

487 WEST 129TH STREET
MANHATTAN, NEW YORK

Remedial Action Work Plan

NYC VCP Number: 15CVCP110M
OER Project Number: 15RHAZ383M
DEP Project Number: 08DEPTECH069M
CEQR Number: 07DCP076M
Restrictive Declaration: R-158

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REMEDIAL ACTION WORK PLAN

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LIST OF ACRONYMS

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

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

CERTIFICATION

I, Michelle Lapin, am a Professional Engineer licensed in the State of New York. I have primary direct responsibility for implementation of the remedial action for the 487 West 129th Street Site, OER Project Number 15RHAZ383M and NYC VCP Number 15CVCP110M.

I certify that this Remedial Action Work Plan (RAWP) has a plan for handling, transport and disposal of any soil, fill, fluids or other materials removed from the Site in accordance with applicable City, State and Federal laws and regulations. Importation of any soil, fill or 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.

Name

NYS PE License Number

Signature

Date

PE Stamp

EXECUTIVE SUMMARY

Inner City Contracting LLC has applied to enroll in the New York City Voluntary Brownfield Cleanup Program (NYC VCP) to investigate and remediate an approximately 20,000-square foot (SF) site located at 487 West 129th Street in 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). The remedial action described in this document provides for the protection of public health and the environment consistent with the intended property use, complies with applicable environmental standards, criteria and guidance and conforms with applicable laws and regulations.

Site Location and Current Usage

The Site is located at 487 West 129th Street in the Harlem neighborhood of Manhattan, New York and is identified as Block 1969, Lot 6 on the New York City Tax Map. Figure 1 shows the Site location. The Site is approximately 20,000 SF and is bounded by West 130th Street to the north, West 129th Street to the south, an auto repair shop and vacant warehouse to the east, and the western half of a one-story warehouse used for stage set storage to the west. A map of the Site is shown on Figure 2. Currently, the Site contains the vacant eastern half of a one-story warehouse. Restrictive Declaration R-158 was placed on the Site by the New York City Department of City Planning (DCP) as part of the May 2009 West 129th Street rezoning (CEQR number 07DCP076M). Based on the findings of AKRF’s RI, Spill No. 1407581 was reported to the New York State Department of Environmental Conservation (NYSDEC) in October 2014; this spill remains open.

Summary of Proposed Redevelopment Plan

The proposed future use of the Site will involve the demolition of the on-site half of the existing one-story warehouse, and the construction of two new mixed-use buildings with parking and utility rooms on the lowest (parking) level, which would be shared between the buildings and would occupy the entire Site. The southern building (Building A) would abut West 129th Street and would have nine above-grade floors with residential uses above the parking level. The northern building (Building B) would abut West 130th Street, and would have: a cellar level (above the parking level) occupied by utility rooms, recreational space and a doctor’s office; a

basement level (above the cellar) occupied a mechanical room and a doctor's office, and nine above-grade residential floors. An outdoor plaza would be located between the two buildings, above the parking level. The proposed project would entail excavation to approximately 15 feet below the existing building's foundation (at the West 129th Street level), with some deeper excavation for footings and elevator pits. Layout of the proposed development is presented in Appendix 3. The current zoning designation is R7A (residential with high lot coverage). The proposed use is consistent with existing zoning for the Site.

The maximum estimated total quantity of soil/fill expected to be excavated and disposed off-site is approximately 9,700 cubic yards. Based on prior investigations, the excavated materials are anticipated to include a significant quantity of concrete from existing and historical subsurface structures. The excavation may encounter a perched water table in the southwestern corner of the Site (encountered during the RI at 10.5 to 13 feet below the existing building floor), but will likely remain above the overall water table (encountered approximately 23.7 to 27 feet below the building floor).

Summary of Environmental Findings

1. Based on a 2005 survey, the Site is at an elevation of approximately 36.4 feet above the Manhattan Borough Datum (MBD), which is the elevation of south-adjacent West 129th Street. Regional surface topography slopes down to the southwest. The north-adjacent West 130th Street is at an elevation of approximately 60.8 to 53.9 feet MBD.
2. Depth to groundwater ranges from approximately 23.7 to 27 feet below the Site building floor. The 2008 and 2014 RI borings in the southwestern corner of the Site identified apparent perched groundwater approximately 10.5 to 13 feet below the building floor.
3. Groundwater flow beneath the Site is expected to be southwesterly (toward the Hudson River, approximately 0.45 mile away) based on surface topography. However, actual water table depth and groundwater flow direction can be affected by many factors including subsurface openings or obstructions such as basements, underground utilities, bedrock geology, the A/B/C/D Line subway tunnels approximately 1,000 feet to the east, and other factors beyond the scope of this assessment. Groundwater in Manhattan is not used as a source of potable water.

4. A 2012 geotechnical study encountered weathered bedrock approximately 35 to 61 feet below the Site building floor, and competent bedrock was encountered approximately 36 to 66 feet below the building floor, sloping down toward the south.
5. The stratigraphy of the Site, from the surface down, consists of approximately 5 to 12 feet of fill (sand, gravel, silt, brick, concrete, ash and glass) above a layer of apparent native soil (sand, gravel, and silt). The 2012 geotechnical study identified apparent concrete layers approximately 5 to 10 feet below the building floor, possibly associated with historical rail car repair pits.
6. Analytical results for soil/fill samples were compared to 6 NYCRR Part 375 Soil Cleanup Objectives for Unrestricted Use (USCOs) and Restricted - Residential Use (RRSCOs). Soil/fill samples collected during the RI showed elevated concentrations of primarily petroleum-related VOCs in the deeper samples (12-14') collected from 2008 boring SB-2 and 2014 boring WC-2, both advanced in the southwestern corner of the Site. These VOCs exceeded Unrestricted Use SCOs and included 1,2,4-trimethylbenzene (max. concentration of 87 ppm); 1,3,5-trimethylbenzene (max. concentration of 33 ppm); naphthalene (max. concentration of 44 ppm); n-propylbenzene (max. concentration of 11 ppm); and total xylenes (max. concentration of 41.6 ppm). 1,2,4-trimethylbenzene also exceeded Restricted Residential Use SCOs. VOC concentrations were higher in the 2008 samples. Low levels of petroleum-related VOCs were also detected in shallow soil samples. SVOC concentrations exceeded Restricted Residential Use SCOs in 2008 and 2014 samples, and included benzo(a)anthracene (max. concentration of 26 ppm); benzo(a)pyrene (max. concentration of 24 ppm); benzo(b)fluoranthene (max. concentration of 31 ppm); benzo(k)fluoranthene (max. concentration of 11 ppm); chrysene (max. concentration of 25 ppm); dibenzo(a,h)anthracene (max. concentration of 3.3 ppm); and indeno (1,2,3-cd)pyrene (max. concentration of 16 ppm). Dibenzofuran (max. concentration of 7.9 ppm) also exceeded Unrestricted Use SCOs. Concentrations of SVOCs in these two samples were generally similar. Ash, which commonly contains elevated SVOC concentrations, was observed in 2008 boring SB-3. Metals including barium, chromium, copper, lead, manganese, mercury, nickel, silver, and zinc exceeded their respective Unrestricted Use SCOs. Of these metals, barium (max. of 1,800 ppm),

lead (max. of 1,400 ppm), manganese (max. of 34,000 ppm), and mercury (max. of 0.97 ppm) also exceeded their respective Restricted Residential SCO in one or more soil sample. No pesticides or PCB were detected in the soil samples analyzed. The detected VOC and SVOC concentrations were indicative of petroleum contamination in the southwestern corner of the Site and/or urban fill materials containing SVOCs. Based on observations of contamination above the soil-water interface and laboratory analytical results, Spill No. 1407581 has been reported to NYSDEC.

7. Groundwater sample analytical results were compared to NYSDEC Part 703.5 Class GA Ambient Water Quality Standards (drinking water standards) (GQS). Groundwater samples showed elevated concentrations of petroleum-related VOCs in sample GW-2 from the southwestern corner of the Site, with 1,2,4,5-tetramethylbenzene (340 parts per billion (ppb)), 1,2,4-trimethylbenzene (1,600 ppb), 1,3,5-trimethylbenzene (410 ppb), ethylbenzene (300 ppb), isopropylbenzene (120 ppb), n-butylbenzene (73 ppb), n-propylbenzene (160 ppb), p/m-xylene (800 ppb), o-xylene (59 ppb), and p-isopropyltoluene (88 ppb) exceeding their respective GQSs. Naphthalene was detected at 860 ppb, exceeding its GQS. These VOCs were not detected in the other groundwater samples analyzed. VOCs associated with chlorinated solvents including cis-1,2-dichloroethene (max. of 20 ppb) and tetrachloroethene (max. of 11 ppb) were detected in three groundwater samples. SVOCs were detected in all four groundwater samples, including benzo(a)anthracene (max. of ppb); benzo(a)pyrene (max. of 0.27 ppb); benzo(b)fluoranthene (max. of 0.23 ppb); benzo(k)fluoranthene (max. of 0.1 ppb); chrysene (max. of 0.23 ppb); indeno(1,2,3-cd)pyrene (max. of 0.09 ppb); and naphthalene (max. of 300 ppb). Several metals were identified in groundwater, but only antimony, iron, manganese, and sodium exceeded their respective GQSs. No PCBs or pesticides were detected in the groundwater samples. The detected concentrations of petroleum-related VOCs are likely attributable to a release in the southwestern corner of the Site. The detected chlorinated VOCs were not identified in the soil samples, and are likely attributable to an off-site source.
8. Soil vapor samples collected during the RI showed concentrations of VOCs generally associated with petroleum and solvents. There are no standards or guidelines for soil

vapor, so detected concentrations were (conservatively) compared to indoor air ranges published in the 2006 *New York State Department of Health (NYSDOH) Guidance for Evaluating Soil Vapor Intrusion in the State of New York*. VOCs typically associated with petroleum (1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 2,2,4-trimethylpentane, 4-ethyltoluene, benzene, ethylbenzene, heptane, n-hexane, xylenes, and toluene), were present at concentrations ranging from 3.76 to 3,640 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). VOCs typically associated with solvents (1,3-butadiene, 2-butanone, carbon disulfide, chloroform, cis-1,2-dichloroethene, cyclohexane, ethyl alcohol, isopropyl alcohol, styrene, tertiary butyl alcohol, tetrachloroethene, tetrahydrofuran, trichloroethene, and vinyl chloride), were present at concentrations ranging from 1.37 to 967 $\mu\text{g}/\text{m}^3$. Chloromethane (R-40), dichlorodifluoromethane and trichlorofluoromethane, commonly associated with refrigerants, were detected at trace concentrations. No VOCs were detected in exceedance of NYSDOH Air Guidance Values (AGVs). The detected VOCs were likely attributable to some combination of petroleum contamination in the southwestern corner of the Site, fill materials, and/or off-site sources.

Summary of the Remedy

The proposed remedial action achieves protection of public health and the environment for the intended use of the Site. The proposed remedial action achieves all of the remedial action objectives established for the project and addresses applicable standards, criteria, 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 (CAMP) for particulates and VOCs.
3. Selection of NYSDEC 6NYCRR Part 375 Section 6.8(a) 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. Development of an action plan for groundwater remediation, if required by NYSDEC under the NYSDEC Spill program. This VCP RAWP will be implemented independently of the requirements of the Spill program.
6. Excavation and removal of soil/fill exceeding Track 1 Site Specific SCOs. The proposed building footprint will generally be excavated to approximately 15 feet below the existing foundation slabs, with areas of deeper excavation for footings and elevator pits. Approximately 9,700 cubic yards of soil will be removed from the Site to make space for the new sub-cellar and foundation slabs.
7. Removal and closure of underground storage tanks (if encountered) and closure of Spill No. 1407581 in compliance with applicable local, State and Federal laws and regulations. The spill remediation is anticipated to include removal of a hotspot of petroleum-contaminated soil in the southwestern corner of the Site. This RAWP does not alter or interfere with the NYSDEC requirements for the petroleum spill.
8. 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.
9. Transportation and off-site disposal of all excess soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities.
10. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of SCOs.
11. If required by the proposed project, import of materials to be used for backfill in compliance with this plan and in accordance with applicable laws and regulations.
12. Implementation of stormwater pollution prevention measures in compliance with applicable laws and regulations.

13. Performance of all activities required for the remedial action, including any permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations. Since groundwater is generally at a depth of approximately 23.7 to 27 feet below the existing foundation, with an apparent perched water table (10.5 feet to 13 feet below the existing foundation) in the Site's southwestern corner, only limited dewatering is anticipated to be necessary. Dewatering permits will be obtained from NYCDEP, if applicable. Alternatively, if only a small quantity of groundwater requires removal, it may be properly removed in accordance with the applicable regulations (i.e., using a vacuum truck).
14. Reuse or import of materials to be used for backfill in compliance with this plan and in accordance with applicable laws and regulations.
15. Submission of a Remedial Action Report (RAR) that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, lists any changes from this RAWP, and describes all Engineering and Institutional Controls to be implemented at the Site.

