-0" x 8'-0"	54	18 - #10	-
F9	9'-0" x 9'-0"	60	20 - #10	-
F9.5	9'-6" x 9'-6"	66	22 - #10	-
F10	10'-0" x 10'-0"	66	24 - #10	-
F10.5 x 6.5	10'-6" x 6'-6"	60	-	7-#10 LONG WAY 11-#10 SHORT WAY
F11	11'-0" x 11'-0"	76	30 - #10	-
F12	12'-0" x 12'-0"	88	36 - #10	-
F13	13'-0" x 13'-0"	96	38 - #10	-

ONE VANDERBILT



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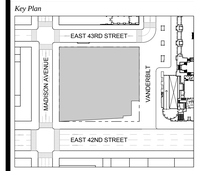
Key Plan



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Project No. 14500
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Scale As indicated

Drawing Title
FOUNDATION AND B4 LEVEL PLAN

Drawing Number
FO-100.00
SHEET 1 OF 11

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EAST 43RD STREET

MADISON AVENUE

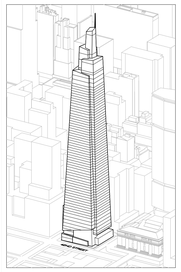
VANDERBILT AVENUE

EAST 42ND STREET

B3 LEVEL PLAN

1/8" = 1'-0"

ONE VANDERBILT



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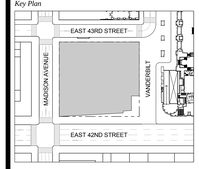

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B3 LEVEL PLAN

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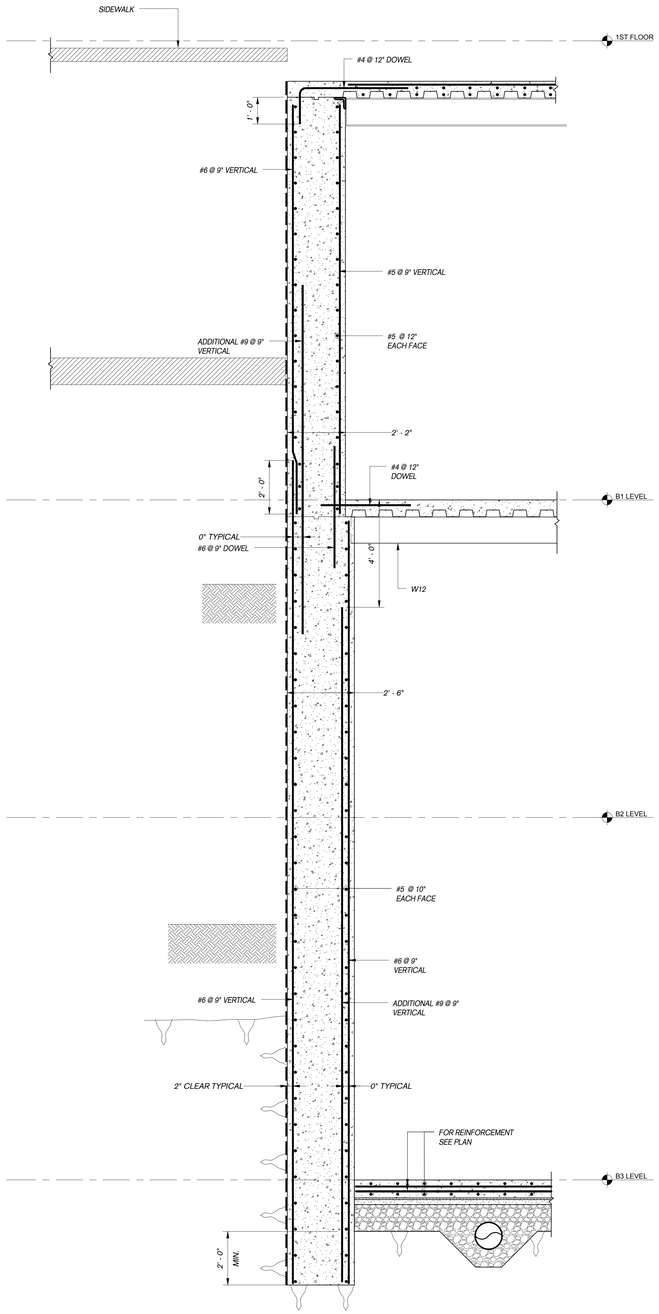

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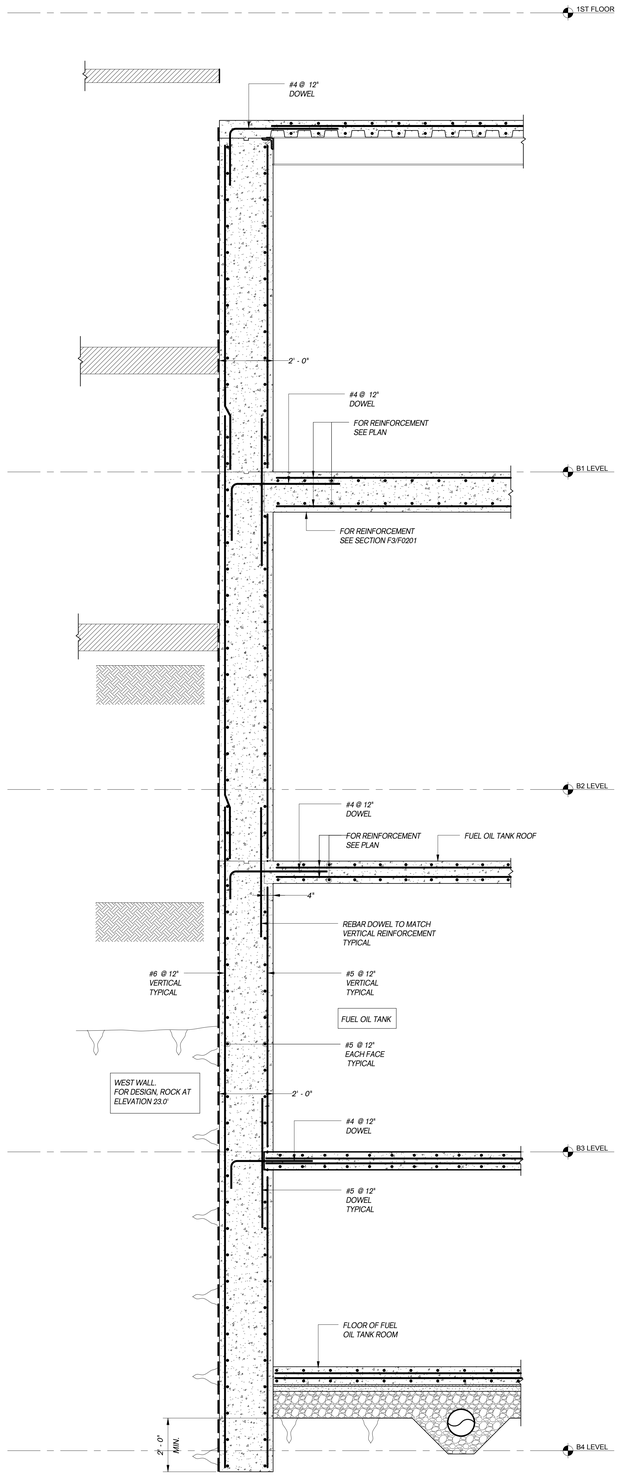

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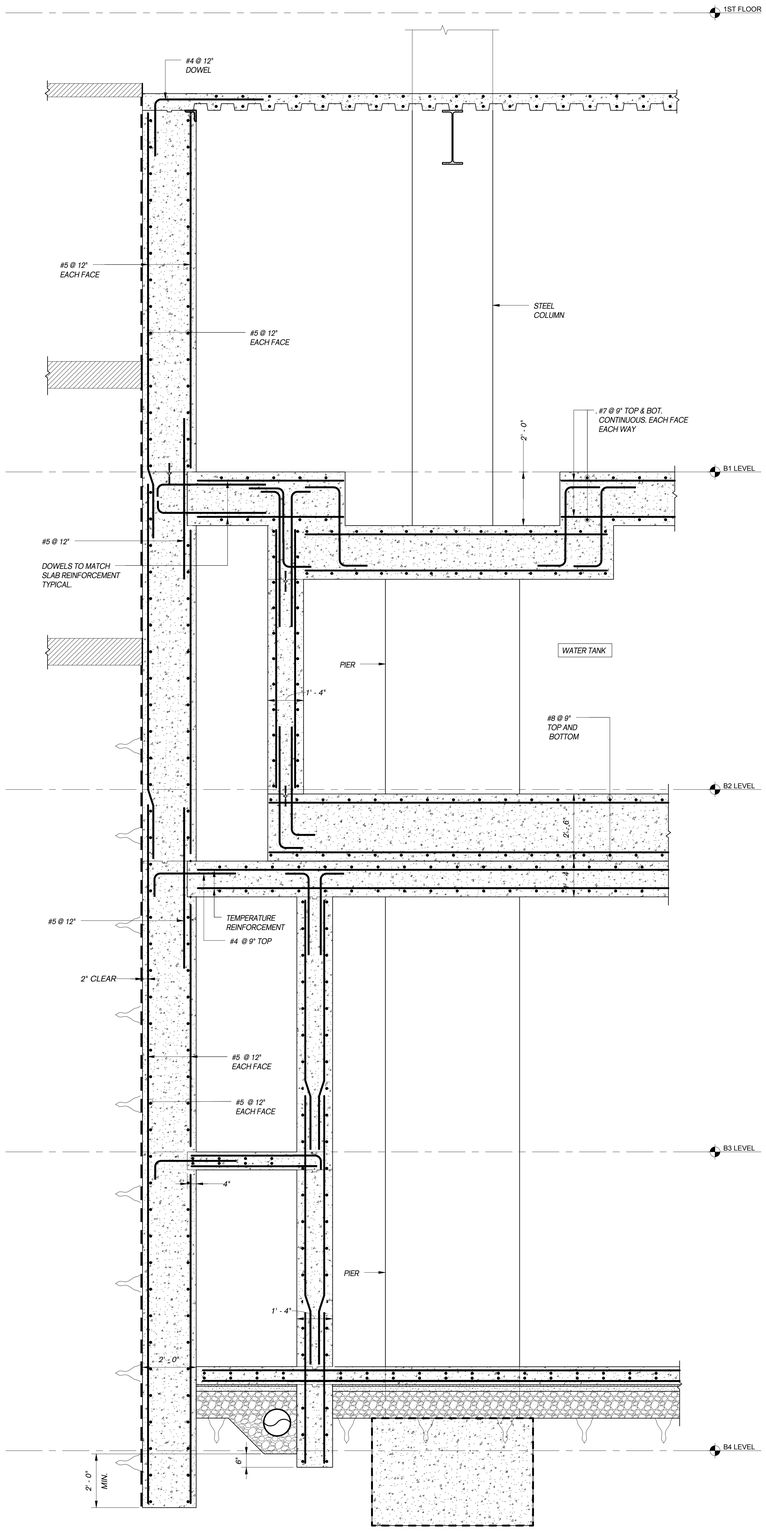

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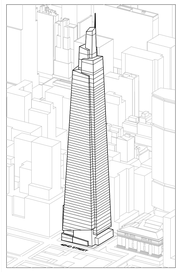

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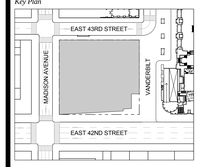

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FOUNDATIONS SECTIONS 1

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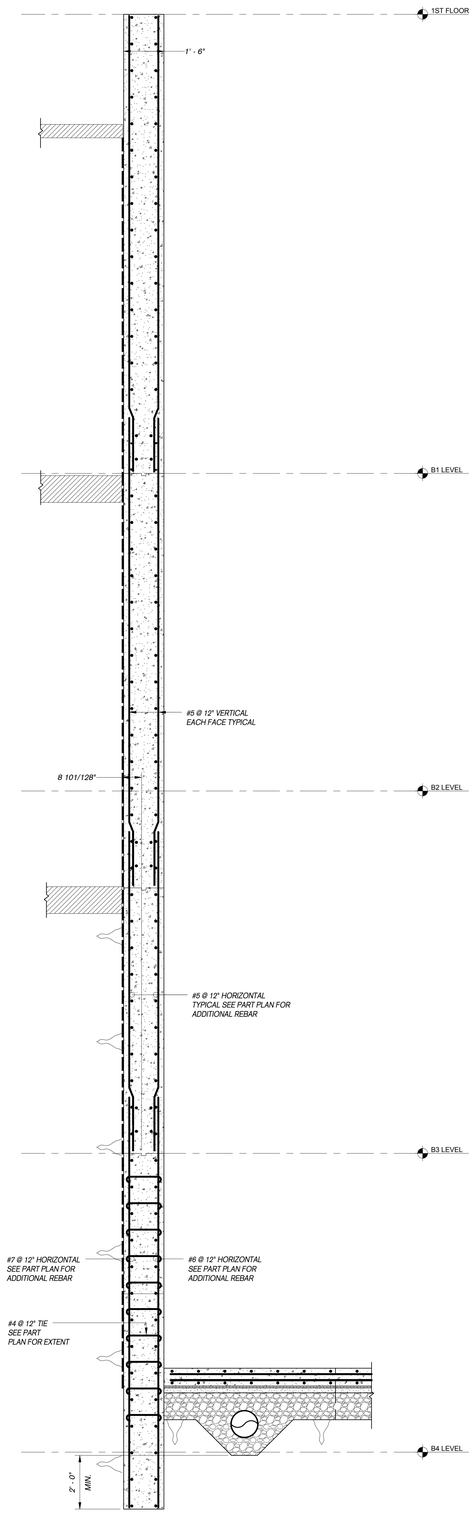

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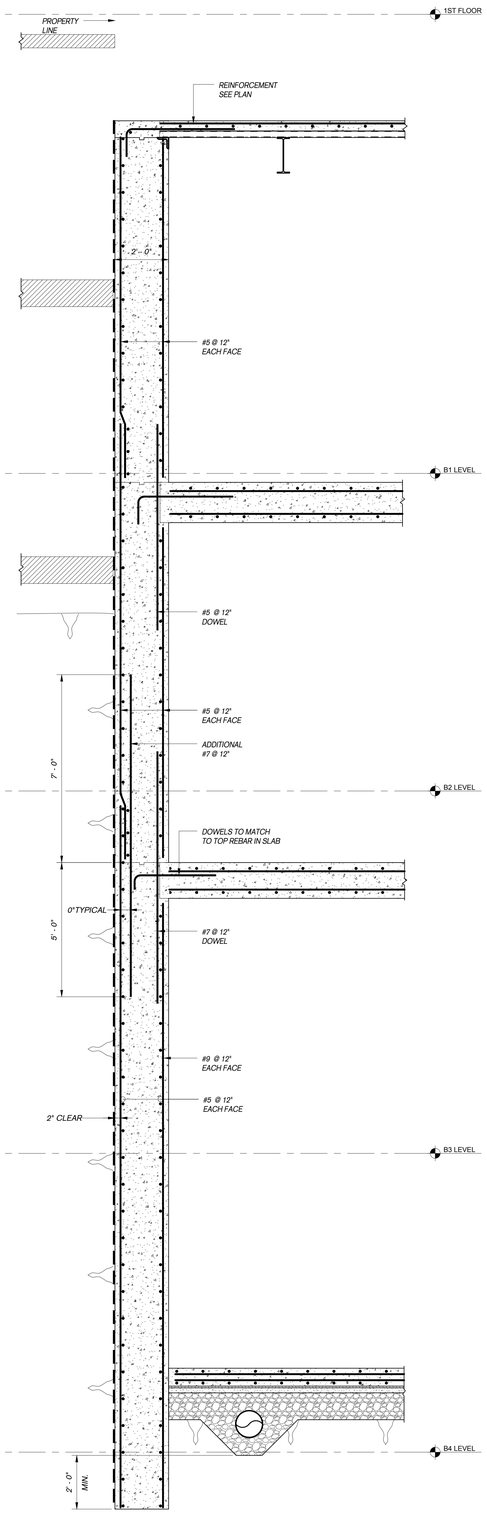
FO-202



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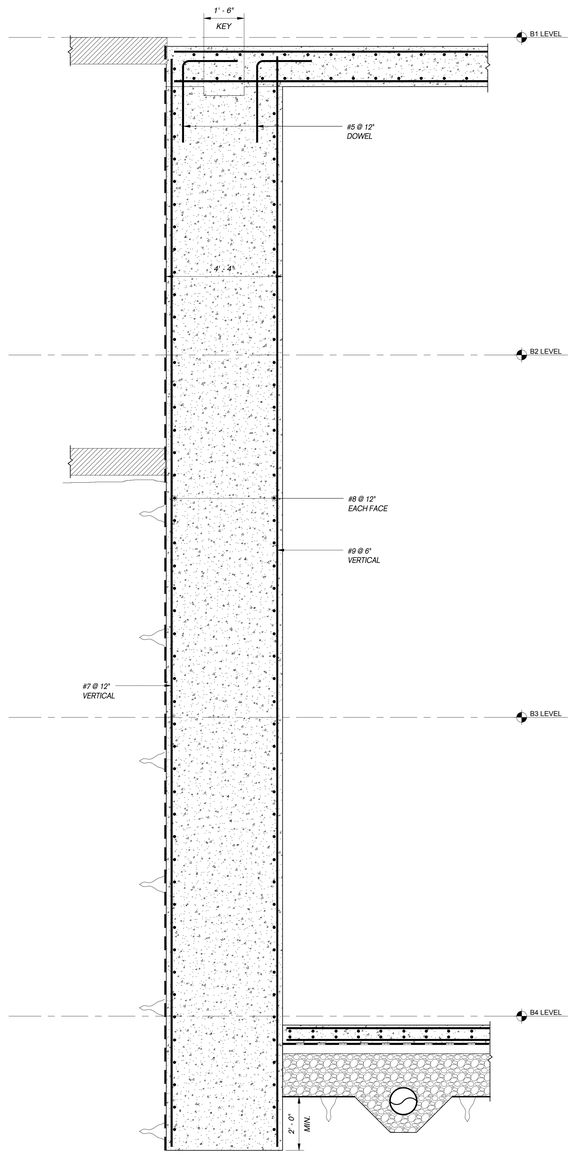

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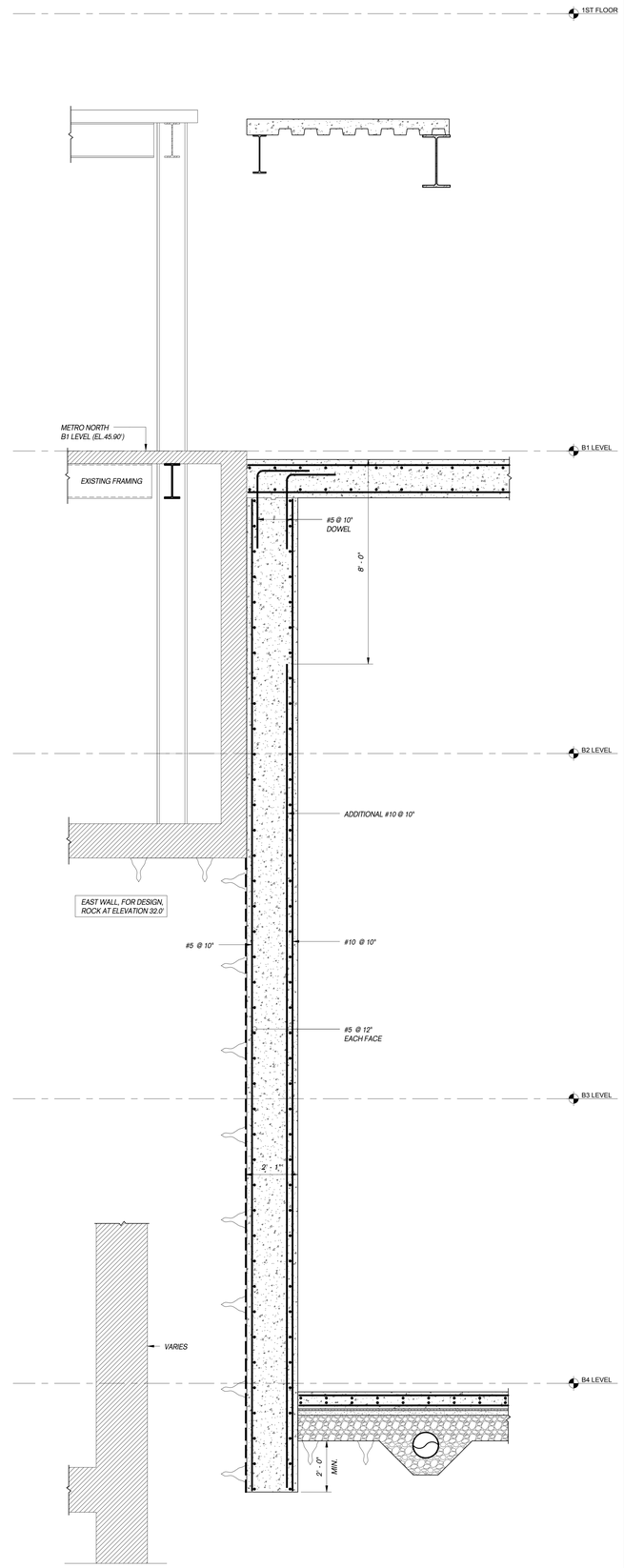

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FO-202

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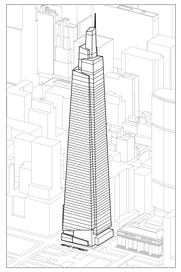

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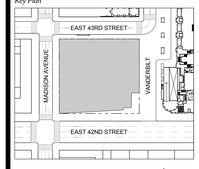
Key Plan



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Project No.	**14500**
Drawn By	
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Drawing Title
FOUNDATIONS SECTIONS 2

Drawing Number
FO-202.00

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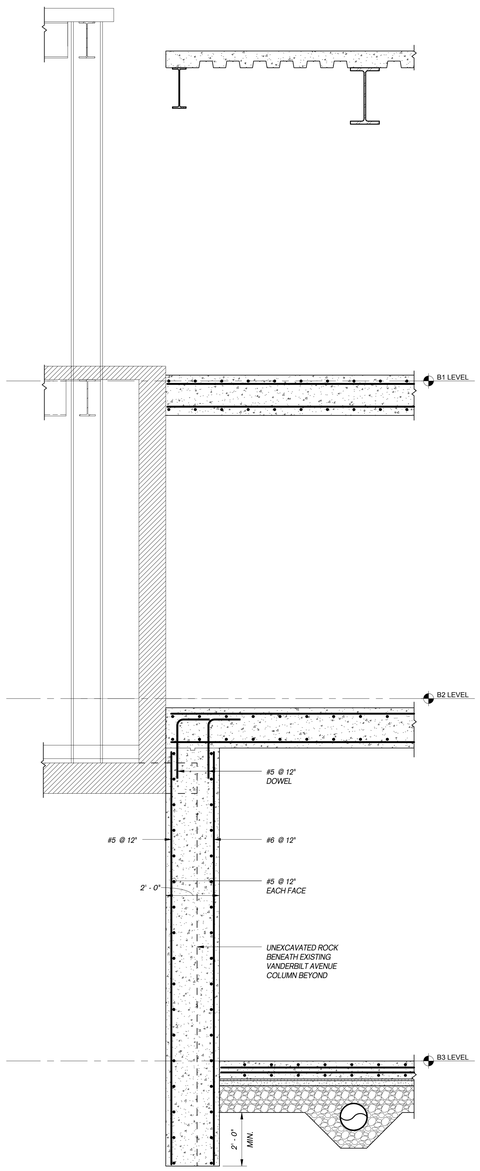

SECTION 1 FO-203
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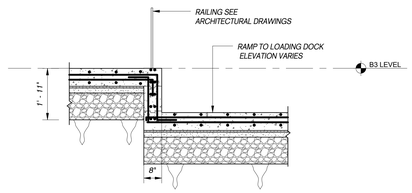

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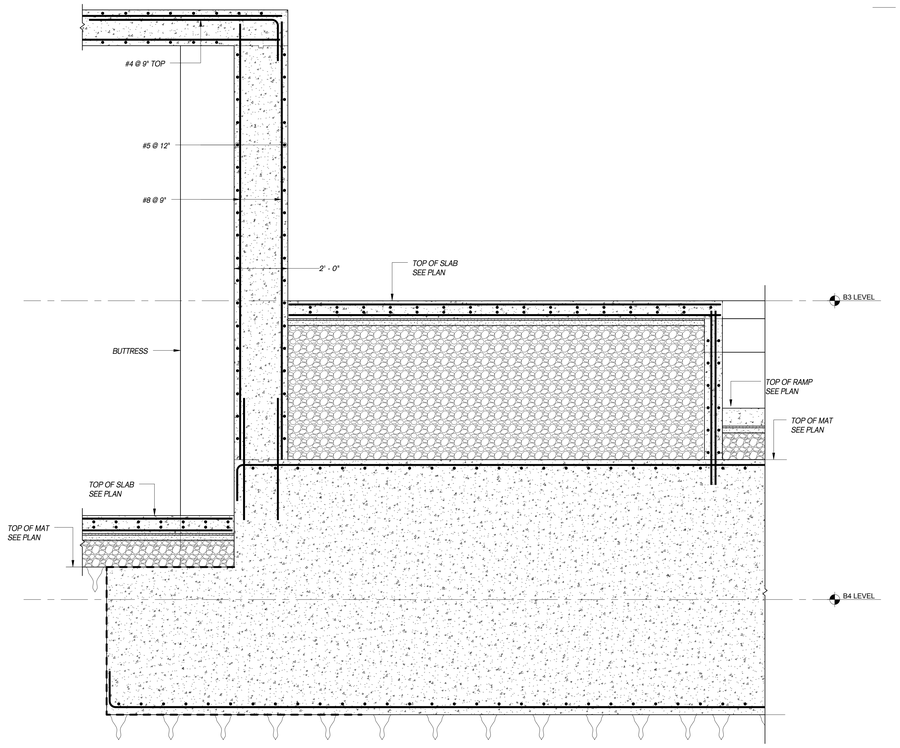

SECTION 3A FO-203
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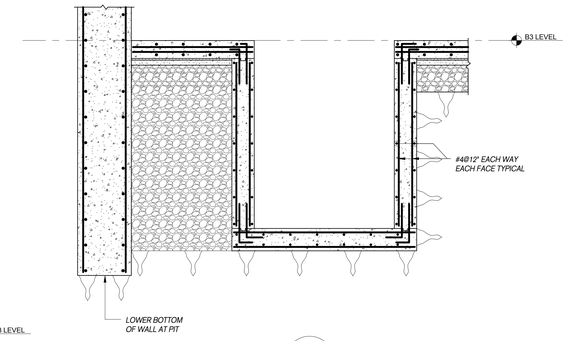
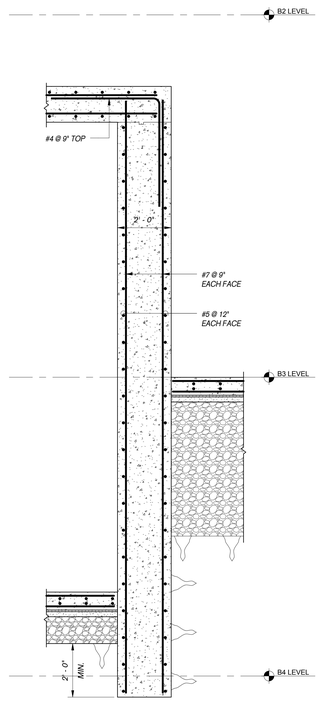


SECTION 6 FO-203
SCALE: 1/2" = 1'-0"



SECTION 5 FO-203
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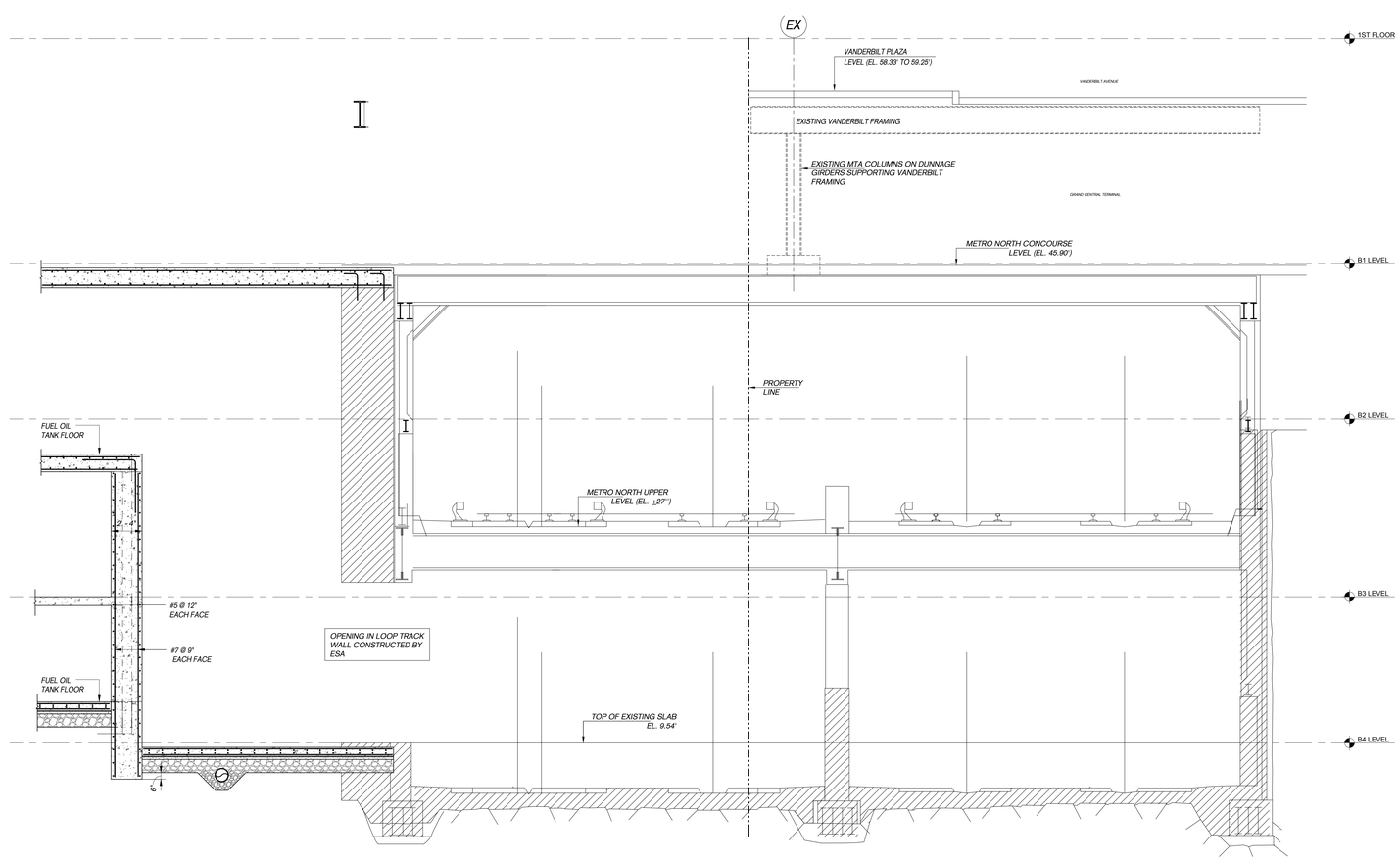
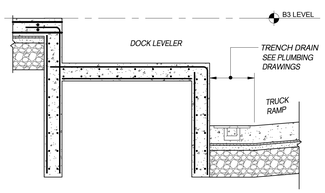
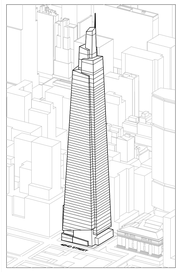


SECTION 2 FO-203
SCALE: 1/4" = 1'-0"



SECTION 4 FO-203
SCALE: 1/2" = 1'-0"

ONE VANDERBILT



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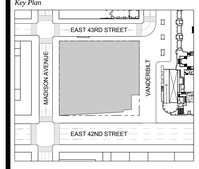
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



STATE OF NEW YORK
GERARD W. MOSS
PROFESSIONAL ENGINEER

Issue Date: 09-01-2015
Project No. 14500
Drawn By
Scale As indicated

Drawing Title
FOUNDATIONS SECTIONS 3

Drawing Number
FO-203.00
SHEET 5 OF 11

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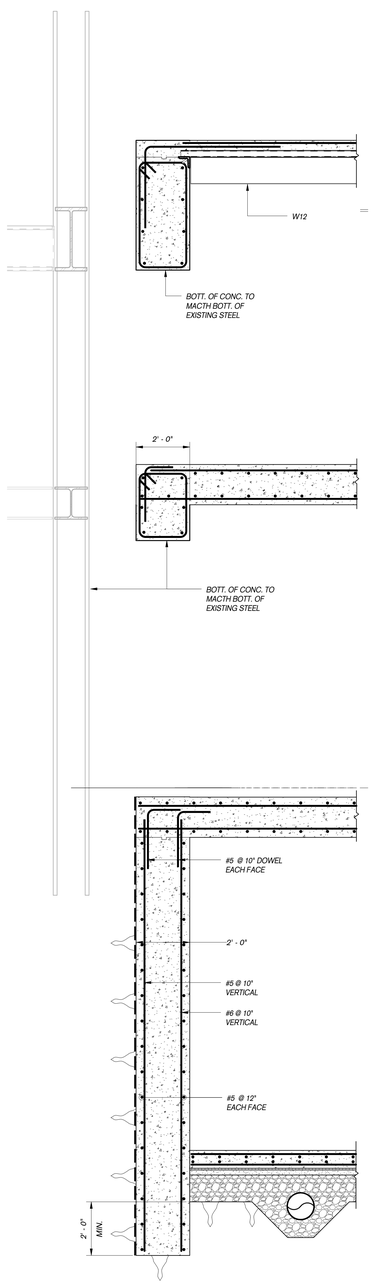

SECTION 1 / FO-204
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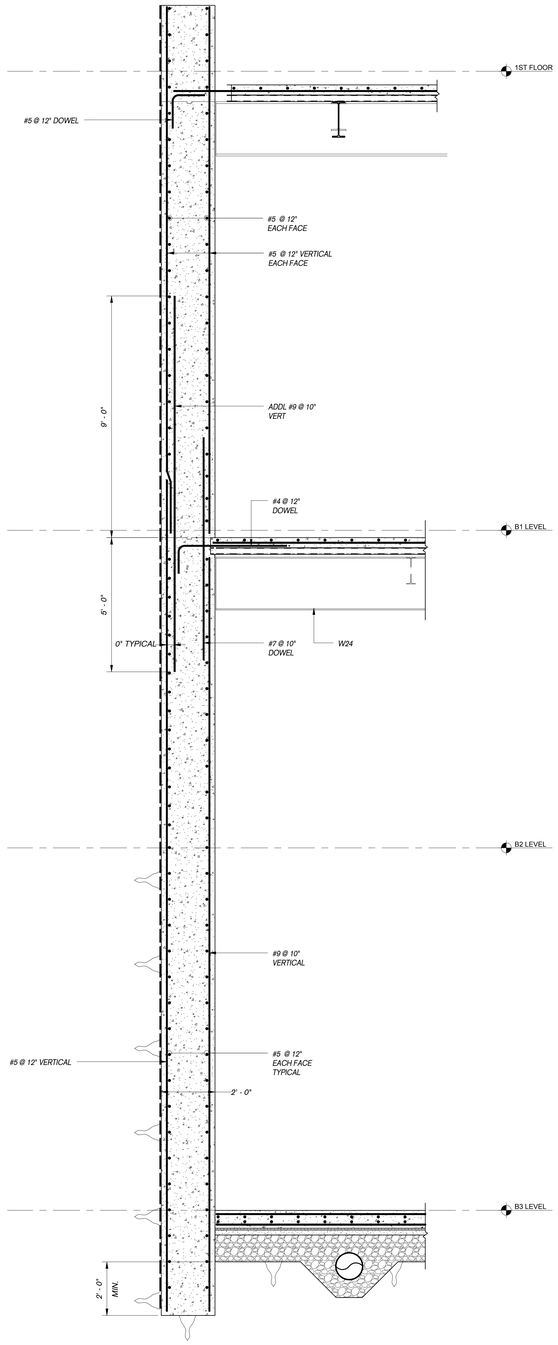

SECTION 2 / FO-204
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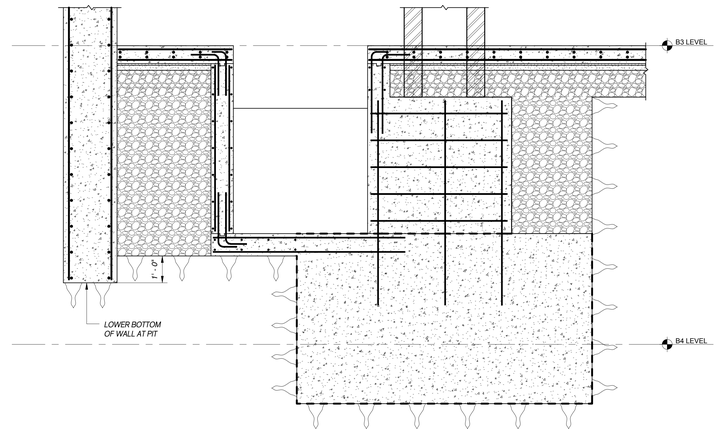