If Track 1 Unrestricted Use (Track 1) SCOs are not achieved, the following construction elements will be implemented and will constitute Engineering and Institutional controls:

16. As part of new development, installation of a vapor barrier system beneath the building pressure slabs and behind foundation/cellar sidewalls below grade. Currently, the vapor barrier has not been selected. If Track 1 SCOs are not achieved, the vapor barrier specifications will be submitted to OER for approval prior to installation.
17. As part of new development, construction and maintenance of an engineered composite cover consisting of concrete building slabs.
18. As part of new development, construction and operation of ventilated parking garage per DOB requirements.
19. 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.

20. If Track 1 SCOs are not achieved, the Site will continue to be registered with a Restrictive Declaration at the NYC Buildings Department, and establishment of Engineering Controls and Institutional Controls and a requirement for management of these controls must be in compliance with an approved SMP. The SMP 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) a higher level of land use without OER approval.

COMMUNITY PROTECTION STATEMENT

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

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

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

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

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

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

Site Safety Coordinator. This project has a designated Site safety coordinator to implement the Health and Safety Plan. The safety coordinator maintains an emergency contact sheet and protocol for management of emergencies. The Site safety coordinator is Marco Balletta and can be reached at 646-270-7195.

Worker Training. Workers participating in cleanup of contaminated material on this project will have the required OSHA training, including (as required) a 40-hour hazardous waste operators training course and annual refresher training. At a minimum, the Site Safety Officer and workers performing specific tasks including removing any hazardous waste will have 40-hour hazardous waste training.

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 (CAMP). Results will be regularly reported to the NYC Office of Environmental Remediation (OER). This cleanup plan also has a plan to address any unforeseen problems that might occur during the cleanup (called a 'Contingency Plan').

Odor, Dust and Noise Control. This cleanup plan includes actions for odor and dust control. These actions are designed to prevent off-site odor and dust nuisances and include steps to be taken if nuisances are detected. Generally, dust is managed by application of physical covers and by water sprays. Odors are controlled by limiting the area of open excavations, physical covers, spray foams and a series of other actions (called operational measures). The project is also required to comply with NYC noise control standards. If you observe problems in these areas, please contact the Site Project Manager, Asya Bychkov at 646-388-9533, or the OER Project Manager, Hannah Moore at 212-442-6372.

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 OER 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 (DOB) construction code requirements or according to specific variances issued by that agency. For this cleanup project, the hours of operation will conform to the DOB construction code requirements or specific variances issued by DOB.

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

Complaint Management. The contractor performing this cleanup is required to address all complaints. If you have any complaints, you can call the facility Construction Manager **TBD** at **TBD**, the OER Project Manager Hannah Moore at 212-442-6372, 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 DOB regulations.

Soil and Liquid Disposal. Any soil and/or 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 soil on the Site, excavated soil will be screened continuously using hand-held instruments, by sight, and by smell to ensure proper material handling and management, and community protection.

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

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

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

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

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

Truck Routing. Truck routes have been selected to: (a) limit transport through residential areas and past sensitive nearby properties; (b) maximize use of city-mapped truck routes; (c) limit total distance to major highways; (d) promote safety in entry to highways; (e) promote overall safety in trucking; and (f) minimize off-site line-ups (queuing) of trucks entering the Site. Operators of loaded trucks leaving the Site will be instructed not to stop or idle in the local neighborhood.

Final Report. The results of all cleanup work will be fully documented in a final report (called a Remedial Action Report) that will be available for you to review in the public document repositories located at the New York Public Library, George Bruce Branch (518 West 125th Street).

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 OER. Requirements that the property owner must comply with are established through a city Restrictive Declaration. A certification of continued protectiveness of the cleanup will be required from time to time to show that the approved cleanup is still effective.

REMEDIAL ACTION WORK PLAN

1.0 SITE BACKGROUND

Inner City Contracting LLC has applied to enroll in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a property located at 487 West 129th Street in the Harlem 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, complies with applicable environmental standards, criteria and guidance and applicable laws and regulations.

1.1 SITE LOCATION AND CURRENT USAGE

The Site is located at 487 West 129th Street in the Harlem neighborhood of Manhattan, New York and is identified as Block 1969, Lot 6 on the New York City Tax Map. Figure 1 shows the Site location. The Site is approximately 20,000 SF and is bounded by West 130th Street to the north, West 129th Street to the south, an auto repair shop and vacant warehouse to the east, and the western half of a one-story warehouse used for stage set storage to the west. A map of the Site is shown on Figure 2. Currently, the Site contains the vacant eastern half of a one-story warehouse. Restrictive Declaration R-158 was placed on the Site by the New York City Department of City Planning (DCP) as part of the May 2009 West 129th Street rezoning (CEQR number 07DCP076M). Based on the findings of AKRF’s RI, Spill No. 1407581 was reported to NYSDEC in October 2014; this spill remains open.

1.2 PROPOSED REDEVELOPMENT PLAN

The proposed future use of the Site will involve the demolition of the on-site half of the existing one-story warehouse, and the construction of two new mixed-use buildings with parking and utility rooms on the lowest (parking) level, which would be shared between the buildings and would occupy the entire Site. The southern building (Building A) would abut West 129th Street

and would have nine above-grade floors with residential uses above the parking level. The northern building (Building B) would abut West 130th Street, and would have: a cellar level (above the parking level) occupied by utility rooms, recreational space and a doctor's office; a basement level (above the cellar) occupied a mechanical room and a doctor's office, and nine above-grade residential floors. An outdoor plaza would be located between the two buildings, above the parking level. The proposed project would entail excavation to approximately 15 feet below the existing building's foundation (at the West 129th Street level), with some deeper excavation for footings and elevator pits. Layout of the proposed development is presented in Appendix 3. The current zoning designation is R7A (residential with high lot coverage). The proposed use is consistent with existing zoning for the Site.

The maximum estimated total quantity of soil/fill expected to be excavated and disposed off-site is approximately 9,700 cubic yards. Based on prior investigations, the excavated materials are anticipated to include a significant quantity of concrete from existing and historical subsurface structures. The excavation may encounter a perched water table in the southwestern corner of the Site (encountered during the RI at 10.5 to 13 feet below the existing building floor), but will likely remain above the overall water table (encountered approximately 23.7 to 27 feet below the building floor).

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

1.3 DESCRIPTION OF SURROUNDING PROPERTY

The neighborhood surrounding the Site includes a mix of institutional, residential, and auto-related uses, including the New York City Housing Authority (NYCHA) Manhattanville Houses, the campus of the City College of New York, several large garage and warehousing buildings, and numerous large residential apartment buildings.

The Site consists of the vacant eastern portion of a one-story warehouse, formerly used by the Metropolitan Opera House to store stage sets. The off-site western portion of the warehouse is separated from the Site by a demising wall (constructed in early 2006) and has continued to be used for Metropolitan Opera stage set storage. The structure to the east (formerly a warehouse and auto repair shop) is under interior renovation to become an enclosed private parking facility.

Three- and four-story residential buildings are located on the Site block along Amsterdam and Convent Avenues, with those on Amsterdam Avenue containing ground-floor retail.

The block south of the Site includes a New York City Transit Authority/Manhattan and Bronx Surface Transit Operating Authority bus depot, and a Verizon garage. The remainder of this block is occupied by three- and four-story warehouses and parking facilities. The warehouses appear to be vacant or underutilized.

The blocks north and east of the Site contain several five- to ten-story apartment buildings. These buildings are located on parcels of one acre or more. Portions of the City College of New York campus and a Catholic church are located approximately 400 feet north of the Site.

The NYCHA Manhattanville Houses and Intermediate School (I.S.) 286/172 are located west of the Site across Amsterdam Avenue. Sheltering Arms Park (a public park under the jurisdiction of the New York City Department of Parks and Recreation) is on the corner of West 129th Street and Amsterdam Avenue. Figure 2 shows the surrounding land usage.

1.4 REMEDIAL INVESTIGATION

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

- *Phase I Environmental Site Assessment (ESA)*, November 2007, prepared by AKRF, Inc. (AKRF)
- *Phase II Investigation*, March 2008, prepared by AKRF
- *Remedial Action Plan (RAP) and Construction Health and Safety Plan (CHASP)*, May 2008, prepared by AKRF
- *Geotechnical Study*, December 2012, prepared by Heller and Johnsen
- *Remedial Investigation (RI)*, January 2015, prepared by AKRF

The following work has been performed at the Site:

1. Conducted several Site inspections in 2007-2014 to identify AOCs and physical obstructions (i.e., structures, buildings, etc.);
2. Advanced 9 soil borings across the entire project Site, and collected 16 soil samples (1 to 2 from each boring) for chemical analysis to evaluate soil quality;
3. Installed 4 temporary groundwater monitoring wells in soil borings throughout the Site and collected 4 groundwater samples for chemical analysis to evaluate groundwater quality; and

4. Installed 5 soil vapor probes around the Site perimeter and collected 5 samples for chemical analysis.

Digital (PDF) copies of these environmental work plans and reports were previously provided to the OER as Appendix A of the RI report.

Summary of Regulatory Correspondence

The following is a summary of pertinent regulatory correspondence related to the Site:

- Comments on the November 2007 Phase I ESA prepared by AKRF, March 21, 2008, prepared by the New York City Department of Environmental Protection (DEP), sent to DCP.
- Comments on the March 2008 Phase II Report prepared by AKRF, April 16, 2008, prepared by DEP, sent to DCP.
- Comments on the May 2008 RAP and CHASP prepared by AKRF, July 31, 2008, prepared by DEP, sent to DCP.
- 487 West 129th Street Restrictive Declaration, April 21, 2008, prepared by Kramer Levin Naftalis & Frankel LLP, sent to DCP and DEP.
- Confirmation of Receipt of Restrictive Declaration, April 22, 2008, prepared by DEP, sent to DCP.

The May 2008 RAP was approved by DEP with certain comments as noted in the May 2008 letter; however, the proposed construction did not begin at the time. At the time the Restrictive Declaration was recorded, control of Restrictive Declaration implementation was overseen by DEP; it was subsequently transferred to OER. Digital (PDF) copies of the above-referenced regulatory correspondence were previously provided to the OER as Appendix A of the RI report.

Findings of Environmental Investigation

1. Based on a 2014 survey, the Site is at an elevation of approximately 39 feet above the North Atlantic Vertical Datum of 1988 (NAVD88). The Site elevation is nearest to the elevation of south-adjacent West 129th Street (which ranges from approximately 37.5 to 40 feet NAVD88). Regional surface topography slopes down to the southwest. The north-adjacent West 130th Street is at an elevation of approximately 55.5 to 62.5 feet NAVD88.
2. Depth to groundwater ranges from approximately 23.7 feet to 27 feet below grade at the Site. The 2008 and 2014 RI borings in the southwestern corner of the Site identified apparent perched groundwater approximately 10.5 feet to 13 feet below grade.
3. Groundwater flow direction is expected to be southwesterly (toward the Hudson River, approximately 0.45-mile away) based on surface topography. However, actual

water table depth and groundwater flow direction can be affected by many factors including subsurface openings or obstructions such as basements, underground utilities, bedrock geology, and other factors. Groundwater in Manhattan is not used as a source of potable water.

4. A 2012 geotechnical study encountered weathered bedrock approximately 35 to 61 feet below Site grade, and competent bedrock was encountered approximately 36 to 66 feet below Site grade, sloping down toward the south.
5. The stratigraphy of the site, from the surface down, consists of approximately 5 to 12 feet of fill (sand, gravel, silt, brick, concrete, ash and glass) underlain by approximately 23 to 30 feet of apparent native soil (sand, gravel, and silt), which is underlain by bedrock approximately 35 to 61 feet below grade. The 2012 geotechnical study identified apparent concrete layers approximately 5 to 10 feet below the building floor, possibly associated with historical rail car repair pits.
6. Analytical results for soil/fill samples were compared to 6 NYCRR Part 375 Soil Cleanup Objectives for Unrestricted Use (USCOs) and Restricted - Residential Use (RRSCOs), developed for multi-family residential uses and active recreational uses with reasonable potential for soil contact. Of the 16 soil samples collected, 11 were collected within the proposed excavation interval (ranging from 0-2 feet below grade to 8-10 feet below grade), three were collected approximately 12 to 14 feet below grade (at or one foot below the proposed depth of excavation), and the remaining 2 samples were collected approximately 26 to 28 feet below grade (due to elevated PID readings). Soil/fill samples collected during the RI showed elevated concentrations of primarily petroleum-related VOCs in the deeper samples collected from 2008 boring SB-2 and 2014 boring WC-2, both advanced in the southwestern corner of the Site [2008 sample SB-2 (12-14') and 2014 sample WC-2 (12-14')]. These included: 1,2,4-trimethylbenzene (max. concentration of 87 ppm, above its USCO of 3.6 ppm and its RRSCO of 52 ppm); 1,3,5-trimethylbenzene (max. concentration of 33 ppm, above its USCO of 3.6 ppm, but below its RRSCO of 52 ppm); naphthalene (max. concentration of 44 ppm, above its USCO of 12 ppm but below its RRSCO of 100 ppm); n-propylbenzene (max. concentration of 11 ppm, above its USCO of 3.9 ppm but below its RRSCO of 100 ppm); and total xylenes (max. concentration of 41.6 ppm, above its USCO of 0.26 ppm but below its RRSCO of 100 ppm). VOC concentrations were higher in the 2008 sample, although it was not clear whether this is representative of attenuation with time or sample variability. Lower levels of petroleum-related VOCs (below both USCOs and RRSCOs) were detected in shallow samples from these borings: 2008 sample SB-2 (0-2'), and 2014 sample WC-2 (3-5'). Acetone (a solvent and common component of fill materials, but also a common laboratory artifact) was detected in both SB-2 (12-14') and WC-2 (12-14') at concentrations of approximately 1.6 ppm and 6.1 ppm, respectively, above its USCO of 0.05 ppm but well below its RRSCO of 100 ppm. Methylene chloride (a solvent and a common laboratory artifact) was detected in WC-2 (12-14') at a concentration of approximately 2.7 ppm, above its USCO of 0.05 ppm but well below its RRSCO of 100 ppm.

Elevated SVOC concentrations were detected in 2008 sample SB-3 (0-2') and 2014 sample WC-2 (12-14'), including: benzo(a)anthracene (max. concentration of 26 ppm, above its USCO and RRSCO of 1 ppm); benzo(a)pyrene (max. concentration of 24 ppm, above its USCO and RRSCO of 1 ppm); benzo(b)fluoranthene (max. concentration of 31 ppm, above its USCO and RRSCO of 1 ppm); benzo(k)fluoranthene (max. concentration of 11 ppm, above its USCO of 0.8 ppm and RRSCO of 3.9 ppm); chrysene (max. concentration of 25 ppm, above its USCO of 1 ppm and RRSCO of 3.9 ppm); dibenzo(a,h)anthracene (max. concentration of 3.3 ppm, above its USCO and RRSCO of 0.33 ppm); dibenzofuran (max. concentration of 7.9 ppm, slightly above its USCO of 7 ppm, but below its RRSCO of 59 ppm); and indeno (1,2,3-cd)pyrene (max. concentration of 16 ppm, above its USCO and RRSCO of 0.5 ppm). Concentrations of SVOCs in these two samples were generally similar; ash, which commonly contains elevated SVOC concentrations, was observed in 2008 boring SB-3. Nine metals (barium, chromium, copper, lead, manganese, mercury, nickel, silver, and zinc) exceeded their respective USCOs in one to six samples each. Barium (max. concentration of 1,800 ppm) also exceeded its RRSCO of 400 ppm in one sample. Lead (max. concentration of 1,400 ppm) exceeded its RRSCO of 400 ppm in two samples. Manganese (max. concentration of 34,000 ppm) exceeded its RRSCO of 2,000 ppm in one sample. Mercury (max. concentration of 0.97 ppm) slightly exceeded its RRSCO of 0.81 ppm in one sample. No pesticides or PCB were detected in the soil samples analyzed. The detected VOC and SVOC concentrations were indicative of petroleum contamination in the southwestern corner of the Site and/or urban fill materials containing SVOCs. The detected concentrations of metals in the samples appeared to be primarily either naturally occurring or attributable to urban fill. Only 2 of the 16 soil samples (from the petroleum-contaminated area) contained concentrations of VOCs exceeding USCOs, only 2 contained concentrations of SVOCs exceeding USCOs (in the petroleum-contaminated area and/or within the fill layer), and only 8 contained concentrations of metals exceeding USCOs (within the fill layer). Significantly higher concentrations of several metals including barium, manganese, silver, chromium, cobalt, nickel, and thallium were detected in 2014 sample WC-3 (26-28') compared to the other soil samples, suggesting a potential release at this location (e.g., from a leaking drain that may have been historically used for chemical disposal). Soil laboratory analytical data is summarized in Tables 2 through 5.

7. Groundwater sample analytical results were conservatively compared to NYSDEC Class GA Ambient Water Quality Standards (drinking water standards), although groundwater is not used as a source of potable water in Manhattan. Groundwater samples collected during the RI showed elevated concentrations of petroleum-related VOCs in sample GW-2 from the southwestern corner of the Site, with 1,2,4,5-tetramethylbenzene (340 ppb), 1,2,4-trimethylbenzene (1,600 ppb), 1,3,5-trimethylbenzene (410 ppb), ethylbenzene (300 ppb), isopropylbenzene (120 ppb), n-butylbenzene (73 ppb), n-propylbenzene (160 ppb), p/m-xylene (800 ppb), o-xylene (59 ppb), and p-isopropyltoluene (88 ppb) exceeding their Class GA standards of 5 ppb. Naphthalene was detected at 860 ppb, exceeding its Class GA standard of 10 ppb. These VOCs were not detected in the other groundwater samples analyzed. VOCs associated with chlorinated solvents were detected in samples GW-1, GW-3,

and GW-4. The detected chlorinated VOCs included: 1,2-dichloroethene (max. concentration of 20 ppb, no Class GA standard assigned); cis-1,2-dichloroethene (max. concentration of 20 ppb, exceeding the Class GA standard of 5 ppb in one sample); and tetrachloroethene (max. concentration of 11 ppb, exceeding the Class GA standard of 5 ppb in one sample). SVOCs were detected in all four groundwater samples, with seven SVOCs exceeding Class GA standards in samples GW-1, GW-2 and/or GW-3. These included: benzo(a)anthracene [max. concentration of 0.24 parts per billion (ppb), above its Class GA standard of 0.002 ppb]; benzo(a)pyrene (max. concentration of 0.27 ppb, above its Class GA standard of “non-detectable”); benzo(b)fluoranthene (max. concentration of 0.23 ppb, above its Class GA standard of 0.002 ppb); benzo(k)fluoranthene (max. concentration of 0.1 ppb, above its Class GA standard of 0.002 ppb); chrysene (max. concentration of 0.23 ppb, above its Class GA standard of 0.002 ppb); indeno(1,2,3-cd)pyrene (max. concentration of approximately 0.09 ppb, above its Class GA standard of 0.002 ppb); and naphthalene (max. concentration of 300 ppb, above its Class GA standard of 10 ppb).

Twenty-three metals were detected in the unfiltered groundwater samples (total metals analysis), 20 of which were also detected in the filtered samples (dissolved metals analysis). Thirteen metals were detected by total metal analysis at concentrations above Class GA standards: arsenic, barium, beryllium, cadmium, chromium, copper, iron, lead, magnesium, manganese, nickel, selenium, and sodium. Concentrations in the dissolved metal samples were lower, with only four metals (antimony, iron, manganese, and sodium) exceeding Class GA standards. No PCBs or pesticides were detected in the groundwater samples. The detected concentrations of petroleum-related VOCs are likely attributable to a release in the southwestern corner of the Site.

The detected chlorinated VOCs were not identified in the soil samples, and are likely attributable to an off-site source. The detected SVOC concentrations were likely attributable to some combination of petroleum contamination in the southwestern corner of the Site and fill particles entrained in the samples, as these compounds were also detected in soil samples at these locations. The detected metals, including those at concentrations above the Class GA standards, are typical of regional groundwater quality in Manhattan and are not indicative of an on-site release or spill. Groundwater laboratory analytical data is summarized in Tables 6 through 9.

8. Soil vapor samples collected during the RI showed concentrations of VOCs generally associated with petroleum and solvents. There are no standards or guidelines for soil vapor, so detected concentrations were (conservatively) compared to indoor air ranges published in the 2006 *New York State Department of Health (NYSDOH) Guidance for Evaluating Soil Vapor Intrusion in the State of New York*. VOCs typically associated with petroleum (1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 2,2,4-trimethylpentane, 4-ethyltoluene, benzene, ethylbenzene, heptane, n-hexane, xylenes, and toluene), where detected, were present at concentrations ranging from 3.76 to 3,640 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). VOCs typically associated with solvents (1,3-butadiene, 2-butanone, carbon disulfide, chloroform, cis-1,2-dichloroethene, cyclohexane, ethyl alcohol, isopropyl alcohol, styrene, tertiary butyl

alcohol, tetrachloroethene, tetrahydrofuran, trichloroethene, and vinyl chloride), where detected, were present at concentrations ranging from 1.37 to 967 $\mu\text{g}/\text{m}^3$. Chloromethane (R-40), dichlorodifluoromethane and trichlorofluoromethane, commonly associated with refrigerants, were detected in one to three samples each at concentrations ranging from 1.06 to 4.52 $\mu\text{g}/\text{m}^3$. Acetone, which may be associated with solvents or fill materials and is also a common laboratory contaminant, was detected in four samples at concentrations ranging from 14.9 to 143 $\mu\text{g}/\text{m}^3$. Methylene chloride (a solvent and common laboratory contaminant) was detected in one sample at 3.26 $\mu\text{g}/\text{m}^3$. No VOCs were detected in exceedance of NYSDOH Air Guidance Values (AGVs). The detected VOCs were likely attributable to some combination of petroleum contamination in the southwestern corner of the Site, fill materials, and/or off-site sources. Soil vapor laboratory analytical data is summarized in Table 10.

9. Based on field observations of contamination above the soil-water interface and laboratory analytical results, Spill No. 1407581 was reported to the NYSDEC in October 2014.

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

2.0 REMEDIAL ACTION OBJECTIVES

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

Soil

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

Groundwater

- Remove contaminant sources causing impact to groundwater.
- Monitor groundwater improvement in response to contaminant source removal and/or treatment under NYSDEC Authority.
- 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 dwellings and other occupied structures.

NYSDEC Spill No. 1407581

- Achieve closure with the NYSDEC with respect to the open spill at the Site.

Remedial and mitigation measures described herein will be performed in accordance with applicable laws and regulations, the Site-specific CHASP, and NYSDEC requirements regarding remediation of Spill No. 1407581. This remedy is protective of public health and/or the environment for the intended use.

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 Site. The remedy selection process begins by establishing remedial action objectives (RAOs) for media in which chemical constituents were found in exceedance of applicable standards, criteria and guidance values (SCGs). A remedy is then developed based on the following ten criteria:

- Protection of human health and the environment;
- Compliance with SCGs;
- Short-term effectiveness and impacts;
- Long-term effectiveness and permanence;
- Reduction of toxicity, mobility, or volume of contaminated material;
- Implementability;
- Cost effectiveness;
- Community Acceptance;
- Land use; and
- Sustainability.

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

Alternative 1 involves:

- Selection of NYSDEC Part 375 Section 6.8(a) 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 SCOs have been achieved with post-excavation endpoint sampling. If soil/fill containing analytes at concentrations above Track 1 Unrestricted Use SCOs is still present beneath the Site after removal of all soil required for the new construction is complete, additional excavation would be performed to ensure complete removal of soil that does not meet Track 1 Unrestricted Use SCOs.

- No engineering or institutional controls are required for a Track 1 cleanup, but a vapor barrier beneath the foundation and behind foundation sidewalls of the new building would be installed as part of new development to prevent future exposures from off-site soil vapor.
- As part of new development, construction and operation of a ventilated parking garage in the sub-cellar will prevent future vapor intrusion.
- Placement of a final cover over the entire Site as part of new construction.

Alternative 2 involves

- Establishment of Track 4 Site-Specific SCOs.
- Removal of all petroleum-contaminated soil, removal or capping of all other soil/fill exceeding Track 4 Site-Specific SCOs and confirmation that Track 4 SCOs have been achieved with post-excavation endpoint sampling. Excavation for development purposes would generally take place to approximately 15 feet below the existing building's foundation, with some deeper excavation for footings and elevator pits. If non-petroleum contaminated soil/fill containing analytes at concentrations above Track 4 SCOs is still present at the base of the excavation, such material will be capped with the concrete building foundations, or additional excavation will be performed to ensure complete removal of soil that does not meet Site Specific Track 4 SCOs.
- Placement of a final cover over the entire Site to eliminate exposure to remaining soil/fill.
- Placement of a vapor barrier beneath the building slab and basement/foundation sidewalls to prevent soil vapor entering the new building.
- Construction and operation of high-air-exchange ventilated parking garage per DOB requirements.
- Establishment of use restrictions including prohibitions on the use of groundwater from the Site and prohibitions on sensitive Site uses, such as farming or vegetable gardening, to eliminate future exposure pathways.
- Establishment of an approved Site Management Plan to ensure long-term management of these engineering and institutional controls including the performance of periodic inspections and certification that the controls are performing as they were intended.

- The Site will continue to be registered with a Restrictive Declaration at the NYC Buildings Department.

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 the historic fill and petroleum-contaminated soil 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 contamination leaching into groundwater.

Alternative 2 would achieve comparable protections of human health and the environment by excavating the entire Site to at least 15 feet below grade (with limited deeper excavation for footings and elevator pits, as well as potential deeper excavation if necessary in the petroleum-contaminated area). As the fill layer is believed to be up to 12 feet thick based on current data, this is anticipated to remove all historic fill and petroleum-contaminated soil. Potential localized areas of deeper, non-petroleum contaminated historical fill that may be encountered during excavation would be capped rather than removed under Alternative 2. This would ensure that remaining soil/fill on-site meets Track 4 Site-Specific SCOs to the extent practicable. Additionally, the Site would be subject to Institutional and Engineering controls, including a vapor barrier and a composite cover system. The composite cover system would prevent direct contact with any remaining on-site soil/fill. The vapor barrier and ventilated garage would prevent vapor intrusion in new development and the composite cover system would prevent direct contact with any remaining on-site soil/fill and groundwater. Implementing institutional controls including continuation of the Restrictive Declaration and a Site Management Plan would ensure that the composite cover system remains intact and protective. Establishment of Track 4 Site-Specific SCOs would minimize the risk of contamination leaching into groundwater.