SECTION 6 / FO-204
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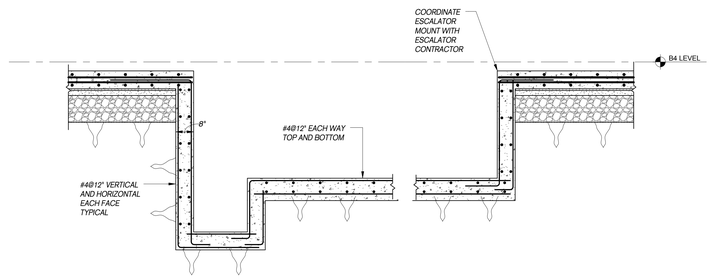

SECTION 4 / FO-204
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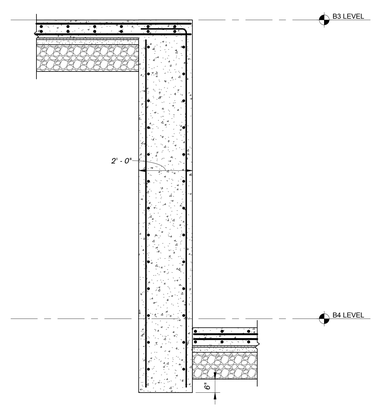

SECTION 3 / FO-204
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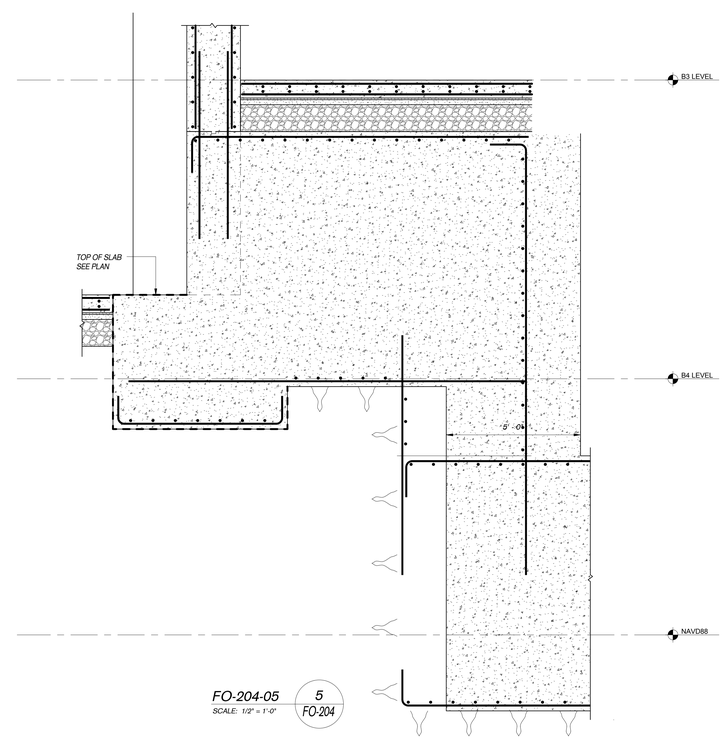
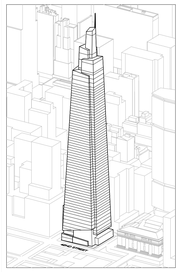


FO-204-05 / 5 / FO-204
SCALE: 1/2" = 1'-0"

ONE VANDERBILT



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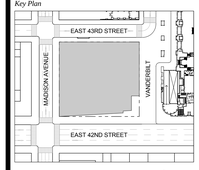
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



Issue Date:	09-01-2015
Project No.	14500
Drawn By	
Scale	1/2" = 1'-0"

Drawing Title
FOUNDATIONS SECTIONS 4

Drawing Number
FO-204.00
SHEET 6 OF 11

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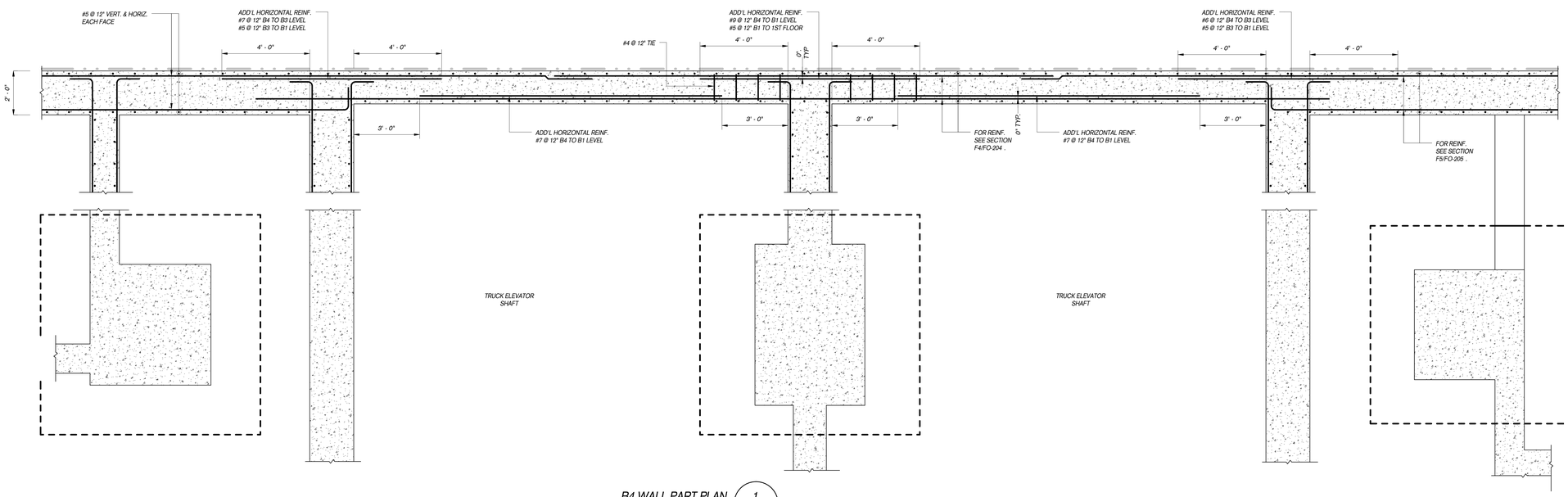
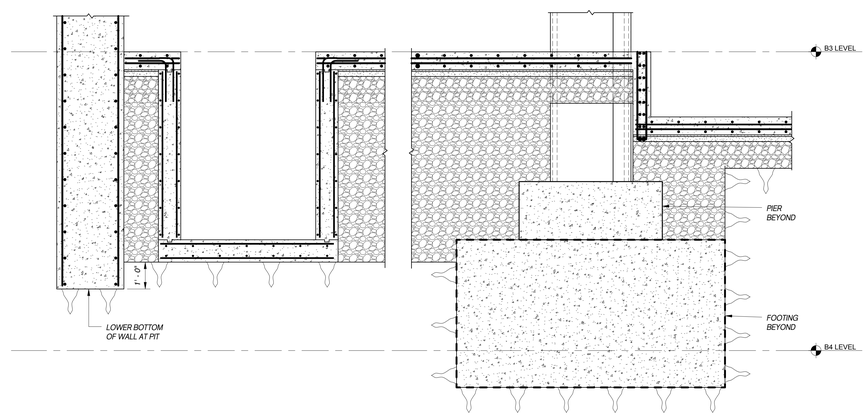
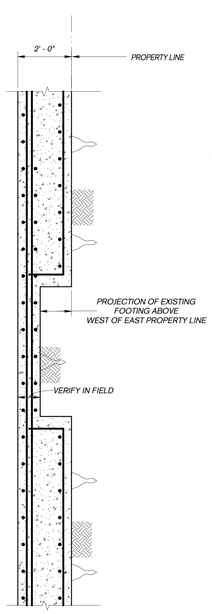


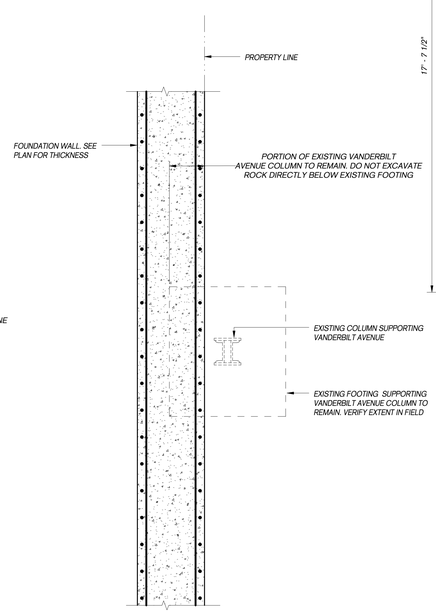
B4 WALL PART PLAN 1/FO205
1/2" = 1'-0"



SECTION 7/FO-205
SCALE: 1/2" = 1'-0"



PLAN DETAIL 2/FO205
1/2" = 1'-0"



PLAN DETAIL 3/FO205
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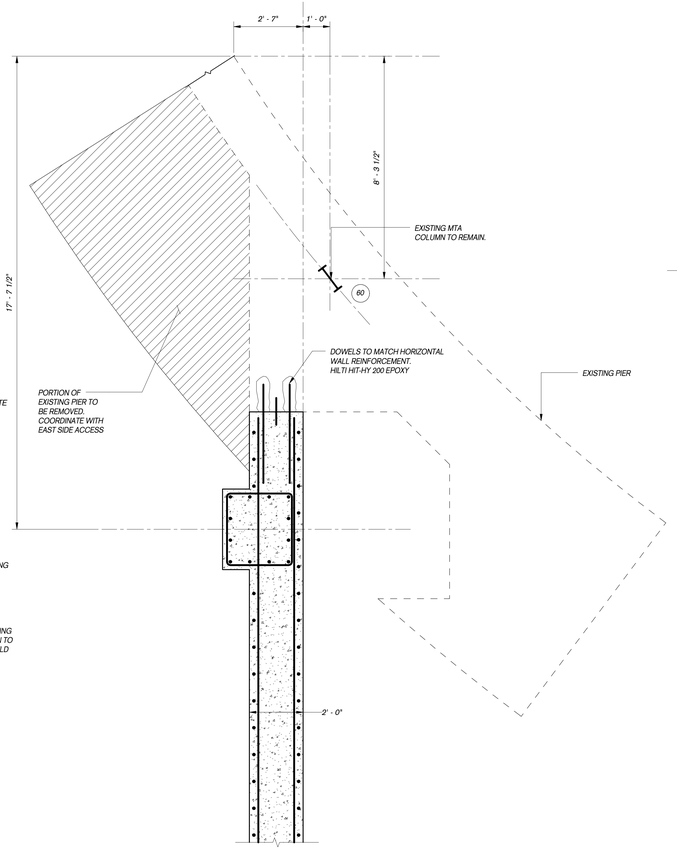

PLAN DETAIL 4/FO205
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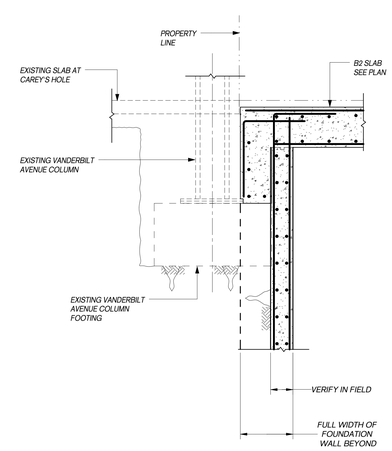
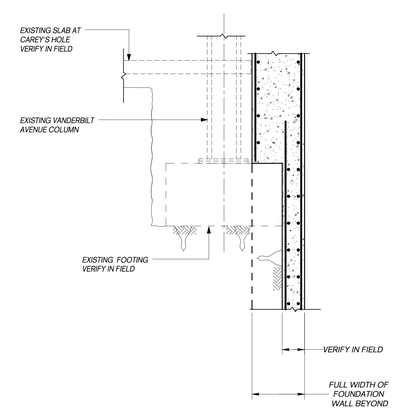
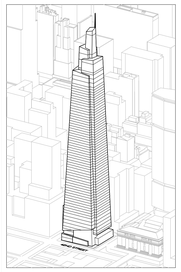


SECTION 5/FO205
1/2" = 1'-0"



SECTION 6/FO205
1/2" = 1'-0"

ONE VANDERBILT



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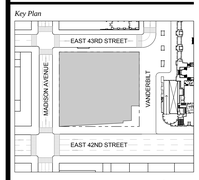
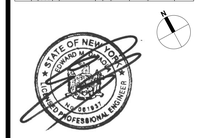
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan





Issue Date:	09-01-2015
Project No.	14500
Drawn By	
Scale	1/2" = 1'-0"

Drawing Title
FOUNDATIONS SECTIONS 5

Drawing Number
FO-205.00

SHEET 7 OF 11

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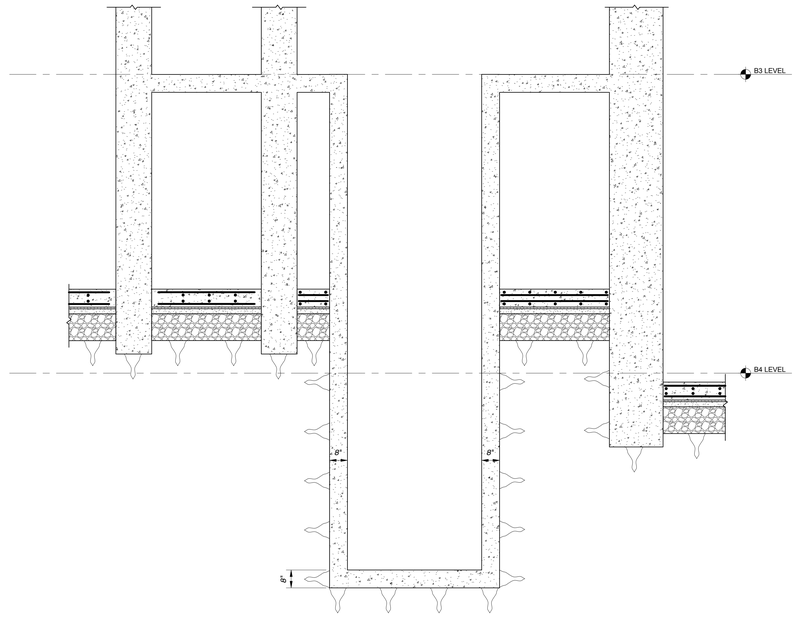
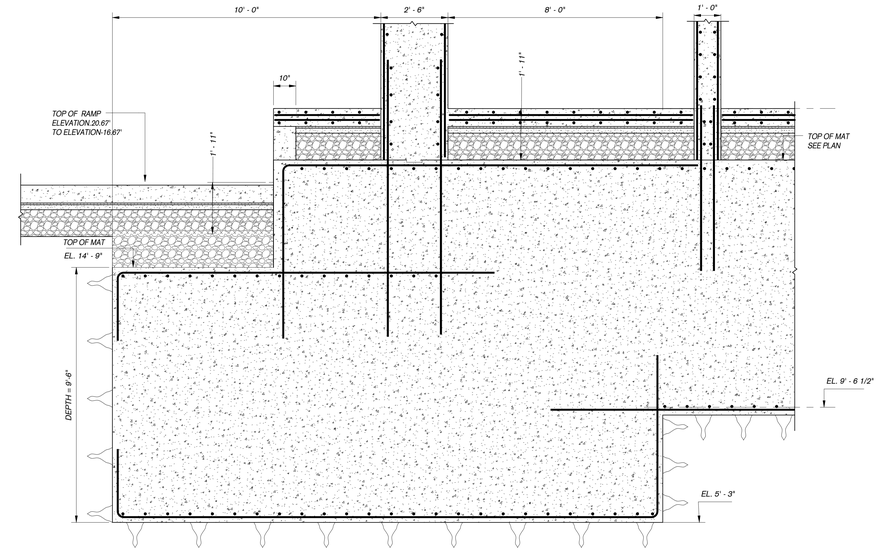
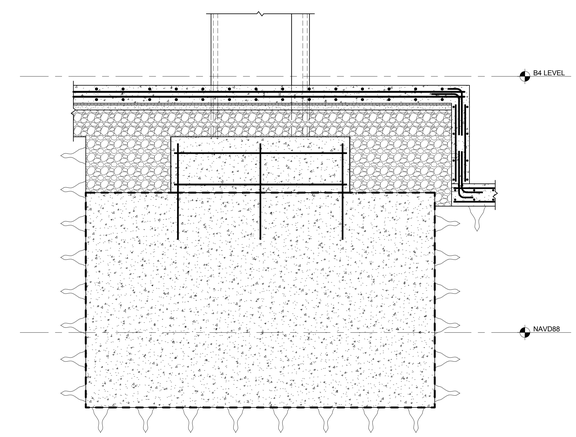


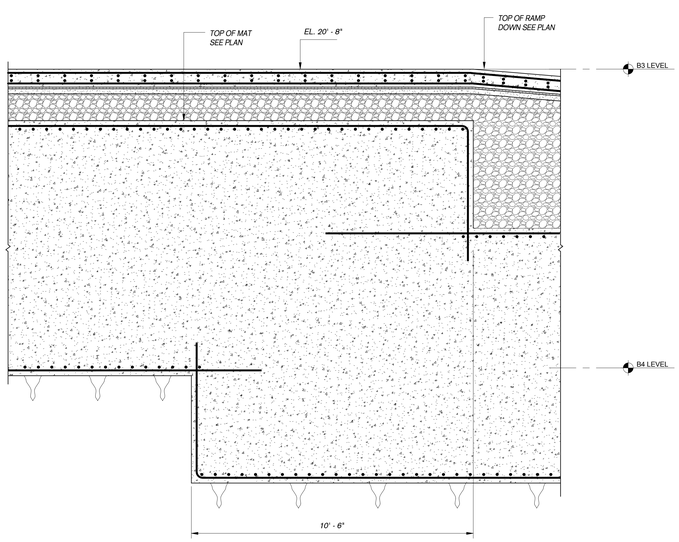
SECTION 2
SCALE: 1/2" = 1'-0"
FO-206



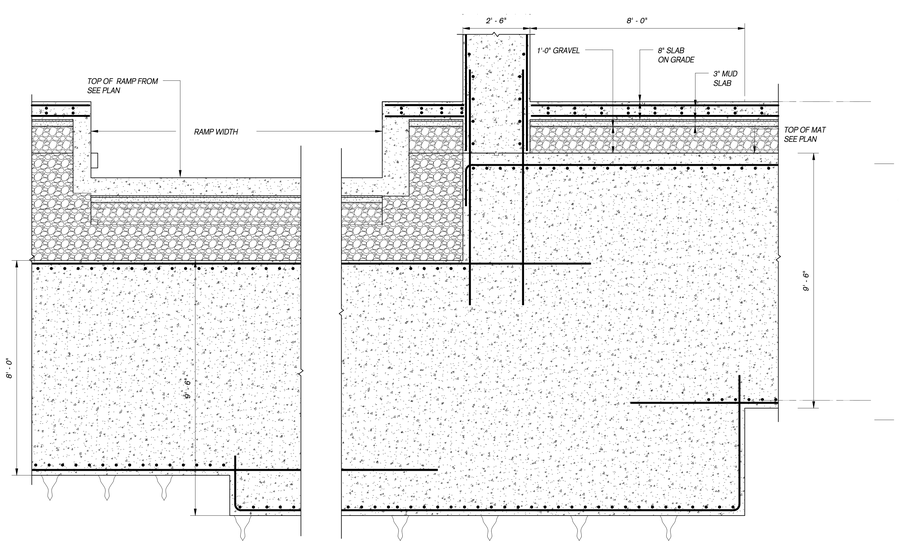
SECTION 3
SCALE: 1/2" = 1'-0"
FO-206



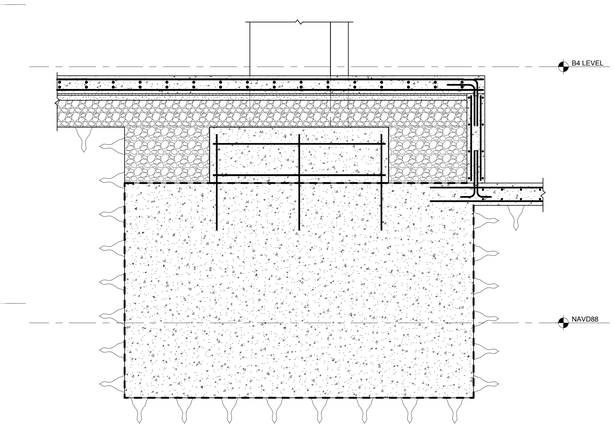
SECTION 7
SCALE: 1/2" = 1'-0"
FO-206



SECTION 4
SCALE: 1/2" = 1'-0"
FO-206

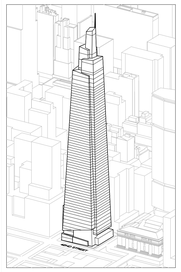


SECTION 5
SCALE: 1/2" = 1'-0"
FO-206



SECTION 6
SCALE: 1/2" = 1'-0"
FO-206

ONE VANDERBILT



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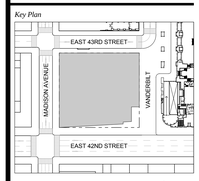
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



Issue Date: 09-01-2015
Project No. 14500
Drawn By
Scale 1/2" = 1'-0"

Drawing Title
FOUNDATIONS SECTIONS 6

Drawing Number
FO-206.00

SHEET 8 OF 11

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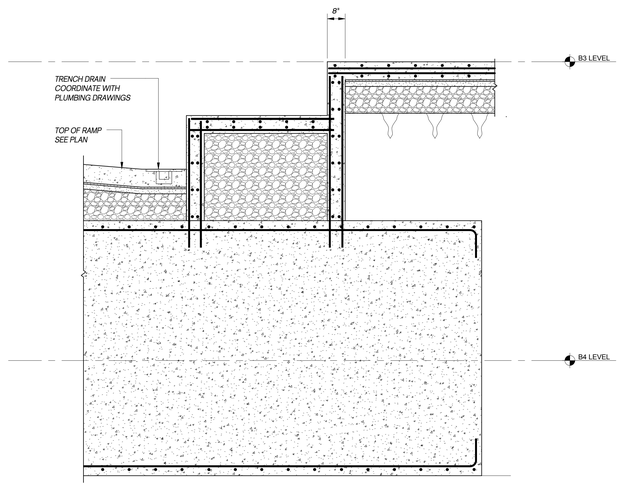
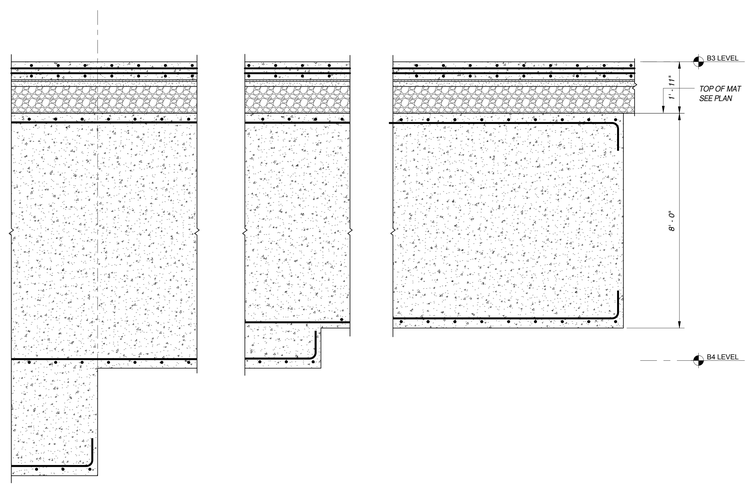
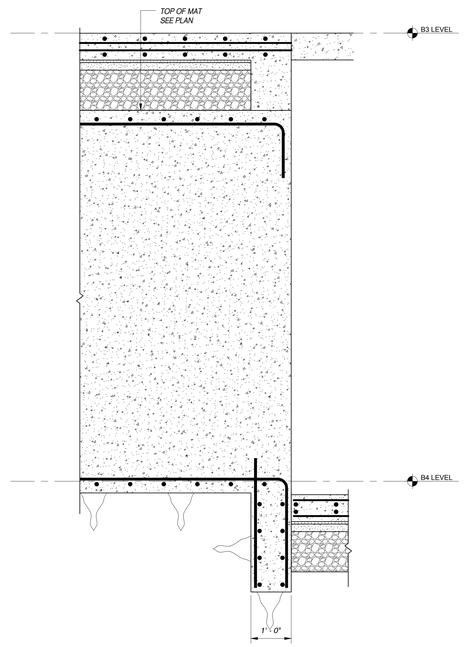


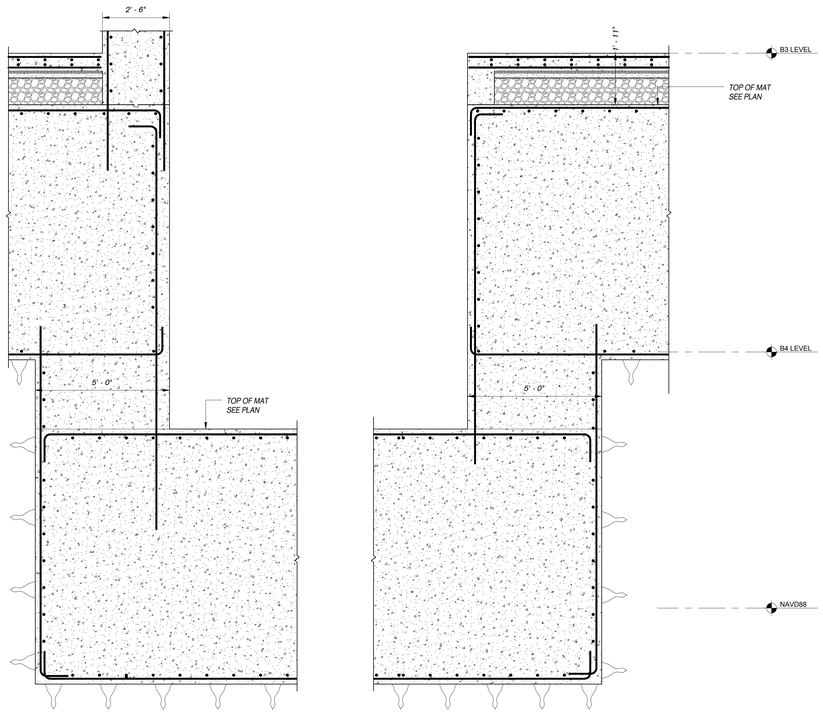
SECTION 1 / FO-207
SCALE: 1/2" = 1'-0"



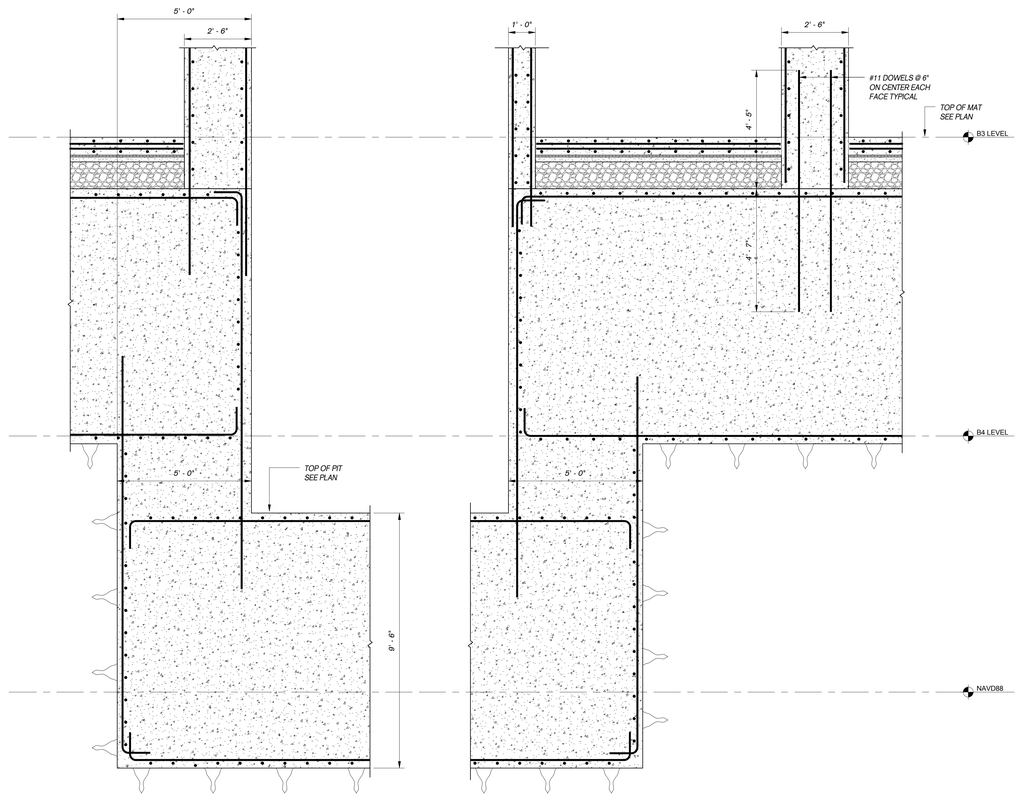
SECTION 2 / FO-207
SCALE: 1/2" = 1'-0"



SECTION 3 / FO-207
SCALE: 3/4" = 1'-0"

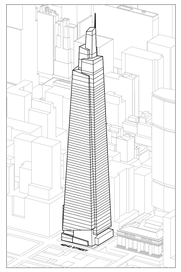


SECTION 4 / FO-207
SCALE: 1/2" = 1'-0"



SECTION 5 / FO-207
SCALE: 1/2" = 1'-0"

ONE VANDERBILT



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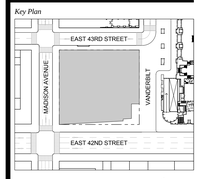
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



Issue Date: 09-01-2015
Project No. 14500
Drawn By
Scale As indicated

Drawing Title
FOUNDATIONS SECTIONS 7

Drawing Number
FO-207.00

SHEET 9 OF 11

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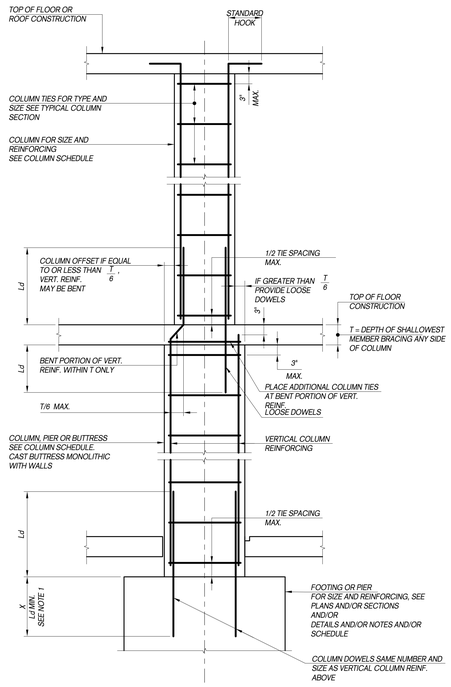
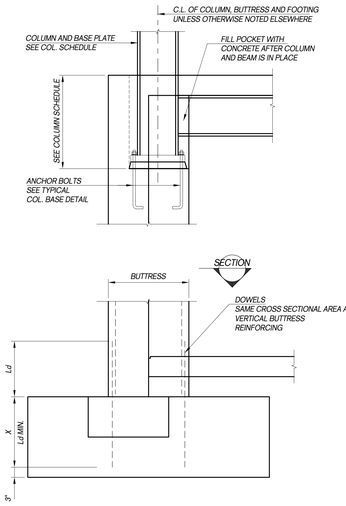


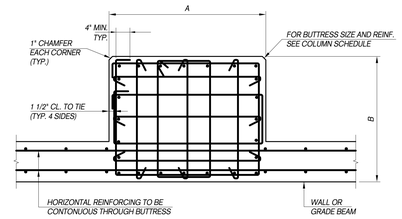
NOTES:

1. IF X IS LESS THAN Ld INCREASE TOTAL AREA OF DOWELS BY Ld/X.
2. DEVELOPMENT LENGTH Ld TO BE DETERMINED IN ACCORDANCE WITH THE REQUIREMENTS OF ACI 318, CHAPTER 12.

TYPICAL COLUMN DETAIL



VERTICAL BAR DIAMETER	TIES	
	BAR SIZE	SPACING
#5	#3	10"
#6	#3	12"
#7	#3	14"
#8	#3	16"
#9	#3	18"
#10	#3	18"
#11 OR LARGER	#4	18"

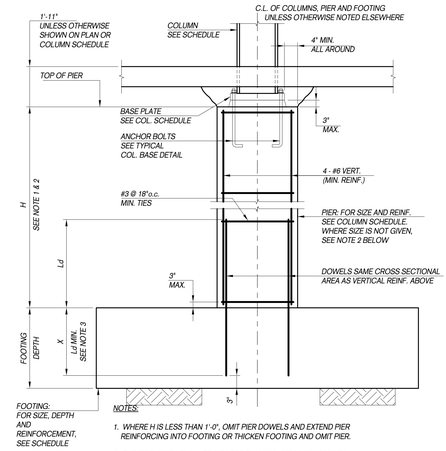


SECTION

NOTES:

1. TIES SHALL BE ARRANGED SUCH THAT EVERY CORNER AND ALTERNATE LONGITUDINAL BAR SHALL HAVE LATERAL SUPPORT PROVIDED BY THE CORNER OF A TIE WITH AN INCLUDED ANGLE OF NOT MORE THAN 135 DEGREES. IF ANY BAR SHALL BE FARTHER THAN 6 INCHES CLEAR ON EACH SIDE ALONG THE TIE FROM A LATERALLY SUPPORTED BAR, LATERAL SUPPORT (SHOWN DOTTED) SHALL BE PROVIDED FOR THESE BARS
2. IF THE DIMENSION A OR B IS LESS THAN THE TIE SPACING SHOWN, THE SPACING SHALL BE DECREASED TO EQUAL A OR B WHICHEVER IS SMALLER
3. IF X IS LESS THAN Ld, INCREASE AREA OF DOWELS BY $\frac{Ld}{X}$.
4. DEVELOPMENT LENGTH Ld TO BE DETERMINED IN ACCORDANCE WITH THE REQUIREMENTS OF ACI 318, CHAPTER 12.

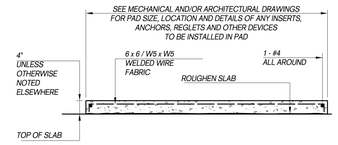
TYPICAL STEEL COLUMN SUPPORTED ON BUTTRESS DETAIL



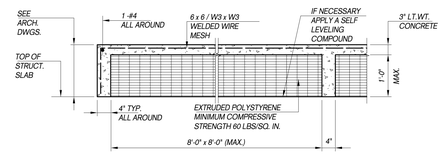
NOTES:

1. WHERE H IS LESS THAN 1'-0", OMIT PIER DOWELS AND EXTEND PIER REINFORCING INTO FOOTING OR THICKEN FOOTING AND OMIT PIER.
2. THE PIER WIDTH SHALL BE NO LESS THAN H/3, OR AS NECESSARY TO FIT BASE PLATE AND CONCRETE PROTECTION
3. IF X IS LESS THAN Ld INCREASE TOTAL AREA OF DOWELS BY $\frac{Ld}{X}$
4. DEVELOPMENT LENGTH Ld TO BE DETERMINED IN ACCORDANCE WITH THE REQUIREMENTS OF ACI 318, CHAPTER 12.

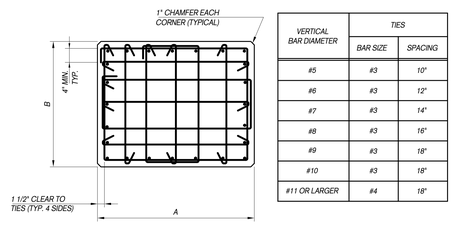
TYPICAL INTERIOR STEEL COLUMN SUPPORTED ON PIER DETAIL



TYPICAL MECHANICAL PAD DETAIL



TYPICAL "RAISED SLAB" DETAIL

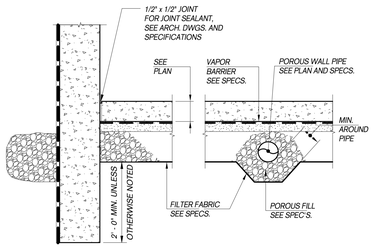


VERTICAL BAR DIAMETER	TIES	
	BAR SIZE	SPACING
#5	#3	10"
#6	#3	12"
#7	#3	14"
#8	#3	16"
#9	#3	18"
#10	#3	18"
#11 OR LARGER	#4	18"

NOTES:

1. TIES SHALL BE ARRANGED SUCH THAT EVERY CORNER AND ALTERNATE LONGITUDINAL BAR SHALL HAVE LATERAL SUPPORT PROVIDED BY THE CORNER OF A TIE WITH AN INCLUDED ANGLE OF NOT MORE THAN 135 DEGREES. IF ANY BAR SHALL BE FARTHER THAN 6 INCHES CLEAR ON EACH SIDE ALONG THE TIE FROM A LATERALLY SUPPORTED BAR. LATERAL SUPPORT (SHOWN DOTTED) SHALL BE PROVIDED FOR THESE BARS
2. IF THE DIMENSION A OR B IS LESS THAN THE TIE SPACING SHOWN, THE SPACING SHALL BE DECREASED TO EQUAL A OR B WHICHEVER IS SMALLER.

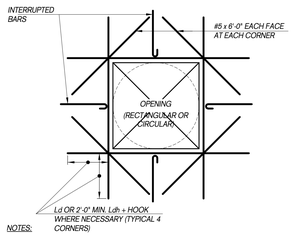
TYPICAL COLUMN SECTION



NOTE:

1. THESE DETAILS SHALL BE USED IN CONJUNCTION WITH ARCHITECTURAL AND PLUMBING DRAWINGS

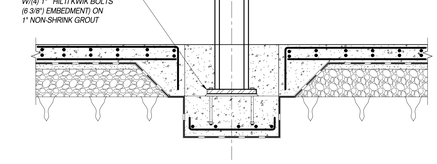
TYPICAL UNDERFLOOR DRAINAGE DETAILS



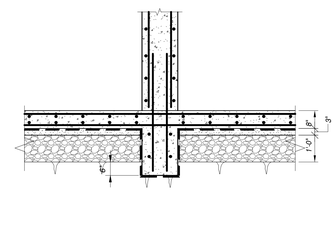
NOTES:

1. HOOK ALL INTERRUPTED BARS.
2. FOR EACH FACE 50% OF REINFORCING BAR AREA INTERRUPTED BY OPENING SHALL BE PROVIDED EACH SIDE OF OPENING #5 MIN. EACH SIDE IN EACH FACE.
3. DEVELOPMENT LENGTH Ld OR Ldh TO BE DETERMINED IN ACCORDANCE WITH THE REQUIREMENTS OF ACI318 CHAPTER 12.

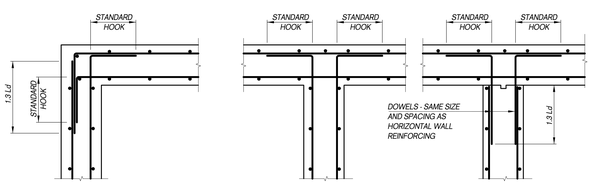
TYPICAL DETAIL OF OPENING IN CONCRETE WALLS



TYPICAL TEMPORARY POST BASE DETAIL



TYPICAL WALL...



CORNER

CAST MONOLITHICALLY

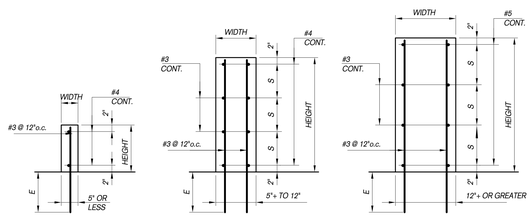
CAST SEPARATELY

INTERSECTION

NOTE:

1. DEVELOPMENT LENGTH Ld TO BE DETERMINED IN ACCORDANCE WITH THE REQUIREMENTS OF ACI 318, CHAPTER 12.

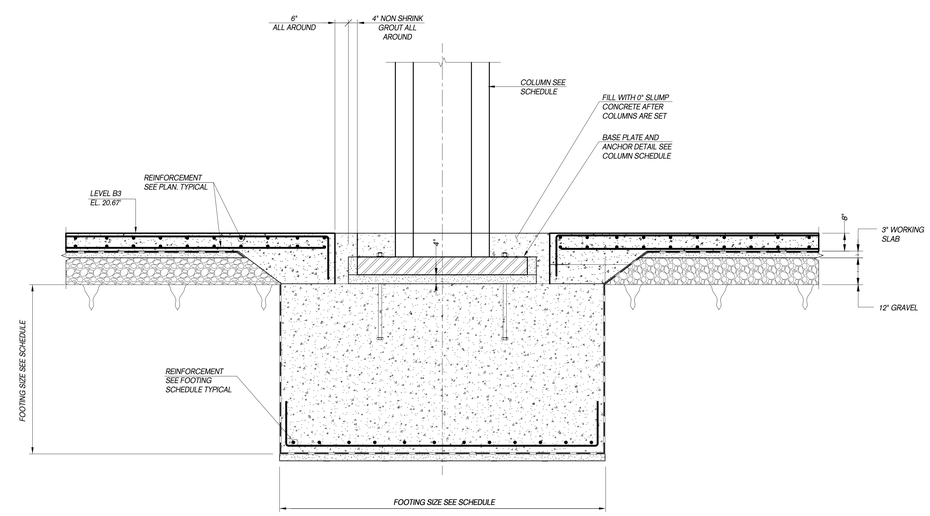
TYPICAL CONCRETE WALL CORNER AND INTERSECTION DETAILS



NOTES:

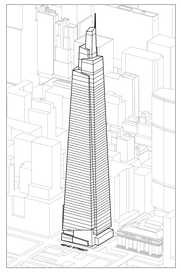
1. S SHALL NOT BE GREATER THAN 12".
2. THE HEIGHT OF CURBS SHALL NOT BE GREATER THAN 3 TIMES THE CURB WIDTH.
3. E SHALL BE 1'-0" MIN. OR HOOK.
4. FOR CURB SIZE AND LOCATIONS, SEE ARCHITECTURAL DRAWINGS AND/OR MECHANICAL AND/OR OTHER CONTRACT DOCUMENTS.

TYPICAL CONCRETE CURB DETAIL



TYPICAL COLUMN BASE DETAIL

ONE VANDERBILT



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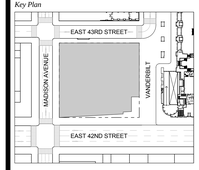
Key Plan



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Project No. 14500
Drawn By
Scale As indicated

Drawing Title
FOUNDATION TYPICAL DETAILS 1

Drawing Number
FO-251.00

SHEET 10 OF 11

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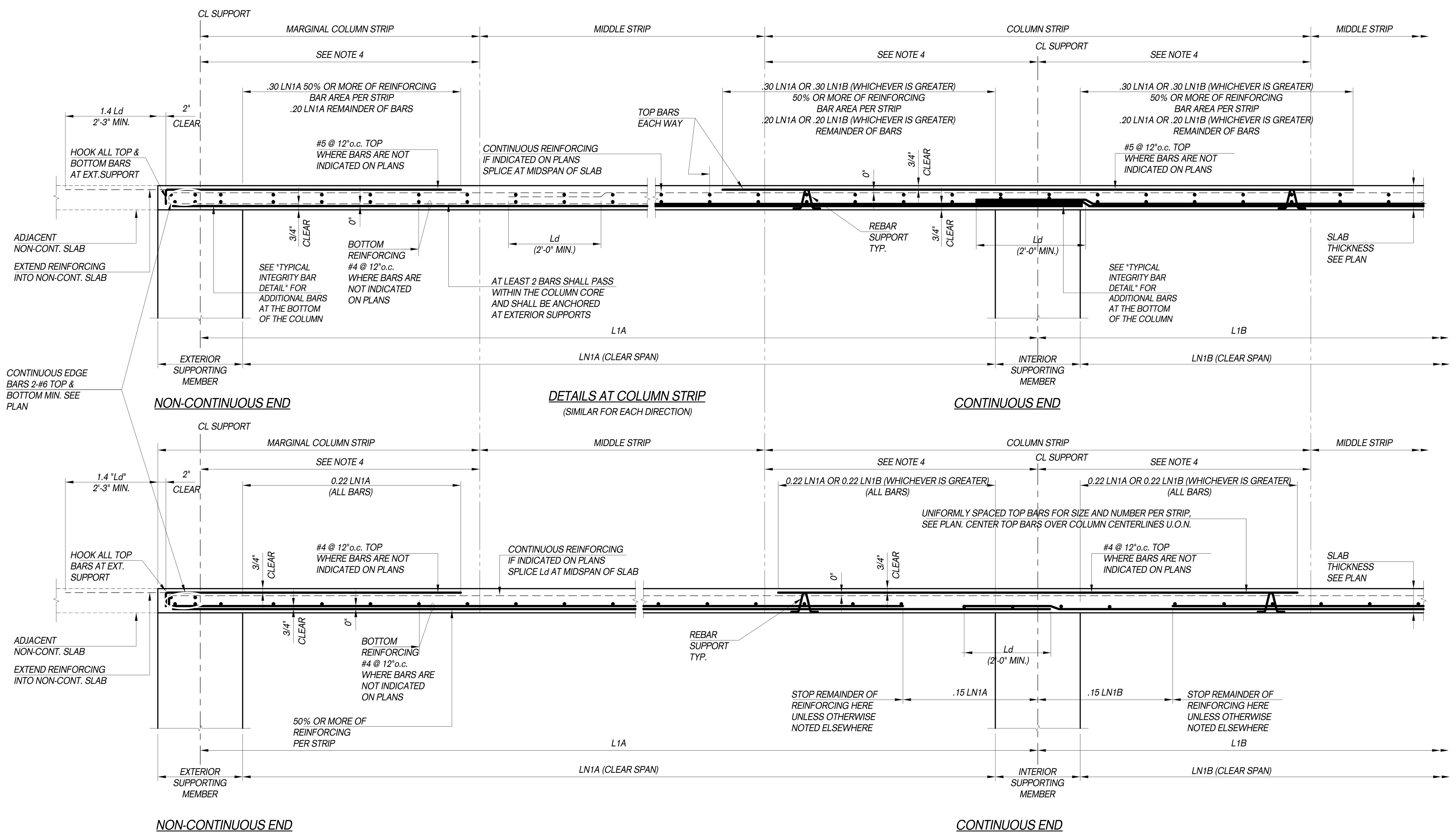
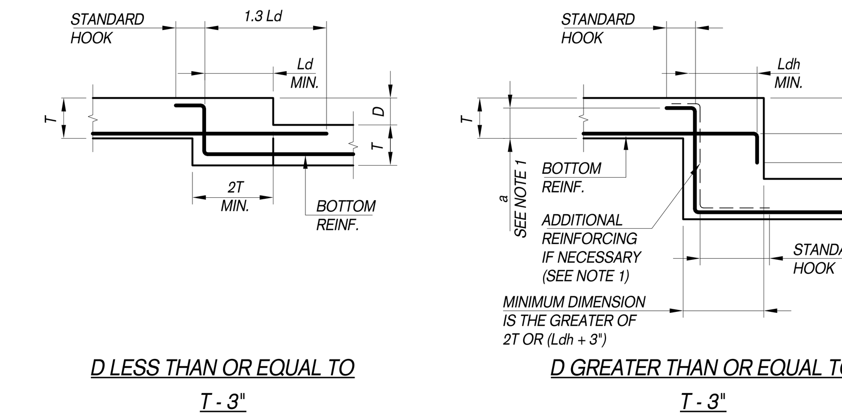


DETAILS AT MIDDLE STRIP

NOTES:

1. FOR SIZE AND NUMBER OF ALL TOP AND BOTTOM BARS, SEE PLANS AND/OR SCHEDULES.
2. DEVELOPMENT LENGTH Ld TO BE DETERMINED IN ACCORDANCE WITH THE REQUIREMENTS OF ACI 318, CHAPTER 12.
3. AT INTERIOR SUPPORTS LN1A AND LN1B IS THE CLEAR SLAB SPAN TO THE LEFT AND RIGHT OF SUPPORT.
4. COLUMN STRIP DIMENSIONS TO BE DETERMINED IN ACCORDANCE WITH THE REQUIREMENT OF ACI 318, CHAPTER 13 UNLESS NOTED OTHERWISE ON PLANS.
5. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR PROVIDING THE TYPE, SIZE, LOCATION AND FREQUENCY OF REBAR SUPPORTS AND THE MEANS AND METHODS TO ASSURE THAT THE REINFORCEMENT IS ACCURATELY PLACED AND IS ADEQUATELY SUPPORTED BEFORE CONCRETE IS PLACED, AND ADEQUATELY SECURED AGAINST DISPLACEMENT BY CONCRETE PLACEMENT OR CONSTRUCTION PERSONNEL.

TYPICAL FLAT SLAB DETAILS



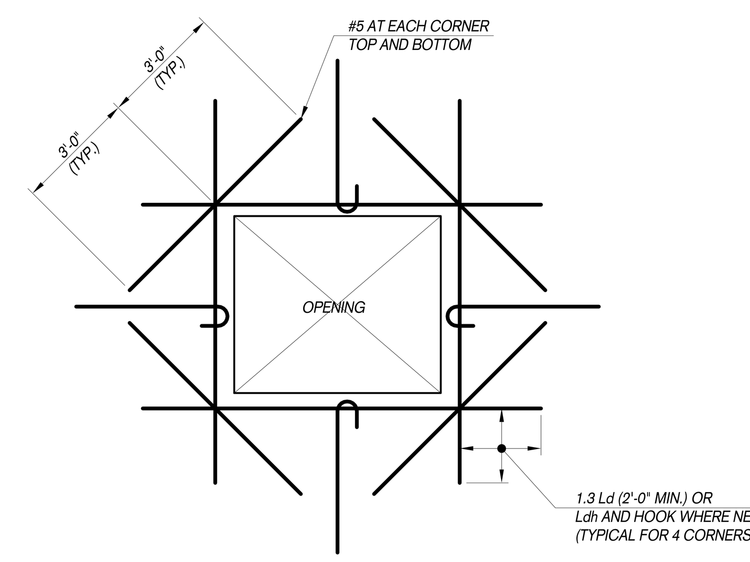
D LESS THAN OR EQUAL TO T - 3"

D GREATER THAN OR EQUAL TO T - 3"

NOTES:

1. IF DIMENSION "a" IS LESS THAN Ldh, PROVIDE ADDITIONAL REINFORCING OF SAME SIZE SUCH THAT THE TOTAL AMOUNT OF REINFORCING IS INCREASED BY THE FACTOR (Ldh/a).
2. DEVELOPMENT LENGTH Ld AND Ldh TO BE DETERMINED IN ACCORDANCE WITH THE REQUIREMENTS OF ACI 318, CHAPTER 12.
3. WHERE TOP REINFORCING OCCURS, PROVIDE SIMILAR DETAIL.

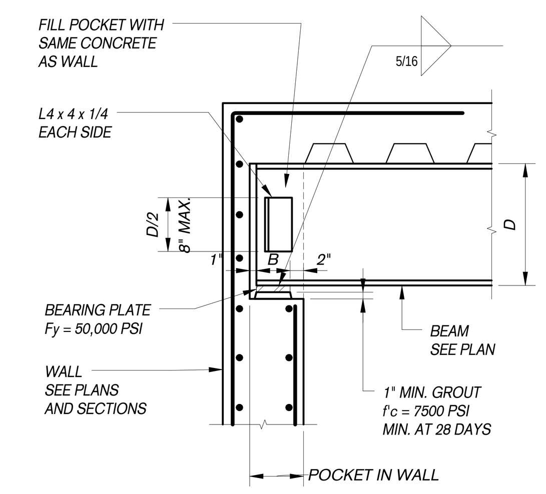
TYPICAL CHANGE IN SLAB ELEVATION DETAIL



NOTES:

1. HOOK ALL TOP BARS INTERRUPTED BY OPENING.
2. ONE HALF OF REINFORCING BARS INTERRUPTED BY OPENING SHALL BE PROVIDED EACH SIDE OF OPENING (SAME NUMBER AND SIZE) MINIMUM 1 - #5 TOP AND BOTTOM.
3. SLAB REINFORCING MAY BE SPREAD TO MISS OPENINGS BUT SPACING BETWEEN SLAB REINFORCING BARS SHALL NOT EXCEED 3 TIMES SLAB THICKNESS NOR 18".
4. DEVELOPMENT LENGTH Ld AND Ldh TO BE DETERMINED IN ACCORDANCE WITH THE REQUIREMENT OF ACI 318, CHAPTER 12.
5. DO NOT CONSTRUCT OPENINGS THROUGH FLAT SLABS. IN AREAS COMMON TO TWO COLUMN STRIPS UNLESS OPENINGS ARE DIMENSIONED AND SPECIFICALLY DETAILED ON FRAMING PLANS.
6. SUBMIT SIZE AND LOCATION OF ALL PROPOSED OPENINGS NOT SHOWN ON FRAMING PLANS.

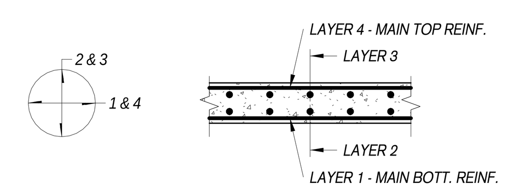
TYPICAL CONCRETE SLAB OPENING DETAIL



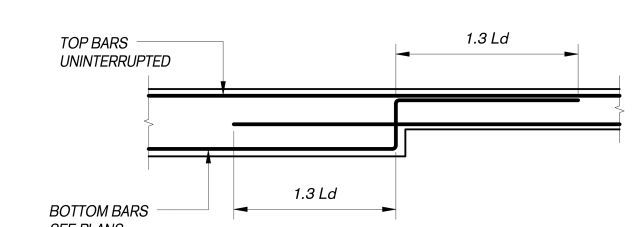
BEARING PLATE SCHEDULE

BEAM SIZE	B	THICKNESS	LENGTH
W8 THRU W12	4"	3/4"	0'-8"
W14 & W16	4"	1"	0'-10"
W18	4"	1 1/4"	0'-10"
W21	5"	1 1/4"	0'-10"
W24	6"	1 1/4"	0'-11"
W27 AND W30	7"	1 1/2"	1'-0"
LARGER THAN W30	8"	1 3/4"	1'-2"

TYPICAL BEAM BEARING PLATE DETAIL



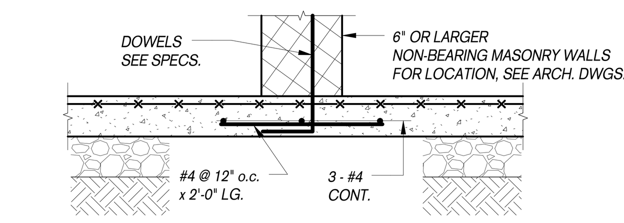
FLAT SLAB BAR PLACING ORDER



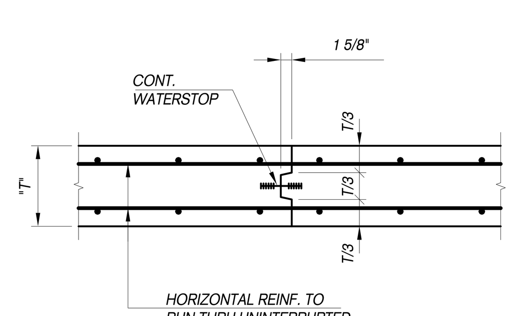
NOTE:

1. DEVELOPMENT LENGTH Ld TO BE DETERMINED IN ACCORDANCE WITH THE REQUIREMENTS OF ACI 318, CHAPTER 12.

TYPICAL CHANGE IN SLAB DEPTH DETAIL



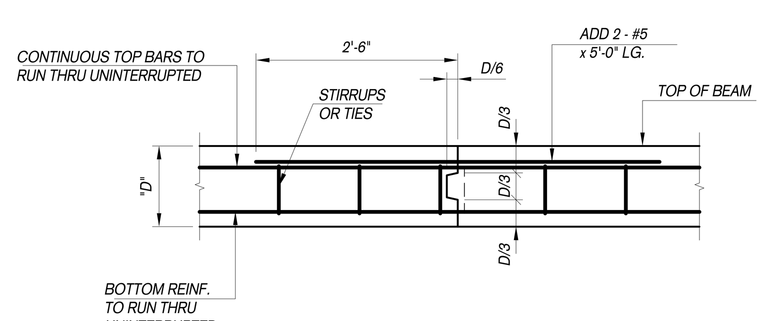
TYPICAL DETAIL AT NON BEARING MASONRY WALLS BEARING ON SLAB ON GRADE



NOTES:

1. UNLESS OTHERWISE NOTED ELSEWHERE, LOCATE JOINTS MIDWAY BETWEEN COLUMN CENTERLINES.
2. UNLESS OTHERWISE NOTED ELSEWHERE, SPACING OF JOINTS SHALL NOT EXCEED 60'-0".
3. ALLOW 7 (SEVEN) DAYS MINIMUM BETWEEN PLACING CONCRETE ADJACENT TO PREVIOUSLY CAST CONCRETE.

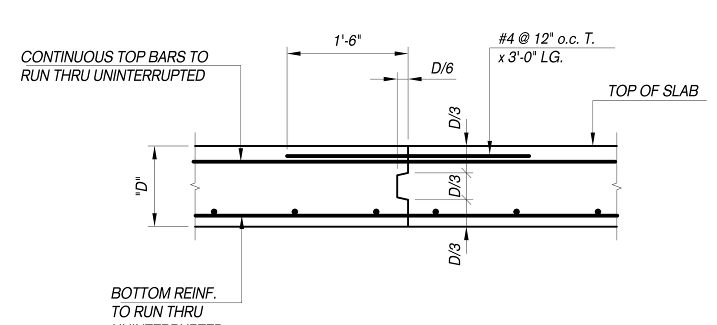
TYPICAL CONCRETE WALL CONSTRUCTION JOINT DETAIL



NOTES:

1. UNLESS OTHERWISE NOTED ELSEWHERE, LOCATE JOINTS MIDWAY BETWEEN COLUMN CENTERLINES.
2. UNLESS OTHERWISE NOTED ELSEWHERE, SPACING OF JOINTS SHALL NOT EXCEED 75'-0".
3. ALLOW 7 (SEVEN) DAYS MINIMUM BETWEEN PLACING CONCRETE ADJACENT TO PREVIOUSLY CAST CONCRETE.
4. CONCRETE BEAMS ARE NOT SELF SUPPORTING UNTILL BOTH SIDES OF JOINT HAVE BEEN PLACED

TYPICAL CONCRETE BEAM CONSTRUCTION JOINT DETAIL



NOTES:

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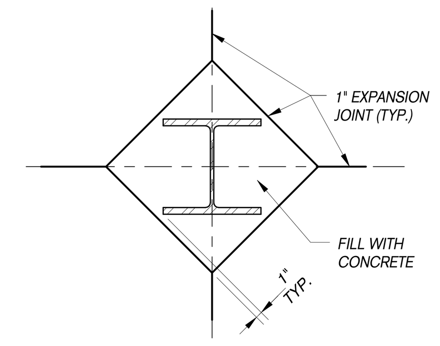
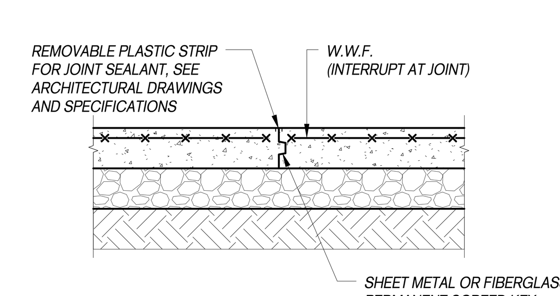
2. UNLESS OTHERWISE NOTED ELSEWHERE, SPACING OF JOINTS SHALL NOT EXCEED 75'-0".
3. ALLOW 7 (SEVEN) DAYS MINIMUM BETWEEN PLACING CONCRETE ADJACENT TO PREVIOUSLY CAST CONCRETE.
4. CONCRETE SLABS ARE NOT SELF SUPPORTING UNTILL BOTH SIDES OF JOINT HAVE BEEN PLACED

TYPICAL FRAMED CONCRETE SLAB CONSTRUCTION JOINT DETAIL



CONSTRUCTION JOINT IN BOTH DIRECTION

PLANS AT COLUMNS

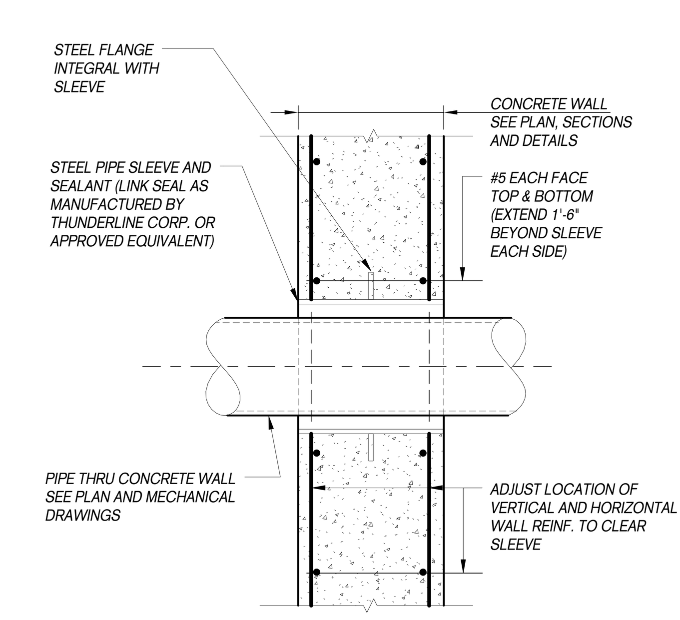


CONSTRUCTION JOINT

NOTES:

1. LOCATE SCREED KEYS ON COLUMN CENTERLINES IN EACH DIRECTION UNLESS OTHERWISE NOTED ELSEWHERE.
2. THE CONTRACTOR SHALL SUBMIT A DRAWING FOR THE ARCHITECTS REVIEW INDICATING THE LOCATION OF JOINTS AND THE SEQUENCE OF CASTINGS.

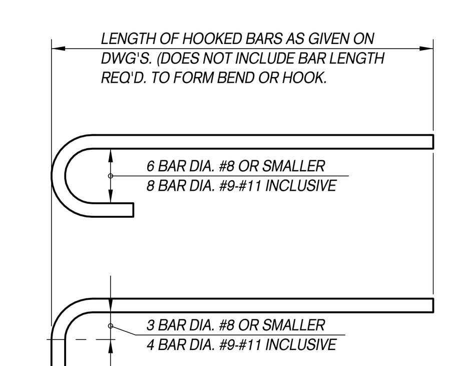
TYPICAL SLAB ON GRADE JOINT DETAILS



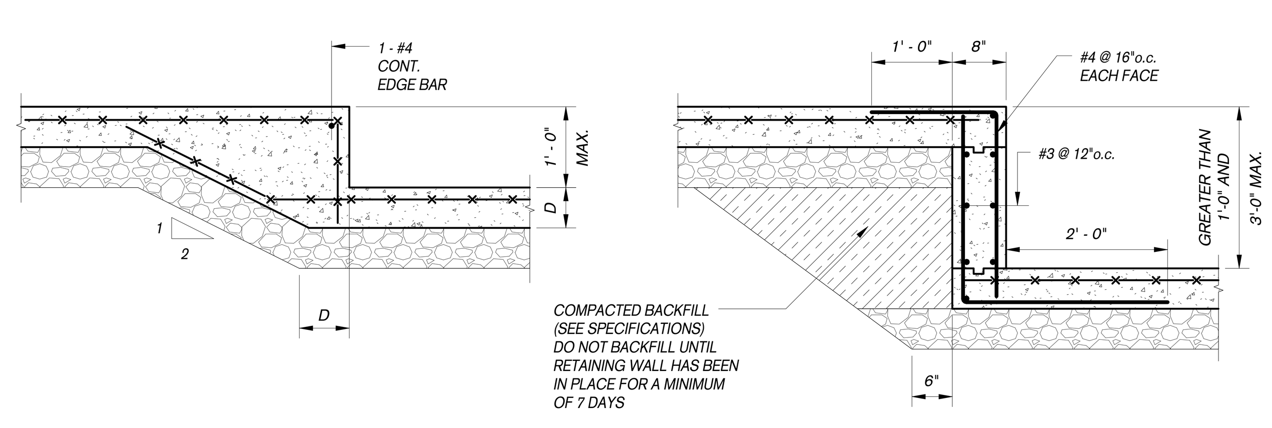
NOTES: 1. COORDINATE SIZE, NUMBER AND LOCATION OF ALL PIPES AND SLEEVES WITH MECHNICAL DRAWINGS.

2. DETAIL SHOWN IS FOR INDIVIDUAL SLEEVES. WHERE SLEEVES OCCUR IN GROUPS, STEEL FLANGES MAY BE COMBINED INTO SINGLE PIECE.

TYPICAL WALL SLEEVE DETAIL

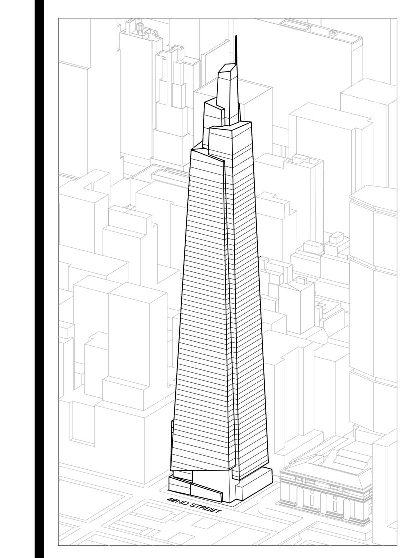


TYPICAL HOOK DETAILS



TYPICAL SLAB ON GRADE DEPRESSION DETAILS

ONE VANDERBILT



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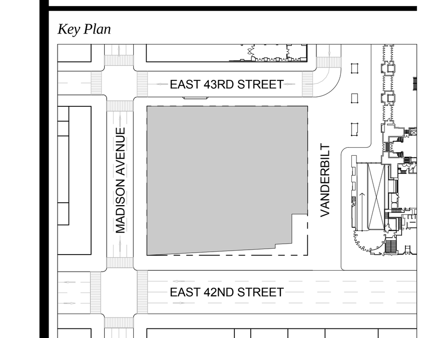
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



Issue Date: 09-01-2015
Project No. 14500
Drawn By
Scale 3/4" = 1'-0"

Drawing Title
FOUNDATION TYPICAL DETAILS 2

Drawing Number
FO-252.00
SHEET 11 OF 11

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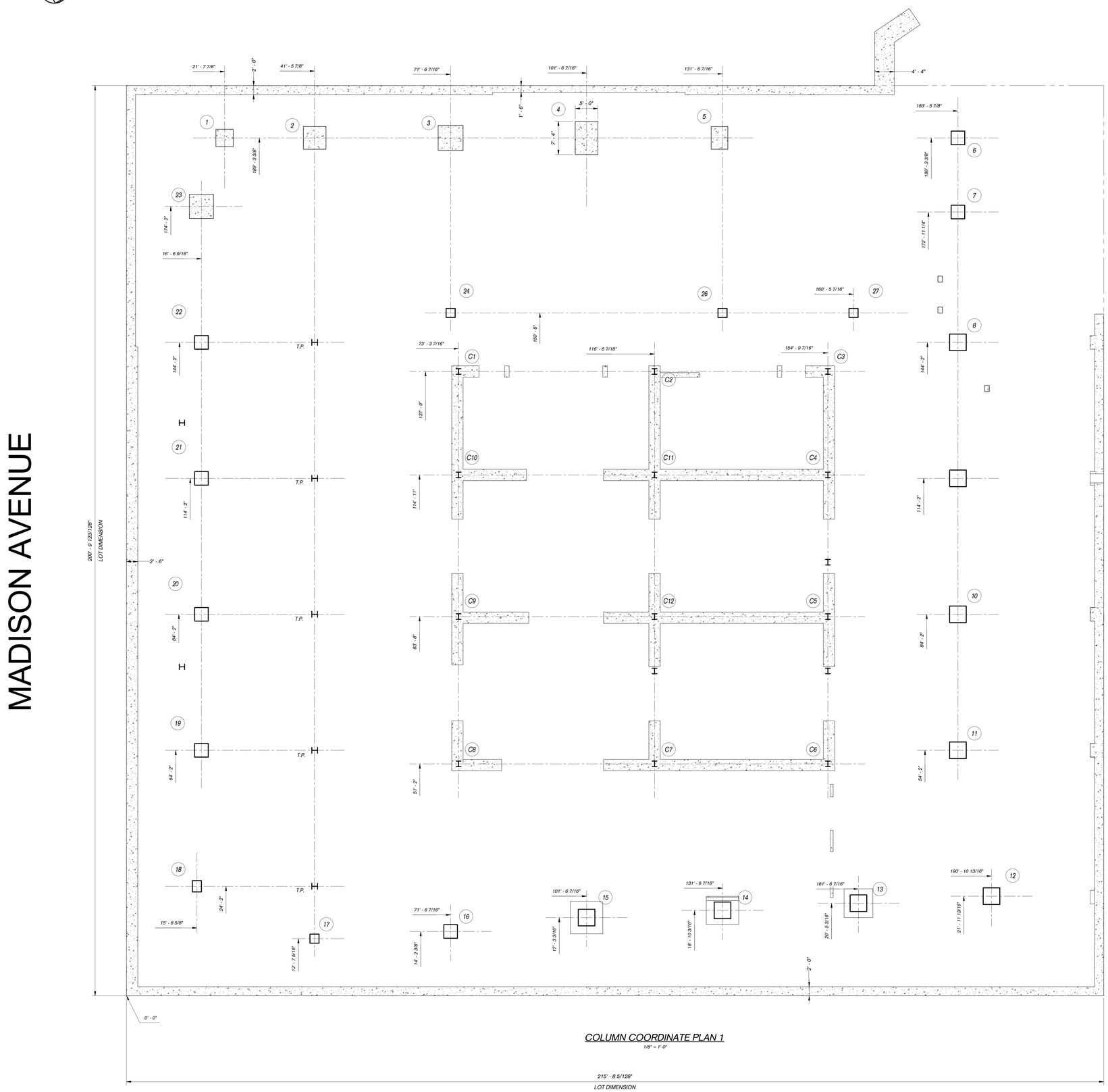
EAST 43RD STREET

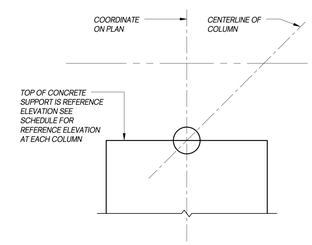


COLUMN COORDINATE PLAN 1

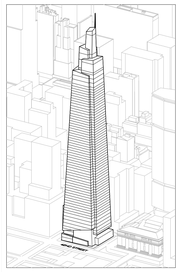
1/8" = 1'-0"

EAST 42ND STREET

COLUMN NUMBER	REFERENCE ELEVATION
1	10'-9"
2	10'-9"
3	10'-9"
4	10'-9"
5	10'-9"
6	7'-3 1/2"
7	7'-3 1/2"
8	7'-3 1/2"
9	18'-9"
10	18'-9"
11	18'-9"
12	18'-9"
13	18'-9"
14	18'-9"
15	18'-9"
16	18'-9"
17	18'-9"
18	18'-9"
19	18'-9"
20	18'-9"
21	18'-9"
22	18'-9"
23	18'-9"
24	18'-9"
26	18'-9"
27	18'-9"



ONE VANDERBILT



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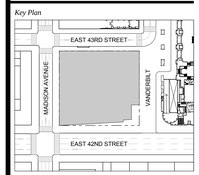
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



Issue Date: 09-01-2015
Project No. 14500
Drawn By
Scale As indicated

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Drawing Title
COLUMN COORDINATE PLAN 1

Drawing Number
S-010

SHEET 1 OF 9

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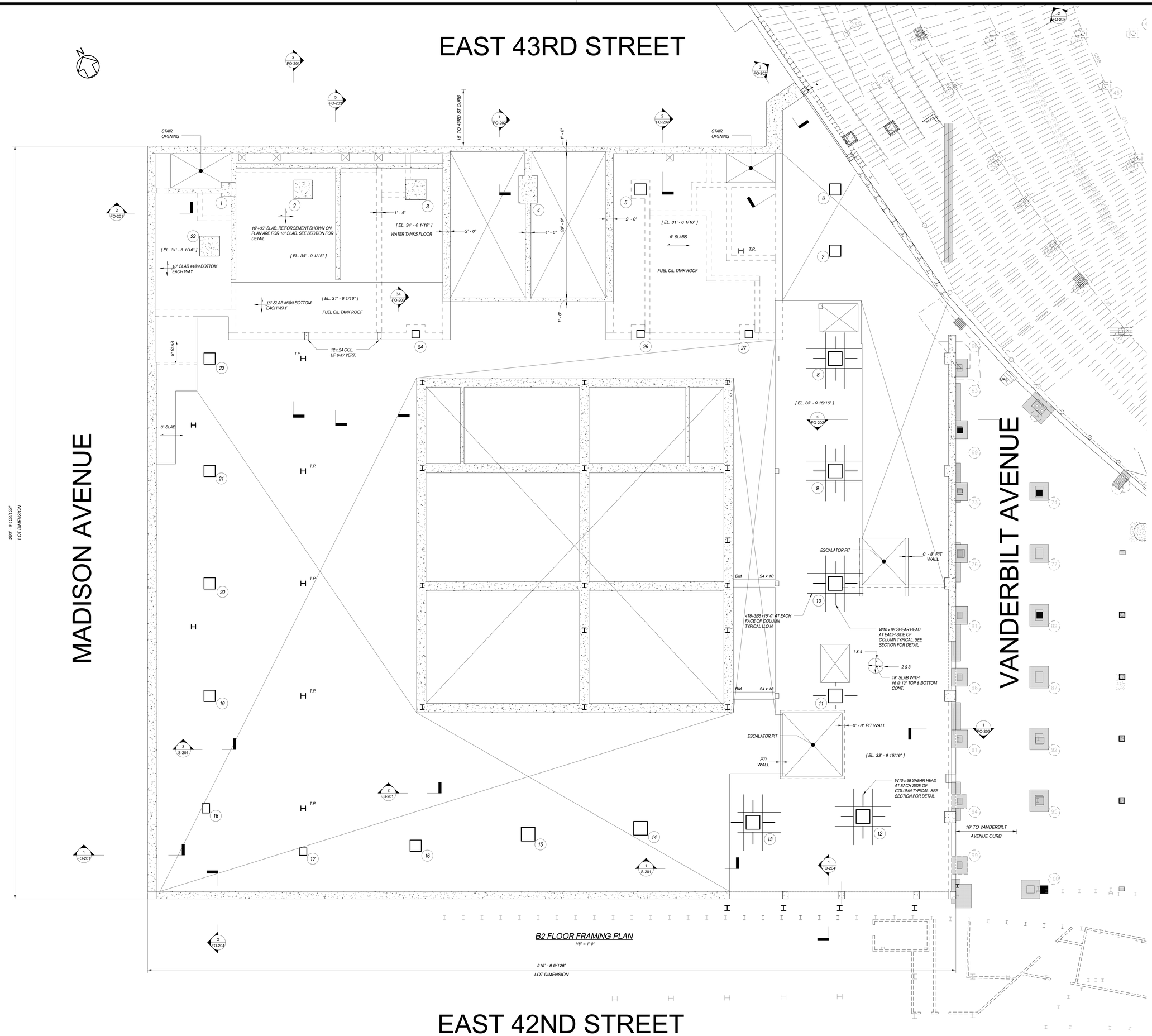
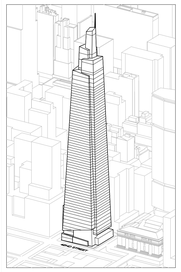