For both Alternatives, potential exposure to contaminated soil during construction would be minimized by implementing a Construction Health and Safety Plan (CHASP), an approved Soil and Materials Management Plan (SMMP) and Community Air Monitoring Plan (CAMP). Groundwater encountered during construction would be appropriately managed in accordance with NYSDEC and/or NYCDEP requirements for dewatering. Groundwater is not used for potable water supply. Potential migration of soil vapors into the new building would be prevented by installing a vapor barrier beneath the new pressure slab as part of new construction.

3.2 BALANCING CRITERIA

Compliance with Standards, Criteria and Guidance (SCGs)

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

Alternative 1 would achieve compliance with the remedial goals, chemical-specific SCGs and RAOs for soil through removal to Track 1 Unrestricted Use SCOs and Groundwater Protection Standards. Compliance with SCGs for soil vapor would also be achieved by installation of a vapor barrier system below the new building's foundation slab and continuing the vapor barrier around foundation/basement walls, and a concrete building slab would be constructed over the entirety of the building footprint as part of new construction.

Alternative 2 would achieve compliance with the remedial goals, chemical-specific SCGs and RAOs for soil through removal of soil to meet Track 4 Site Specific SCOs. Compliance with SCGs for soil vapor would also be achieved by operation of ventilated garage and by installation of a vapor barrier system below the new building's foundation slab and continuing the vapor barrier around foundation/basement walls, and a concrete building slab would be constructed over the entirety of the building footprint. A Site Management Plan would ensure that these controls remained protective for the long term.

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

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

Short-term Effectiveness and Impacts

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

Both Alternatives 1 and 2 have similar short-term effectiveness during their respective implementations, as each requires excavation of historic fill material. Both alternatives would result in short-term dust generation impacts associated with excavation, handling, load out of materials, and truck traffic. The volume of fill excavated is anticipated to be similar for Alternatives 1 and 2, as the fill layer is anticipated to be up to 12 feet thick (less than the proposed depth of excavation); for Alternative 1, some additional excavation beyond the design depth may be necessary should pockets of deeper fill materials be encountered. For both alternatives, focused attention to means and methods during the remedial action, including community air monitoring and appropriate truck routing, would minimize the overall impact of these activities.

An additional short-term adverse impact and risk to the community associated with both remedial alternatives is increased truck traffic. Approximately 580, 25-ton capacity truck trips would be necessary to transport fill and soil excavated during Site development under either alternative. As noted above, under Alternative 1, some additional truck trips may be required to remove excess fill.

Both remedial alternatives would also employ appropriate measures to prevent short-term impacts through the use of a CHASP, a Soil/Materials Management Plan (SMMP), and a CAMP, during all on-site soil disturbance activities, and would effectively mitigate the release of significant contaminants into the environment by properly handling and disposing of soil encountered during the development. Both alternatives provide short term effectiveness in protecting the surrounding community by decreasing the risk of contact with on-site

contaminants. Construction workers operating under appropriate management procedures (Site-specific CHASP) would be protected from on-site contaminants through the use of the appropriate personal protective equipment.

Long-term Effectiveness and Permanence

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

Alternative 1 would achieve long-term effectiveness and permanence by permanently removing all petroleum-contaminated soil and soil/fill material exceeding Track 1 Unrestricted Use SCOs. Removal of on-site contaminant sources would prevent future groundwater contamination.

Alternative 2 would provide long-term effectiveness by removing all petroleum-contaminated soil and most or all of soil/fill exceeding Track 1 Unrestricted Use SCOs, installing a composite cover system across the Site, installing a vapor barrier, maintaining use restrictions, establishing a Site Management Plan to ensure long-term management of Institutional Controls (ICs) and Engineering Controls (ECs), and leaving the Restrictive Declaration in place to memorialize these controls for the long term. The SMP would ensure long-term effectiveness of all ECs and ICs by requiring periodic inspection and certification that these controls and use restrictions continue to be in place and are functioning as they were intended, assuring that protections designed into the remedy will provide continued high level of protection in perpetuity.

Alternative 1 would result in removal of soil contamination exceeding the SCOs providing the highest level, most effective and permanent remedy over the long-term with respect to contaminated soil, which would eliminate any migration to groundwater. Alternative 2 would result in removal of all, or most, of the soil contamination exceeding the SCOs, and cap any such remaining soil, also providing an effective and permanent remedy over the long-term with respect to contaminated soil, which would eliminate or significantly reduce the potential for

migration to groundwater. Potential sources of soil vapor and groundwater contamination would also be eliminated as part of the remedy.

Reduction of Toxicity, Mobility, or Volume of Contaminated Material

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

Alternative 1 would permanently eliminate the toxicity, mobility, and volume of contaminants from on-site soil by meeting Track 1 Unrestricted Use SCOs.

Alternative 2 would permanently eliminate or reduce the toxicity, mobility, and volume of contaminants by removing approximately 9,700 cubic yards of soil/fill present on the Site, which is anticipated to include all petroleum-contaminated soil and all, or most, of the fill layer. Any remaining soil/fill beneath the new Site would meet Track 4 Site-Specific SCOs or would be handled as residual contamination and addressed via the composite site cover, vapor barrier, and implementation of the SMP. Alternative 1 would potentially eliminate a greater total mass of contaminants on-site, should additional fill materials exceeding Track 1 Unrestricted Use SCOs be present beneath the design excavation depth, as excavation of such fill would be required under this alternative.

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.

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 proposed remedial action under either alternative is anticipated to be essentially similar, although some excavation beyond the design depth may be necessary under Alternative 1. The potential additional excavation under Alternative 1 may be somewhat more difficult compared to Alternative 2 due to the greater depth of excavation, and associated requirements for excavation support, dewatering (if excavation reaches the water table), and protection of adjacent buildings. However, both alternatives are feasible and implementable and use reliable methods and standard construction technologies. Standard construction equipment utilized for the overall earthwork would be used. The techniques, materials and equipment to implement either alternative are readily available and have been proven effective in remediating and/or mitigating the contaminants associated with the Site. OSHA-trained personnel would complete all activities that include excavation and handling of petroleum-contaminated or other soil with contamination beyond that associated with typical historical fill material. Both alternatives are highly reliable. 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.

Since historic fill at Site extends to depths of 12 feet and new development excavation extends below fill layer, costs associated with both alternatives would be comparable. Alternative 1 would eliminate potential costs for investigation or remediation by future landowners or lessees, and is anticipated to be cost effective, with costs equal to or somewhat greater than those for implementing Alternative 2. The potential for increased costs associated with Alternative 1 is associated with the potential for greater difficulty of excavation support, dewatering and

protection of adjacent buildings compared to Alternative 2 and the potentially somewhat higher volume of soil to be removed. Initial costs associated with Alternative 1 would thus be similar or somewhat higher than Alternative 2. Long-term costs are anticipated to be slightly higher for Alternative 2 than Alternative 1, based on the need to implement a Site Management Plan as part of Alternative 2. In both cases, appropriate public health and environmental protections are achieved.

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

Community Acceptance

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

Based on the overall goals of the remedial program, no adverse community opinion is anticipated during the project. This RAWP will be subject to and undergo public review under the NYC VCP, and will provide the opportunity for detailed public input on the remedial alternatives and the selected remedial action. Any public comments related to environmental remediation will be considered by OER and Inner City Contracting LLC prior to the approval and execution of the remedial plan. The Citizen Participation Plan for the project is provided in Appendix 1.

Land use

This evaluation criterion addresses the proposed use of the Site. 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 remedial alternatives are appropriate with respect to the proposed use and to land uses in the vicinity of the Site. The proposed redevelopment of the Site is compatible with the existing zoning designation and is consistent with recent development patterns. Following remediation, the Site will meet either Track 1 Unrestricted Use or Track 4 Site-Specific SCOs (with residual contamination addressed by Engineering Controls and Institutional Controls), both of which are appropriate for its planned mixed residential and commercial uses. Improvements in the current environmental condition of the Site achieved by both alternatives are also consistent with the City's goals for cleanup of contaminated land and bringing such land into productive reuse. Both alternatives are equally protective of natural resources and cultural resources.

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 soil, which would reduce greenhouse gas emissions and conserve energy used to fuel trucks. To the extent practicable, energy efficient building materials, appliances, and equipment will be utilized to complete the development. A sustainability statement is provided in Appendix 2.

4.0 REMEDIAL ACTION

4.1 SUMMARY OF PREFERRED REMEDIAL ACTION

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

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan.
2. Performance of a Community Air Monitoring Program (CAMP) for particulates and VOCs.
3. Selection of NYSDEC 6NYCRR Part 375 Section 6.8(a) 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. Development of an action plan for groundwater remediation if required by NYSDEC under the NYSDEC Spill program. This City VCP RAWP will be implemented independently of the requirements of the Spill program.
6. Excavation and removal of soil/fill exceeding Track 1 Site Specific SCOs. The proposed building footprint will generally be excavated to approximately 15 feet below the existing foundation slabs, with areas of deeper excavation for footings and elevator pits. Approximately 9,700 cubic yards of soil will be removed from the Site to make space for the new sub-cellar and foundation slabs.
7. Removal and closure of underground storage tanks (if encountered) and closure of Spill No. 1407581 in compliance with applicable local, State and Federal laws and

regulations. The spill remediation is anticipated to include removal of a hotspot of petroleum-contaminated soil in the southwestern corner of the Site. This RAWP does not alter or interfere with the NYSDEC requirements for the petroleum spill.

8. 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.
9. Transportation and off-site disposal of all excess soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities.
10. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of SCOs.
11. If required by the proposed project, import of materials to be used for backfill in compliance with this plan and in accordance with applicable laws and regulations.
12. Implementation of stormwater pollution prevention measures in compliance with applicable laws and regulations.
13. Performance of all activities required for the remedial action, including any permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations. Since groundwater is generally at a depth of approximately 23.7 to 27 feet below the existing foundation, with an apparent perched water table (10.5 feet to 13 feet below the existing foundation) in the Site's southwestern corner, only limited dewatering is anticipated to be necessary. Dewatering permits will be obtained from NYCDEP, if applicable. Alternatively, if only a small quantity of groundwater requires removal, it may be properly removed in accordance with the applicable regulations (i.e., using a vacuum truck).
14. Reuse or import of materials to be used for backfill in compliance with this plan and in accordance with applicable laws and regulations.

15. Submission of a Remedial Action Report (RAR) that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, lists any changes from this RAWP, and describes all Engineering and Institutional Controls to be implemented at the Site.

If Track 1 Unrestricted Use (Track 1) SCOs are not achieved, the following construction elements will be implemented and will constitute Engineering and Institutional controls:

16. As part of new development, installation of a vapor barrier system beneath the building pressure slabs and behind foundation/cellar sidewalls below grade. Currently, the vapor barrier has not been selected. If Track 1 SCOs are not achieved, the vapor barrier specifications will be submitted to OER for approval prior to installation.
17. As part of new development, construction and maintenance of an engineered composite cover consisting of concrete building slabs.
18. As part of new development, construction and operation of ventilated parking garage per requirements of NYC Building's Department.
19. 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.
20. If Track 1 SCOs are not achieved, the Site will continue to be registered with a Restrictive Declaration at the NYC Buildings Department, and establishment of Engineering Controls and Institutional Controls and a requirement for management of these controls must be in compliance with an approved SMP. The SMP 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) a higher level of land use without OER approval.

4.2 SOIL CLEANUP OBJECTIVES AND SOIL/FILL MANAGEMENT

Soil Cleanup Objectives (SCOs) proposed for this project are the 6 NYCRR Part 375 USCOs. 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 3. The location of planned excavations is shown in Figure 3.

The known petroleum hotspot and any other discrete contaminant sources/hotspots identified during the remedial action will be horizontally and vertically identified by GPS or surveyed. This information will be provided in the RAR.

Estimated Soil/Fill Removal Quantities

The maximum total quantity of soil/fill expected to be excavated and disposed off-site is approximately 9,700 cubic yards. Based on prior investigations, the excavated materials are anticipated to include a significant quantity of concrete from existing and historical subsurface structures. Potential disposal locations for Site-derived contaminated materials are listed below in Table 1. Ultimate disposal locations have not been selected to date, and will be reported promptly to the OER Project Manager once selected.

Table 1 – Proposed Soil Disposal Locations

<u>Disposal Facility</u>	<u>Waste Type</u>	<u>Estimated Quantities</u>
Clean Earth DuPont Grasselli, Linden, NJ	Historic fill	Up to 9,700 cubic yards
Clean Earth, Carteret, NJ	Petroleum-contaminated soil	As necessary

End-Point Sampling

Removal actions under this plan will be performed in conjunction with remedial end-point sampling. End-point sampling will be conducted in the southwestern corner of the Site (where known petroleum contamination exists), and in any other portions of the Site where petroleum-contaminated soil is encountered. End-point sampling frequency will consist of the following:

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.

- For sampling of VOCs, bottom samples should be taken within 24 hours of excavation, and should be taken from the 0 to 6-inch interval at the excavation floor. Samples taken after 24 hours should be taken at 6 to 12 inches.
- 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.