B2 FLOOR FRAMING PLAN
1/8" = 1'-0"

ONE VANDERBILT



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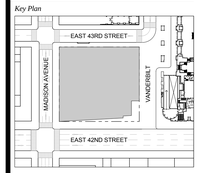
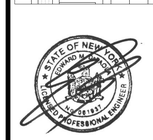
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan





Issue Date: 09-01-2015
Project No. 14500
Drawn By
Scale 1/8" = 1'-0"

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Drawing Title
B2 FLOOR FRAMING PLAN

Drawing Number
S-099.00

SHEET 2 OF 9

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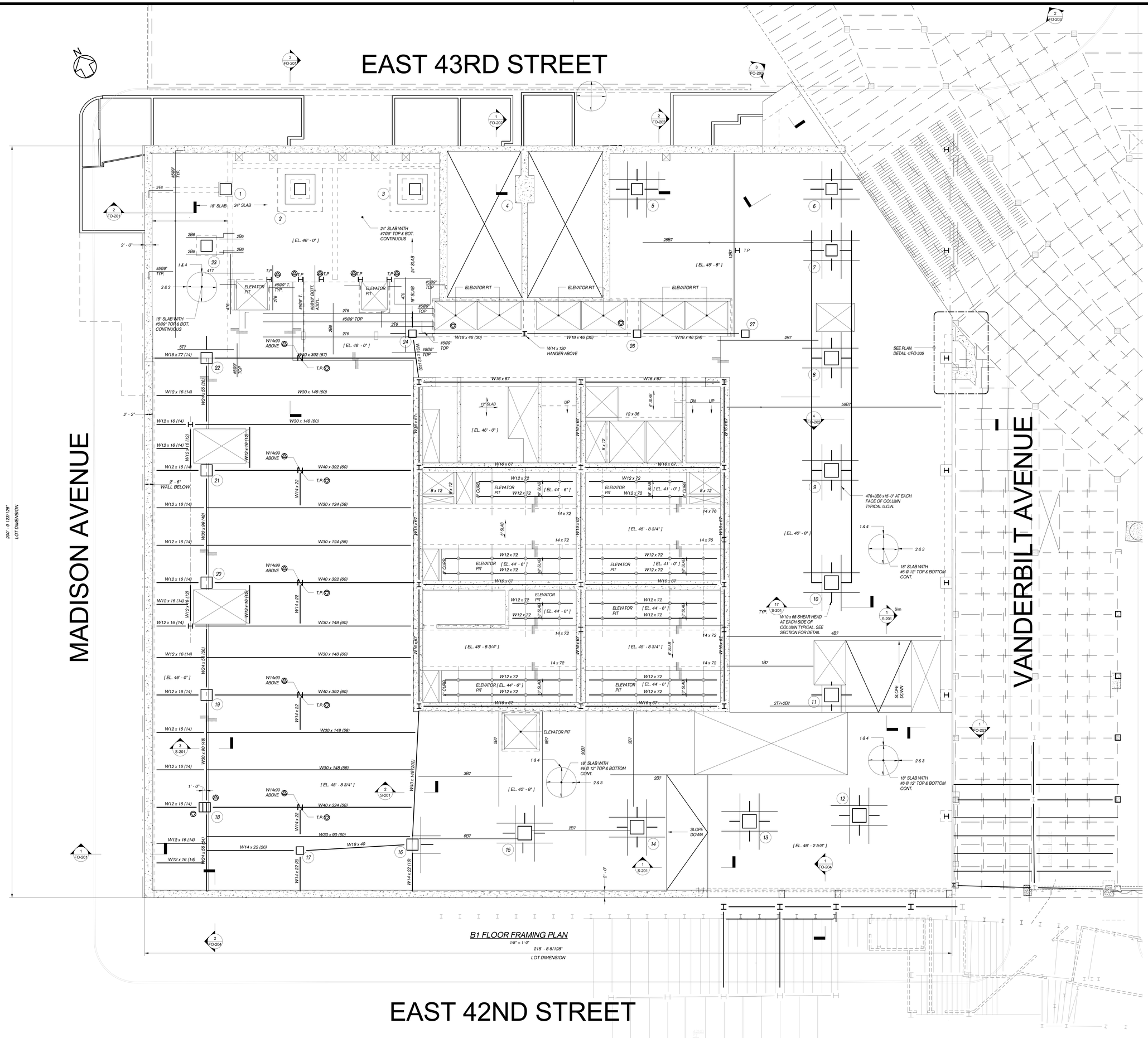
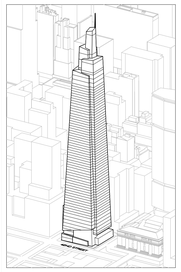


ONE VANDERBILT



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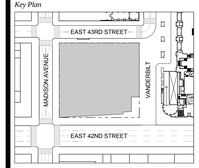
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



Issue Date:	09-01-2015
Project No.	14500
Drawn By	
Scale	1/8" = 1'-0"

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Drawing Title

B1 FLOOR FRAMING PLAN

Drawing Number

S-100.00

SHEET 3 OF 9

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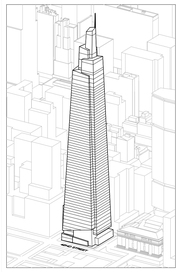
GROUND FLOOR FRAMING PLAN

1/8" = 1'-0"

ONE VANDERBILT



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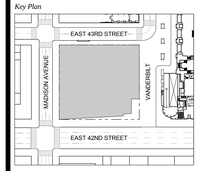
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



Issue Date:	09-01-2015
Project No.	14500
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Scale	1/8" = 1'-0"

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Drawing Title
GROUND FLOOR FRAMING PLAN

Drawing Number
S-101.00

SHEET 4 OF 9

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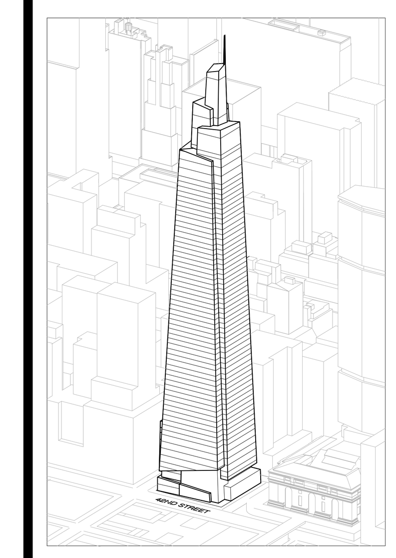
COLUMN SCHEDULE

FLOOR \ COLUMN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	26	27
9TH FLOOR EL. +233.10' (20'-0")																										
8TH FLOOR EL. +213.10' (20'-0")																										
7TH FLOOR EL. +193.10' (20'-0")																										
6TH FLOOR EL. +173.10' (24'-0")																										
5TH FLOOR EL.+149.10' (24'-0")																										
4TH FLOOR EL. +125.10' (20'-0")																										
3RD FLOOR EL. +105.10' (24'-0")																										
2ND FLOOR EL. +81.10' (18'-0")																										
GROUND FLOOR EL. +63.10' (14'-0")	W14 x 398	W14 x 426	34" x 34" x 6"	34" x 34" x 7"	24" x 24" x 4"	38" x 38" x 6"	32" x 32" x 4"	42" x 42" x 4"	44" x 44" x 8"	42" x 42" x 8"	44" x 44" x 8"	42" x 42" x 7 1/2"	32" x 32" x 6 1/2"	44" x 44" x 8"	42" x 42" x 7 1/2"	34" x 34" x 8"	24" x 24" x 3 1/2"	W14 x 665	36" x 36" x 2 1/2"	36" x 36" x 6"	36" x 36" x 6"	34" x 34" x 3"	W14 x 605	34" x 20" x 8"	26" x 20" x 8"	20" x 20" x 3"
FLOOR B1 EL. +46.00' (11'-10")																										
FLOOR B2 EL. +34.17' (13'-6")	B	P	P	B	B																					
FLOOR B3 EL. +20.67' (11'-1 1/2")									B														P	B	B	B
FLOOR B4 EL. +9.54'																										
BASE PLATE (B x t x N) t = THICKNESS Fy = 36 ksi. u.o.n	30" x 5 1/2" x 30"	32" x 6" x 32"	52" x 8" x 64" DET BP3	52" x 7 1/2" x 58"	50" x 8" x 50" DET C4 SIM	40" x 2" x 40"	46" x 6 1/2" x 46"	52" x 5" x 52"	76" x 8" x 76" DET C4 SIM	52" x 5" x 52"	52" x 4" x 52"	50" x 4" x 50"	40" x 4" x 40"	50" x 3" x 50"	50" x 4" x 50"	44" x 5" x 44"	34" x 5" x 34"	30" x 6" x 26"	44" x 4" x 44"	42" x 3" x 42"	38" x 2" x 38"	42" x 4" x 42"	34" x 6 1/2" x 34"	50" x 8" x 68" DET C4 SIM	40" x 8" x 60" DET C4 SIM	40" x 6 1/2" x 40"
PIER OR BUTTRESS	38" x 38" 12 #10	40" x 40" 14 #10	60" x 72" 36 #10	60" x 66" 32 #10	58" x 58" 28 #10	-	-	80" x 80" 52 #10	84" x 84" 56 #10	-	-	-	76" x 76" 46 #10	86" x 74" 52 #10	86" x 86" 60 #10	80" x 68" 44 #10	-	-	-	-	64" x 64" 34 #10	-	42" x 42" 16 #10	-	72" x 48" 28 #10	48" x 48" 20 #10
LOAD TO FOOTING	2772	3289	11363	10307	8459	11198	13563	17512	19800	17952	18150	12848	8712	16368	14335	12804	8085	2981	9581	11979	10021	11121	3850	11726	8888	5258
FLOOR \ COLUMN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	26	27

COLUMN SCHEDULE

FLOOR \ COLUMN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
23RD FLOOR EL. +479.60' (14'-6")																														
22ND FLOOR EL. +465.10' (14'-6")																														
21ST FLOOR EL. +450.60' (14'-6")																														
20TH FLOOR EL. +436.10' (14'-6")																														
19TH FLOOR EL. +421.60' (14'-6")																														
18TH FLOOR EL. +407.10' (14'-6")																														
17TH FLOOR EL. +392.60' (14'-6")																														
16TH FLOOR EL. +378.10' (14'-6")																														
15TH FLOOR EL. +363.60' (16'-6")																														
14TH FLOOR EL. +347.10' (27'-0")																														
13TH FLOOR EL. +320.10' (27'-0")																														
12TH FLOOR EL. +293.10' (20'-0")																														
11TH FLOOR EL. +273.10' (20'-0")																														
10TH FLOOR EL. +253.10' (20'-0")																														
9TH FLOOR EL. +233.10'																														
FLOOR \ COLUMN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

ONE VANDERBILT



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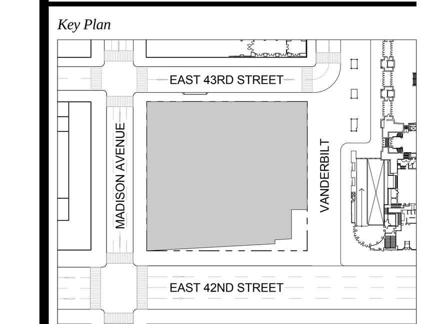
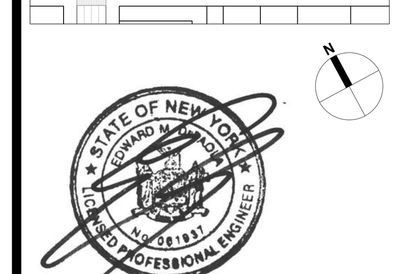
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan





Issue Date: 09-01-2015
Project No. 14500
Drawn By
Scale 1/8" = 1'-0"

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Drawing Title
COLUMN SCHEDULE 1

Drawing Number
S-601.00
SHEET 5 OF 9

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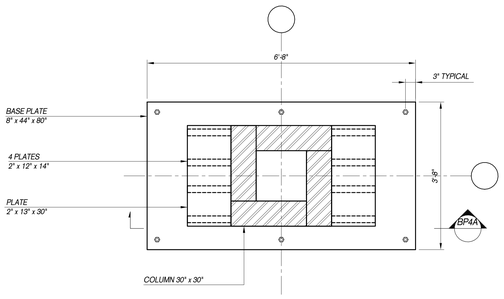
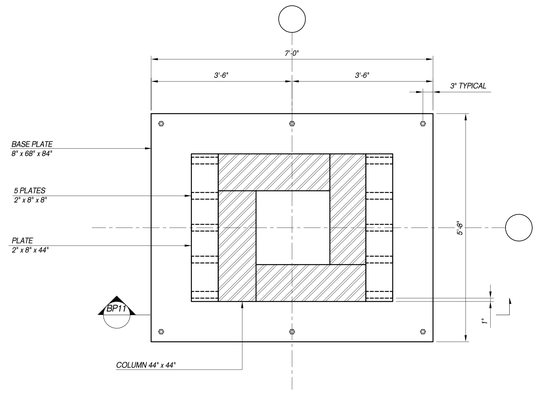
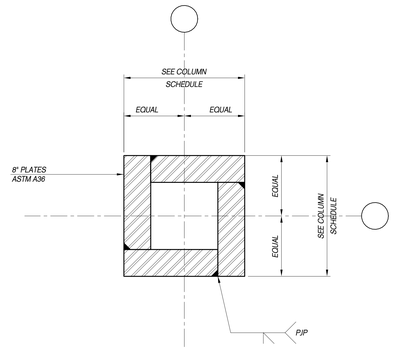


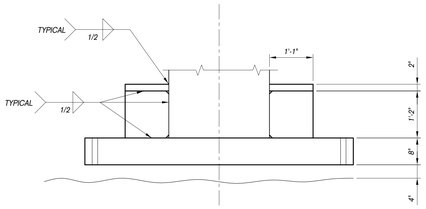
COLUMN #4 BASE PLATE — BP4
3/4" = 1'-0"



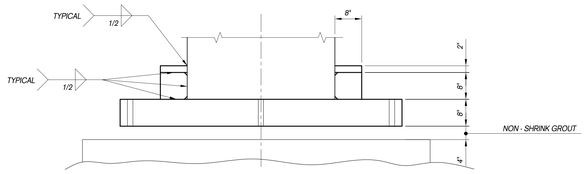
COLUMN #11 BASE PLATE PLAN (COLUMN #10 SIM) — BP11
3/4" = 1'-0"



TYPICAL BOX COLUMN 1
N.T.S

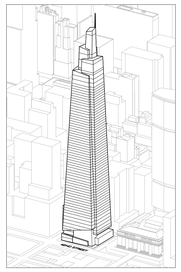


SECTION — BP4A
3/4" = 1'-0"



SECTION — BP11A
3/4" = 1'-0"

ONE VANDERBILT



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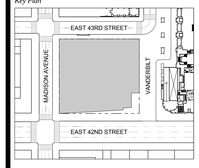
Key Plan



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FOR REFERENCE ONLY

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COLUMN DETAILS 1

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SHEET 6 OF 9

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G GENERAL

G.1 ALL WORK SHALL COMPLY WITH THE 2014 NEW YORK CITY BUILDING CODE.

G.2 THE STRUCTURAL CONSTRUCTION DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE SPECIFICATIONS AND THE ARCHITECTURAL AND MECHANICAL CONSTRUCTION DRAWINGS.

G.3 BEFORE PROCEEDING WITH ANY WORK, THE GENERAL CONTRACTOR OR CONSTRUCTION MANAGER SHALL VERIFY THAT ALL MAJOR DIMENSIONS (LOCATIONS OF GRID LINES, COLUMNS, SLAB EDGES, ETC.) SHOWN ON STRUCTURAL DRAWINGS ARE THE SAME AS SHOWN ON ARCHITECTURAL DRAWINGS AND THAT EXISTING CONDITIONS ARE AS INDICATED. ANY VARIANCES SHALL BE BROUGHT TO THE ARCHITECT'S ATTENTION IN WRITING.

G.4 THE GENERAL CONTRACTOR OR CONSTRUCTION MANAGER SHALL COORDINATE THE LOCATION OF FRAMING AROUND ELEVATORS, STAIRS AND SHAFTS WITH THE ELEVATOR, STAIR, MECHANICAL, ELECTRICAL AND PLUMBING CONTRACTORS.

G.5 THE GENERAL CONTRACTOR OR CONSTRUCTION MANAGER SHALL BE SOLELY RESPONSIBLE FOR COORDINATION BETWEEN TRADES INCLUDING BUT NOT LIMITED TO THE LOCATION OF SLOTS, TRENCHES AND SLEEVES AS REQUIRED FOR THE MECHANICAL OR OTHER TRADES AND THE PROVISION AND/OR INSTALLATION OF ANCHORS, INSERTS, HANGERS, ETC. AS REQUIRED FOR THE VARIOUS TRADES.

G.6 CONTROL OVER OR CHARGE OF AND RESPONSIBILITY FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES, OR FOR SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK OF THE PROJECT ARE SOLELY THE GENERAL CONTRACTOR'S OR CONSTRUCTION MANAGER'S RESPONSIBILITY.

G.7 THE CONSTRUCTION MANAGER OR GENERAL CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ACTS OR OMISSIONS OF CONTRACTORS OR ANY OTHER PERSONS PERFORMING ANY OF THE WORK, OR FOR THE FAILURE OF ANY OF THEM TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONSTRUCTION CONTRACT.

G.8 THE GENERAL CONTRACTOR OR CONSTRUCTION MANAGER SHALL BE SOLELY AND FULLY RESPONSIBLE FOR THE SAFETY AND STABILITY OF EXISTING ADJACENT STRUCTURES INCLUDING BUT NOT LIMITED TO BUILDINGS, SIDEWALKS, ROADWAYS AND UTILITIES AND FOR ANY METHODS REQUIRED TO ENSURE THAT SAFETY AND STABILITY.

G.9 THE DESIGN, CONSTRUCTION, INSPECTION AND MAINTENANCE OF TEMPORARY STRUCTURES OR PROCEDURES INCLUDING BUT NOT LIMITED TO SUPPORT FOR AND STABILITY OF CRANES OR HOISTS OR LIFTS OR OTHER SIMILAR EQUIPMENT, TEMPORARY GUYING OR BRACING, SCAFFOLDING, FORMWORK OR SHORING, DEWATERING, SHEETING OR UNDERPINNING, CONSTRUCTION STORAGE OR STAGING AREAS, SIDEWALK BRIDGES OR CONSTRUCTION FENCES, TEMPORARY ENCLOSURES AT OPENINGS, AT THE BUILDING'S PERIMETER, OR ELSEWHERE, ETC., ARE SOLELY THE RESPONSIBILITY OF THE GENERAL CONTRACTOR OR CONSTRUCTION MANAGER AND/OR CONTRACTORS AND/OR CONSULTANTS RETAINED BY THE GENERAL CONTRACTOR OR CONSTRUCTION MANAGER.

G.10 THE GENERAL CONTRACTOR OR CONSTRUCTION MANAGER SHALL MAKE NO DEVIATION FROM CONTRACT DOCUMENTS WITHOUT THE PRIOR WRITTEN APPROVAL OF THE ARCHITECT.

G.11 THE GENERAL CONTRACTOR OR CONSTRUCTION MANAGER SHALL REPORT TO THE ARCHITECT, IN WRITING, ANY DISCREPANCIES, AMBIGUITIES OR CONTRADICTIONS IN THE CONSTRUCTION DOCUMENTS.

G.12 THE GENERAL CONTRACTOR OR CONSTRUCTION MANAGER SHALL BE RESPONSIBLE FOR NOTIFYING THE ENGINEER RESPONSIBLE FOR CONTROLLED OR SPECIAL INSPECTIONS, IN A TIMELY MANNER, WHEN WORK IS READY FOR INSPECTION.

SI STRUCTURAL INSPECTIONS

SI.1 ALL PROGRESS INSPECTIONS SHALL CONFORM TO CHAPTER 1 OF THE NEW YORK CITY BUILDING CODE. ALL SPECIAL INSPECTIONS SHALL CONFORM TO CHAPTER 17 OF THE NEW YORK CITY BUILDING CODE.

SI.2 THE FOLLOWING PROGRESS INSPECTIONS ARE REQUIRED:

A. FOOTING AND FOUNDATION

SI.3 THE FOLLOWING SPECIAL INSPECTIONS ARE REQUIRED:

A. STRUCTURAL STEEL - WELDING
B. STRUCTURAL STEEL - DETAILS
C. STRUCTURAL STEEL - HIGH STRENGTH BOLTING
D. CONCRETE - CAST-IN-PLACE
E. CONCRETE SAMPLING AND TESTING, TR-2
F. CONCRETE DESIGN MIX, TR-3
G. MASONRY
H. SUBGRADE INSPECTION
I. SUBSURFACE CONDITIONS - FILL PLACEMENT AND IN - PLACE DENSITY
J. EXCAVATIONS - SHEETING, SHORING AND BRACING

SI.4 SPECIAL INSPECTIONS SHALL BE CONTINUOUS EXCEPT WHERE PERIODIC SPECIAL INSPECTIONS ARE SPECIFICALLY PERMITTED BY THE BUILDING CODE.

SI.5 ALL SPECIAL INSPECTIONS SHALL BE PERFORMED BY SPECIAL INSPECTORS AND AGENCIES QUALIFIED BY THE CITY OF NEW YORK AND ACCEPTABLE TO THE ENGINEER OF RECORD.

SI.6 ALL WORK FOR WHICH SPECIAL INSPECTION IS REQUIRED SHALL REMAIN ACCESSIBLE AND EXPOSED UNTIL APPROVED BY THE SPECIAL INSPECTOR.

SI.7 ALL SPECIAL INSPECTORS SHALL BRING ANY DISCREPANCIES TO THE ATTENTION OF THE OWNER AND ENGINEER OF RECORD.

SI.8 ALL SPECIAL INSPECTORS SHALL FURNISH INSPECTION REPORTS TO THE OWNER AND TO THE ENGINEER OF RECORD.

C CAST-IN-PLACE CONCRETE

C.1 ALL CONCRETE WORK SHALL CONFORM TO THE ACI BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318) AND THE 2014 NEW YORK CITY BUILDING CODE.

C.2 CONCRETE

A. ALL CONCRETE MIXES SHALL BE AS FOLLOWS:

MAX "A" CONCRETE SHALL BE NORMAL WEIGHT CONCRETE HAVING A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS. THE MIX SHALL HAVE A WATER-CEMENT RATIO NO GREATER THAN 0.40.

MAX "B" CONCRETE SHALL BE NORMAL WEIGHT CONCRETE HAVING A MINIMUM COMPRESSIVE STRENGTH OF 6000 PSI AT 28 DAYS. THE MIX SHALL HAVE A WATER-CEMENT RATIO NO GREATER THAN 0.40.

MAX "C" CONCRETE SHALL BE NORMAL WEIGHT CONCRETE HAVING A MINIMUM COMPRESSIVE STRENGTH OF 8000 PSI AT 28 DAYS. THE MIX SHALL HAVE A WATER-CEMENT RATIO NO GREATER THAN 0.40.

MAX "D" CONCRETE SHALL BE NORMAL WEIGHT CONCRETE HAVING A MINIMUM COMPRESSIVE STRENGTH OF 10000 PSI AT 28 DAYS. THE MIX SHALL HAVE A WATER-CEMENT RATIO NO GREATER THAN 0.40.

MAX "E" CONCRETE SHALL BE NORMAL WEIGHT CONCRETE HAVING A MINIMUM COMPRESSIVE STRENGTH OF 12000 PSI AT 28 DAYS. THE MIX SHALL HAVE A WATER-CEMENT RATIO NO GREATER THAN 0.40.

MAX "F" CONCRETE SHALL BE NORMAL WEIGHT CONCRETE HAVING A MINIMUM COMPRESSIVE STRENGTH OF 14000 PSI AT 28 DAYS. THE MIX SHALL HAVE A WATER-CEMENT RATIO NO GREATER THAN 0.40.

B. CONCRETE MIXES LISTED ABOVE SHALL BE USED AS FOLLOWS:

FOOTINGS FOUNDATION MAT	MIX "D"
PIERS AND BUTTRESSES	MIX "D"
FOUNDATION WALLS	MIX "D"
SLAB ON GRADE	MIX "A"
EXTERIOR TOPPING SLABS (OTHER THAN SIDEWALKS)	MIX "A"
SHEAR WALLS (FOUNDATION TO 13TH FLOOR	MIX "F"
SHEAR WALLS (13TH TO 26TH FLOOR)	MIX "E"
SHEAR WALLS (26TH TO 39TH FLOOR)	MIX "D"
SHEAR WALLS (39TH TO 51ST FLOOR)	MIX "C"
SHEAR WALLS (AVOVE 51ST FLOOR)	MIX "B"
RAISED SLAB	MIX "A"
CONCRETE ON METAL DECKING	MIX "A"
ALL CONCRETE NOT LISTED ABOVE	MIX "B"

C.3 REINFORCING

A. BAR REINFORCING SHALL BE DEFORMED BARS OF NEW BILLET STEEL CONFORMING TO ASTM A 615, GRADE 60.

B. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 82 AND A 185.

C. ALL REINFORCING IN LEVEL B3 SLAB ON GRADE SHALL BE EPOXY-COATED (IN ACCORDANCE WITH ASTM A 775).

C.4 ADMIXTURES

A. ALL CONCRETE EXPOSED TO THE WEATHER IN THE FINISHED BUILDING AND ALL LIGHTWEIGHT CONCRETE SHALL BE AIR-ENTRAINED.

B. ALL STONE CONCRETE FOR SLABS ON GRADE AND LIGHTWEIGHT CONCRETE ON METAL DECK SHALL CONTAIN A HIGH RANGE WATER REDUCING ADMIXTURE (SUPERPLASTICIZER).

C. ALL CONCRETE FOR LEVEL B3 SLAB ON GRADE SHALL CONTAIN A CALCIUM NITRATE BASED CORROSION INHIBITOR SUCH AS D.C.I., AS MANUFACTURED BY W.R. GRACE, IN THE AMOUNT OF 3.6 GALLONS PER CUBIC YARD OF CONCRETE, OR APPROVED EQUIVALENT.

D. ALL CONCRETE MIXES SHALL CONTAIN 45% BLAST FURNACE SLAG (BASED ON CEMENT CONTENT).

C.5 DEVELOPMENT LENGTHS OF REINFORCING (Ld, Ldh or Ldc) SHALL BE DETERMINED IN ACCORDANCE WITH THE REQUIREMENTS OF ACI 318, CHAPTER 12.

C.6 ALL HORIZONTAL BARS IN WALLS (NOT INCLUDING SHEAR WALLS) AND BEAMS, AND BARS MARKED CONT. (CONTINUOUS) SHALL BE LAPPED A DISTANCE ld AT SPLICES AND AT CORNERS UNLESS OTHERWISE NOTED. LAP CONTINUOUS TOP BARS AT CENTER BETWEEN SUPPORTS AND BOTTOM BARS AT SUPPORTS. HOOK ALL TOP BARS AT NON-CONTINUOUS ENDS.

C.7 ALL LENGTHS OF HOOKED BARS INDICATED ON DRAWINGS DO NOT INCLUDE EXTENSION FOR HOOK.

C.8 ALL DETAILS OF BENDS AND HOOKS SHALL BE DETERMINED IN ACCORDANCE WITH THE REQUIREMENTS OF ACI 318, CHAPTER 7.

C.9 ALL REINFORCING SHALL BE HELD RIGIDLY AND ACCURATELY IN PLACE, AND PROTECTED AGAINST DISPLACEMENT BEFORE AND DURING CASTING. IF NECESSARY, ADDITIONAL BARS AND/OR STIRRUPS SHALL BE PROVIDED TO FURNISH SUPPORT FOR ALL REINFORCING.

C.10 PROVIDE CLEARANCES FROM FACES OF CONCRETE TO REINFORCEMENT IN ACCORDANCE WITH THE REQUIREMENTS OF ACI 318, CHAPTER 7. IN THE FIRST PARAGRAPH OF 7.7.1, THE WORD "MINIMUM" SHALL BE REPLACED WITH THE WORD "CLEAR".

C.11 PROVIDE SHRINKAGE AND TEMPERATURE REINFORCEMENT FOR ALL STRUCTURAL SLABS WHERE THE FLEXURAL REINFORCING EXTENDS IN ONE DIRECTION ONLY, IN ACCORDANCE WITH THE REQUIREMENTS OF ACI 318, CHAPTER 7.

C.12 PRIOR TO THE START OF WORK, THE CONCRETE CONTRACTOR SHALL COORDINATE ANDDETERMINE WITH THE GENERAL CONTRACTOR OR THE CONSTRUCTION MANAGER ALL DIMENSIONS AND LOCATIONS OF SLAB DEPRESSIONS, FLOOR DRAINS, OPENINGS, SLEEVES, CONCRETE CURBS, PADS AND EQUIPMENT BASES AND OTHER SIMILAR ITEMS. THE PROVISION OF THESE ITEMS SHALL BE PART OF THE CONCRETE CONSTRUCTION WORK.

C.13 THE CONCRETE CONTRACTOR SHALL INSTALL IN THE FORMS ALL SLOTS, SLEEVES, WATERTIGHT SLEEVES, INSERTS, ANCHOR BOLTS, HANGERS, MASONRY ANCHORS, ETC., REQUIRED BY OTHER TRADES AND SHALL COORDINATE WITH THE GENERAL CONTRACTOR OR CONSTRUCTION MANAGER FOR COMPLETENESS AND LOCATION BEFORE CONCRETE IS CAST.

C.14 IF PIPES OR CONDUITS ARE TO BE PLACED IN SLABS, THE GENERAL CONTRACTOR OR CONSTRUCTION MANAGER, PRIOR TO THE START OF WORK, SHALL SUBMIT TO THE ARCHITECT FOR APPROVAL DRAWINGS SHOWING THE SIZE, LOCATION (VERTICALLY AND HORIZONTALLY) AND SPACING OF PIPES AND/OR CONDUITS.

C.15 GENERALLY, PIPES OR CONDUITS PLACED IN SLABS SHOULD NOT BE LARGER THAN 1/3 THE SLAB THICKNESS AND SHOULD NOT BE SPACED CLOSER THAN 3 DIAMETERS ON CENTER AND SHOULD NOT BE PLACED IN THE INTERSECTION OF COLUMN STRIPS FOR FLAT SLABS.

C.16 ALUMINUM CONDUITS OR PIPES SHALL NOT BE PLACED IN CONCRETE.

C.17 ALL BEAMS AND SLABS SHALL BE CAST MONOLITHICALLY, AND THE SLABS FINISHED AS REQUIRED BY THE SPECIFICATIONS.

C.18 VERTICAL CONSTRUCTION JOINTS USING APPROVED BULKHEADS MAY BE MADE AT MID-SPAN OF BEAM OR SLAB SPANS WHERE A STOP IN CONCRETE WORK IS NECESSARY. FOR ADDITIONAL REINFORCING AT CONSTRUCTION JOINTS, SEE TYPICAL DETAILS.

C.19 HORIZONTAL CONSTRUCTION JOINTS SHALL BE PERMITTED IN SLABS BEAMS, JOISTS AND WALLS ONLY IF AND AS SHOWN.

C.20 STEEL BEAMS SUPPORTING METAL DECK AND CONCRETE FILL ARE CAPABLE OF SUPPORTING THE WET WEIGHT OF CONCRETE FILL WITHOUT THE USE OF TEMPORARY SHORES AFTER THE METAL DECK IS WELDED TO THE BEAMS TO PROVIDE LATERAL BRACING. HOWEVER, UNSHORED BEAMS AND DECK WILL DEFLECT WHILE CONCRETE IS BEING CAST. IF CONCRETE IS CAST WITHOUT BEAM AND DECK SHORING, PROVIDE ADDITIONAL CONCRETE AS REQUIRED TO MAINTAIN PROPER FINISHED ELEVATIONS. IF SHORES ARE USED, CAMBER SLABS UPWARD TO COMPENSATE FOR DEFLECTION WHEN SHORES ARE REMOVED.

C.21 ALL PLUMBING SLOTS AROUND SLEEVES SHALL BE FILLED WITH CONCRETE TO THE SAME DEPTH AS FLOOR SLAB AFTER PIPING IS INSTALLED.

C.22 SLABS ON GROUND SHALL BE CAST OVER A 6" LAYER OF COMPACTED POROUS FILL, UNLESS OTHERWISE SHOWN. THE THICKNESS OF THE SLAB IS SHOWN ON PLANS. PROVIDE 6" X 6"-W5 X W5 WELDED FABRIC PLACED 1" FROM TOP OF SLAB IN ALL SLABS ON GROUND UNLESS OTHERWISE NOTED ELSEWHERE. SLABS SHALL BE CAST IN ALTERNATE PANELS NOT EXCEEDING 40 FEET IN ANY LENGTH OR WIDTH.

C.23 ALL CONCRETE TOPPINGS, FILLS AND PROTECTION SLABS SHALL BE REINFORCED WITH 6" X 6"-W3 X W3 WELDED WIRE FABRIC PLACED 1" BELOW THE TOP OF FINISHED CONCRETE.

C.24 CONCRETE PADS AND EQUIPMENT BASES SHALL BE REINFORCED WITH 6" X 6"-W5 X W5 WELDED WIRE FABRIC PLACED 1" FROM THE TOP OF PAD, UNLESS OTHERWISE NOTED ELSEWHERE. FOR LOCATIONS, SIZES AND THICKNESSES, SEE ARCHITECTURAL, AND/OR STRUCTURAL AND/OR MECHANICAL DRAWINGS.

C.25 FOR TREATMENT OF EXPOSED CONCRETE, SEE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS.

C.26 CHAMFER EDGES OF EXPOSED CONCRETE COLUMNS AND BEAMS. PROVIDE REGLETS AND DRIPS AS SHOWN ON THE ARCHITECTURAL DRAWINGS AND IN THE SPECIFICATIONS.

C.27 CURING OF CONCRETE SHALL START AS SOON AS THE FINISH WILL NOT BE MARRED THEREBY. IT SHALL NOT BE PERMISSIBLE TO DELAY THE CURING UNTIL THE MORNING AFTER THE CONCRETE IS CAST.

DESIGN CRITERIA SCHEDULE

STRUCTURAL OCCUPANCY / RISK CATEGORY	II
ROOF SNOW LOAD:	
GROUND SNOW LOAD $(P)_g$	40 psf
FLAT-ROOF SNOW LOAD $(P)_f$	37 psf
SNOW EXPOSURE FACTOR $(C)_e$	1.2
SNOW LOAD IMPORTANCE FACTOR $(I)_s$	1.0
THERMAL FACTOR $(C)_t$	1.0
WIND LOADS:	
BASIC WIND SPEED $(V)_{3s}$	100 mph
WIND IMPORTANCE FACTOR $(I)_w$	1.00
WIND EXPOSURE	C
INTERNAL PRESSURE COEFFICIENT $(GC)_{pi}$	±0.18
COMPONENT/CLADDING DESIGN WIND PRESSURE	75 psf
SEISMIC LOADS:	
SEISMIC IMPORTANCE FACTOR $(I)_E$	1.00
MAPPED SPECTRAL RESPONSE ACCELERATIONS	
SHORT PERIOD $(S)_S$	0.281g
1-SECOND PERIOD $(S)_1$	0.073g
SEISMIC SITE CLASS	B
DESIGN SPECTRAL RESPONSE ACCELERATIONS	
SHORT PERIOD $(S)_{DS}$	0.187g
1-SECOND PERIOD $(S)_{D1}$	0.049g
SEISMIC DESIGN CATEGORY	B
RESPONSE MODIFICATION FACTOR (R)	
ORDINARY REINFORCED CONCRETE SHEAR WALLS	4
SYSTEM OVER-STRENGTH FACTOR $( )\Omega_O$	
ORDINARY REINFORCED CONCRETE SHEAR WALLS	2 1/2
DEFLECTION AMPLIFICATION FACTOR $(C)_d$	
ORDINARY REINFORCED CONCRETE SHEAR WALLS	4
DESIGN BASE SHEAR	—
SEISMIC RESPONSE COEFFICIENT $(C)_s$	—
ANALYSIS PROCEDURE	EQUIV. LAT. FORCE

SD SHOP DRAWINGS - STRUCTURAL

SD.1 THE GENERAL CONTRACTOR OR CONSTRUCTION MANAGER SHALL SUBMIT STRUCTURAL SHOP DRAWINGS TO THE ARCHITECT AFTER THE GC OR CM HAS REVIEWED AND NOTED ON THESE SUBMITTALS THAT THEY ARE IN CONFORMANCE WITH CONTRACT REQUIREMENTS. THE STRUCTURAL ENGINEER, UPON RECEIPT OF THESE SUBMITTALS FROM THE ARCHITECT, WILL REVIEW AND APPROVE OR TAKE OTHER APPROPRIATE ACTION UPON AND RETURN TO THE ARCHITECT FOR FINAL DISPOSITION.

SD.2 CHANGES OR NON-CONFORMANCE TO CONTRACT REQUIREMENTS SHALL BE FLAGGED ON SUBMITTALS.

SD.3 SUBMITTALS SHALL NOT BE USED AS A SUBSTITUTE FOR REQUESTS FOR, OR APPROVALS OF SUBSTITUTIONS OR OTHER CHANGES OR PROCEDURES REQUIRED BY THE CONSTRUCTION CONTRACT.

SD.4 PRIOR TO SUBMITTING SHOP DRAWINGS, THE GENERAL CONTRACTOR OR CONSTRUCTION MANAGER SHALL SUBMIT A SHOP DRAWING SUBMITTAL SCHEDULE FOR THE APPROVAL OF THE STRUCTURAL ENGINEER AND THE ARCHITECT. THE SCHEDULE SHALL INCLUDE THE DATES WHEN DRAWINGS ARE TO BE SUBMITTED TO THE ARCHITECT AND THE NUMBER OF DRAWINGS AND TYPE OF DETAILS (PLANS, SCHEDULES, BEAMS, COLUMNS, ETC.) THAT WILL BE SUBMITTED ON EACH SUBMISSION DATE.

SD.5 THE STRUCTURAL ENGINEER'S REVIEW OF, APPROVAL OF, OR OTHER ACTION UPON THE SHOP DRAWINGS IS ONLY FOR THE LIMITED PURPOSE OF CHECKING FOR CONFORMANCE WITH THE DESIGN INTENT AND INFORMATION EXPRESSED IN CONTRACT DOCUMENTS PREPARED BY THE STRUCTURAL ENGINEER.

SD.6 THE STRUCTURAL ENGINEER'S REVIEWS SHALL NOT INCLUDE THE ACCURACY OR COMPLETENESS OF DETAILS SUCH AS WEIGHTS, GAUGES, FABRICATION OR ERECTION PROCESS, CONSTRUCTION MEANS OR METHODS, COORDINATION OF THE WORK WITH OTHER TRADES OR CONSTRUCTION SAFETY PRECAUTIONS, ALL OF WHICH ARE THE SOLE RESPONSIBILITY OF THE CONSTRUCTION MANAGER OR GENERAL CONTRACTOR.

SD.7 THE STRUCTURAL ENGINEER'S REVIEW OF A SPECIFIC ITEM SHALL NOT EXTEND TO A REVIEW OF AN ASSEMBLY OF WHICH THE ITEM IS A COMPONENT.

SD.8 THE STRUCTURAL ENGINEER WILL NOT REVIEW SUBMISSIONS WHICH ARE PARTIALLY COMPLETE.

SD.9 NO WORK MAY COMMENCE UNTIL ALL RELEVANT SHOP DRAWINGS HAVE BEEN REVIEWED AND FINAL "APPROVAL WITH NO EXCEPTIONS" HAS BEEN GRANTED BY THE ARCHITECT.

SD.10 THE USE OF THE "REQUEST FOR INFORMATION" (RFI) PROCESS IS STRICTLY A FORM OF COMMUNICATION BETWEEN CM/GC AND THE DESIGN TEAM AND ITS SOLE PURPOSE IS TO RESOLVE MINOR ISSUES AND SHALL NOT BE USED TO PRE-PREPARE SHOP DRAWINGS.

SD.11 STRUCTURAL STEEL SHOP DRAWINGS SHALL BE PREPARED UNDER THE SUPERVISION OF A PROFESSIONAL ENGINEER REGISTERED IN THE STATE IN WHICH THE PROJECT IS LOCATED WHO IS EXPERIENCED IN THE DETAILING OF STRUCTURAL STEEL AND HAS A THOROUGH WORKING KNOWLEDGE OF THE REQUIREMENTS, SUGGESTIONS, EXAMPLES AND COMMENTARIES OF THE AISC MANUAL OF STEEL CONSTRUCTION, LOAD AND RESISTANCE FACTOR DESIGN SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS, THE SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A 325 OR A 490 BOLTS AND THE AMERICAN WELDING SOCIETY (AWS) D1.1 "STRUCTURAL WELDING CODE-STEEL".

SD.12 STRUCTURAL STEEL PIECE DRAWINGS SHALL NOT BE SUBMITTED UNTIL ERECTION PLANS AND TYPICAL CONNECTION DETAIL DRAWINGS (GENERALLY REFERRED TO AS JOB STANDARDS), HAVE BEEN REVIEWED AND APPROVED BY THE STRUCTURAL ENGINEER AND ARCHITECT.

SD.13 IF THE STRUCTURAL ENGINEER OF RECORD SO REQUESTS, THE CONSTRUCTION MANAGER AND/OR THE GENERAL CONTRACTOR SHALL SUBMIT CALCULATIONS FOR ANY OR ALL CONNECTIONS OR JOB STANDARDS SHOWN ON SHOP DRAWINGS. THESE CALCULATIONS SHALL BE SIGNED AND SEALED BY THE PROFESSIONAL ENGINEER SUPERVISING THE PREPARATION OF SHOP DRAWINGS.

SD.14 SHOP DRAWINGS FOR CONCRETE WORK SHALL BE PREPARED UNDER THE SUPERVISION OF AN EXPERIENCED DETAILER FOR CONCRETE STRUCTURES WHO HAS A THOROUGH WORKING KNOWLEDGE OF THE REQUIREMENTS, SUGGESTIONS, EXAMPLES AND COMMENTARIES OF ACI 318- BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, ACI 315-DETAILS AND DETAILING OF CONCRETE REINFORCEMENT AND THE CONCRETE REINFORCING STEEL INSTITUTE (CRSI) "MANUAL OF STANDARD PRACTICE".

SD.15 SHOP DRAWINGS FOR CONCRETE WORK SHALL INCLUDE BUT NOT BE LIMITED TO BENDING DETAILS, LOCATION AND LENGTH OF ALL LAPS AND VERTICAL AND HORIZONTAL LOCATION OF ALL REINFORCEMENT (BARS AND WELDED WIRE FABRIC AND REINFORCEMENT) INCLUDING THE REINFORCEMENT IN SLABS CAST ON GRADE.

SD.16 METAL DECK SHOP DRAWINGS SHALL BE PREPARED UNDER THE SUPERVISION OF AN EXPERIENCED DETAILER FOR METAL DECK WHO HAS A THOROUGH WORKING KNOWLEDGE OF AWS D1.3 STRUCTURAL WELDING CODE - SHEET STEEL AND THE SDI MANUAL FOR FLOOR DECKS AND ROOF DECKS.

SD.17 METAL DECK SHOP DRAWINGS SHALL INCLUDE BUT NOT BE LIMITED TO THE TYPE AND GAGE OF DECK, LOCATION AND SIZE OF ALL WELDING TO STRUCTURAL STEEL, LOCATION AND TYPE OF SIDE LAP FASTENINGS, LOCATION AND SIZE OF SHEAR STUDS (IF ANY), CLOSURES, SUPPLEMENTARY FRAMING (IF ANY), SUMP PANS, CANT STRIPS, ETC.

S STRUCTURAL STEEL

S.1 ALL STRUCTURAL STEEL MATERIAL, FABRICATION AND ERECTION SHALL COMPLY WITH THE PROVISIONS OF THE AISC SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, INCLUDING THE COMMENTARY AND ANY SUPPLEMENTS.

S.2 ALL STRUCTURAL STEEL SHALL BE ASTM A992 OR ASTM A572, GRADE 50 STEEL. ALL HSS RECTANGULAR AND ROUND STEEL SHALL BE ASTM A500, GRADE B. PLATES, ANGLES, ETC., USED AS CONNECTION MATERIAL MAY BE ASTM A36 STEEL. THE TYPE OF STEEL FOR ALL STRUCTURAL STEEL SHAPES, PLATES, BARS, ETC. SHALL BE INDICATED ON SHOP DRAWINGS.

S.3 THE STEEL CONTRACTOR SHALL FURNISH MILL TEST REPORTS FROM THE PRODUCER OF STEEL CERTIFYING THAT THE STEEL MEETS THE MINIMUM REQUIREMENTS AS DEFINED BY ASTM SPECIFICATIONS. IF REQUIRED BY THE APPLICABLE BUILDING CODE, STEEL MILL REPORTS AND COMPLETION CERTIFICATES SHALL BE FILED WITH THE BUILDING DEPT.

S.4 ALL CONNECTIONS NOT DETAILED ON THE DRAWINGS SHALL CONFORM TO THOSE SHOWN IN THE AISC STEEL CONSTRUCTION MANUAL, 13TH EDITION, WHERE POSSIBLE. ALL SHOP CONNECTIONS SHALL BE HIGH-STRENGTH BOLTED OR WELDED. ALL FIELD CONNECTIONS SHALL BE WELDED OR MADE WITH HIGH-STRENGTH BOLTS WITH HARDENED WASHERS, INSTALLED BY MEANS OF PNEUMATIC WRENCHES AND TORQUED TO THE REQUIRED VALUE, IN ACCORDANCE WITH THE SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR ASTM A490 BOLTS APPROVED BY THE RESEARCH COUNCIL ON RIVETED AND BOLTED JOINTS.

S.5A ALL BEAM TO BEAM/GIRDER OR BEAM/GIRDER TO COLUMN CONNECTIONS SHALL HAVE A CAPACITY OF 60% (FOR NON-COMPOSITE BEAMS) AND 100% (FOR COMPOSITE BEAMS) OF THE TOTAL UNIFORMLY DISTRIBUTED DESIGN LOAD FOR THE SIZE, SHAPE, SPAN AND Fy OF THE BEAM TO BE CONNECTED. THE EFFECT OF ANY CONCENTRATED LOADS AT THE ENDS OF THE BEAM (NEAR THE CONNECTION) SHALL ALSO BE INCLUDED. THE TOTAL UNIFORMLY DISTRIBUTED DESIGN LOADS SHALL BE CALCULATED USING THE TABLES FOR UNIFORM LOAD CONSTANTS FOR BEAMS CONTAINED IN THE AISC STEEL CONSTRUCTION MANUAL.

S.5B (NYC PROJECTS) ALL CONNECTIONS SHALL MEET THE STRUCTURAL INTEGRITY REQUIREMENTS OF NYCBC SECTION 2213.2.

S.6 UNLESS OTHERWISE SHOWN OR DETAILED, ALL BEAMS AND GIRDERS SHALL BE CONNECTED TO COLUMNS WITH FULLY RESTRAINED MOMENT CONNECTIONS WITH A CAPACITY OF 400 KIP-FEET OR THE STRENGTH OF THE BEAM OR GIRDER. THE BASIC SEISMIC-FORCE-RESISTING SYSTEM IS ORDINARY STEEL MOMENT FRAMES AND THE RESPONSE MODIFICATION COEFFICIENT IS 3½.

S.7A UNLESS OTHERWISE SHOWN IN TYPICAL DETAILS, COLUMN SPLICES SHALL BE 4'-0" ABOVE FINISHED FLOOR AND SHALL CONFORM TO SUGGESTED COLUMN SPLICE DETAILS. SHOWN IN THE AISC STEEL CONSTRUCTION MANUAL, THE CAPACITY OF THE SPLICE SHOULD BE NOT LESS THAN AN ULTIMATE LOAD OF 180 KIPS (TENSION OR COMPRESSION).

S.7B (NYC PROJECTS) COLUMN SPLICES SHALL HAVE AN AVAILABLE TENSION STRENGTH EQUAL TO THE LARGEST REACTION APPLIED AT ANY OF THE FOUR FLOOR LEVELS BELOW THE SPLICE PER NYCBC SECTION 2213.2.1.

S.8 ALL WELDING SHALL BE IN ACCORDANCE WITH THE STANDARD CODE FOR ARC AND GAS WELDING IN BUILDING CONSTRUCTION OF THE AMERICAN WELDING SOCIETY.

S.9 WELDING ELECTRODES SHALL CONFORM TO ASTM SPECIFICATION E-70XX. ALL BUTT WELDS SHALL BE 100% PENETRATION WELDS AND FILLET WELDS SHALL BE MINIMUM ¼". IF REQUIRED BY THE APPLICABLE BUILDING CODE, COPIES OF TEST REPORTS SHALL BE FILED WITH THE BUILDING DEPT.

S.10 ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM UNLESS OTHERWISE NOTED.

S.11 FOR COMPOSITE CONSTRUCTION, THE NUMBER IN PARENTHESIS AFTER THE BEAM DESIGNATION INDICATES THE TOTAL NUMBER OF 3/4" DIAMETER HEADED SHEAR CONNECTORS. SEE TYPICAL DETAILS FOR PLACEMENT AND FURTHER DETAILS. REGARDLESS OF THE QUANTITY OF STUDS SHOWN ON THE PLAN. THE MINIMUM APACING FOR STUDS SHALL NOT EXCEED 12" ON CENTER.

S.12 CAMBER BEAMS AND GIRDERS, AS SHOWN ON PLANS THUS C=________. WHERE NO CAMBER IS CALLED FOR, FABRICATE AND ERECT BEAMS WITH NATURAL CAMBER UP.

S.13 ALL CONTACT SURFACE WITHIN HIGH-STRENGTH BOLT CONNECTIONS AND WELDING AREAS SHALL BE FREE OF OIL, PAINT, LACQUER OR GALVANIZING.

S.14 THE CONTRACTOR SHALL FURNISH AND INSTALL ALL PLATES, CLIP ANGLES, CONNECTIONS, NAILER HOLES, ETC., REQUIRED FOR THE COMPLETION OF THE STRUCTURE OR BY OTHER TRADES, EVEN IF EVERY SUCH ITEM IS NOT SHOWN ON THE STRUCTURAL DRAWINGS.

S.15 THE STEEL FRAMING SHALL BE TEMPORARILY BRACED AGAINST EARTH PRESSURE, WIND, POSSIBLE LATERAL CONSTRUCTION LOADS OR UNBALANCES CAUSED BY CONSTRUCTION SEQUENCING UNTIL SLABS, BEAMS, COLUMNS, BRACING AND ANY OTHER STRUCTURE DESIGNED TO LATERALLY BRACE THE FINISHED STRUCTURE ARE IN PLACE AND HAVE ATTAINED THEIR REQUIRED STRENGTH OR HAVE HAD THEIR PERMANENT CONNECTIONS MADE. THE GENERAL CONTRACTOR AND/OR THE CONSTRUCTION MANAGER AND/OR THE STEEL CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE INTEGRITY OF THE STEEL STRUCTURE DURING ERECTION AND CONSTRUCTION.

S.16 THE STRUCTURAL STEEL SHALL BE ERECTED TO THE TOLERANCE CALLED FOR IN THE AISC CODE OF STANDARD PRACTICE UNLESS MORE STRINGENT TOLERANCES ARE REQUIRED BY OTHER TRADES SUCH AS BUT NOT LIMITED TO PRECAST, ELEVATOR, STAIR OR FAÇADE CONTRACTORS. THE GENERAL CONTRACTOR OR CONSTRUCTION MANAGER SHALL COORDINATE.

S.17 THE USE OF LEVELING PLATES UNDER COLUMN BASE PLATES WILL NOT BE PERMITTED.

S.18 ALL GROUT FOR BASE PLATES AND ANCHOR BOLTS SHALL BE OF A NON-SHRINKAGE TYPE WITH A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 7,500 PSI AFTER 28 DAYS.

S.19 PROVIDE LOOSE LINTELS OVER ALL OPENINGS IN EXTERIOR AND INTERIOR MASONRY WALLS AS SCHEDULED BELOW, EXCEPT WHERE OTHERWISE DETAILED ON THE DRAWINGS.

MASONRY OPENINGS	NOMINAL MASONRY WALL THICKNESS				
	4"	6"	8"	10"	12"
4'-11" OR LESS	1L 4x3 1/2x5/16	1L 5x5x5/16	2LS 4x3 1/2x5/16	2LS 4x4x5/16	2LS 5x5x5/16
5'-0" TO 7'-0"	1L 5x3 1/2x5/16	1L 5x5x5/16	2LS 4x3 1/2x5/16	2LS 6x4x5/16	2LS 5x5x5/16

SHORT LEGS ARE HORIZONTAL
LENGTH OF LINTELS = M.0 + 12" (6" BEARING EACH SIDE)

D METAL DECKING

D.1 ALL METAL DECK MATERIAL, FABRICATION AND ERECTION SHALL COMPLY WITH THE PROVISIONS OF THE AISI SPECIFICATIONS FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS AND THE SDI DESIGN MANUAL FOR FLOOR DECKS AND ROOF DECKS.

D.2 STEEL FOR PAINTED METAL DECK UNITS SHALL CONFORM TO ASTM A1008, GRADE 40.

D.3 STEEL FOR GALVANIZED METAL DECK UNITS SHALL CONFORM TO ASTM A653, GRADE 40. GALVANIZING SHALL CONFORM TO ASTM A924, G60.

D.4 ALL WELDING OF METAL DECK TO SUPPORTING STEEL SHALL BE IN ACCORDANCE WITH THE AWS D1.3 STRUCTURAL WELDING CODE - SHEET STEEL.

D.5 THE TYPE , GAGE AND DIRECTION OF METAL DECK SHALL BE AS SHOWN ON PLANS.

D.6 FASTEN FLOOR AND ROOF DECK UNITS TO STEEL SUPPORTING MEMBERS AND SPANDREL GIRDERS BY NOT LESS THAN 3/4" DIAMETER FUSION WELDS OR ELONGATED WELDS OF EQUAL STRENGTH, SPACED NOT MORE THAN 12" ON CENTER WITH A MINIMUM OF 2 WELDS PER UNIT AT EVERY SUPPORT AND AT CLOSER SPACING WHERE REQUIRED FOR LATERAL OR UPLIFT FORCE RESISTANCE.

D.7 FASTEN SIDE LAPS OF ALL ADJACENT DECK UNITS BETWEEN SUPPORTS, WITH SELF-TAPPING NO. 8 OR LARGER MACHINE SCREWS OR BY WELDING AT INTERVALS NOT EXCEEDING 24" ON CENTER.

D.8 PROVIDE HOLES IN DECK AT SHEAR CONNECTOR LOCATIONS UNLESS THE DECK MANUFACTURER CERTIFIES THAT SHEAR CONNECTORS CAN BE WELDED TO SUPPORTS THROUGH DECK UNITS WITHOUT LESSENING THE SHEAR CONNECTOR'S CAPACITY.

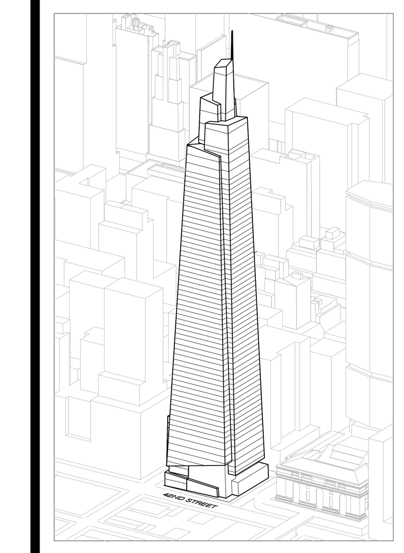
D.9 THE GENERAL CONTRACTOR OR CONSTRUCTION MANAGER AND/OR THE DECK CONTRACTOR SHALL COORDINATE OPENINGS IN DECK REQUIRED BY MECHANICAL ELECTRICAL, PLUMBING OR ARCHITECTURAL DOCUMENTS OR BY MECHANICAL OR OTHER TRADE CONTRACTORS.

D.10 THE DECK CONTRACTOR SHALL SUBMIT TO THE ARCHITECT FOR APPROVAL A DRAWING INDICATING THE SIZE AND LOCATION OF ALL OPENINGS PROPOSED TO BE PROVIDED IN METAL DECK THAT ARE NOT SHOWN ON STRUCTURAL DRAWINGS.

D.11 HANGER SLOTS IN METAL DECK SHALL BE USED FOR SUPPORT OF CEILINGS, AIR DUCTS OR LIGHTING FIXTURES AND SHALL NOT BE USED TO SUPPORT MECHANICAL OR ELECTRICAL EQUIPMENT OR PIPING. THE TRIBUTARY LOAD FOR EACH SLOT SHALL NOT EXCEED FIVE POUNDS PER SQUARE FOOT AND A TOTAL LOAD OF 60 POUNDS. HANGER SLOTS SHALL NOT BE USED TO SUPPORT CEILINGS WHERE THE APPLICABLE BUILDING CODE REQUIRES CEILING HANGERS TO SUPPORT MORE THAN 60 POUNDS.

D.12 METAL DECK SHALL BE CONTINUOUS OVER THREE SPANS MINIMUM, UNLESS SPECIFICALLY SHOWN OTHERWISE.

ONE VANDERBILT



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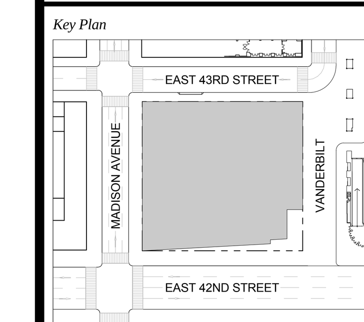
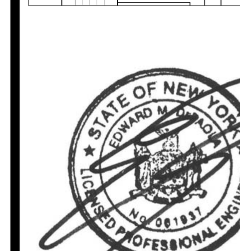
No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan





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FOR REFERENCE ONLY

Drawing Title
GENERAL NOTES

Drawing Number
S-701.00
SHEET 7 OF 9

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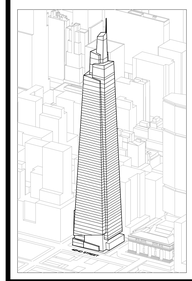
ONE VANDERBILT

LOADING SCHEDULE (PSF)

FLOOR	AREA	STRUCT SLAB	STEEL	RAISED FLOOR	BUILT UP SLAB	FINISH	MISC.	PARTITIONS	CEILING HUNG MEP	DEAD LOAD	LIVE LOAD	TOTAL LOAD	SLAB CONSTRUCTION	REMARKS
B3/B4 (FOUNDATION)														
B2 (SUB-CELLAR)	SHUTTLE PLATFORM	225	-	-	-	50	-	-	10	285	100	385	18" NWC SLAB	
B1 (CELLAR)	NORTHWEST	300	-	-	-	50	-	-	10	360	100	460	24" NWC SLAB	
	WEST	80	20	-	-	50	-	-	10	160	100	260	TYPE 3	
	EAST	225	-	-	-	50	-	-	10	285	100	385	18" NWC SLAB	
	CORE	75	-	-	-	50	-	-	10	135	100	235	6" NWC SLAB	
1ST	TEMPORARY CONSTRUCTION LOADING - TRUCK AREAS	80	20	-	-	-	-	-	-	100	600	700	TYPE 4	
	TEMPORARY CONSTRUCTION LOADING - STAGING AREA	80	20	-	-	-	-	-	-	100	250	350	TYPE 4	
	TYPICAL - TRANSIT HALL TYPICAL - RETAIL TYPICAL - AMENITY TYPICAL - OFFICE LOBBY TYPICAL - SUBWAY ENTRANCE TYPICAL - MESSENGER CENTER TYPICAL - DOCK MASTER	80	20	-	-	50	-	-	10	160	100	260	TYPE 4	
	CORE - PASSENGER ELEVATOR LOBBY	75	-	-	-	50	-	-	10	135	100	235	6" NWC SLAB	
	CORE - MER CORE - FREIGHT ELEVATOR VESTIBULE CORE - BACK OF HOUSE	75	-	-	-	-	-	-	10	85	100	185	6" NWC SLAB	
	CORE - STAIRS	130	-	-	-	-	-	-	-	130	100	230	CONCRETE RISERS*	*SEE STAIR PLANS AND DETAILS FOR CONSTRUCTION
2ND	TEMPORARY CONSTRUCTION LOADING - STAGING AREA	80	20	-	-	-	-	-	-	100	250	350	TYPE 1	
	TYPICAL - RETAIL	80	20	-	-	25	-	-	10	135	100	235	TYPE 1	
	TYPICAL - AMENITY	80	20	-	-	25	-	-	10	135	100	235	TYPE 1	
	CORE - CIRCULATION	75	-	-	-	50	-	-	10	135	100	265	6" NWC SLAB	
	CORE - BACK OF HOUSE CORE - MER CORE - FREIGHT ELEVATOR VESTIBULE	75	-	-	-	-	-	-	10	85	100	210	6" NWC SLAB	
	CORE - STAIRS	130	-	-	-	-	-	-	-	130	100	230	CONCRETE RISERS*	*SEE STAIR PLANS AND DETAILS FOR CONSTRUCTION
3RD	TYPICAL - AMENITY	80	20	-	-	25	-	-	10	135	100	235	TYPE 1	
	TERRACE	80	20	-	-	50	-	-	10	160	100	260	TYPE 1	
	CORE - CIRCULATION	75	-	-	-	50	-	-	10	135	100	235	6" NWC SLAB	
	CORE - BACK OF HOUSE CORE - MER CORE - FREIGHT ELEVATOR VESTIBULE	75	-	-	-	-	-	-	10	85	100	185	6" NWC SLAB	
	CORE - STAIRS	130	-	-	-	-	-	-	-	130	100	230	CONCRETE RISERS*	*SEE STAIR PLANS AND DETAILS FOR CONSTRUCTION
4TH	TYPICAL - MECHANICAL	115	20	-	-	-	-	-	10	145	150	295	TYPE 3	
	CORE	75	-	-	-	-	-	-	10	85	100	185	6" NWC SLAB	
	CORE - STAIRS	130	-	-	-	-	-	-	-	130	100	230	CONCRETE RISERS*	*SEE STAIR PLANS AND DETAILS FOR CONSTRUCTION
5TH	TYPICAL - MECHANICAL	80	20	-	-	-	-	-	50	150	150	300	TYPE 3	*CONCRETE FILL AND MECHANICAL PADS
	CORE	75	-	-	-	-	-	-	10	85	100	185	6" NWC SLAB	
	CORE - STAIRS	130	-	-	-	-	-	-	-	130	100	230	CONCRETE RISERS*	*SEE STAIR PLANS AND DETAILS FOR CONSTRUCTION
6TH	TYPICAL - TRADING FLOOR	115	12	15	-	-	-	-	50	192	100	292	TYPE 1	
	TYPICAL - TOILET ROOMS	115	12	-	-	50	-	-	50	227	100	327	TYPE 1	
	TYPICAL - STAIRS	50	12	-	-	-	-	-	-	62	100	162		
	TYPICAL - BACK OF HOUSE	55	12	15	-	-	-	-	50	132	100	232	TYPE 1	
	TYPICAL - PASSENGER ELEVATOR LOBBY	55	12	-	50	50	-	-	50	217	100	317	TYPE 1	
	CORE - MER CORE - FREIGHT ELEVATOR VESTIBULE	75	-	-	-	-	-	-	10	85	100	185	6" NWC SLAB	
	CORE - PASSENGER ELEVATOR LOBBY CORE - TOILET ROOMS	75	-	-	-	50	-	-	10	135	100	235	6" NWC SLAB	
	CORE - STAIRS	130	-	-	-	-	-	-	-	130	100	230	CONCRETE RISERS*	*SEE STAIR PLANS AND DETAILS FOR CONSTRUCTION
7TH-11TH	TYPICAL - TRADING FLOOR	55	12	15	-	-	-	-	10	92	100	192	TYPE 1	
	TYPICAL - TOILET ROOMS	55	12	-	-	50	-	-	10	127	100	227	TYPE 1	
	TYPICAL - STAIRS	50	12	-	-	-	-	-	-	62	100	162		
	TYPICAL - BACK OF HOUSE	55	12	15	-	-	-	-	10	92	100	192	TYPE 1	
	TYPICAL - PASSENGER ELEVATOR LOBBY	55	12	-	50	50	-	-	10	177	100	277	TYPE 1	
	CORE - MER CORE - FREIGHT ELEVATOR VESTIBULE	75	-	-	-	-	-	-	10	85	100	185	6" NWC SLAB	
	CORE - TOILET ROOMS	75	-	-	-	50	-	-	10	135	100	235	6" NWC SLAB	
	CORE - STAIRS	130	-	-	-	-	-	-	-	130	100	230	CONCRETE RISERS*	*SEE STAIR PLANS AND DETAILS FOR CONSTRUCTION
12TH	TYPICAL - MECHANICAL	115	20	-	-	-	-	-	10	145	150	295	TYPE 3	*CONCRETE FILL AND MECHANICAL PADS
	CORE	75	-	-	-	-	-	-	10	85	100	185	6" NWC SLAB	
	CORE - STAIRS	130	-	-	-	-	-	-	-	130	100	230	CONCRETE RISERS*	*SEE STAIR PLANS AND DETAILS FOR CONSTRUCTION
13TH	TYPICAL - MECHANICAL	80	20	-	-	-	-	-	50	150	150	300	TYPE 3	*CONCRETE FILL AND MECHANICAL PADS
	ELEVATOR MACHINE ROOM	80	20	-	-	-	-	-	-	100	75+*	175+*	TYPE 3	*+SHEAVE BEAM REACTIONS
	CORE	75	-	-	-	-	-	-	10	85	100	185	6" NWC SLAB	
	CORE - STAIRS	130	-	-	-	-	-	-	-	130	100	230	CONCRETE RISERS*	*SEE STAIR PLANS AND DETAILS FOR CONSTRUCTION
14TH	TYPICAL - OFFICE	115	12	15	-	-	-	12	50	204	50	254	TYPE 1	
	TERRACE	55	12	-	-	50	-	-	50	167	100	267	TYPE 1	
	CORE - MER CORE - FREIGHT ELEVATOR VESTIBULE	75	-	-	-	-	-	-	10	85	100	185	6" NWC SLAB	
	CORE - PASSENGER ELEVATOR LOBBY CORE - TOILET ROOMS	75	-	-	-	50	-	-	10	135	100	235	6" NWC SLAB	
	CORE - STAIRS	130	-	-	-	-	-	-	-	130	100	230	CONCRETE RISERS*	*SEE STAIR PLANS AND DETAILS FOR CONSTRUCTION
15TH-35TH	TYPICAL - OFFICE	55	12	15	-	-	-	12	8	102	50	152	TYPE 1	
	CORE - MER CORE - FREIGHT ELEVATOR VESTIBULE	75	-	-	-	-	-	-	10	85	100	185	6" NWC SLAB	
	CORE - PASSENGER ELEVATOR LOBBY CORE - TOILET ROOMS	75	-	-	-	50	-	-	10	135	100	235	6" NWC SLAB	
	CORE - STAIRS	130	-	-	-	-	-	-	-	130	100	230	CONCRETE RISERS*	*SEE STAIR PLANS AND DETAILS FOR CONSTRUCTION
	CORE - ELEVATOR MACHINE ROOM	100	-	-	-	-	-	-	-	100	75+*	175+*	6" NWC SLAB	*+SHEAVE BEAM REACTIONS
36TH	TYPICAL - MECHANICAL	115	20	-	-	-	-	-	10	145	150	295	TYPE 3	*CONCRETE FILL AND MECHANICAL PADS
	CORE	75	-	-	-	-	-	-	10	85	100	210	6" NWC SLAB	
	CORE - STAIRS	130	-	-	-	-	-	-	-	130	100	230	CONCRETE RISERS*	*SEE STAIR PLANS AND DETAILS FOR CONSTRUCTION
	CORE - ELEVATOR MACHINE ROOM	100	-	-	-	-	-	-	-	100	75+*	175+*	6" NWC SLAB	*+SHEAVE BEAM REACTIONS
37TH	TYPICAL - OFFICE	115	12	15	-	-	-	12	50	204	50	254	TYPE 1	
	TYPICAL - TOILET ROOMS	55	12	-	-	50	-	12	50	179	50	229	TYPE 1	
	CORE - MER CORE - FREIGHT ELEVATOR VESTIBULE	75	-	-	-	-	-	-	10	85	100	185	6" NWC SLAB	
	CORE - PASSENGER ELEVATOR LOBBY	75	-	-	-	50	-	-	10	135	100	235	6" NWC SLAB	
	CORE - STAIRS	130	-	-	-	-	-	-	-	130	100	230	CONCRETE RISERS*	*SEE STAIR PLANS AND DETAILS FOR CONSTRUCTION
38TH-49TH	TYPICAL - OFFICE	55	12	15	-	-	-	12	8	102	50	152	TYPE 1	
	TYPICAL - TOILET ROOMS	55	12	-	-	50	-	12	50	179	50	229	TYPE 1	
	CORE - MER CORE - FREIGHT ELEVATOR VESTIBULE	75	-	-	-	-	-	-	10	85	100	185	6" NWC SLAB	
	CORE - PASSENGER ELEVATOR LOBBY	75	-	-	-	50	-	-	10	135	100	235	6" NWC SLAB	
	CORE - STAIRS	130	-	-	-	-	-	-	-	130	100	230	CONCRETE RISERS*	*SEE STAIR PLANS AND DETAILS FOR CONSTRUCTION

LOADING SCHEDULE (PSF)

FLOOR	AREA	STRUCT SLAB	STEEL	RAISED FLOOR	BUILT UP SLAB	FINISH	MISC.	PARTITIONS	CEILING HUNG MEP	DEAD LOAD	LIVE LOAD	TOTAL LOAD	SLAB CONSTRUCTION	REMARKS
50TH	TYPICAL - MECHANICAL	115	20	-	-	-	-	-	10	145	150	295	TYPE 3	*CONCRETE FILL AND MECHANICAL PADS
	CORE	75	-	-	-	-	-	-	10	85	100	185	6" NWC SLAB	
	CORE - STAIRS	130	-	-	-	-	-	-	-	130	100	230	CONCRETE RISERS*	*SEE STAIR PLANS AND DETAILS FOR CONSTRUCTION
51ST	TYPICAL - OFFICE	115	12	15	-	-	-	12	50	204	50	254	TYPE 1	
	TYPICAL - TOILET ROOMS	55	12	-	-	50	-	12	50	179	50	229	TYPE 1	
	CORE - MER CORE - FREIGHT ELEVATOR VESTIBULE	75	-	-	-	-	-	-	10	85	100	185	6" NWC SLAB	
	CORE - PASSENGER ELEVATOR LOBBY	75	-	-	-	50	-	-	10	135	100	235	6" NWC SLAB	
	CORE - STAIRS	130	-	-	-	-	-	-	-	130	100	230	CONCRETE RISERS*	*SEE STAIR PLANS AND DETAILS FOR CONSTRUCTION
52ND-58TH	TYPICAL - OFFICE	55	12	15	-	-	-	12	8	102	50	152	TYPE 1	
	TYPICAL - TOILET ROOMS	55	12	-	-	50	-	12	8	137	50	187	TYPE 1	
	CORE - MER CORE - FREIGHT ELEVATOR VESTIBULE	75	-	-	-	-	-	-	10	85	100	185	6" NWC SLAB	
	CORE - PASSENGER ELEVATOR LOBBY	75	-	-	-	50	-	-	10	135	100	235	6" NWC SLAB	
	CORE - STAIRS	130	-	-	-	-	-	-	-	130	100	230	CONCRETE RISERS*	*SEE STAIR PLANS AND DETAILS FOR CONSTRUCTION
59TH	TYPICAL - MECHANICAL	115	20	-	-	-	-	-	10	145	150	295	TYPE 3	*CONCRETE FILL AND MECHANICAL PADS
	CORE	75	-	-	-	-	-	-	10	85	100	185	6" NWC SLAB	
	CORE - STAIRS	130	-	-	-	-	-	-	-	130	100	230	CONCRETE RISERS*	*SEE STAIR PLANS AND DETAILS FOR CONSTRUCTION
60TH	TYPICAL - MECHANICAL	80	20	-	-	-	-	-	50	150	150	300	TYPE 3	*CONCRETE FILL AND MECHANICAL PADS
	CORE	75	-	-	-	-	-	-	10	85	100	185	6" NWC SLAB	
	CORE - STAIRS	130	-	-	-	-	-	-	-	130	100	230	CONCRETE RISERS*	*SEE STAIR PLANS AND DETAILS FOR CONSTRUCTION
61ST	TYPICAL - AMENITY	115	12	-	-	25	-	-	50	202	100	302	TYPE 1	
	TYPICAL - TOILET ROOMS	55	12	-	-	50	-	-	50	167	100	267	TYPE 1	
	CORE - MER CORE - FREIGHT ELEVATOR VESTIBULE	75	-	-	-	-	-	-	10	85	100	185	6" NWC SLAB	
	CORE - PASSENGER ELEVATOR LOBBY	75	-	-	-	50	-	-	10	135	100	235	6" NWC SLAB	
	CORE - STAIRS	130	-	-	-	-	-	-	-	130	100	230	CONCRETE RISERS*	*SEE STAIR PLANS AND DETAILS FOR CONSTRUCTION
62ND-63RD	TYPICAL - AMENITY	55	12	-	-	25	-		10	102	100	202	TYPE 1	
	CORE	75	-	-	-	50	-		10	135	100	235	6" NWC SLAB	
	CORE - STAIRS	130	-	-	-	-	-		-	130	100	230	CONCRETE RISERS*	*SEE STAIR PLANS AND DETAILS FOR CONSTRUCTION
64TH	ROOF - GLASS	40	12			-			-	52	40	92		
	ROOF - SLAB	80	12			20			10	122	100	222		
64M	MECHANICAL	80	20			50			10	160	150	310		
65TH	BMU-1	40	12			20			-	72	100	172		GRATING AT FLOOR
66TH	BMU-2	40	12			20			-	72	100	172		GRATING AT FLOOR
67TH	BMU-3	40	12			20			-	72	100	172		GRATING AT FLOOR
68TH	TOP OF BUILDING	80	20			20			10	130	40	170		