For larger excavations, sampling frequency may be modified with documentation specifying why the altered sampling frequency is appropriate. Post-remediation sample locations and depth will be biased towards the areas and depths of highest contamination identified during previous sampling episodes unless field indicators such as field instrument measurements or visual contamination identified during the remedial action indicate that other locations and depths may be more heavily contaminated. In all cases, post-remediation samples should be biased toward locations and depths of the highest expected contamination.

New York State Department of Health Environmental Laboratory Approval Program (ELAP)-certified labs will be used for all end-point sample analyses. Labs for 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. End-point samples will be analyzed for trigger analytes (those for which SCO exceedance is identified) utilizing the following methodology:

Soil analytical methods will include, as necessary:

- VOCs by EPA Method 8260;
- SVOCs by EPA Method 8270;
- Pesticides/PCBs by EPA Method 8081/8082; and
- Target Analyte List metals.

If either LNAPL and/or DNAPL are detected, appropriate samples will be collected for characterization and “fingerprint analysis” and required regulatory reporting (i.e., spills hotline) will be performed.

Quality Assurance/Quality Control

Samples will be collected in accordance with the following procedures:

- Record sample observations (evidence of contamination, PID readings, soil classification) in field log book.
- Collect an aliquot of soil or groundwater using a dedicated and disposable plastic sample spoon or sample bailer and place in laboratory-supplied sample jars. One grab sample will be collected for VOC analysis, if applicable. One composite sample will be collected for all other analyses.
- Seal and label the sample jars and place in a chilled cooler.

Decontamination Procedures

To avoid contamination and cross-contamination of samples, only dedicated or disposable sampling equipment may be used to collect these samples. All non-disposable equipment involved in field sampling must be decontaminated before being brought to the sampling location, and must be properly decontaminated after use.

Sample Identification

All samples will be consistently identified in all field documentation, chain-of-custody documents and laboratory reports using an alpha-numeric or alpha-alpha code. For stockpiled soil, the alpha prefix will be “SP” and the numbers following the alpha prefix will correspond to excavated stockpiles, beginning with “1, 2, 3...etc.” For example, the first sample collected from the first stockpile will be labeled “SP-1-1” and the first sample collected from the second stockpile will be labeled “SP-2-1.”

For groundwater samples, the alpha prefix will be “GW” and the number following the prefix will correspond to the sample number. For example, the first groundwater sample collected for sample analysis will be labeled “GW-1” and the second sample will be “GW-2.”

Sample Labeling and Shipping

All sample containers will be labeled with the following information:

- Site identification
- Sample identification
- Date and time of collection
- Analysis(es) to be performed
- Sampler’s initials

Once the samples are collected and labeled, they will be placed in chilled coolers and stored in a cool area away from direct sunlight to await shipment to the laboratory. Soil samples will be shipped to the laboratory at a frequency that will not result in an exceedance of applicable holding times for sample methods. At the start and end of each workday, field personnel will add ice to the coolers as needed.

The samples will be prepared for shipment by placing each sample jar in a sealable plastic bag, then wrapping each bag in bubble wrap to prevent breakage, adding freezer packs and/or fresh ice in sealable plastic bags and the chain-of-custody form. Samples will be shipped overnight (e.g., Federal Express) or transported by a laboratory courier. All coolers shipped to the laboratory will be sealed with mailing tape and a chain-of-custody (COC) seal to ensure that the coolers remain sealed during delivery.

Sample Custody

Field personnel will be responsible for maintaining the sample coolers in a secured location until they are picked up and/or sent to the laboratory. The record of possession of samples from the time they are obtained in the field to the time they are delivered to the laboratory or shipped off-site will be documented on COC forms. The COC forms will contain the following information: project name; names of sampling personnel; sample number; date and time of collection and matrix; and signatures of individuals involved in sample transfer, and the dates and times of transfers. Laboratory personnel will note the condition of the custody seal and sample containers at sample check-in.

Documentation

A sample log book will be maintained. The following information, as a minimum, will be recorded to the log.

- Sample identification number
- Sample location
- Field Observations
- Sample Type
- Analyses

- Date/Time of collection
- Collector's name
- Sample procedures and equipment utilized
- Date sent to laboratory/name of laboratory
- Copies of site drawings indicating stockpile numbers and location.

Import and Reuse of Soil

Import of soil onto the Site for backfill/as part of the Site cap is not anticipated, but if necessary (e.g., as structural backfill), it will be performed in conformance with the Soil/Materials Management Plan in Appendix 1. Reuse of soil already on-site will be performed in conformance with the Soil/Materials Management Plan in Appendix 1. Small quantities of on-site soil/fill are expected to be reused/relocated on-site (e.g., as backfill around footings, other subsurface structural elements, and utilities).

4.3 ENGINEERING CONTROLS

The excavation required for the proposed Site development will achieve Track 1 Unrestricted Use SCOs. Track 1 remedial actions do not require Engineering Controls. However, the following elements below will be incorporated into the foundation design as part of the new development:

- A composite cover system consisting of a minimum of 36-inch thick concrete slab.
- Vapor barrier beneath new foundations and sidewalls.
- Ventilated parking garage.

If Track 1 is not achieved, these three 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 a concrete building slab overlaying the entire extent of the Site. The composite cover system will be comprised of a minimum of 36-inch thick

concrete slab. The concrete slab layout details are shown in Appendix 5. The composite cover system is a permanent engineering control for the Site.

If Track 1 objectives are not achieved, the system will be inspected and reported at specified intervals as required by this RAWP and the SMP. A Soil Management Plan will be included in the Site Management Plan and will outline the procedures to be followed in the event that the composite cover system and underlying residual soil/fill is disturbed after the remedial action is complete. Procedures for maintenance of this composite cover system will be described in the SMP.

Vapor Barrier

Migration of soil vapor will be mitigated with a combination of concrete slab and vapor barrier. Currently, the vapor barrier has not been selected. If Track 1 SCOs are not achieved, the vapor barrier specifications and stamped design drawings would be submitted to OER for approval.

The vapor barrier system is a permanent engineering control for the Site. The Remedial Closure Report will include photographs of the installation process, PE/RA 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.

Feasibility of and Need for Sub-Slab Depressurization System

Known petroleum contamination exists in the southwestern corner of the Site; as part of Site redevelopment and remediation of Spill No. 1407581, this area would be excavated as a hotspot to the satisfaction of OER and NYSDEC. Based on the RI, this contamination is limited to this area. Soil vapor sampling as part of the RI identified various VOCs, but none at concentrations exceeding AGVs. Additionally, the RI indicated that a perched water table ranging from 10.5 to 13 feet below grade (i.e., above the proposed foundation depth) may be present in the southwestern corner of the Site, which may render an SSDS ineffective (SSDS systems cannot function when filled with water). However, the reason for a perched water pocket was not clear. Lastly, the majority of the proposed buildings' shared lowest level (the area occupied by a garage) would be ventilated separately from the upper levels.

Based on the RI findings, the anticipated remedial measures, and the proposed building construction, the proposed vapor barrier is considered to be sufficiently protective of future building workers and occupants, and an SSDS is not warranted.

Ventilated Garage

The proposed development includes a sub-grade ventilated garage which will be operated per requirements of the New York City Department of Buildings codes and regulations.

4.4 INSTITUTIONAL CONTROLS

Track 1 remedial actions do not require Institutional Controls. If Track 1 SCOs are not achieved, Institutional Controls (IC) will be utilized in this remedial action to manage residual soil/fill and other media and render the Site protective of public health and the environment. These proposed Institutional Controls are listed below. In the event that Track 1 SCOs are not achieved, long-term employment of EC/ICs will be implemented under a site-specific Site Management Plan (SMP) that will be included in the RAR, and the Site will continue to be registered with a Restrictive Declaration by the NYC Buildings Department.

Institutional Controls for this remedial action, in the event that Track 1 SCOs are not achieved, are:

- The property will continue to be registered with a Restrictive Declaration by the NYC Buildings Department. This RAWP includes a description of all ECs and ICs and summarizes the requirements of the Site Management Plan which will note that the Site owner and Site owner's successors and assigns must comply with the approved SMP;
- Submittal of a Site Management Plan in the RAR for approval by OER that provides procedures for appropriate operation, maintenance, monitoring, inspection, reporting and certification of ECs. SMP will require that the Site owner and Site owner's successors and assigns will submit to OER a periodic written statement that certifies that: (1) controls employed at the Site are unchanged from the previous certification or that any changes to the controls were approved by OER; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. OER retains the right to enter

the Site in order to evaluate the continued maintenance of any controls. This certification shall be submitted at a frequency to be determined by OER in the SMP, and will comply with RCNY §43-1407(1)(3);

- Vegetable gardens and farming on the Site are prohibited in contact with residual soil materials;
- Use of groundwater underlying the Site is prohibited without treatment rendering it safe for its intended use;
- All future activities on the Site that will disturb residual material must be conducted pursuant to the soil management provisions in an approved SMP; and
- The Site will be used for residential and commercial use, and will not be used for a higher level of use without prior approval by OER.

4.5 SITE MANAGEMENT PLAN

Site Management is not required for Track 1 remedial actions. However, if Track 1 SCOs are not achieved, Site Management will be the last phase of remediation and begins with the approval of the Remedial Action Report and issuance of the Notice of Completion (NOC) for the Remedial Action. The Site Management Plan (SMP) describes appropriate methods and procedures to ensure implementation of all ECs and ICs that are required by this RAWP. The Site Management Plan is submitted as part of the RAR but will be written in a manner that allows its use as an independent document. Site Management continues until terminated in writing by OER. The property owner is responsible to ensure that all Site Management responsibilities defined in the DCR and the Site Management Plan are implemented.

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

Site management activities, reporting, and EC/IC certification will be scheduled by OER on a periodic basis to be established in the SMP and will be subject to review and modification by

OER. The Site Management Plan will be based on a calendar year and certification reports will be due for submission to OER by July 31 of the year following the reporting period.

4.6 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.

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

Known and Potential Sources

A Phase I ESA, a Remedial Investigation, and a geotechnical study have been conducted at the Site. These investigations indicated the following:

1. The Site was historically a railway power station and a railway car house and repair shop. DOB records indicated historical fuel use at the Site address (i.e., potentially on-site or in the off-site Metropolitan Opera warehouse, which was historically part of the same building as the Site). The Phase I ESA did not identify any evidence of on-site petroleum storage tanks (i.e., fill ports, vent pipes, etc.).
3. Potential sources of contamination were identified in the surrounding area (i.e., garages and rail car/bus/auto repair, petroleum storage, reported spills, and a hazardous waste generator listing involving chlorinated solvents for the east-adjacent auto repair shop/vacant warehouse).
4. The stratigraphy of the Site, from the surface down, consists of approximately 5 to 12 feet of fill materials (sand, gravel, silt, brick, concrete, ash and glass) underlain by approximately 23 to 30 feet of apparent native soil (sand, gravel, and silt), which is underlain by bedrock approximately 35 to 61 feet below grade. The 2012 geotechnical study identified apparent concrete layers approximately 5 to 10 feet

below the building floor, possibly associated with historical rail car repair pits. Groundwater has been encountered approximately 23.7 feet to 27 feet below grade at the Site, with an apparent perched groundwater pocket (approximately 10.5 feet to 13 feet below grade) in the Site's southwestern corner. Groundwater flow direction is expected to be southwesterly (toward the Hudson River, approximately 0.45-mile away) based on surface topography.

5. Soil

- Petroleum-related VOCs including 1,3,5-trimethylbenzene, naphthalene, n-propylbenzene, and total xylenes exceeded Unrestricted Use SCOs, and 1,2,4-trimethylbenzene also exceeded Restricted Residential SCO.
- Elevated SVOC including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, dibenzofuran, and indeno (1,2,3-cd)pyrene, which exceeded Restricted Residential Use SCOs.
- Metals including barium, lead, manganese, and mercury exceeded Restricted Residential SCO.

6. Groundwater

- Petroleum-related VOCs including 1,2,4,5-tetramethylbenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, ethylbenzene, isopropylbenzene, n-butylbenzene, n-propylbenzene, p/m-xylene, o-xylene, p-isopropyltoluene, and naphthalene detected at elevated levels, exceeding Class GA standards in one sample.
- Several SVOCs exceeded Class GA standards in three of the samples.
- Several metals were identified, but only antimony, iron, manganese, and sodium exceeded Class GA standards in the filtered groundwater samples.
- The detected concentrations of petroleum-related VOCs were likely attributable to a release in the southwestern corner of the Site. The detected chlorinated VOCs were not identified in the soil samples, and were likely attributable to an off-site source. The detected SVOC concentrations were likely attributable to some combination of petroleum contamination in the southwestern corner of the Site and fill particles entrained in the samples, as these compounds were also detected in soil samples at these locations. The detected metals, including those at concentrations above the Class GA standards, are typical of regional groundwater quality in Manhattan and were not indicative of an on-site release or spill. Groundwater laboratory analytical data is summarized in Tables 6 through 9.

7. Soil Vapor

- Petroleum-related VOCs were detected at elevated concentrations.
- Chlorinated VOCs were detected at low levels.