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Civil / Geotechnical Engineer
Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
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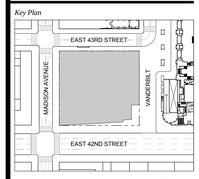
Tel: 973.994.9220 Fax: 973.994.2539

Code Consulting
Code Consultants, Inc.
215 West 40th Street, 15th Floor
New York, NY 10018
Tel: 212.216.9596 Fax: 212.216.9619

No.	Description	Date
1	D.O.B. FOUNDATION PERMIT FILING	09-01-2015

Key Plan



Issue Date: 09-01-2015
Project No. 14500
Drawn By
Scale 1/8" = 1'-0"

FOR REFERENCE ONLY

Drawing Title
LOADING SCHEDULE

Drawing Number
S-702.00
SHEET 8 OF 9

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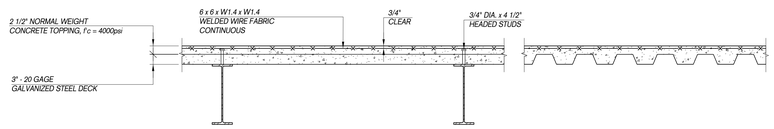
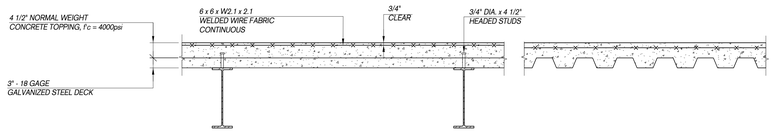


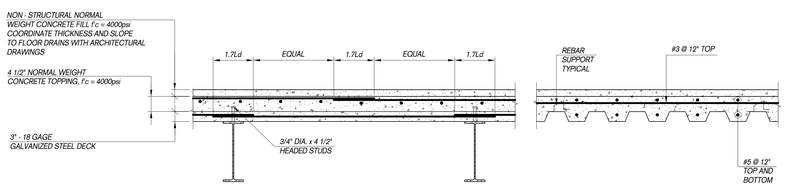
STRUCTURAL FLOOR TYPE 1

3/4" = 1'-0"



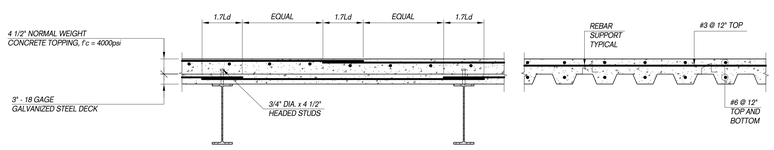
STRUCTURAL FLOOR TYPE 2

3/4" = 1'-0"



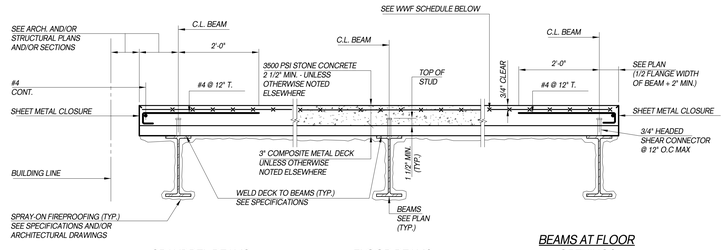
STRUCTURAL FLOOR TYPE 3

3/4" = 1'-0"



STRUCTURAL FLOOR TYPE 4

3/4" = 1'-0"



SPANDREL BEAMS FLOOR BEAMS BEAMS AT FLOOR OPENINGS

PARALLEL TO SPAN OF DECK

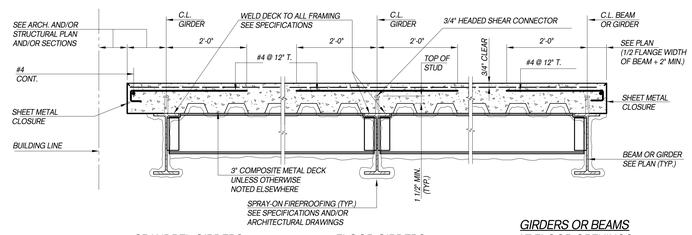
TYPICAL FLOOR CONSTRUCTION DETAIL

NOTES:

1. THE SIZE AND CONNECTION OF ALL SHEET METAL CLOSURES SHALL BE FURNISHED, DESIGNED AND SHOWN ON SHOP DRAWINGS BY THE METAL DECK MANUFACTURER AND INSTALLED BY THE METAL DECK CONTRACTOR.
2. CLOSURES SHALL BE DESIGNED TO SAFELY SUPPORT THE WET WEIGHT OF SUPERIMPOSED CONCRETE WITH MINIMAL DEFLECTION. SHORE IF NECESSARY.
3. ANY ATTACHMENT TO THE SLAB EDGE FOR SUPPORT OF EXTERIOR WALLS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE WHERE THE PROJECT IS LOCATED AND SUBMITTED FOR THE REVIEW OF THE ENGINEER OF RECORD.
4. SHEAR CONNECTORS SHALL BE EQUALLY SPACED ALONG THE SPAN OF THE BEAM UNLESS OTHERWISE NOTED. THE TOTAL NUMBER OF SHEAR CONNECTORS PER BEAM IS SHOWN THUS (. .) ON PLAN. SPACING OF STUDS NOT TO EXCEED 12" (AVERAGE OVER BEAM LENGTH)
5. FOR GAGE AND TYPE OF DECK, SEE PLAN.
6. FASTEN SIDE LAPS OF ALL ADJACENT DECK UNITS BETWEEN SUPPORTS WITH SELF-TAPPING No. 8 OR LARGER MACHINE SCREWS OR BY WELDING, AT INTERVALS NOT EXCEEDING 24" o.c.
7. THE CONCRETE CONTRACTOR SHALL INCLUDE IN HIS BID THE ADDITIONAL QUANTITY OF CONCRETE THAT MAY BE REQUIRED TO COMPENSATE FOR METAL DECK, FILLER BEAM AND GIRDER DEFLECTION.

WWF SCHEDULE

THICKNESS OF CONCRETE COVER	MIN. WELDED WIRE REINFORCEMENT REQ'D
2 1/2"	6X6-W2.5 X W2.5
3 1/4"	6X6-W2.9 X W2.9
4 1/2"	6X6-W4.0 X W4.0
OTHER	0.0015 X CONCRETE AREA



SPANDREL GIRDERS FLOOR GIRDERS GIRDERS OR BEAMS AT FLOOR OPENINGS

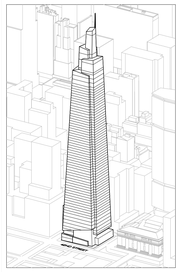
PERPENDICULAR TO SPAN OF DECK

TYPICAL FLOOR CONSTRUCTION DETAIL

NOTES:

1. THE SIZE AND CONNECTION OF ALL SHEET METAL CLOSURES SHALL BE FURNISHED, DESIGNED AND SHOWN ON SHOP DRAWINGS BY THE METAL DECK MANUFACTURER AND INSTALLED BY THE METAL DECK CONTRACTOR.
2. CLOSURES SHALL BE DESIGNED TO SAFELY SUPPORT THE WET WEIGHT OF SUPERIMPOSED CONCRETE WITH MINIMAL DEFLECTION. SHORE IF NECESSARY.
3. ANY ATTACHMENT TO THE SLAB EDGE FOR SUPPORT OF EXTERIOR WALL SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE WHERE THE PROJECT IS LOCATED AND SUBMITTED FOR THE REVIEW OF THE ENGINEER OF RECORD.
4. THE TOTAL NUMBER OF SHEAR CONNECTORS SHALL BE EQUALLY SPACED BETWEEN FILLER BEAMS OR BETWEEN COLUMNS AND FILLER BEAMS OR BETWEEN OTHER GIRDERS AND FILLER BEAMS. THE TOTAL NUMBER OF SHEAR CONNECTORS ARE SHOWN ON PLAN THUS (. .), e.g. SPACING OF STUDS NOT TO EXCEED 12"
5. FOR GAGE AND TYPE OF DECK, SEE PLAN.
6. FASTEN SIDE LAPS OF ALL ADJACENT DECK UNITS BETWEEN SUPPORTS WITH SELF-TAPPING No. 8 OR LARGER MACHINE SCREWS OR BY WELDING, AT INTERVALS NOT EXCEEDING 24" o.c.
7. THE CONCRETE CONTRACTOR SHALL INCLUDE IN HIS BID THE ADDITIONAL QUANTITY OF CONCRETE THAT MAY BE REQUIRED TO COMPENSATE FOR METAL DECK, FILLER BEAM AND GIRDER DEFLECTION.

ONE VANDERBILT



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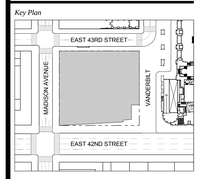
Key Plan



Issue Date: 09-01-2015
Project No. 14500
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Scale 3/4" = 1'-0"

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Drawing Title

TYPICAL FLOOR CONSTRUCTION DETAILS

Drawing Number

S-703.00

SHEET 9 OF 9

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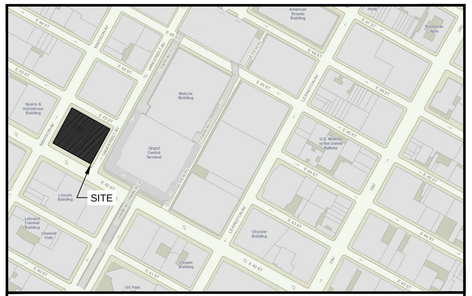
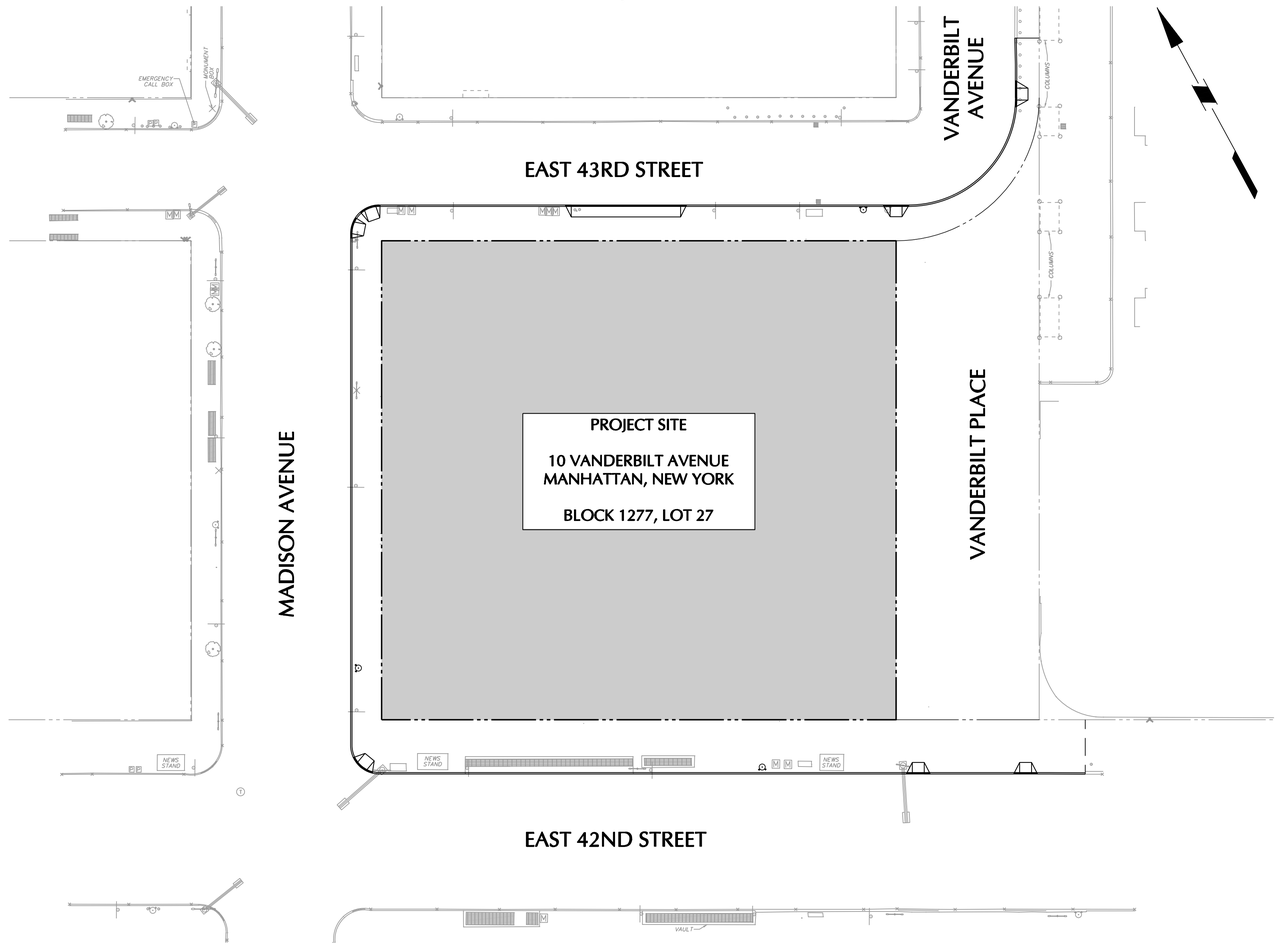
BUILDERS PAVEMENT PLAN FOR:
10 VANDERBILT AVENUE
NEW YORK, NY 10017



AREA MAP
NOT TO SCALE

SOURCE:
NYCityMap



OVERALL PLAN
SCALE: 1" = 30'

30 0 15 30
SCALE IN FEET

Borough: MANHATTAN	Sheet: 1 of 8
DOB App. No.:	NB No.: 121 189 828

NEW YORK CITY
DEPARTMENT OF TRANSPORTATION
BUILDERS PAVEMENT PLAN

PROJECT DATA

BLOCK:	1277	LOT:	27
ZONING:	C5-3	ZONING MAP NO.:	8D
ADDRESS:	10 VANDERBILT AVENUE		

OWNER: ONE VANDERBILT OWNER, LLC, C/O SL GREEN REALTY CORP.
420 LEXINGTON AVENUE
NEW YORK, NY 10017

PLANS PREPARED BY:
CHRISTOPHER VITOLANO, P.E.
NYS PROFESSIONAL ENGINEER LICENSE NUMBER 081589

COMPANY: LANGAN ENGINEERING, ENVIRONMENTAL, SURVEYING AND LANDSCAPE ARCHITECTURE, D.P.C.
ADDRESS: 360 WEST 31ST STREET, 8TH FLOOR
CITY/STATE/ZIP: NEW YORK, NY 10001
PHONE NO.: (212) 479-5400

WAIVERS

DOT REQUIREMENT WAIVED	AS PER / DATE
1.	

NOTES

GENERAL REQUIREMENTS

1. ALL DESIGNS, MATERIALS, CONSTRUCTION METHODS AND WORKMANSHIP SHALL COMPLY WITH THE FOLLOWING PUBLICATIONS OF THE BUREAU OF HIGHWAYS: STANDARD SPECIFICATIONS, STANDARD DETAILS OF CONSTRUCTION; RULES OF THE BUREAU OF HIGHWAY OPERATIONS; GUIDELINES FOR THE DESIGN OF INFRASTRUCTURE COMPONENTS.
2. ALL NON STANDARD MATERIALS AND CONSTRUCTION PROCEDURES SHALL BE SPECIFICALLY APPROVED IN WRITING BY THE DOT.
3. ANY WORK NOT COMPLYING WITH THE REQUIREMENTS OF THE DOT SHALL BE REMOVED AND REPLACED.
4. THIS PLAN SHALL BE VALID FOR THE ISSUANCE OF CONSTRUCTION PERMITS FOR A PERIOD OF ONE YEAR FROM THE DATE OF APPROVAL OR SELF-CERTIFICATION, AS APPLICABLE.
5. ALL SIDEWALK AND STREET AREAS CONSTRUCTED UNDER THIS PLAN SHALL REMAIN OPEN TO THE PUBLIC AT ALL TIMES.

ISSUANCE OF PERMITS

6. NO SIDEWALK, CURB OR ROADWAY WORK SHALL BE DONE WITHOUT A PERMIT FROM THE BOROUGH HIGHWAY SUPERINTENDENT. APPLICATION SHALL BE MADE THREE DAYS BEFORE STARTING CONSTRUCTION. THE CONTRACTOR SHALL HAVE ALL REQUIRED INSURANCE COVERAGE ON FILE.
7. NO WORK ON DRAINAGE STRUCTURES SHALL BE DONE WITHOUT A PERMIT FROM THE BOROUGH OFFICE OF THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
8. ANY VAULT WORK AT THE SITE SHALL BE DONE AS PER THE APPLICABLE RULES OF THE DOT AND DOB.

CONSTRUCTION ACTIVITY

9. A CONSTRUCTION PLAN SHOWING MAINTENANCE AND PROTECTION OF TRAFFIC, INCLUDING PLACEMENT OF SIDEWALK BRIDGES, BARRIERS AND SIGNAGE, SHALL BE SUBMITTED TO THE BOROUGH HIGHWAY OFFICE BEFORE CONSTRUCTION BEGINS.
10. NO SIDEWALK SHALL BE CLOSED WITHOUT A PERMIT. PEDESTRIAN AND TRAFFIC SAFETY SHALL BE PROTECTED AT ALL TIMES. ROADWAY CLOSINGS SHALL BE AS DIRECTED.
11. THE SITE SHALL BE MAINTAINED IN A CLEAN AND SAFE CONDITION.

FINAL SIGN-OFF

12. PERMITS SHALL BE PRESENTED FROM ALL PUBLIC AGENCIES AND UTILITIES HAVING OWNERSHIP OF STRUCTURES RELOCATED OR REMOVED DURING CONSTRUCTION.
13. ALL PAVEMENT MARKINGS INCLUDING THERMOPLASTIC LANE DIVIDERS, REMOVED DURING CONSTRUCTION SHALL BE REPLACED IN KIND TO THE BUREAU OF TRAFFIC STANDARDS.
14. ALL EXISTING CATCH BASINS ON SITE SHALL BE CLEANED AND MADE OPERABLE.
15. ALL DAMAGE CAUSED BY CONSTRUCTION ON THIS PROJECT OUTSIDE THE PROJECT LIMITS SHALL BE REPAIRED AS DIRECTED.
16. THE ROADWAY SHALL BE PAVED TO THE REQUIREMENTS OF THE DOT AND AS DIRECTED.

INSPECTION / FINAL SIGN-OFF

THE CONTRACTOR IS RESPONSIBLE TO PROCURE OR PROVIDE ALL ITEMS NECESSARY FOR FINAL NYCDOB/NYCDOT SIGN-OFF, INCLUDING BUT NOT LIMITED TO;
-NYCDOT INSPECTION AND SIGN-OFF
-FINAL AS-BUILT SURVEY SIGNED AND SEALED BY A NYS PLS
-FULL-TIME CONTROLLED INSPECTION AND CONCRETE CORE TESTS SIGNED AND SEALED BY A NYS P.E. OR R.A., ACCOMPANIED BY BPP-11 (ENGINEER'S INSPECTION AFFIDAVIT)

GENERAL NOTES

1. BACKGROUND SHOWN PROVIDED BY LANGAN ENGINEERING, ENVIRONMENTAL, SURVEYING AND LANDSCAPE ARCHITECTURE D.P.C. PER PLAN TITLED "TOPOGRAPHIC, BOUNDARY AND UTILITY SURVEY (NAVD 88)" DATED 9/29/2014.
2. ELEVATIONS SHOWN ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). NAVD 88 IS 1.083 FEET ABOVE THE NATIONAL GEODETIC SURVEY DATUM OF 1929, (US COAST AND GEODETIC SURVEY DATUM) MEAN SEA LEVEL AT SANDY HOOK, NJ (NGVD 29). NAVD 88 IS 1.669 FEET BELOW MANHATTAN BOROUGH DATUM.
3. THE CONTRACTOR IS RESPONSIBLE FOR CREATING ALL REQUIRED SITE LOGISTICS PLANS, AND FOR COORDINATING SAID PLANS AND ALL REQUIRED PERMITS WITH THE NEW YORK CITY OFFICE OF CONSTRUCTION MITIGATION AND COORDINATION (OCMC).
4. SIDEWALK REPLACEMENT TO CONSIST OF REMOVING EXISTING CONCRETE SIDEWALK AND CONSTRUCTING NEW 4-INCH AND 7-INCH THICK NYC DOT STANDARD CONCRETE SIDEWALK, AS NOTED (H-1045 TYPE I AND TYPE III).
5. TRANSVERSE EXPANSION JOINTS 1/4 INCH WIDE SHALL BE PROVIDED AT INTERVALS OF MAXIMUM 20 FEET AND FILLED WITH PREFORMED BITUMINOUS CELLULAR TYPE JOINT FILLER. SCORE LINES SHALL BE EVERY 5 FEET ON CENTER.
6. EXPANSION JOINT WITH JOINT FILLER TO BE PROVIDED AT INTERFACE OF NEW SIDEWALK AND ALL PROPOSED AND EXISTING SIDEWALK FEATURES (BUILDINGS, VAULT GRATES, MANHOLES, NYCT STRUCTURES, ETC.) EXCEPT TRAFFIC SIGNS.
7. CONTRACTOR TO OBTAIN NECESSARY DOT WORK PERMITS AND PERFORM ALL WORK IN ACCORDANCE WITH DOT REQUIREMENTS AND STANDARDS.
8. ADJUST ALL SURFACE FEATURES TO MATCH EXISTING GRADE AS NECESSARY (EX. HYDRANTS, VALVE COVERS, VAULT LIDS, ETC.). CONTRACTOR TO COORDINATE THIS WORK WITH THE APPROPRIATE UTILITY OWNER(S), AS REQUIRED.
9. ALL STREET SIGNS SHALL BE TEMPORARILY REMOVED AND REPLACED IN KIND.
10. IN ORDER TO COMPLY WITH ADA REQUIREMENTS, THE CONTRACTOR IS REQUIRED TO BREAK THE TRANSVERSE GRADE OF SIDEWALKS SUCH THAT THERE SHALL BE A MINIMUM OF FIVE (5') FEET WIDTH OF SIDEWALK WITH A TRANSVERSE SLOPE NOT EXCEEDING 2% AND THE REMAINING SIDEWALK SLOPE NOT EXCEEDING 5%, WHERE POSSIBLE.
11. THE CONTRACTOR IS TO STRIP AND RESURFACE ROADWAY AS NOTED ON THE PLAN OR TO THE EXTENTS NECESSARY AS DIRECTED BY NYCDOT OR NYCDOB. REPAIR OR REPLACE 6-INCH TO 9-INCH CONCRETE BASE (MATCH EXISTING, 6-INCH MIN.) AS REQUIRED BY INSPECTOR. RESURFACE WITH 3-INCH DEPTH ACWC, OR AS INDICATED. NYCDOT RESERVES THE RIGHT, UPON BPP INSPECTION, TO REQUIRE THE OWNER TO MILL AND RESURFACE ENTIRE STREET WIDTH.
12. EXTERIOR DOORS SHALL NOT BE PROJECTED BEYOND THE STREET LINE MORE THAN 18-INCHES PER NYC DOB STANDARDS.
13. REFER TO APPROVED NYCT DRAWINGS FOR ADDITIONAL NOTES AND REQUIREMENTS.
14. VANDERBILT PLACE CREATED PER NYC DCP C 140440 MMM. REFERENCE ALTERATION MAP 30244.

NYC DOT STANDARD DETAILS

H-1045	CONCRETE SIDEWALK (TYPE I & III)
H-1042 A,B,C	STANDARD TRENCH OR HOLE RESTORATION
H-1010	STEEL FACED CURB: STEEL FACING TYPE D
H-1011	SIDEWALK PEDESTRIAN RAMP
H-1015	STEEL FACED DROP CURB DRIVEWAYS
H-1035	REINFORCED CONCRETE CURB & DROP CURB
H-1033	TYPICAL RESURFACING ON ASPHALT PAVEMENT
H-1056,A	TYPICAL GRANITE CURB

NYC DOT STANDARD SPECIFICATIONS

4.02	ASPHALTIC CONCRETE WEARING COURSE
4.09	CURB, CONCRETE, STEEL FACED
4.13	SIDEWALK, CONCRETE
4.13 DE	EMBEDDED PREFORMED DETECTABLE WARNING UNITS
4.14	STEEL REINFORCEMENT IN CONCRETE

NOTE: THE LATEST REVISIONS OF THE APPLICABLE REFERENCED STANDARDS THAT HAVE BEEN AUTHORIZED UP TO THE START OF ADVERTISING SHALL BE CONSIDERED AS PART OF THESE DOCUMENTS.

LIST OF ESTIMATED QUANTITIES

NEW CURB	866	LIN. FT.
NEW SIDEWALK	14250	SQ. FT.
NEW ROADWAY	624-2979	SQ. YDS.
NEW TREES	0	EACH
NEW CBs	3	EACH
NEW DIP	0	LIN. FT.
NEW MANHOLES	0	EACH

SUMMARY OF WORK

1. MAINTAIN AND PROTECT ALL EXISTING UTILITIES.
2. REMOVE ALL EXISTING SIDEWALK AND CURB FRONTING THE SITE ALONG EAST 42ND STREET, MADISON AVENUE, EAST 43RD STREET AND VANDERBILT AVENUE.
4. INSTALL NEW GRANITE CURB AS APPROVED BY NYCDOT
5. INSTALL NEW CONCRETE SIDEWALK AND GRANITE CURB ALONG EAST 42ND STREET, MADISON AVENUE EAST 43RD STREET AND VANDERBILT AVENUE. CONSTRUCT CURBS AND DROP CURBS AS NOTED, AND IN ACCORDANCE WITH APPROVED CURB CUT PLANS. CONSTRUCT GRANITE CORNER QUADRANTS AND CROSSWALKS IN ACCORDANCE WITH GRAND CENTRAL PARTNERSHIP REQUIREMENTS.
6. MILL AND REPAVE ROADWAY AS REQUIRED.

STREET TREE SUMMARY

STREET FRONTAGE	833
TREES REQUIRED BY ZONING/NYC DOB:	33
EXISTING TREES TO REMAIN/PROTECT:	0
EXISTING TREES TO REMOVE WITH NYC PARKS DOCUMENTATION:	0
PROPOSED TREES TO PLANT:	0
TREES TO PAY INTO TREE FUND/ OR PLANT OFFSITE:	33

LIST OF DRAWINGS

1. COVER SHEET
2. EAST 42ND STREET PLAN AND PROFILE 1
3. EAST 42ND STREET PLAN AND PROFILE 2
4. MADISON AVENUE PLAN AND PROFILE
5. EAST 43RD STREET PLAN AND PROFILE
6. EAST 43RD STREET & VANDERBILT AVENUE PLAN AND PROFILE
7. DETAILS
8. DETAILS

NYC DPR NOTES

1. CONTRACTOR SHALL CONTACT NYC PARKS IF ANY UNDERGROUND INFRASTRUCTURE (GAS/WATER/ELECTRIC ETC.) AFFECTS ANY PROPOSED/EXISTING TREES ON SITE. PROJECT MANAGER IS AWARE THAT ANY WORK DONE ON OR NEAR A CITY TREE REQUIRES A PERMIT FROM NYC PARKS. THIS INCLUDES UTILITY, SIDEWALK, PRUNING OR ANY OTHER WORK WITHIN THE DRIPLINE OF A TREE (WITHIN THE RIGHT OF WAY) DONE BY THE GENERAL CONTRACTOR OR ANY SUBCONTRACTORS. THE CONTRACTOR WILL FOLLOW NYC PARKS PLANTING AND FORESTRY SPECIFICATIONS. UTILITIES MAY NOT BE LABELED. IF UNKNOWN, THE PROJECT MANAGER MUST AMEND PLANS WITH NYC PARKS IN THE FUTURE.
2. PROTECT ALL EXISTING STREET TREES PRIOR TO THE COMMENCEMENT OF CONSTRUCTION IN ACCORDANCE WITH "TEMPORARY WOODEN TREE GUARD" DETAIL BY NYCDPR.
3. ALL PIT SIZES INDICATED ARE TO BE FULLY EXCAVATED TO THE DIMENSIONS LABELED AND REPLACED WITH NEW TOPSOIL TO NYC PARKS STANDARDS.
4. STREET TREE SITE PLAN REF # 18302

DOT APPROVAL

PROPOSED AND EXISTING WORK SHOWN HERE REVIEWED FOR COMPLIANCE WITH ALL APPLICABLE RULES AND REQUIREMENTS BY:

PLAN EXAMINER

APPROVAL FOR ISSUANCE OF WORK PERMITS GRANTED BY:

DEPARTMENT OF TRANSPORTATION — DATE / /

[B-SCAN STICKER]

Date	Description	No.
12/4/2015	INITIAL SUBMISSION TO DOB	0

Revisions

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NEW JERSEY NEW YORK VIRGINIA CALIFORNIA PENNSYLVANIA CONNECTICUT FLORIDA
ABU DHABI ATHENS DOHA DUBAI ISTANBUL
Langan Engineering & Environmental Services, Inc.
Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
Langan International LLC
Collectively known as Langan

Project: 10 VANDERBILT AVENUE
BLOCK 1277, LOT 27
MANHATTAN
NEW YORK NEW YORK

Drawing Title: BUILDERS PAVEMENT PLAN: COVER SHEET

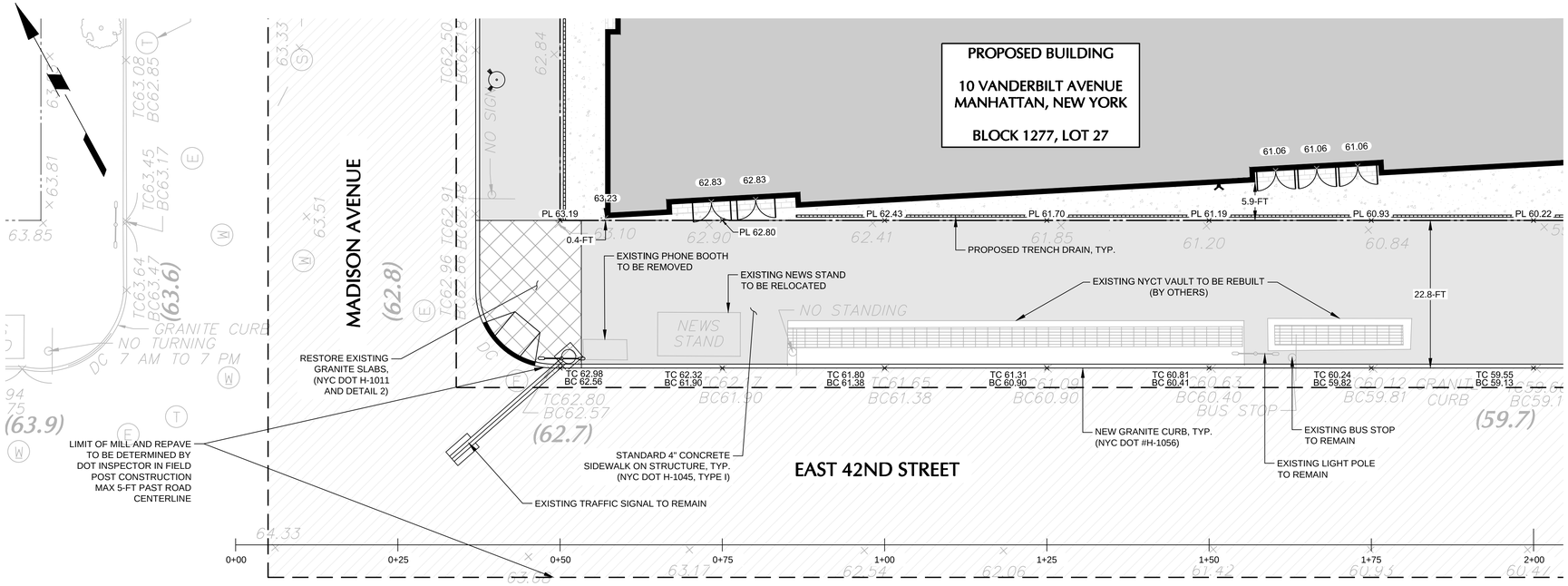
Warning: It is a violation of the NYS Education Law Article 145 for any person, unless he is acting under the direction of a licensed Professional Engineer, to alter this item in any way.

STATE OF NEW YORK · CHRISTOPHER VITOLANO · 081589 · LICENSED PROFESSIONAL ENGINEER

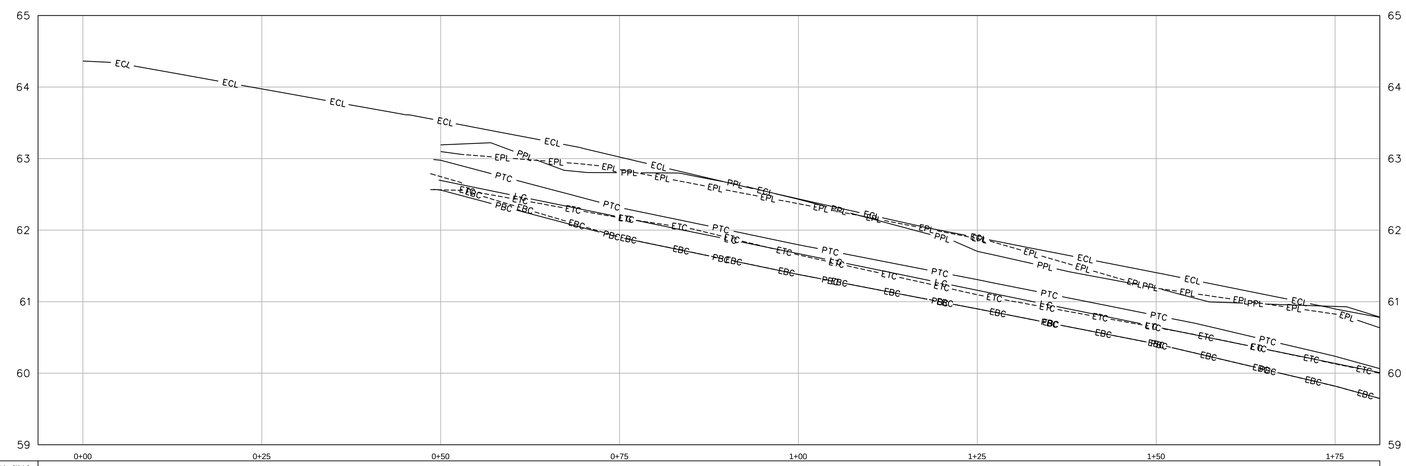
CHRISTOPHER VITOLANO, P.E.
PROFESSIONAL ENGINEER N.Y. LIC. No. 081589

DATE:	06/26/2015
PROJECT No.:	170140801
DRAWING BY:	KEK
CHK BY:	MLN
DWG No.:	BPP-101.00
SHEET NO.:	1 of 8

Borough: MANHATTAN	Sheet: 2 of 8
DOB App. No.:	NB No.: 121 189 828



PLAN
1" = 10'



	0+00	0+25	0+50	0+75	1+00	1+25	1+50	1+75
EXISTING CURB REVEAL (IN.)			2.22	3.26	3.28	2.37	2.77	3.76
PROPOSED CURB REVEAL (IN.)			5.00	5.00	4.99	4.89	4.77	5.00
EXISTING SIDEWALK X-SLOPE (%)			1.60%	3.00%	3.19%	3.50%	2.47%	3.12%
PROPOSED SIDEWALK X-SLOPE (%)			0.95%	2.15%	2.81%	1.75%	1.70%	3.08%
EXISTING ROAD X-SLOPE (%)			3.56%	4.14%	3.88%	3.67%	3.67%	3.98%
PROPOSED ROAD X-SLOPE (%)			3.55%	4.12%	3.88%	3.66%	3.65%	3.96%
LG			62.7	62.2	61.7	61.2	60.6	60.1
ETC			62.75	62.17	61.65	61.10	60.64	60.13
PTC			62.98	62.32	61.80	61.31	60.81	60.24
EBC			62.56	61.90	61.38	60.90	60.41	59.82
PBC			62.56	61.90	61.38	60.90	60.41	59.82
EPL			63.10	62.85	62.37	61.88	61.19	60.83
PPL			63.19	62.80	62.43	61.70	61.19	60.93
ECL	64.36	63.97	63.53	63.02	62.44	61.90	61.41	60.90

PROFILE
V: 1" = 1' H:1" = 10'

LEGEND: PROFILE

- EBC — EXISTING BOTTOM OF CURB
- ECL — EXISTING CENTERLINE
- EPL — EXISTING PROPERTY LINE
- ETC — EXISTING TOP OF CURB
- PBC — PROPOSED BOTTOM OF CURB
- PPL — PROPOSED PROPERTY LINE
- PTC — PROPOSED TOP OF CURB

[B-SCAN STICKER]

10 0 2 4 10
SCALE IN FEET

Date	Description	No.
12/4/2015	INITIAL SUBMISSION TO DOB	0

Revisions

LANGAN
21 Penn Plaza, 360 West 31st Street, 8th Floor, New York, NY 10001
T: 212.479.5400 F: 212.479.5444 www.langan.com
NEW JERSEY NEW YORK VIRGINIA CALIFORNIA PENNSYLVANIA CONNECTICUT FLORIDA
ABU DHABI ATHENS DOHA DUBAI ISTANBUL
Langan Engineering & Environmental Services, Inc.
Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
Langan International LLC
Collectively known as Langan

Project
10 VANDERBILT AVENUE
BLOCK 1277, LOT 27
MANHATTAN
NEW YORK NEW YORK

Drawing Title
BUILDERS PAVEMENT PLAN: EAST 42ND STREET PLAN AND PROFILE 1

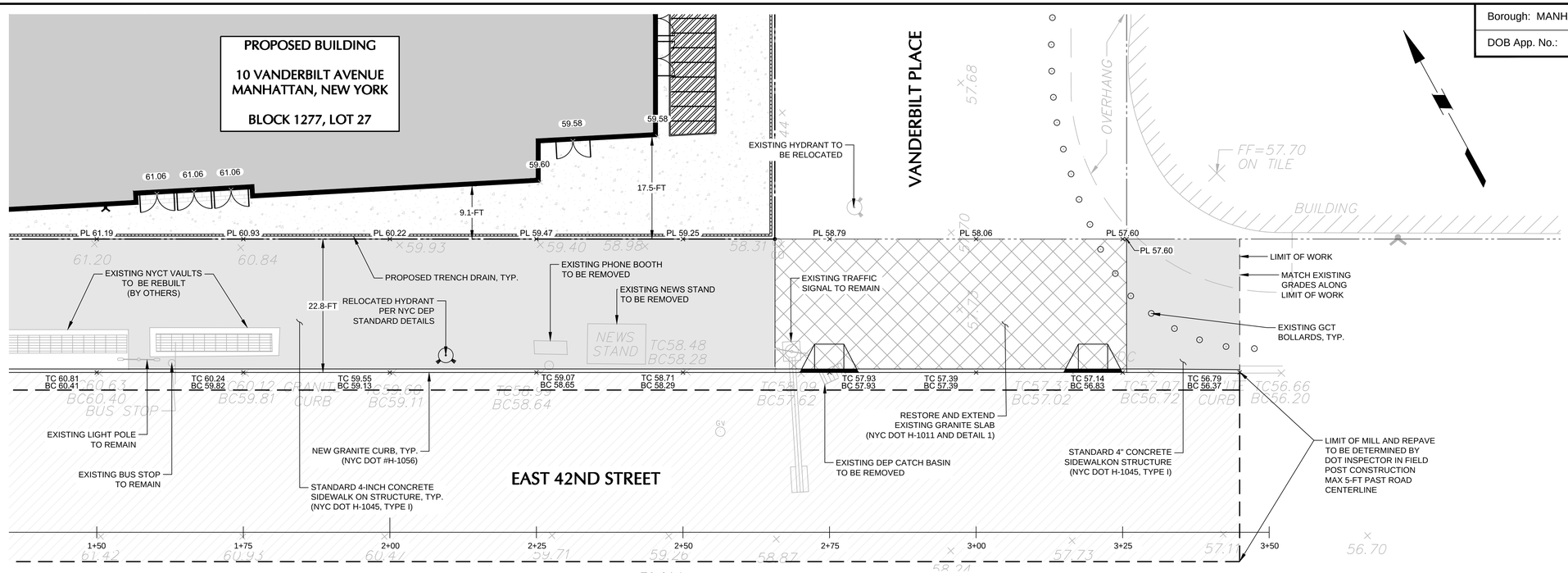
Warning: It is a violation of the NYS Education Law Article 145 for any person, unless he is acting under the direction of a licensed Professional Engineer, to alter this item in any way.