- The detected VOCs were likely attributable to some combination of petroleum contamination in the southwestern corner of the Site, fill materials, and/or off-site sources. Soil vapor laboratory analytical data is summarized in Table 10.
8. Based on field observations of contamination above the soil-water interface and laboratory analytical results, Spill No. 1407581 was reported to the NYSDEC in October 2014.

Nature, Extent, Fate and Transport of Contaminants

Elevated concentrations of primarily petroleum-related VOCs were detected in the deeper samples in the southwestern corner of the Site. SVOC and metals were detected throughout the Site. The detected VOC and SVOC concentrations were indicative of petroleum contamination in the southwestern corner of the Site and/or urban fill materials containing SVOCs. The detected concentrations of metals in the samples appeared to be primarily either naturally occurring or attributable to urban fill. However, significantly higher concentrations of several metals including barium, manganese, silver, chromium, cobalt, nickel, and thallium were detected in 2014 sample WC-3 (26-28') compared to the other soil samples, suggesting a potential release at this location (e.g., from a leaking drain historically used for chemical disposal). Groundwater showed elevated petroleum related VOCs and SVOCs. The detected concentrations of petroleum-related VOCs are likely attributable to a release in the southwestern corner of the Site. The detected chlorinated VOCs were not identified in the soil samples, and are likely attributable to an off-site source. The detected SVOC concentrations were likely attributable to some combination of petroleum contamination in the southwestern corner of the Site and fill particles entrained in the samples. Petroleum-related VOCs were also detected in soil vapor.

Potential Routes of Exposure

The five elements of an exposure pathway are:

- 1) The source of contamination;
- 2) The environmental media and transport mechanisms;
- 3) The point of exposure;
- 4) The route of exposure; and

5) The receptor population.

An exposure pathway is considered complete when all five elements of an exposure pathway are documented. A potential exposure pathway exists when any one or more of the five elements comprising an exposure pathway cannot be ruled out. An exposure pathway may be eliminated from further evaluation when any one of the five elements comprising an exposure pathway has not existed in the past, does not exist in the present, and will never exist in the future. Three potential primary routes exist by which chemicals can enter the body:

- Ingestion of water, fill, or soil;
- Inhalation of vapors and particulates; and
- Dermal contact with fill or soil.

One or more of these routes of exposure is possible before, during and after the remedial action if proper precautions are not taken. The remedial plan outlined in this RAWP will ensure that routes of exposure are prevented during the development of the Site.

Existence of Human Health Exposure

Current Conditions: The potential for exposure to historic fill does not exist under current conditions due to building slabs across the entire Site. Currently, there are no potential migration pathways for absorption, ingestion, and inhalation for soil, and absorption and ingestion for groundwater since Site soil is covered by building slabs. Groundwater is marginally contaminated but is not exposed at the Site, and because the Site is served by the public water supply and groundwater use for potable supply is prohibited, groundwater is not used at the Site and there is no potential for exposure. Soil vapor could pose an intrusion threat to any existing buildings within the Site area.

Construction/Remediation Activities: The work performed at the Site will include excavation of some soil/fill material and general construction activities, and has the potential to affect the on-site construction/remediation workers and the off-site local population. Once redevelopment activities begin, construction workers will come into direct contact with surface and subsurface soil. On-site construction workers potentially could ingest, inhale or have dermal contact with any exposed contaminated soil/fill. Similarly, off-site receptors could be exposed to dust and vapors from on-site activities. During construction, on-site and off-site exposures to

contaminated dust from on-site will be addressed through the Soil/Materials Management Plan, dust controls, and the implementation of the Community Air Monitoring Program and Construction Health and Safety Plan.

Proposed Future Conditions: Upon the completion of remediation and construction activities, there will be no exposures because contaminants exceeding Track 1 SCOs will be removed from the Site or, if Track 1 is not achieved, the majority of these contaminants would be removed with the remainder covered by an engineered composite cover and vapor barrier as part of development. If Track 1 is not achieved, an SMP will address long-term management of residual contamination. The Site will be fully capped, limiting potential direct exposure to soil and groundwater remaining in place, and a vapor barrier system will prevent any exposure to potential off-site soil vapors in the future. The Site is served by a public water supply, and groundwater is not used at the Site for potable supply. There are no plausible off-site pathways for ingestion, inhalation, or dermal exposure to contaminants derived from the Site under future conditions.

Receptor Populations

On-Site Receptors – The receptors identified under current conditions include on-site workers and visitors. During redevelopment of the Site, the on-site potential receptors will include construction workers, Site representatives, and visitors. Once the Site is redeveloped, the on-site potential sensitive receptors will include on-site workers and residents.

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

1. Commercial Businesses – existing and future
2. Residential Buildings – existing and future
3. Site – existing and future
4. Building Construction/Renovation – existing and future
5. Pedestrians and Trespassers – existing and future

Overall Human Health Exposure Assessment

There are potential complete exposure pathways present during the current conditions. There is a potential complete exposure pathway that requires mitigation during implementation of the remedy. There is no complete exposure pathway under future conditions after the Site is developed. This assessment takes into consideration the reasonably anticipated use of the Site, which includes a mixed-use residential and commercial building that would cover the entire Site with concrete foundations, and a subsurface vapor barrier system for the building and a ventilated parking garage. Potential post-construction use of groundwater is not considered an option because groundwater in this area of New York City is not used as a potable water source.

Exposure of both on-site workers and the off-site local population to Site contaminated media (soil and soil vapor) has the greatest potential during the remedial and construction work. To mitigate possible exposure levels, a CHASP will be implemented during construction and remedial work for the safety of the on-site workers and off-site local population. Other measures include conducting a community air monitoring program (CAMP) for dust and VOCs to track on-site and off-site conditions, requiring personal protective equipment, provisions for upgrading the level of personal protective equipment when needed, applying dust and vapor suppression measures, requiring truck inspection and washing prior to departure from the Site, and stormwater controls. After the remedial action is complete, there will be no remaining exposure pathways to on-site soil/fill, as all or most of the soil above Track 1 SCOs will have been removed, and a composite cover system with a waterproofing/vapor barrier system will have been installed as part of development.

5.0 REMEDIAL ACTION MANAGEMENT

5.1 PROJECT ORGANIZATION AND OVERSIGHT

Principal personnel who will participate in the remedial action include Michelle Lapin, Principal and Asya Bychkov, Project Manager. The Professional Engineer (PE) for this project is Michelle Lapin.

5.2 SITE SECURITY

Site access will be controlled by secure construction fencing and security guards. No unauthorized personnel will be able to access the Site. During off hours, the Site will be completely enclosed with a locked gate.

5.3 WORK HOURS

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

5.4 CONSTRUCTION HEALTH AND SAFETY PLAN

The CHASP is included in Appendix 4. The Site Safety Coordinator will be Asya Bychkov of AKRF. Remedial work performed under this RAWP will be in full compliance with applicable health and safety laws and regulations, including Site and OSHA worker safety requirements and HAZWOPER requirements. Confined space entry, if any, will comply with OSHA requirements and industry standards and will address potential risks. The parties performing the remedial construction work will ensure that performance of work is in compliance with the HASP and applicable laws and regulations. The HASP pertains to remedial and invasive work performed at the Site until the issuance of the Notice of Completion.

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

Personnel entering any exclusion zone will be trained in the provisions of the HASP and be required to sign a HASP acknowledgment. Site-specific training will be provided to field personnel. Additional safety training may be added depending on the tasks performed. Emergency telephone numbers will be posted at the Site location before any remedial work

begins. A safety meeting will be conducted before each shift begins. Topics to be discussed include task hazards and protective measures (physical, chemical, environmental); emergency procedures; PPE levels and other relevant safety topics. Meetings will be documented in a log book or specific form.

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

5.5 COMMUNITY AIR MONITORING PLAN

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

Periodic monitoring for VOCs will be performed during non-intrusive activities such as the collection of soil or groundwater samples. Periodic monitoring during sample collection, for instance, will consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. Exceedances of action levels observed during performance of the Community Air Monitoring Plan (CAMP) will be reported to the OER Project Manager and included in the Daily Report.

VOC Monitoring, Response Levels, and Actions

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 as follows.

- 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 shut down.

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 (PM₁₀) 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 PM₁₀ particulate level is 100 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 $\mu\text{g}/\text{m}^3$ above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM₁₀ particulate levels are greater than 150 $\mu\text{g}/\text{m}^3$ above the upwind level, work will be stopped and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the

downwind PM₁₀ particulate concentration to within 150 µg/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 in compliance with applicable laws and regulations to assure safety. Utility companies and other responsible authorities will be contacted to locate and mark the locations, and a copy of the Markout Ticket will be retained by the contractor prior to the start of drilling, excavation or other invasive subsurface operations. Overhead utilities may also be present within the anticipated work zones. Electrical hazards associated with drilling in the vicinity of overhead

utilities will be prevented by maintaining a safe distance between overhead power lines and drill rig masts.

Proper safety and protective measures pertaining to utilities and easements, and compliance with all laws and regulations will be employed during invasive and other work contemplated under this RAP. 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.

If dewatering is necessary during the proposed construction, it will be conducted in accordance with a DEP Bureau of Wastewater Treatment (BWT) Wastewater Quality Control Permit. Groundwater testing, and possibly pre-treatment (dependent upon the testing results), will be necessary to comply with DEP requirements. Any groundwater exhibiting evidence of petroleum contamination (e.g., odor, sheen, and/or laboratory analytical data confirming contamination) will be properly pre-treated prior to discharge or otherwise properly removed in accordance with the applicable regulations (i.e., using a vacuum truck for a small quantity of contaminated water).

Equipment and Material Staging

Equipment and materials will be stored and staged in a manner that complies with applicable laws and regulations. Staging and storage of equipment and materials will be contained within the secured Site. By the nature of the work involved in this project, equipment and materials will be moved to different areas within the secured Site as work progresses.

Stabilized Construction Entrance

Steps will be taken to ensure that trucks departing the Site will not track soil, fill or debris off-site. Such actions may include use of cleaned asphalt or concrete roads or use of stone or other aggregate-based egress paths between the truck inspection station and the Site exit. Measures will be taken to ensure that adjacent roadways will be kept clean of project-related soil, 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 potable water will be utilized for the removal of soil from vehicles and equipment, as necessary.

Extreme Storm Preparedness and Response Contingency Plan

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

Storm Preparedness

Preparations in advance of an extreme storm event will include the following: containerized hazardous materials and fuels will be removed from the Site; loose materials will be secured to prevent dislocation and blowing by wind or water; heavy equipment such as excavators and generators will be removed from holes, trenches and depressions on the Site to high ground or removed from the Site; an inventory of the Site 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; any stockpiled hazardous waste will be removed from the property; and 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 Site, a complete inspection of the Site 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 NYSDEC 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 structures will be inspected and fortified as necessary. Any affected 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 a corrective measure plan designed to remove and clean dislocated material will be submitted to OER and implemented following approval by OER and granting of site access by the property owner. Affected off-site areas may require characterization based on site conditions, at the discretion of OER. If on-site petroleum spills are identified, a qualified environmental professional will determine the nature and extent of the spill and report to NYSDEC's spill hotline at 800-457-7362. If the source of the spill is ongoing and can be identified, it should be stopped if this can be done safely. Potential hazards will be addressed immediately, consistent with guidance issued by NYSDEC.

Storm Response Reporting

A Site inspection report will be submitted to OER at the completion of the 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. The 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 with photographs; description of erosion damage; description of equipment damage; description of damage to the remedial program or the construction program, such as damage to the support of excavation; presence of on-site or off-site exposure pathways caused by the storm; presence of petroleum or other spills and status of spill reporting to NYSDEC; description of corrective actions; and schedule for corrective actions. This report should be completed and submitted to the OER project manager with photographs within 24 hours of the time of safe entry to the property after the storm event.

5.8 TRAFFIC CONTROL

Drivers of trucks leaving the NYC VCP Site with soil/fill will be instructed to proceed without stopping in the vicinity of the Site to prevent neighborhood impacts. The planned route on local roads for trucks leaving the Site is to go either east on West 129th Street, north on Convent Avenue, west on West 131st Street, and north on Amsterdam Avenue for access to the George Washington Bridge, or east on West 129th Street, south on Convent Avenue, west on West 125th Street, and south on Amsterdam Avenue for access to the Lincoln Tunnel.

5.9 DEMOBILIZATION

Demobilization will include:

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

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

5.10 REPORTING AND RECORD KEEPING

Daily Reports

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

- Project number and statement of the activities and an update of progress made and locations of work performed;
- Quantities of material imported and exported from the Site;
- Status of on-site soil/fill stockpiles;
- A summary of all citizen complaints, with relevant details (basis of complaint; actions taken; etc.);
- A summary of CAMP exceedances, if any; and
- Photographs of notable Site conditions and activities.

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

Record Keeping and Photo Documentation

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

5.11 COMPLAINT MANAGEMENT

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

5.12 DEVIATIONS FROM THE REMEDIAL ACTION WORK PLAN

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

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

6.0 REMEDIAL ACTION REPORT

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

- Information required by this RAWP;
- As-built drawings for all constructed remedial elements, required certifications, manifests, and other written and photographic documentation of remedial work performed under this remedy;
- Site Management Plan (if Track 1 is not achieved);
- Description of any changes in the remedial action from the elements provided in this RAWP and associated design documents;
- Tabular summary of all end-point sampling results and all material characterization results, QA/QC results for end-point sampling, and other sampling and chemical analysis performed as part of the remedial action and DUSR;
- Test results or other evidence demonstrating that remedial systems are functioning properly;
- Account of the source area locations and characteristics of all contaminated material removed from the Site including a map showing source areas;
- Account of the disposal destinations 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 any soil imported onto the Site; and
- If Track 1 is not achieved, continued registration of the Site with a Restrictive Declaration by the NYC Department of Buildings.