STATE OF NEW YORK · CHRISTOPHER VITOLANO · 081589 · LICENSED PROFESSIONAL ENGINEER

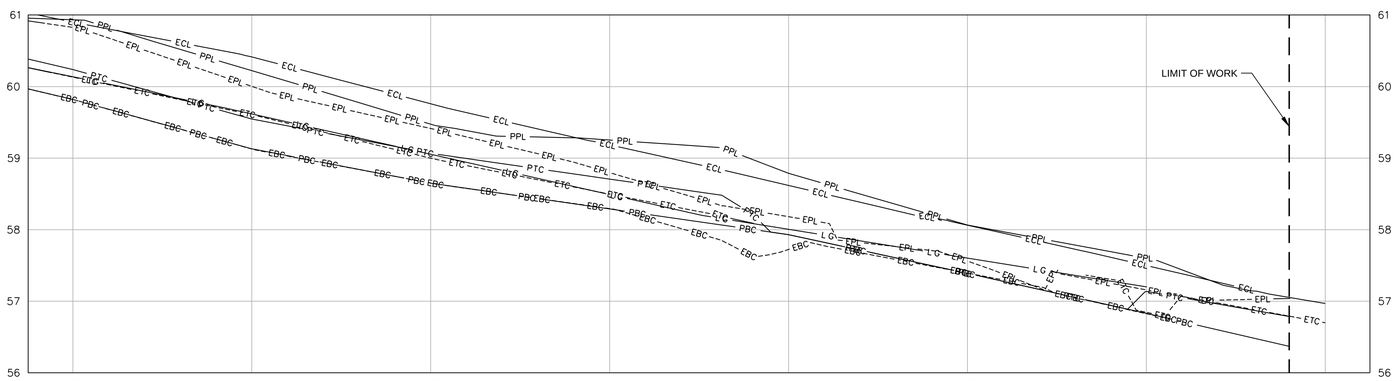
CHRISTOPHER VITOLANO, P.E.
PROFESSIONAL ENGINEER N.Y. LIC. No. 081589

DATE:	06/26/2015
PROJECT No.:	170140801
DRAWING BY:	KEK
CHK BY:	MLN
DWG No.:	BPP-102.00
SHEET NO.:	2 of 8

Borough: MANHATTAN	Sheet: 3 of 8
DOB App. No.:	NB No.: 121 189 828



PLAN
1" = 10'



	1+75	2+00	2+25	2+50	2+66	2+75	3+00	3+25	3+45	3+50
EXISTING CURB REVEAL (IN.)	3.76	5.74	4.17	2.43	4.08			0.01	5.04	
PROPOSED CURB REVEAL (IN.)	5.00	5.00	5.00	5.00	5.00	0.00	0.00	3.68	5.04	
EXISTING SIDEWALK X-SLOPE (%)	3.12%	1.78%	1.86%	1.35%	0.68%			1.45%		
PROPOSED SIDEWALK X-SLOPE (%)	3.08%	2.98%	1.80%	2.41%	2.94%	2.77%	1.75%	2.05%	3.70%	
EXISTING ROAD X-SLOPE (%)	3.98%	4.74%	4.08%	3.25%	3.64%	3.39%	2.47%	2.48%	2.53%	2.65%
PROPOSED ROAD X-SLOPE (%)	3.96%	4.71%	4.07%	3.28%	2.83%	2.52%	2.47%	2.45%	2.50%	
LG	60.1	59.6	59.1	58.5		58.0	57.6	57.2		
ETC	60.13	59.61	59.00	58.50	58.19			56.84	56.79	
PTC	60.24	59.55	59.07	58.71	58.48	57.93	57.39	57.14	56.79	
EBC	59.82	59.13	58.65	58.29	57.85	57.72	57.39	56.83	56.37	
PBC	59.82	59.13	58.65	58.29	58.06	57.93	57.39	56.83	56.37	
EPL	60.83	60.00	59.41	58.80	58.33	58.18	57.56	57.16	57.04	
PPL	60.93	60.22	59.47	59.25	59.15	58.79	58.06	57.60	57.04	
ECL	60.90	60.41	59.76	59.18	58.83	58.62	58.06	57.50	57.05	56.97

PROFILE
V: 1" = 1' H:1" = 10'

LEGEND: PROFILE

- EBC — EXISTING BOTTOM OF CURB
- ECL — EXISTING CENTERLINE
- EPL — EXISTING PROPERTY LINE
- ETC — EXISTING TOP OF CURB
- PBC — PROPOSED BOTTOM OF CURB
- EPL — PROPOSED BOTTOM OF CURB
- PPL — PROPOSED PROPERTY LINE
- PTC — PROPOSED TOP OF CURB

[B-SCAN STICKER]

10 0 2 4 10
SCALE IN FEET

Date	Description	No.
12/4/2015	INITIAL SUBMISSION TO DOB	0

Revisions

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Langan International LLC
Collectively known as Langan

Project
10 VANDERBILT AVENUE
BLOCK 1277, LOT 27
MANHATTAN
NEW YORK NEW YORK

Drawing Title
BUILDERS PAVEMENT PLAN:
EAST 42ND STREET
PLAN AND PROFILE 2

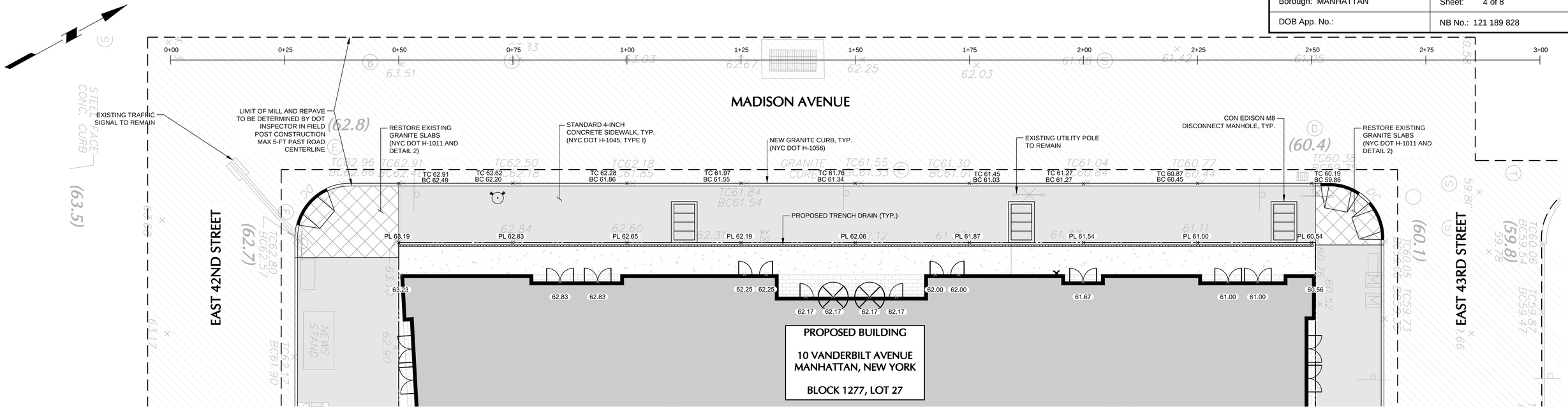
Warning: It is a violation of the NYS Education Law Article 145 for any person, unless he is acting under the direction of a licensed Professional Engineer, to alter this item in any way.

STATE OF NEW YORK · CHRISTOPHER VITOLANO · 081589 · LICENSED PROFESSIONAL ENGINEER

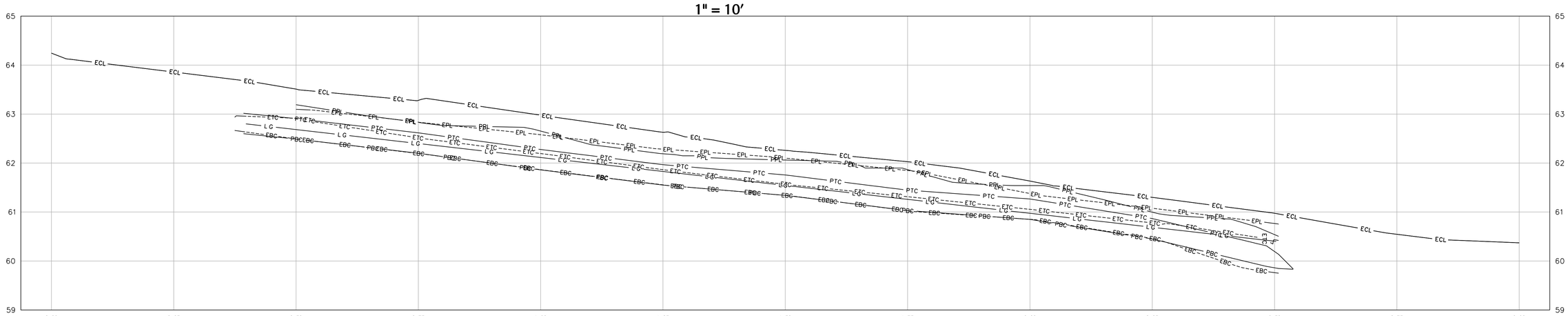
CHRISTOPHER VITOLANO, P.E.
PROFESSIONAL ENGINEER N.Y. LIC. No. 081589

DATE:	06/26/2015
PROJECT No.:	170140801
DRAWING BY:	KEK
CHK BY:	MLN
DWG No.:	BPP-103.00
SHEET NO.:	3 of 8

Borough: MANHATTAN	Sheet: 4 of 8
DOB App. No.:	NB No.: 121 189 828



PLAN
1" = 10'



	0+00	0+25	0+50	0+75	1+00	1+25	1+50	1+75	2+00	2+25	2+50	2+75	3+00
EXISTING CURB REVEAL (IN.)			5.06	3.83	3.95	3.72	2.72	3.45	2.44	3.82	8.05		
PROPOSED CURB REVEAL (IN.)			5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	4.00		
EXISTING SIDEWALK X-SLOPE (%)			1.51%	2.58%	3.07%	3.31%	4.26%	4.21%	2.58%	2.38%	3.00%		
PROPOSED SIDEWALK X-SLOPE (%)			2.21%	1.65%	2.92%	1.73%	2.37%	3.25%	2.12%	1.02%	2.67%		
EXISTING ROAD X-SLOPE (%)			3.78%	4.02%	4.12%	3.98%	3.41%	3.73%	2.91%	3.14%	4.53%		
PROPOSED ROAD X-SLOPE (%)			3.78%	4.00%	4.14%	3.99%	3.40%	3.69%	2.90%	3.15%	4.13%		
LG			62.7	62.4	62.1	61.8	61.5	61.3	61.0	60.7	60.4		
ETC			62.91	62.51	62.19	61.86	61.57	61.31	61.05	60.78	60.43		
PTC			62.91	62.62	62.28	61.97	61.76	61.45	61.27	60.87	60.19		
EBC			62.49	62.20	61.86	61.55	61.34	61.03	60.85	60.46	59.76		
PBC			62.49	62.20	61.86	61.55	61.34	61.03	60.85	60.45	59.86		
EPL			63.10	62.83	62.58	62.28	62.10	61.85	61.38	61.08	60.77		
PPL			63.19	62.83	62.65	62.19	62.06	61.87	61.54	61.00	60.54		
ECL	64.24	63.86	63.51	63.28	62.98	62.63	62.26	62.03	61.63	61.30	60.97	60.54	60.37

PROFILE
V: 1" = 1' H:1" = 10'

LEGEND: PROFILE

- EBC — EXISTING BOTTOM OF CURB
- ECL — EXISTING CENTERLINE
- EPL — EXISTING PROPERTY LINE
- ETC — EXISTING TOP OF CURB
- PBC — PROPOSED BOTTOM OF CURB
- EPL — PROPOSED BOTTOM OF CURB
- PPL — PROPOSED PROPERTY LINE
- PTC — PROPOSED TOP OF CURB

10 0 2 4 10
SCALE IN FEET

Date	Description	No.
12/4/2015	INITIAL SUBMISSION TO DOB	0

Revisions

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Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
Langan International LLC
Collectively known as Langan

Project
10 VANDERBILT AVENUE
BLOCK 1277, LOT 27
MANHATTAN
NEW YORK NEW YORK

Drawing Title
BUILDERS PAVEMENT PLAN: MADISON AVENUE PLAN AND PROFILE

[B-SCAN STICKER]

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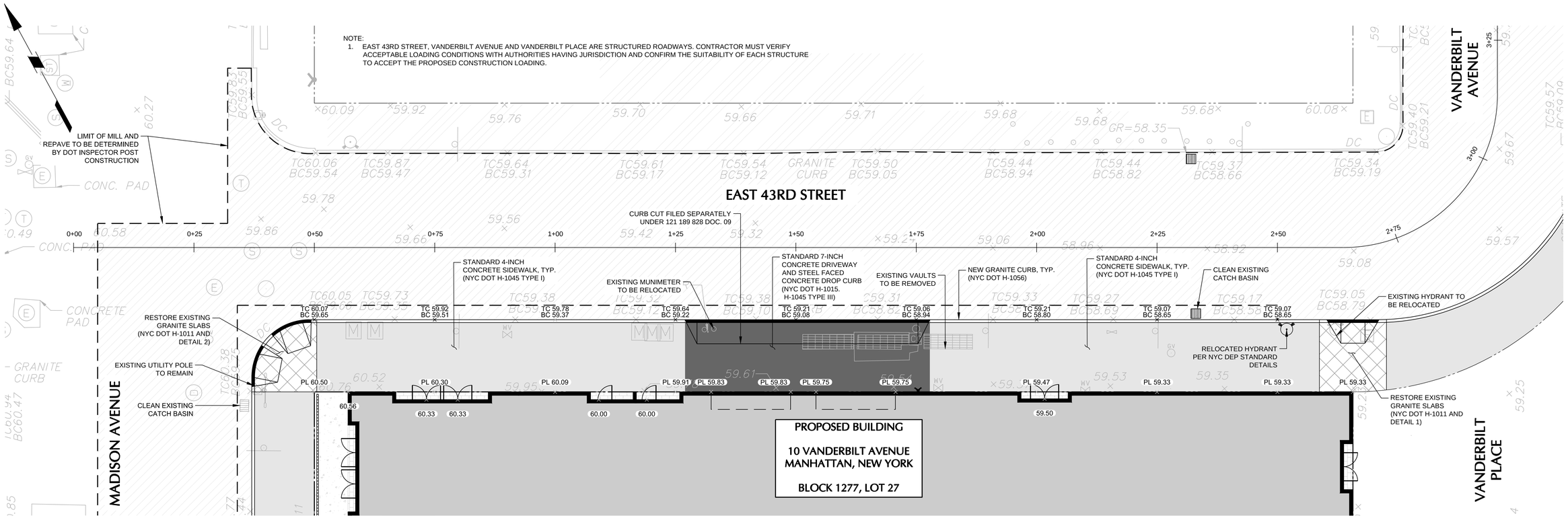
STATE OF NEW YORK · CHRISTOPHER VITOLANO · 081589-1 · LICENSED PROFESSIONAL ENGINEER

CHRISTOPHER VITOLANO, P.E.
PROFESSIONAL ENGINEER N.Y. LIC. No. 081589

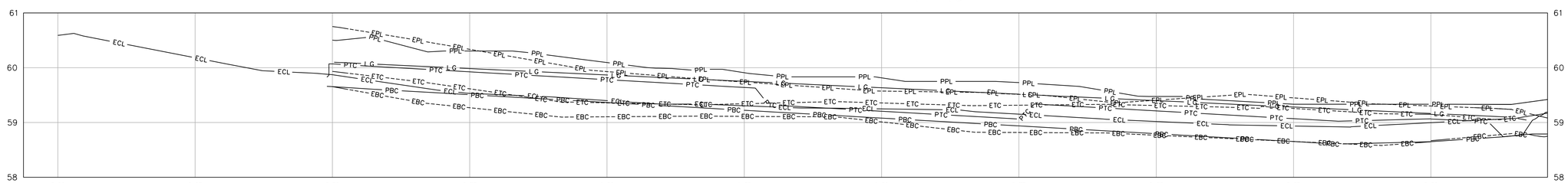
DATE:	06/26/2015
PROJECT No.:	170140801
DRAWING BY:	KEK
CHK BY:	MLN
DWG No.:	BPP-104.00
SHEET NO.:	4 of 8

Borough: MANHATTAN	Sheet: 5 of 8
DOB App. No.:	NB No.: 121 189 828

NOTE:
1. EAST 43RD STREET, VANDERBILT AVENUE AND VANDERBILT PLACE ARE STRUCTURED ROADWAYS. CONTRACTOR MUST VERIFY ACCEPTABLE LOADING CONDITIONS WITH AUTHORITIES HAVING JURISDICTION AND CONFIRM THE SUITABILITY OF EACH STRUCTURE TO ACCEPT THE PROPOSED CONSTRUCTION LOADING.



PLAN
1" = 10'



	0+00	0+25	0+50	0+75	1+00	1+25	1+50	1+75	2+00	2+25	2+50
EXISTING CURB REVEAL (IN.)			3.33	4.14	3.05	2.77	4.16	5.98	6.51	7.25	6.00
PROPOSED CURB REVEAL (IN.)			4.99	5.00	5.00	5.00	1.50	1.51	5.00	5.00	5.00
EXISTING SIDEWALK X-SLOPE (%)			5.64%	4.97%	3.94%	2.74%	1.49%	1.37%	0.68%	1.36%	1.09%
PROPOSED SIDEWALK X-SLOPE (%)			2.91%	2.56%	2.10%	1.81%	1.95%	2.37%	1.77%	1.77%	1.84%
EXISTING ROAD X-SLOPE (%)			1.47%	1.76%	1.98%	1.30%	1.61%	2.25%	1.68%	1.90%	2.34%
PROPOSED ROAD X-SLOPE (%)			1.45%	0.16%	0.23%	0.55%	1.13%	1.43%	1.49%	1.89%	2.31%
LG				60.0	59.9	59.8	59.6	59.5	59.4	59.3	59.2
ETC			59.93	59.61	59.36	59.34	59.36	59.32	59.31	59.26	59.15
PTC			60.07	59.92	59.78	59.64	59.21	59.06	59.21	59.07	59.07
EBC			59.65	59.27	59.10	59.11	59.01	58.82	58.77	58.65	
PBC			59.65	59.51	59.37	59.22	59.08	58.94	58.79	58.65	58.65
EPL			60.75	60.34	59.93	59.74	59.57	59.51	59.41	59.45	59.30
PPL			60.50	60.30	60.09	59.91	59.81	59.73	59.47	59.33	59.33
ECL	60.59	60.18	59.87	59.53	59.40	59.30	59.25	59.15	59.02	58.94	59.00

PROFILE
V: 1" = 1' H:1" = 10'

LEGEND: PROFILE

- EBC — EXISTING BOTTOM OF CURB
- ECL — EXISTING CENTERLINE
- EPL — EXISTING PROPERTY LINE
- ETC — EXISTING TOP OF CURB
- PBC — PROPOSED BOTTOM OF CURB
- PPL — PROPOSED PROPERTY LINE
- PTC — PROPOSED TOP OF CURB

SCALE IN FEET: 10 0 2 4 10

Date	Description	No.
12/4/2015	INITIAL SUBMISSION TO DOB	0

Revisions

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Langan Engineering & Environmental Services, Inc.
Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
Langan International LLC
Collectively known as Langan

Project: 10 VANDERBILT AVENUE
BLOCK 1277, LOT 27
MANHATTAN
NEW YORK NEW YORK

Drawing Title: BUILDERS PAVEMENT PLAN: EAST 43RD STREET PLAN AND PROFILE

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STATE OF NEW YORK · CHRISTOPHER VITOLANO · 081589 · LICENSED PROFESSIONAL ENGINEER

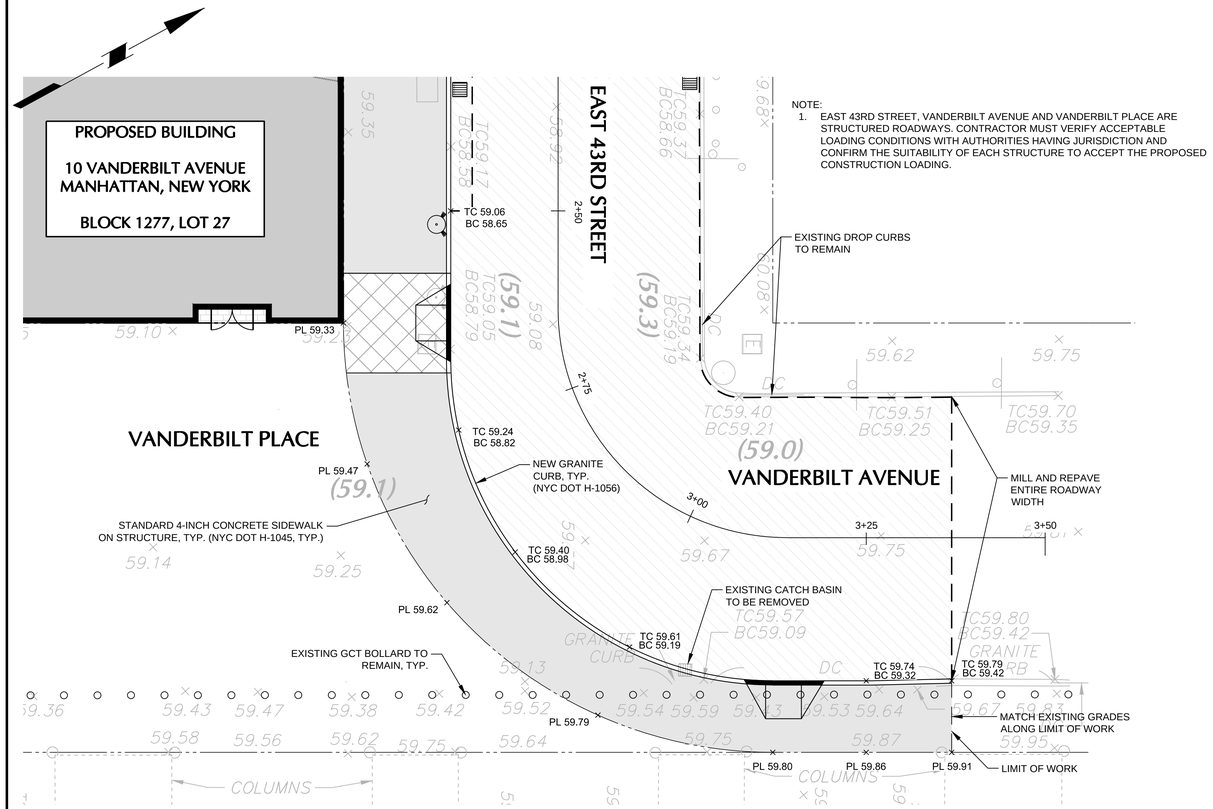
CHRISTOPHER VITOLANO, P.E.
PROFESSIONAL ENGINEER N.Y. LIC. No. 081589

[B-SCAN STICKER]

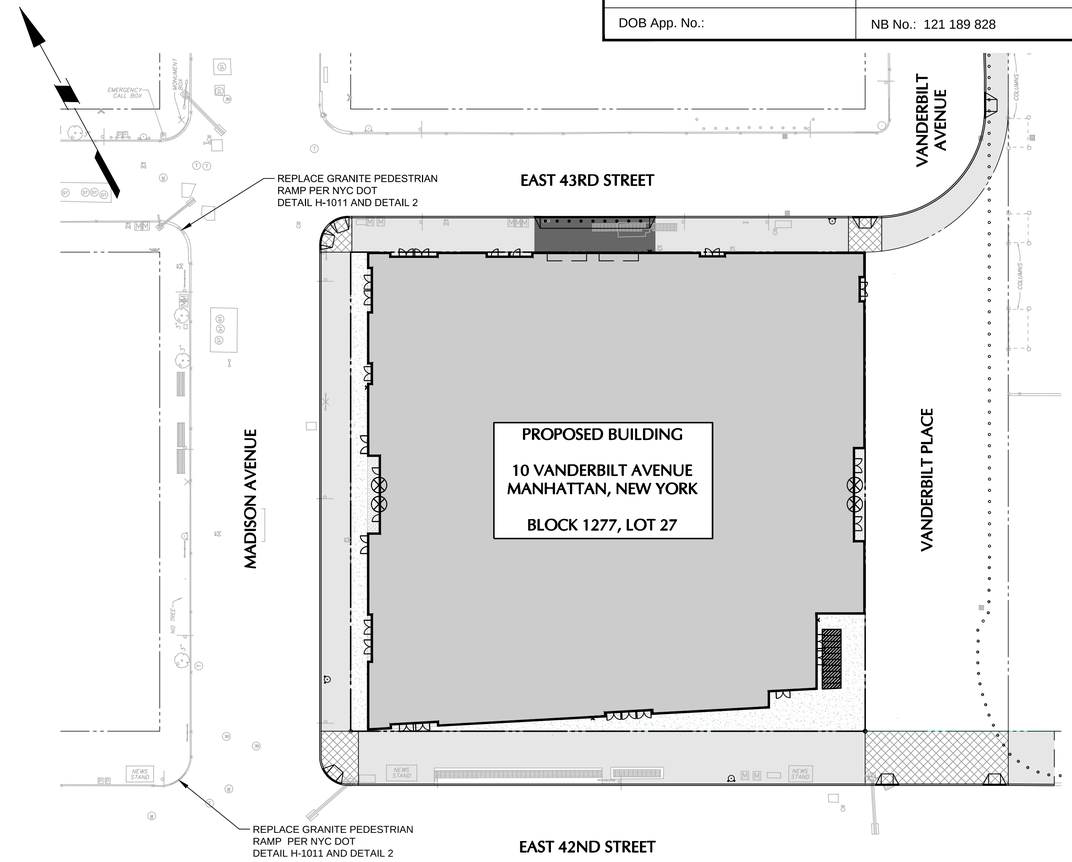
DATE:	06/26/2015
PROJECT No.:	170140801
DRAWING BY:	KEK
CHK BY:	MLN
DWG No.:	BPP-105.00
SHEET NO.:	5 of 8

Filename: \\langan.com\data\NY\data8\170140802\Cadd Data - 170140802\SheetFiles\BPP\170140802-CP101-0105.dwg Date: 12/3/2015 Time: 13:45 User: kkliphuis Style Table: Langan.stb Layout: C-905

Borough: MANHATTAN	Sheet: 6 of 8
DOB App. No.:	NB No.: 121 189 828

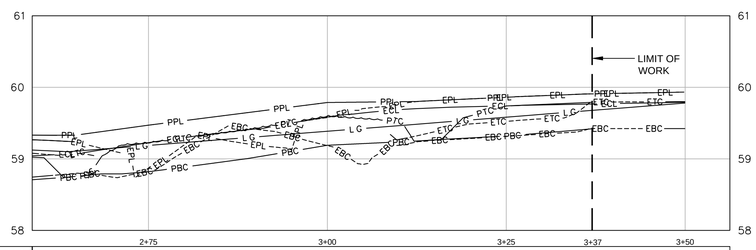


PLAN
1" = 10'



OFF-SITE PEDESTRIAN RAMP REPLACEMENTS
1" = 30'

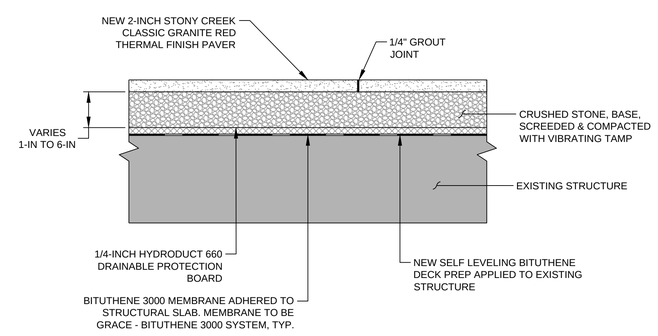
SCALE IN FEET (30 0 15 30)



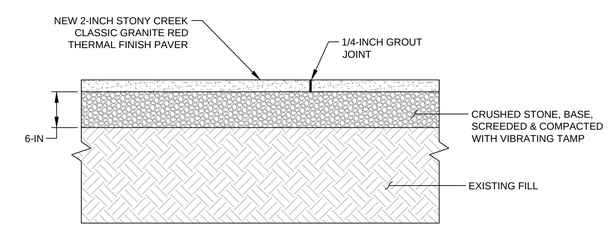
	2+75	3+00	3+25	3+37	3+50
EXISTING CURB REVEAL (IN.)			2.46	4.44	
PROPOSED CURB REVEAL (IN.)	4.81	4.90	5.04	4.44	
EXISTING SIDEWALK X-SLOPE (%)			4.62%	1.26%	1.48%
PROPOSED SIDEWALK X-SLOPE (%)	1.75%	1.75%	1.25%	1.22%	
EXISTING ROAD X-SLOPE (%)	2.38%	1.98%	2.18%	1.75%	1.86%
PROPOSED ROAD X-SLOPE (%)	2.32%	1.69%	2.07%	1.71%	
LG	59.2	59.4	59.6	59.7	59.8
ETC			59.52	59.79	59.80
PTC	59.22	59.60	59.74	59.79	
EBC	58.82	59.19	59.32	59.42	59.42
PBC	58.82	59.19	59.32	59.42	
EPL	58.87	59.58	59.86	59.91	
PPL	59.47	59.79	59.86	59.91	
ECL	59.23	59.58	59.74	59.77	59.79

PROFILE
V: 1" = 1' H:1" = 10'

SCALE IN FEET (10 0 2 4 10)



1 GRANITE SIDEWALK DETAIL ON STRUCTURE
SCALE: 1" = 1'



2 GRANITE SIDEWALK DETAIL ON FILL
SCALE: 1" = 1'

SCALE IN FEET (1 0 0.5 1)

LEGEND: PROFILE

EBC	EXISTING BOTTOM OF CURB
ECL	EXISTING CENTERLINE
EPL	EXISTING PROPERTY LINE
ETC	EXISTING TOP OF CURB
PBC	PROPOSED BOTTOM OF CURB
PPL	PROPOSED PROPERTY LINE
PTC	PROPOSED TOP OF CURB

Date	Description	No.
12/4/2015	INITIAL SUBMISSION TO DOB	0

Revisions

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Langan Engineering & Environmental Services, Inc.
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Langan International LLC
Collectively known as Langan

Project
10 VANDERBILT AVENUE
BLOCK 1277, LOT 27
MANHATTAN
NEW YORK NEW YORK

Drawing Title
BUILDERS PAVEMENT PLAN: EAST 43RD STREET & VANDERBILT AVENUE PLAN AND PROFILE

[B-SCAN STICKER]

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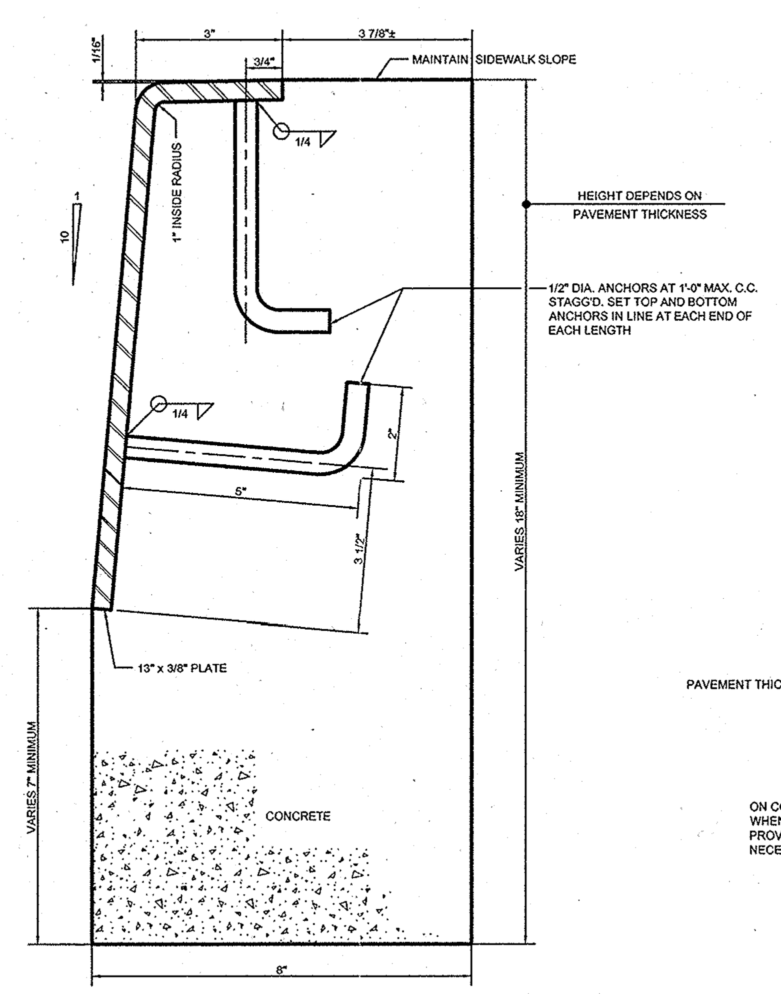
STATE OF NEW YORK · CHRISTOPHER VITOLANO · 081589 · LICENSED PROFESSIONAL ENGINEER

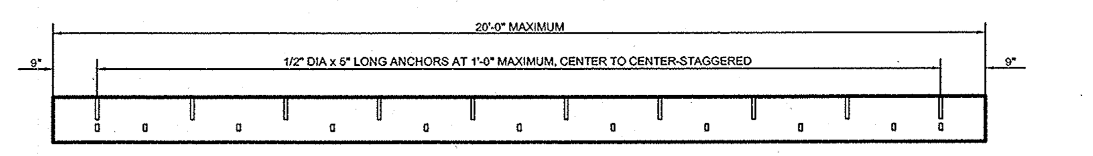
CHRISTOPHER VITOLANO, P.E.
PROFESSIONAL ENGINEER N.Y. LIC. No. 081589

DATE:	06/26/2015
PROJECT No.:	170140801
DRAWING BY:	KEK
CHK BY:	MLN
DWG No.:	BPP-106.00
SHEET NO.:	6 of 8

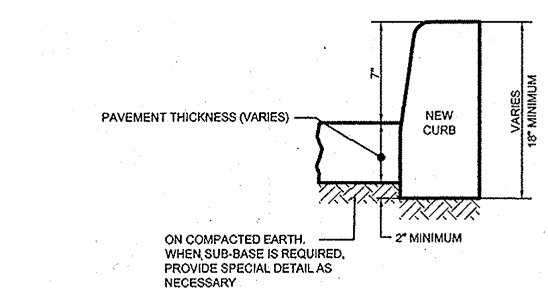
Borough: MANHATTAN	Sheet: 7 of 8
DOB App. No.:	NB No.: 121 189 828



DETAIL
N.T.S.



ELEVATION-STEEL FACING
N.T.S.



TYPICAL SECTION
N.T.S.

NOTES:

1. EXPANSION JOINTS IN THE STEEL CURB FACING AND CONCRETE BACKING SHALL BE AT A MAXIMUM SPACING OF 24 FEET.
2. THE EXPANSION JOINTS OF THE CURB AND STEEL CURB FACING SHALL LINE UP WITH THE EXPANSION JOINTS OF THE CONCRETE SIDEWALKS, WHEREVER POSSIBLE.
3. NO PIECE OF STEEL CURB FACING HAVING LESS THAN TWO (2) WELDED DOWELS MAY BE INSTALLED UNLESS IT IS WELDED TO THE ADJACENT STEEL CURB FACING.
4. 1/2" DIA. x 5" HEADED ANCHOR STUDS (GRANULAR OR SOLID FLUX FILLED) MAY BE SUBSTITUTED.
5. STRUCTURAL STEEL (A.S.T.M. DESIGNATION A36).
6. SURFACE TO BE CLEANED AND PAINTED AS PER NYCDOT STANDARD HIGHWAY SPECIFICATIONS, SECTION 2.13. COLOR OF TOP COAT SHALL BE GRAY AS APPROVED BY THE ENGINEER.
7. WHERE TWO (2) PIECES OF STEEL CURB FACING ARE JOINED BUT NOT WELDED, TWO (2) ONE-HALF (1/2) INCH RODS, TWENTY FOUR (24) INCHES LONG SHALL BE INSERTED INTO THE CONCRETE BACKING, ONE-HALF (1/2) THE LENGTH AT EACH SIDE OF THE JOINT.
8. CONCRETE TO BE CLASS B-32, AIR-ENTRAINED.
9. CORNER CURB:-VERTICAL FACE WILL BE ACCEPTABLE FOR CORNER CURBS PROVIDING THE ENDS ARE WARPED TO FORM A TRANSITION WITH ADJACENT BATTERED FACE CURBS.

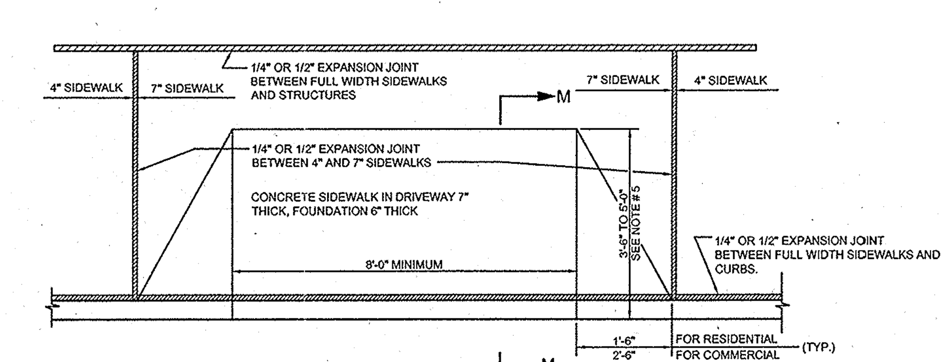
NEW YORK CITY DOT — New York City Department of Transportation

STEEL FACED CONCRETE CURB
STEEL FACING TYPE D

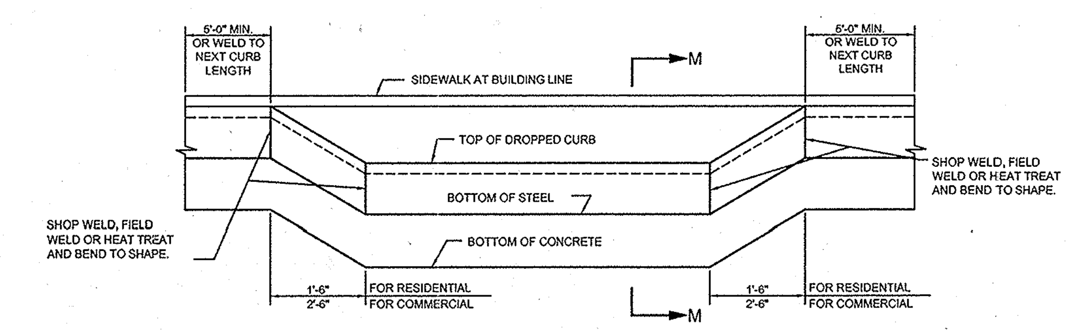
REVISION NO.	DESCRIPTION	DATE	APPROVED

Approved: Chief Engineer, Department of Transportation
Approved: Associate Commissioner, Infrastructure/Design, Department of Design + Construction
Date Issued: 7/1/10 | Scale: None | Drawing # H-1010

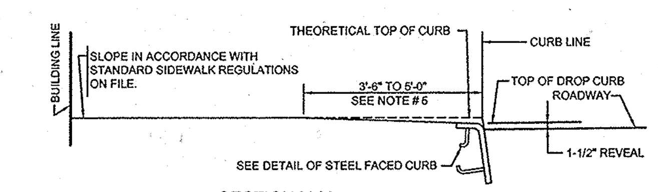
CHECKED BY: MZ
HWS-H1010



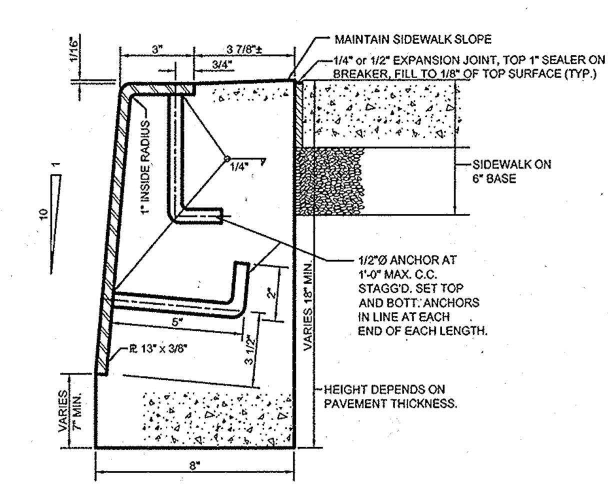
PLAN
N.T.S.



ELEVATION
N.T.S.



SECTION M-M
N.T.S.



DETAIL-STEEL FACED CURB
N.T.S.

NOTES:

1. 1/2" Ø x 5" HEADED ANCHOR STUDS (GRANULAR OR SOLID FLUX FILLED) MAY BE SUBSTITUTED.
2. STRUCTURAL STEEL AS PER ASTM DESIGNATION A-36.
3. STEEL FACING TO BE CLEANED AND PAINTED AS PER SUBSECTION 2.13.4 OF THE NYCDOT STANDARD HIGHWAY SPECIFICATION. THE COLOR OF TOP COAT SHALL BE GRAY AS APPROVED BY THE ENGINEER.
4. CONCRETE TO BE CLASS B-32, TYPE II A.
5. 3'-6" TO 5'-0" AS ORDERED BY THE ENGINEER EXCEPT FOR THE FIRE DEPARTMENT DRIVEWAYS WHICH WILL SLOPE STRAIGHT BACK TO THE PROPERTY LINE. FIRE DEPARTMENT DRIVEWAYS SHALL BE TYPE III SIDEWALK-SEE H1045.

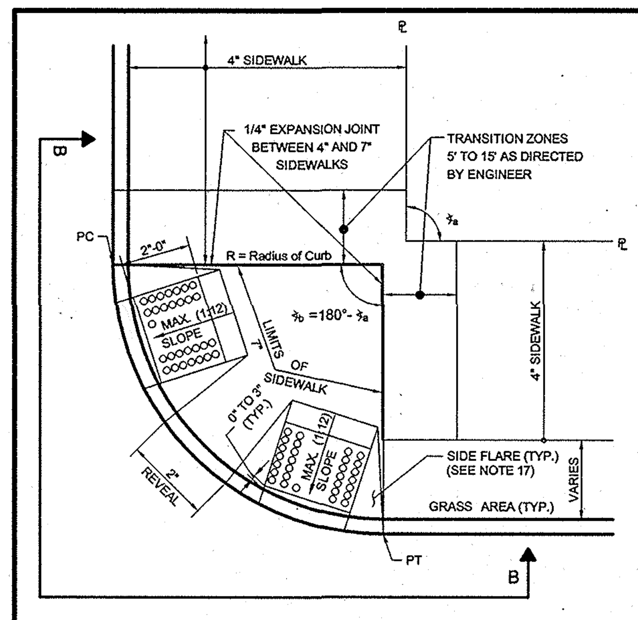
NEW YORK CITY DOT — New York City Department of Transportation

STEEL FACED DROP CURB
DRIVEWAYS

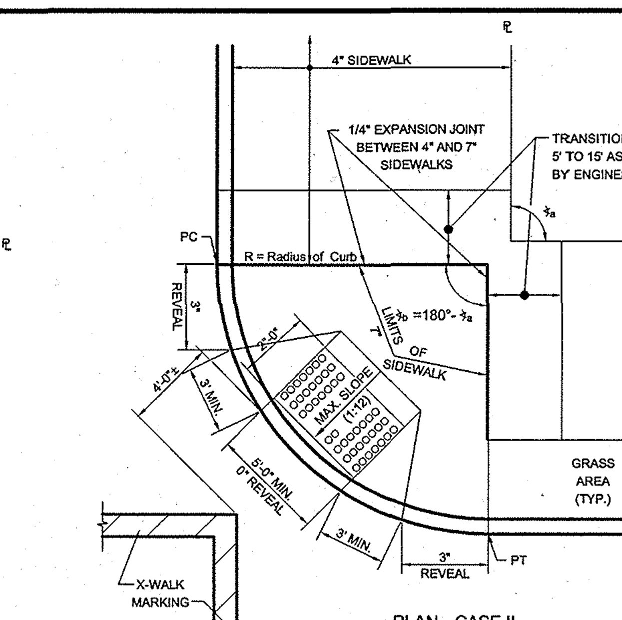
REVISION NO.	DESCRIPTION	DATE	APPROVED

Approved: Chief Engineer, Department of Transportation
Approved: Associate Commissioner, Infrastructure/Design, Department of Design + Construction
Date Issued: 7/1/10 | Scale: None | Drawing # H-1015

CHECKED BY: MZ
HWS-H1015



PLAN - CASE I, CASE III
N.T.S.



PLAN - CASE II
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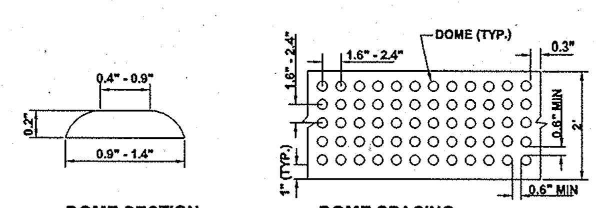
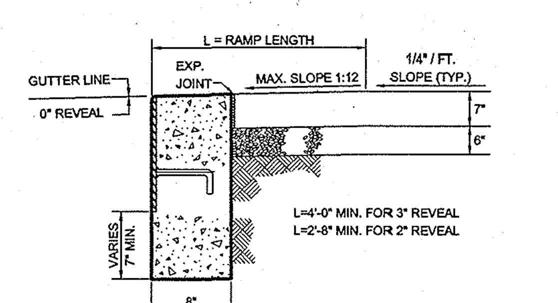
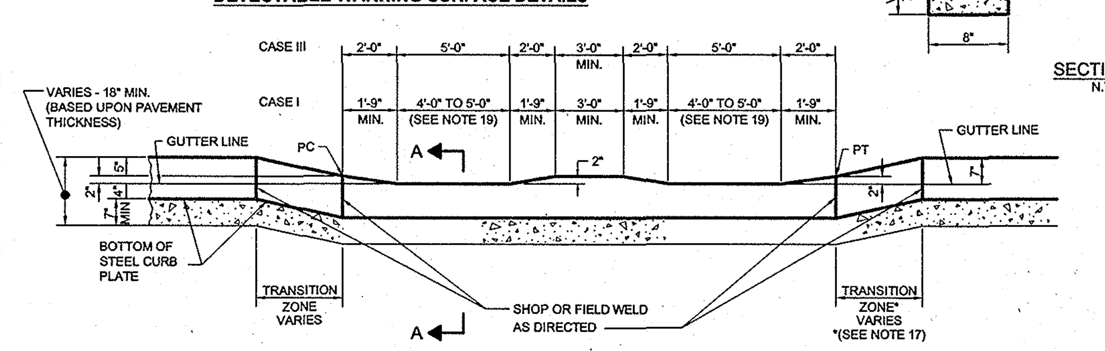


DETECTABLE WARNING SURFACE DETAILS



SECTION A-A
N.T.S.



ELEVATION B-B
N.T.S.

NOTES

1. REFER TO H-1010 (LATEST REVISION) FOR STEEL FACED CURB-TYPE D.
2. ALL MATERIALS AND CONSTRUCTION METHODS USED SHALL CONFORM TO SECTIONS #4.08 / 4.09 / 4.13 / 4.13DE OF THE STANDARD SPECIFICATIONS, LATEST EDITION, AS AMENDED.
3. WHEN INSTALLING PEDESTRIAN RAMPS IN OTHER THAN PRE ENGINEERED CAPITAL RECONSTRUCTION PROJECTS, ALLOWANCE SHALL BE MADE FOR EXISTING CONDITIONS PROVIDED THAT THE SLOPE OF THE RAMP SHALL NOT EXCEED 1:12 AND THE ZERO INCH REVEAL IS OBTAINED. TO INSURE THAT SOUND ENGINEERING JUDGMENT IS USED IN MEETING EXISTING CONDITIONS, ANY AND ALL VARIATIONS FROM THE DETAILS OF CONSTRUCTION HEREIN SHOWN MUST HAVE THE APPROVAL OF BOTH THE ASSISTANT COMMISSIONER OF DESIGN AND THE ASSISTANT COMMISSIONER OF CONSTRUCTION.
4. CASE II PLAN SHALL BE USED ONLY WHERE EXPLICITLY DIRECTED BY THE ENGINEER AND APPROVED BY THE COMMISSIONER PRIOR TO DESIGN / INSTALLATION.
5. SURFACE OF ALL PEDESTRIAN RAMPS SHALL BE STABLE, FIRM AND SLIP RESISTANT. CONCRETE RAMP SURFACE SHALL HAVE A COARSE BROOM FINISH RUNNING PERPENDICULAR TO THE SLOPE, EXCLUSIVE OF THE DETECTABLE WARNING FIELDS.
6. LANDINGS BETWEEN THE PROPERTY LINES AND THE BACK EDGE OF RAMPS SHALL HAVE A MINIMUM CLEAR DIMENSION OF 5 FT. BY 5 FT. SQUARE; HOWEVER, WHERE CASE I RAMPS ARE USED THE MINIMUM CLEAR DIMENSION SHALL BE 4 FT. BY 4 FT. SQUARE. THE MAXIMUM CROSS SLOPE AT LANDINGS IS 1/4" PER FOOT IN ANY DIRECTION. LANDINGS MAY OVERLAP WITH ADJACENT LANDINGS OR A SINGLE LANDING MAY SERVE MULTIPLE CURB RAMPS.
7. ALL EXPOSED STEEL SURFACES SHALL BE GROUND SMOOTH.
8. ON FULL WIDTH SIDEWALKS, EXPANSION JOINTS TO BE PLACED AT BUILDING FACES, STRUCTURES AS WELL AS AT BACK FACE OF CURB.
9. ALL DIMENSIONS AND NOTES SHALL BE APPLICABLE TO GRANITE CURB INSTALLATIONS AND / OR CONCRETE CURB INSTALLATIONS.
10. THE FOLLOWING GUIDELINES SHALL BE APPLIED IN DETERMINING THE APPLICATIONS OF THE SPECIFIC CASES WHERE THE INTERIOR $\theta_b = 180° - \theta_a$

CASE I FOR CORNERS WITH	CASE II FOR CORNERS WITH	CASE III FOR CORNERS WITH
R=12' INTERIOR $\theta_b \geq 90°$	R<12' INTERIOR θ_b ANY ANGLE	R>15' INTERIOR θ_b ANY ANGLE
R=13' INTERIOR θ_b BET. 83° & 93°	R=12' INTERIOR θ_b < 90°	R=15' INTERIOR $\theta_b \geq 81°$
R=14' INTERIOR θ_b BET. 77° & 90°	R=13' INTERIOR θ_b < 83°	R=14' INTERIOR $\theta_b \geq 90°$
R=15' INTERIOR θ_b BET. 72° & 81°	R=14' INTERIOR θ_b < 77°	R=13' INTERIOR $\theta_b \geq 93°$
	R=15' INTERIOR θ_b < 72°	

11. THE DETAILS PROVIDED ARE NOT DRAWN TO SCALE, THE QUANTITY OF DOMES DEPICTED ON THE DETECTABLE WARNING FIELD (THE DOMES AND THE ENTIRE 2 FT. WIDE SURFACE) IS FOR ILLUSTRATION ONLY.
12. THE SIZE OF THE DETECTABLE WARNING FIELD SHALL BE 2FT. IN THE DIRECTION OF TRAVEL AND SHALL EXTEND THE FULL WIDTH OF THE CURB RAMP AS SHOWN, EXCLUSIVE OF SIDE FLARES.
13. DETECTABLE WARNINGS SHALL BE LOCATED SO THAT THE EDGE OF THE WARNING FIELD NEAREST TO THE ROADWAY OR STREET SURFACE IS 0" TO 3" FROM THE BACK OF CURB, AS SHOWN.
14. DOME ALIGNMENT, DOMES SHALL BE ALIGNED ON A SQUARE GRID IN THE PREDOMINANT DIRECTION OF TRAVEL.
15. COLOR REQUIREMENT, THE DETECTABLE WARNING FIELD SHALL BE THE COLOR SPECIFIED IN THE CONTRACT DOCUMENTS OR SHALL VISUALLY CONTRAST WITH THE ADJOINING CURB RAMP, OR OTHER ADJACENT WALKWAY SURFACES WHERE THERE IS NO CURB RAMP. EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT AS DEFINED IN THE AMERICANS WITH DISABILITIES ACCESSIBILITY GUIDELINES (ADAAG).
16. PAYMENT LINES FOR DETECTABLE WARNING UNITS ARE THE 2 FT. DIMENSION SHOWN IN THE DETAILS EXTENDING THE FULL WIDTH OF THE CURB RAMP.
17. WHEN STREET FURNITURE (LAMP POSTS, TRAFFIC SIGNAL POSTS, UTILITY POSTS, HYDRANTS, ETC.) INTERFERES WITH THE CONSTRUCTION OF A SIDE FLARE ADJACENT TO A NON-WALKING (GRASS) AREA, SAID SIDE FLARE SHALL BE REPLACED WITH A CONCRETE CURB, AS DIRECTED BY THE ENGINEER, PROVIDED THE INTERFERENCE CAN BE AVOIDED AND LEFT IN PLACE.
18. IN CASE OF INFEASIBILITY AND IN ORDER TO CLEAR INTERFERENCE WITH THE STREET FURNITURE (LAMPPOSTS, TRAFFIC SIGNAL POSTS, UTILITY POST, HYDRANTS, ETC.), UPON DOCUMENTATION AND APPROVAL BY THE ASSISTANT COMMISSIONER OF THE CONSTRUCTION DIVISION, THE WIDTH OF THE RAMP COULD BE REDUCED TO NO LESS THAN 3'-0" FEET.
19. PEDESTRIAN RAMPS SHALL BE INSTALLED PARALLEL TO THE CROSSWALKS WHERE FEASIBLE. HOWEVER, WHERE DUE TO OBSTRUCTIONS AND INTERFERENCE WITH THE STREET FURNITURE (LAMPPOST, TRAFFIC SIGNAL POSTS, HYDRANTS, ETC.) IT WOULD NOT BE FEASIBLE TO INSTALL THE RAMPS PARALLEL TO THE CROSSWALKS, UPON DOCUMENTATION AND AS ORDERED AND APPROVED BY THE ENGINEER THE RAMPS COULD BE REORIENTED TO CLEAR THE OBSTRUCTIONS.

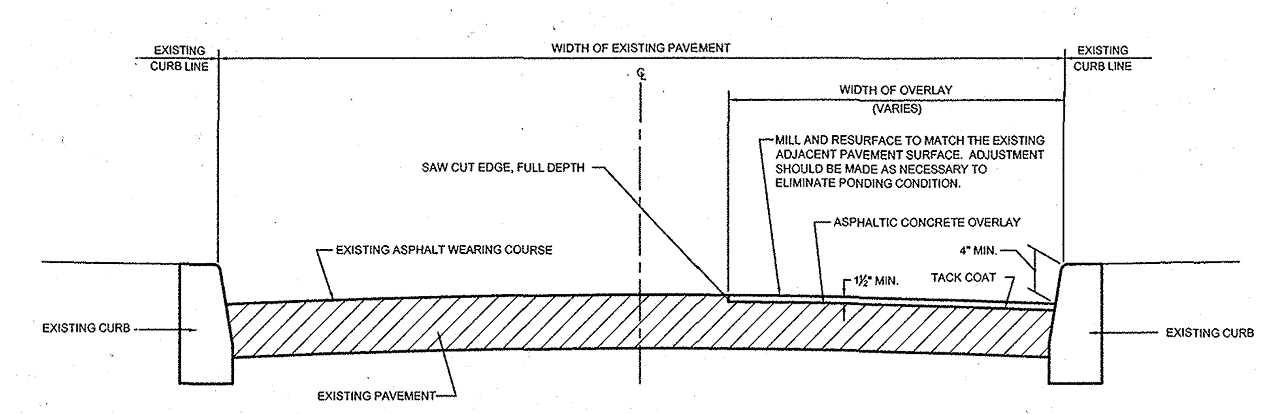
NEW YORK CITY DOT — New York City Department of Transportation

SIDEWALK PEDESTRIAN RAMPS

REVISION NO.	DESCRIPTION	DATE	APPROVED

Approved: Chief Engineer, Department of Transportation
Approved: Associate Commissioner, Infrastructure/Design, Department of Design + Construction
Date Issued: 7/1/10 | Scale: None | Drawing # H-1011

CHECKED BY: MZ
HWS-H1011



SECTION
N.T.S.

NOTE:
ADJUST ALL MANHOLES, GRATES, CATCH BASINS, VAULTS, BOXES, ETC. WITHIN AREA OF RESURFACING.

NEW YORK CITY DOT — New York City Department of Transportation

TYPICAL RESURFACING ON ASPHALT PAVEMENT &/OR WEARING COURSE (LESS THAN FULL WIDTH)

REVISION NO.	DESCRIPTION	DATE	APPROVED

Approved: Chief Engineer, Department of Transportation
Approved: Associate Commissioner, Infrastructure/Design, Department of Design + Construction
Date Issued: 7/1/10 | Scale: None | Drawing # H-1033

CHECKED BY: MZ
HWS-H1033

[B-SCAN STICKER]

Date	Description	No.
12/4/2015	INITIAL SUBMISSION TO DOB	0

Revisions

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Collectively known as Langan

Project
10 VANDERBILT AVENUE
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MANHATTAN
NEW YORK NEW YORK

Drawing Title
BUILDERS PAVEMENT PLAN: BPP DETAILS

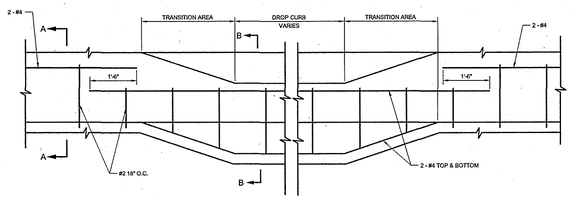
Warning: It is a violation of the NYS Education Law Article 145 for any person, unless he is acting under the direction of a licensed Professional Engineer, to alter this item in any way.

STATE OF NEW YORK — CHRISTOPHER VITOLANO — 081589-1 — LICENSED PROFESSIONAL ENGINEER

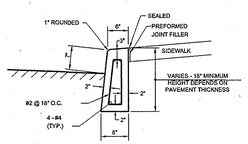
CHRISTOPHER VITOLANO, P.E.
PROFESSIONAL ENGINEER N.Y. LIC. No. 081589

DATE:	06/26/2015
PROJECT No.:	170140801
DRAWING BY:	KEK
CHK BY:	MLN
DWG No.:	BPP-107.00
SHEET NO.:	7 of 8

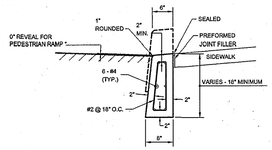
Borough: MANHATTAN	Sheet: 8 of 8
DOB App. No.:	NB No.: 121 189 828



CURB ELEVATION VIEW
NOT TO SCALE



SECTION A-A
NOT TO SCALE



SECTION B-B
NOT TO SCALE

* REVEAL AT PEDESTRIAN RAMPS SHALL BE 0" AS SHOWN. REVEAL AT DRIVEWAY TO BE 1-1/2".

NOTES:

1. CONCRETE SHALL BE CLASS A-40, 4000 P.S.I. AS PER SECTION 3.05 OF STANDARD HIGHWAY SPECIFICATIONS.
2. STEEL REINFORCEMENT SHALL BE AS PER ASTM A615, GRADE 60.
3. THE SLOPE OF THE TOP OF CURB SHALL CONFORM TO SLOPE OF SIDEWALK IN ALL CASES.
4. EXPANSION JOINTS IN CURB SHALL NOT EXCEED 20'-0" O.C.
5. THE EXPANSION JOINTS OF THE CURB SHOULD LINE UP WITH THE EXPANSION JOINTS IN THE CONCRETE SIDEWALK.

CHECKED BY: MZ

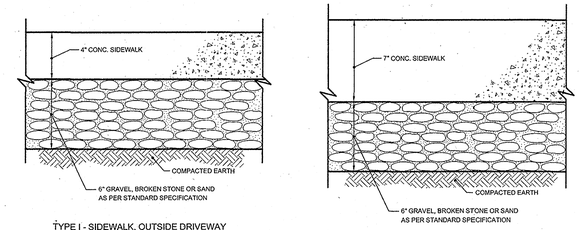
NYC DOT — New York City Department of Transportation

REINFORCED CONCRETE CURB & DROP CURB

Approved: Chief Engineer, Department of Transportation — Approved: Associate Commissioner, Infrastructure/Design, Department of Design + Construction

REVISION NO.	DESCRIPTION	DATE	APPROVED

Date Issued: 7/1/10 — Scale: None — Drawing # H-1035

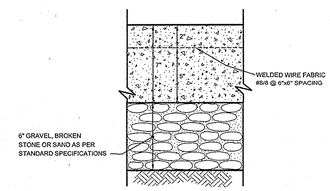


TYPE I - SIDEWALK, OUTSIDE DRIVEWAY AND CORNER QUADRANTS
N.T.S.

TYPE II - SIDEWALK, IN DRIVEWAY AND IN CORNER QUADRANTS
N.T.S.

NOTES:

1. ALL MATERIALS AND CONSTRUCTION METHODS USED ARE TO CONFORM TO SECTION #4.13 OF THE NYC DEPARTMENT OF TRANSPORTATION (DOT) STANDARD HIGHWAY SPECIFICATIONS.
2. WELDED WIRE FABRIC, WHERE SPECIFIED, SHALL BE ASTM DESIGNATION A-185, GAUGE # 8/8 AT 6"x6" SPACING, AND CONFORM TO SECTION # 2.25 OF THE NYCDOT STANDARD HIGHWAY SPECIFICATIONS.



TYPE III - SIDEWALK WITH WELDED WIRE FABRIC
N.T.S.

CHECKED BY: MZ

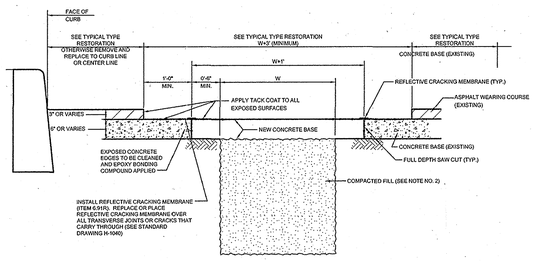
NYC DOT — New York City Department of Transportation

CONCRETE SIDEWALK

Approved: Chief Engineer, Department of Transportation — Approved: Associate Commissioner, Infrastructure/Design, Department of Design + Construction

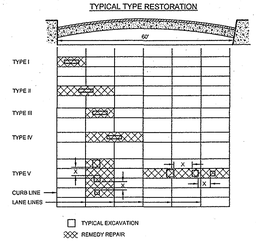
REVISION NO.	DESCRIPTION	DATE	APPROVED

Date Issued: 7/1/10 — Scale: None — Drawing # H-1045



RESTORATION DETAIL
N.T.S.

TYPICAL TYPE RESTORATION



NOTES:

1. ALL UNDERMINED BASE SHALL BE REMOVED PRIOR TO BACKFILLING.
2. ALL TRENCHES SHALL BE BACKFILLED WITH GOOD TO EXCELLENT FILL AS PER NYCDOT STANDARD HIGHWAY SPECIFICATIONS.
3. SAW CUTTING BACK CONCRETE BASE, SQUARING AND ALIGNING OF CUT LIMITS TO BE PERFORMED ONLY AFTER COMPLETION OF THE COMPACTION OF THE BACKFILL TO THE BOTTOM OF THE BASE.
4. BACKFILL MATERIAL SHALL BE DEPOSITED IN HORIZONTAL LAYERS NOT EXCEEDING 12" IN THICKNESS PRIOR TO COMPACTION. A MINIMUM OF 95% OF STANDARD MAXIMUM DENSITY WILL BE REQUIRED. WHEN PLACING BACKFILL AROUND PIPES, LAYERS SHALL BE DEPOSITED TO PROGRESSIVELY BURY THE PIPE TO EQUAL DEPTHS ON BOTH SIDES. COMPACTION SHALL BE ACHIEVED BY THE USE OF IMPACT RAMMERS, PLATE OR SMALL DRUM VIBRATORS OR PNEUMATIC BUTTON HEAD COMPACTION EQUIPMENT. HAND TAMPING IS NOT PERMITTED EXCEPT IN THE IMMEDIATE AREA OF THE UNDERGROUND FACILITY.
5. ALL RESTORATION SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF NYC DEPARTMENT OF TRANSPORTATION AND IN PROCESS INSPECTION AND TESTING SHALL BE CERTIFIED BY A LICENSED PROFESSIONAL ENGINEER.
6. WHEN THE EXISTING PAVEMENT IS ASPHALT ON CONCRETE BASE THEN RESTORATION SHALL BE AS SHOWN ON THIS RESTORATION DETAIL. CONCRETE SHALL BE REMOVED TO A WIDTH OF W + 1 FT. BY FULL DEPTH SAWCUTTING. ASPHALT SHALL BE REMOVED TO A WIDTH OF NOT LESS THAN W + 3 FT. BY SAWCUT AND GRINDING OR PEELING SO AS NOT TO DAMAGE CONCRETE BASE. THE SAWCUT SHALL ALIGN WITH THE LANE MARKING OR DIRECTION OF TRAFFIC, IF THERE ARE NO LANE MARKINGS, AND PERPENDICULAR THERETO.
7. WHEN THE EXISTING PAVEMENT IS ASPHALT MACADAM WITHOUT CONCRETE BASE, THE CONTRACTOR SHALL SAWCUT A WIDTH OF NOT LESS THAN W + 1' OF THE EXISTING PAVEMENT AND RESTORE THIS TO CONFORM TO THE EXISTING PAVEMENT AND SUB-BASE MATERIAL BUT MUST PLACE NOT LESS THAN 6" OF ASPHALT MACADAM ON 6" OF CRUSHED STONE AGGREGATE SIZED TO 1" TO 2". THE RESTORATION SHALL CONFORM TO THE TYPICAL TYPE RESTORATION ABOVE. WHERE NO MARKING EXIST THE ALIGNMENT SHALL BE SO THAT SAWCUT DOES NOT FALL UNDER A WHEEL TRACK.
8. WHEN X DISTANCE BETWEEN HOLES IS GREATER THAN 10 FT. FROM EDGE TO ABUTTING EDGE. THE CONCRETE BASE SHALL BE OPENED SEPARATE FOR EACH HOLE. A SERIES OF SMALL HOLES SPACED 10 FT. OR LESS FROM EDGE TO ABUTTING EDGE SHALL BE OPENED TO A CONTINUOUS TRENCH. SEE TYPE V RESTORATION.
9. ALL REPAIRS SHALL CONFORM TO TYPICAL TYPE RESTORATION I THRU V ABOVE.
10. FOR TRENCH OR HOLE RESTORATION AT BUS STOPS OF FULL DEPTH CONCRETE OR ANY FULL DEPTH CONCRETE PAVEMENT, SEE STANDARD DRAWING 1050 FOR CONSTRUCTION DETAILS AND STANDARD DRAWING 1042B FOR RESTORATION DETAILS.
11. FOR RESTORATION OF CONCRETE COLLARS AROUND STEAM MANHOLES SEE STANDARD DRAWING H-1041. FOR BUS STOPS REFER TO STANDARD DRAWING H-1005 AND H-1005A.

CHECKED BY: MZ

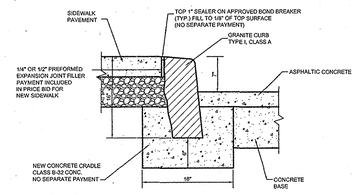
NYC DOT — New York City Department of Transportation

STANDARD TRENCH OR HOLE RESTORATION FOR STREETS PROTECTED BY NYC ADMINISTRATIVE CODE § 19-144

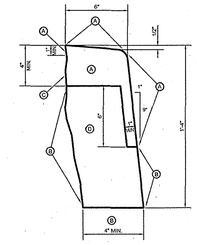
Approved: Chief Engineer, Department of Transportation — Approved: Associate Commissioner, Infrastructure/Design, Department of Design + Construction

REVISION NO.	DESCRIPTION	DATE	APPROVED

Date Issued: 7/1/10 — Scale: None — Drawing # H-1042A



TYPICAL DETAIL OF GRANITE CURB INSTALLATION
N.T.S.



SURFACE FINISH		
SYMBOL	NO PROJECTION OVER	NO DEPRESSION OVER
Ⓐ	1/8"	1/8"
Ⓑ	1-1/2"	1-1/2"
Ⓒ	1/2"	1"
Ⓓ	0"	1"

NOTES:

A. LENGTHS OF STRAIGHT GRANITE CURB SHALL RANGE FROM 4 FT. TO 12 FT. LONG, 95% OF WHICH SHALL BE 6 FT. OR GREATER.

B. LENGTHS OF CORNER GRANITE CURB SHALL RANGE FROM 5FT. TO 8 FT. LONG, 80% OF WHICH SHALL BE 4 FT. OR GREATER.

C. LENGTH OF TRANSITION CURB (STRAIGHT OR CURVED) AT CORNERS SHALL BE 5 FT. LONG, AND,

D. EXPOSED SURFACES OF THE GRANITE CURB TO BE DRESSED WITH A BUSH HAMMERED OR THERMAL FINISH, WITH NO DRILL HOLES.

NOTE:

GRANITE CURB (SAMPLES OF WHICH SHALL BE FURNISHED TO THE CITY BY THE CONTRACTOR PRIOR TO INSTALLING GRANITE) IS TO BE MEDIUM GRAY IN COLOR AS APPROVED BY THE ENGINEER.

DIMENSIONS AND FINISH ON GRANITE CURB
N.T.S.

CHECKED BY: MZ

NYC DOT — New York City Department of Transportation

TYPICAL GRANITE CURB

Approved: Chief Engineer, Department of Transportation — Approved: Associate Commissioner, Infrastructure/Design, Department of Design + Construction

REVISION NO.	DESCRIPTION	DATE	APPROVED

Date Issued: 7/1/10 — Scale: None — Drawing # H-1056

[B-SCAN STICKER]

Date	Description	No.
12/4/2015	INITIAL SUBMISSION TO DOB	0

Revisions

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Langan Engineering & Environmental Services, Inc.
Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
Langan International LLC
Collectively known as Langan

Project: 10 VANDERBILT AVENUE
BLOCK 1277, LOT 27
MANHATTAN
NEW YORK — NEW YORK

Drawing Title: BUILDERS PAVEMENT PLAN: BPP DETAILS

Warning: It is a violation of the NYS Education Law Article 145 for any person, unless he is acting under the direction of a licensed Professional Engineer, to alter this item in any way.

STATE OF NEW YORK — CHRISTOPHER VITOLANO — 081589 — LICENSED PROFESSIONAL ENGINEER

CHRISTOPHER VITOLANO, P.E.
PROFESSIONAL ENGINEER N.Y. LIC. No. 081589

DATE:	06/26/2015
PROJECT No.:	170140801
DRAWING BY:	KEK
CHK BY:	MLN
DWG No.:	BPP-108.00
SHEET NO.:	8 of 8

APPENDIX 8

TYPICAL COVER DETAIL FOR ALL COVER TYPES