Reports and supporting material will be submitted in digital form.

Remedial Action Report Certification

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

I, Michelle Lapin, am currently a professional engineer licensed by the State of New York. I had primary direct responsibility for implementation of the remedial program for the 487 West 129th Street Site, NYC VCP Site No. 15CVCP110M.

I certify that the OER-approved Remedial Action Work Plan dated March 2015 was implemented, and that all requirements in those documents have been substantively complied with. I certify that any contaminated soil, fill, liquids or other material removed from the Site were taken to facilities licensed to accept this material in full compliance with applicable laws and regulations.

7.0 SCHEDULE

The following table 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 two-month remediation period is anticipated.

Schedule Milestone	Weeks from Remedial Action Start	Duration (weeks)
OER Approval of RAP	0	-
Mobilization	5	1
Remedial Construction	6	8
Demobilization (following completion of remedial construction)	14	1
Submit Remedial Closure Report	18	4

FIGURES

BERGEN COUNTY

Hamilton Heights

Hamilton Grange National Memorial

Manhattanville

NEW YORK COUNTY

General Grant National Memorial

Substation 219
Lionel Hampton Houses

Harlem

SITE LOCATION



SOURCE
USGS 7.5 Minute Topographic Map
Central Park Quad 2011



487 WEST 129th Street
New York, New York

SITE LOCATION

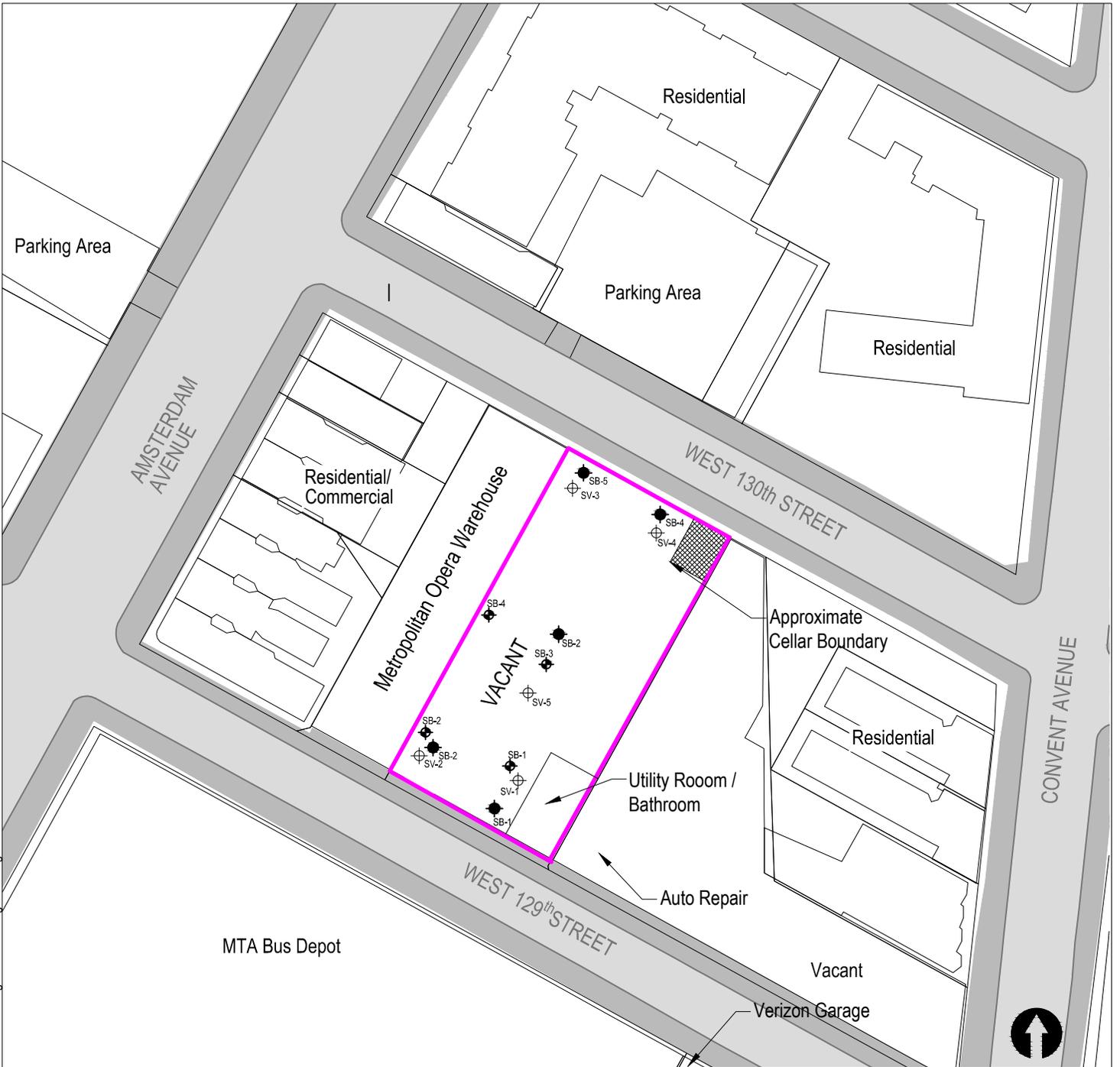


Environmental Consultants
440 Park Avenue South, New York, N.Y. 10016

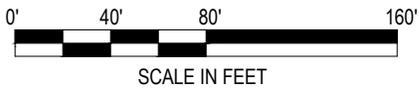
DATE
6/9/2014

PROJECT No.
11978

FIGURE
1



Map Source:
NYCDP (NYC Dept. of City Planning 2013) GIS database



LEGEND:

- PROJECT SITE BOUNDARY
- LOT LINE
- BUILDING LINE
- ⊕ SG-1 SOIL GAS LOCATION (2014)
- SB-1 SOIL AND GROUNDWATER SAMPLE LOCATION (2014)
- SB-1 SOIL BORING LOCATION (2008)

487 WEST 129th STREET
New York, New York

SITE PLAN



Environmental Consultants
440 Park Avenue South, New York, N.Y. 10016

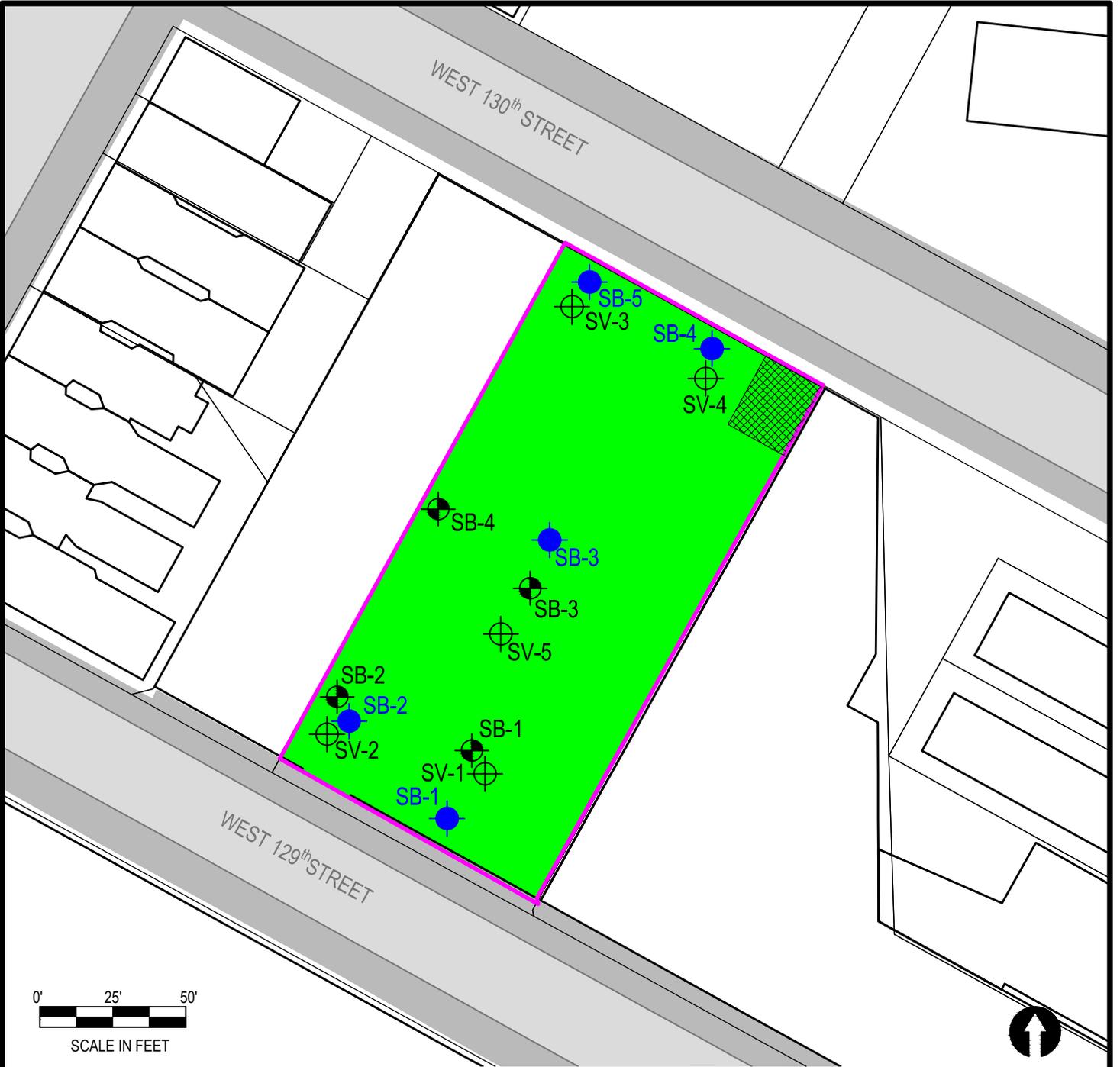
DATE
6.9.2014

PROJECT No.
11978

SCALE
as shown

FIGURE
2

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LEGEND:

- SG-1 SOIL GAS LOCATION (2014)
- SB-1 SOIL AND GROUNDWATER SAMPLE LOCATION (2014)
- SB-1 SOIL BORING LOCATION (2008)

- PROJECT SITE BOUNDARY
- LOT LINE
- BUILDING LINE
- EXCAVATION TO APPROXIMATELY 15 FEET BELOW GRADE
- EXISTING PARTIAL BASEMENT

Map Source:
NYCDCP (NYC Dept. of City Planning 2013) GIS database

487 WEST 129th STREET
New York, New York

EXCAVATION PLAN



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DATE	3.23.2015
PROJECT No.	11978
SCALE	as shown
FIGURE	3

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LEGEND:

- ⊕ SG-1 SOIL GAS LOCATION (2014)
- ⊕ SB-1 SOIL AND GROUNDWATER SAMPLE LOCATION (2014)
- SB-1 SOIL BORING LOCATION (2008)
- PROJECT SITE BOUNDARY
- LOT LINE
- BUILDING LINE
- CONCRETE FOUNDATION SLAB
- ▨ EXISTING PARTIAL BASEMENT

Map Source:
NYCDCP (NYC Dept. of City Planning 2013) GIS database

487 WEST 129th STREET
New York, New York

COVER SYSTEM PLAN

AKRF
Environmental Consultants
440 Park Avenue South, New York, N.Y. 10016

DATE
2.5.2015

PROJECT No.
11978

SCALE
as shown

FIGURE
4

TABLES

Table 2
487 West 129th Street
New York, NY

Subsurface (Phase II) Investigation Soil Analytical Results
 Volatile Organic Compounds

Client ID	NYSDEC Part 375 Unrestricted SCO	NYSDEC Part 375 Restricted Residential SCO	SB-1 (0-2') L0802902-02 2/29/2008 1	SB-2 (0-2') L0802902-03 2/29/2008 1	SB-2 (12-14') L0802902-04 2/29/2008 1	SB-3 (0-2') L0802902-05 2/29/2008 1	SB-4 (0-3') L0802902-06 2/29/2008 1	SB-4 (5-7') L0802902-07 2/29/2008 1
Lab Sample ID								
Date Sampled								
Dilution								
mg/kg	mg/kg	mg/kg						
1,1,1,2-Tetrachloroethane	NS	NS	0.0029 U	0.003 U	0.58 U	0.0028 U	0.0028 U	0.0027 U
1,1,1-Trichloroethane	0.68	100	0.0029 U	0.003 U	0.58 U	0.0028 U	0.0028 U	0.0027 U
1,1,2,2-Tetrachloroethane	NS	NS	0.0029 U	0.003 U	0.58 U	0.0028 U	0.0028 U	0.0027 U
1,1,2-Trichloroethane	NS	NS	0.0043 U	0.0045 U	0.87 U	0.0043 U	0.0042 U	0.004 U
1,1-Dichloroethane	0.27	26	0.0043 U	0.0045 U	0.87 U	0.0043 U	0.0042 U	0.004 U
1,1-Dichloroethene	0.33	100	0.0029 U	0.003 U	0.58 U	0.0028 U	0.0028 U	0.0027 U
1,1-Dichloropropene	NS	NS	0.014 U	0.015 U	2.9 U	0.014 U	0.014 U	0.013 U
1,2,3-Trichlorobenzene	NS	NS	0.014 U	0.015 U	2.9 U	0.014 U	0.014 U	0.013 U
1,2,3-Trichloropropane	NS	NS	0.029 U	0.03 U	5.8 U	0.028 U	0.028 U	0.027 U
1,2,4,5-Tetramethylbenzene	NS	NS	0.0029 U	0.003 U	12	0.0028 U	0.0028 U	0.0027 U
1,2,4-Trichlorobenzene	NS	NS	0.014 U	0.015 U	2.9 U	0.014 U	0.014 U	0.013 U
1,2,4-Trimethylbenzene	3.6	52	0.014 U	0.015 U	87	0.014 U	0.014 U	0.013 U
1,2-Dibromo-3-chloropropane	NS	NS	0.014 U	0.015 U	2.9 U	0.014 U	0.014 U	0.013 U
1,2-Dibromoethane	NS	NS	0.011 U	0.012 U	2.3 U	0.011 U	0.011 U	0.011 U
1,2-Dichlorobenzene	1.1	100	0.014 U	0.015 U	2.9 U	0.014 U	0.014 U	0.013 U
1,2-Dichloroethane	0.02	3.1	0.0029 U	0.003 U	0.58 U	0.0028 U	0.0028 U	0.0027 U
1,2-Dichloroethene (total)	NS	NS	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	NS	NS	0.01 U	0.01 U	2 U	0.0099 U	0.0098 U	0.0094 U
1,3,5-Trimethylbenzene	8.4	52	0.014 U	0.015 U	33	0.014 U	0.014 U	0.013 U
1,3-Dichlorobenzene	2.4	49	0.014 U	0.015 U	2.9 U	0.014 U	0.014 U	0.013 U
1,3-Dichloropropane	NS	NS	0.014 U	0.015 U	2.9 U	0.014 U	0.014 U	0.013 U
1,3-Dichloropropene, Total	NS	NS	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	1.8	13	0.014 U	0.015 U	2.9 U	0.014 U	0.014 U	0.013 U
1,4-Diethylbenzene	NS	NS	0.0029 U	0.003 U	50	0.0028 U	0.0028 U	0.0027 U
1,4-Dioxane	0.1	13	NA	NA	NA	NA	NA	NA
2,2-Dichloropropane	NS	NS	0.014 U	0.015 U	2.9 U	0.014 U	0.014 U	0.013 U
2-Butanone	0.12	100	0.029 U	0.03 U	5.8 U	0.028 U	0.028 U	0.027 U
2-Hexanone	NS	NS	0.029 U	0.03 U	5.8 U	0.028 U	0.028 U	0.027 U
4-Ethyltoluene	NS	NS	0.0029 U	0.003 U	63	0.0028 U	0.0028 U	0.0027 U
4-Methyl-2-pentanone	NS	NS	0.029 U	0.03 U	5.8 U	0.028 U	0.028 U	0.027 U
Acetone	0.05	100	0.029 U	0.03 U	6.1	0.028 U	0.028 U	0.027 U
Acrylonitrile	NS	NS	NA	NA	NA	NA	NA	NA
Benzene	0.06	4.8	0.0029 U	0.0084	0.58 U	0.0028 U	0.0028 U	0.0027 U
Bromobenzene	NS	NS	0.014 U	0.015 U	2.9 U	0.014 U	0.014 U	0.013 U
Bromochloromethane	NS	NS	0.014 U	0.015 U	2.9 U	0.014 U	0.014 U	0.013 U
Bromodichloromethane	NS	NS	0.0029 U	0.003 U	0.58 U	0.0028 U	0.0028 U	0.0027 U
Bromoform	NS	NS	0.011 U	0.012 U	2.3 U	0.011 U	0.011 U	0.011 U
Bromomethane	NS	NS	0.0057 U	0.006 U	1.2 U	0.0057 U	0.0056 U	0.0054 U
Carbon disulfide	NS	NS	0.029 U	0.03 U	5.8 U	0.028 U	0.028 U	0.027 U
Carbon tetrachloride	0.76	2.4	0.0029 U	0.003 U	0.58 U	0.0028 U	0.0028 U	0.0027 U
Chlorobenzene	1.1	100	0.0029 U	0.003 U	0.58 U	0.0028 U	0.0028 U	0.0027 U
Chloroethane	NS	NS	0.0057 U	0.006 U	1.2 U	0.0057 U	0.0056 U	0.0054 U
Chloroform	0.37	49	0.0043 U	0.0045 U	0.87 U	0.0043 U	0.0042 U	0.004 U
Chloromethane	NS	NS	0.014 U	0.015 U	2.9 U	0.014 U	0.014 U	0.013 U
cis-1,2-Dichloroethene	0.25	100	0.0029 U	0.003 U	0.58 U	0.0028 U	0.0028 U	0.0027 U
cis-1,3-Dichloropropene	NS	NS	0.0029 U	0.003 U	0.58 U	0.0028 U	0.0028 U	0.0027 U
Dibromochloromethane	NS	NS	0.0029 U	0.003 U	0.58 U	0.0028 U	0.0028 U	0.0027 U
Dibromomethane	NS	NS	0.029 U	0.03 U	5.8 U	0.028 U	0.028 U	0.027 U
Dichlorodifluoromethane	NS	NS	0.029 U	0.03 U	5.8 U	0.028 U	0.028 U	0.027 U
Ethyl ether	NS	NS	NA	NA	NA	NA	NA	NA
Ethylbenzene	1	41	0.0029 U	0.003 U	9.5	0.0028 U	0.0028 U	0.0027 U
Hexachlorobutadiene	NS	NS	0.014 U	0.015 U	2.9 U	0.014 U	0.014 U	0.013 U
Isopropylbenzene	NS	NS	0.0029 U	0.003 U	6.7	0.0028 U	0.0028 U	0.0027 U
Methyl tert butyl ether	0.93	100	0.0057 U	0.006 U	1.2 U	0.0057 U	0.0056 U	0.0054 U
Methylene chloride	0.05	100	0.029 U	0.03 U	5.8 U	0.028 U	0.028 U	0.027 U
Naphthalene	12	100	0.014 U	0.015 U	44	0.018	0.014 U	0.013 U
n-Butylbenzene	12	100	0.0029 U	0.003 U	12	0.0028 U	0.0028 U	0.0027 U
n-Propylbenzene	3.9	100	0.0029 U	0.003 U	11	0.0028 U	0.0028 U	0.0027 U
o-Chlorotoluene	NS	NS	0.014 U	0.015 U	2.9 U	0.014 U	0.014 U	0.013 U
o-Xylene	NS	NS	0.0057 U	0.006 U	3.6	0.0057 U	0.0056 U	0.0054 U
p/m-Xylene	NS	NS	0.0057 U	0.006 U	38	0.0057 U	0.0056 U	0.0054 U
p-Chlorotoluene	NS	NS	0.014 U	0.015 U	2.9 U	0.014 U	0.014 U	0.013 U
p-Isopropyltoluene	NS	NS	0.0029 U	0.003 U	11	0.0028 U	0.0028 U	0.0027 U
sec-Butylbenzene	11	100	0.0029 U	0.003 U	4.4	0.0028 U	0.0028 U	0.0027 U
Styrene	NS	NS	0.0057 U	0.006 U	1.2 U	0.0057 U	0.0056 U	0.0054 U
tert-Butylbenzene	5.9	100	0.014 U	0.015 U	2.9 U	0.014 U	0.014 U	0.013 U
Tetrachloroethene	1.3	19	0.0029 U	0.003 U	0.58 U	0.0028 U	0.0028 U	0.0027 U
Toluene	0.7	100	0.0043 U	0.013	0.87 U	0.0043 U	0.0042 U	0.004 U
trans-1,2-Dichloroethene	0.19	100	0.0043 U	0.0045 U	0.87 U	0.0043 U	0.0042 U	0.004 U
trans-1,3-Dichloropropene	NS	NS	0.0029 U	0.003 U	0.58 U	0.0028 U	0.0028 U	0.0027 U
trans-1,4-Dichloro-2-butene	NS	NS	NA	NA	NA	NA	NA	NA
Trichloroethene	0.47	21	0.0029 U	0.003 U	0.58 U	0.0028 U	0.0028 U	0.0027 U
Trichlorofluoromethane	NS	NS	0.014 U	0.015 U	2.9 U	0.014 U	0.014 U	0.013 U
Vinyl acetate	NS	NS	0.029 U	0.03 U	5.8 U	0.028 U	0.028 U	0.027 U
Vinyl chloride	0.02	0.9	0.0057 U	0.006 U	1.2 U	0.0057 U	0.0056 U	0.0054 U
Xylene (Total)	0.26	100	ND	ND	41.6	ND	ND	ND

Table 2
487 West 129th Street
New York, NY

Subsurface (Phase II) Investigation Soil Analytical Results
 Volatile Organic Compounds

Client ID	NYSDEC Part 375	NYSDEC Part 375	SB-5 (0-3') L0802902-08	SB-5 (5-7') L0802902-09	WC-1-8'-10' L1423865-05	WC-1-12'-14' L1423865-06	WC-2-3'-5' L1423865-07	WC-2-12'-14' L1423865-08
Lab Sample ID	Unrestricted	Restricted	2/29/2008	2/29/2008	10/8/2014	10/8/2014	10/7/2014	10/7/2014
Date Sampled	SCO	Residential	1	1	1	1	1	10
Dilution		SCO						
mg/kg	mg/kg	mg/kg						
1,1,1,2-Tetrachloroethane	NS	NS	0.0027 U	0.0026 U	0.00036 U	0.00038 U	0.00054 U	0.28 U
1,1,1-Trichloroethane	0.68	100	0.0027 U	0.0026 U	0.00012 U	0.00013 U	0.00019 U	0.098 U
1,1,2,2-Tetrachloroethane	NS	NS	0.0027 U	0.0026 U	0.00011 U	0.00012 U	0.00017 U	0.089 U
1,1,2-Trichloroethane	NS	NS	0.0041 U	0.004 U	0.00034 U	0.00037 U	0.00051 U	0.27 U
1,1-Dichloroethane	0.27	26	0.0041 U	0.004 U	0.0001 U	0.0001 U	0.00014 U	0.076 U
1,1-Dichloroethene	0.33	100	0.0027 U	0.0026 U	0.00029 U	0.00032 U	0.00044 U	0.23 U
1,1-Dichloropropene	NS	NS	0.014 U	0.013 U	0.00016 U	0.00017 U	0.00024 U	0.12 U
1,2,3-Trichlorobenzene	NS	NS	0.014 U	0.013 U	0.00016 U	0.00018 U	0.00025 U	0.13 U
1,2,3-Trichloropropane	NS	NS	0.027 U	0.026 U	0.00018 U	0.0002 U	0.00028 U	0.14 U
1,2,4,5-Tetramethylbenzene	NS	NS	0.0027 U	0.0026 U	0.00014 U	0.00016 U	0.00022 U	5.5
1,2,4-Trichlorobenzene	NS	NS	0.014 U	0.013 U	0.0002 U	0.00022 U	0.00031 U	0.16 U
1,2,4-Trimethylbenzene	3.6	52	0.014 U	0.013 U	0.00016 U	0.00017 U	0.00038 J	19
1,2-Dibromo-3-chloropropane	NS	NS	0.014 U	0.013 U	0.00044 U	0.00048 U	0.00067 U	0.35 U
1,2-Dibromoethane	NS	NS	0.011 U	0.011 U	0.00019 U	0.00021 U	0.0003 U	0.15 U
1,2-Dichlorobenzene	1.1	100	0.014 U	0.013 U	0.00017 U	0.00018 U	0.00026 U	0.14 U
1,2-Dichloroethane	0.02	3.1	0.0027 U	0.0026 U	0.00013 U	0.00014 U	0.00019 U	0.1 U
1,2-Dichloroethene (total)	NS	NS	NA	NA	0.00016 U	0.00017 U	0.00024 U	0.13 U
1,2-Dichloropropane	NS	NS	0.0095 U	0.0093 U	0.00025 U	0.00028 U	0.00039 U	0.2 U
1,3,5-Trimethylbenzene	8.4	52	0.014 U	0.013 U	0.00016 U	0.00017 U	0.00024 U	0.13 U
1,3-Dichlorobenzene	2.4	49	0.014 U	0.013 U	0.00015 U	0.00016 U	0.00023 U	0.12 U
1,3-Dichloropropane	NS	NS	0.014 U	0.013 U	0.00016 U	0.00018 U	0.00024 U	0.13 U
1,3-Dichloropropene, Total	NS	NS	NA	NA	0.00013 U	0.00014 U	0.0002 U	0.1 U
1,4-Dichlorobenzene	1.8	13	0.014 U	0.013 U	0.00015 U	0.00017 U	0.00023 U	0.12 U
1,4-Diethylbenzene	NS	NS	0.0027 U	0.0026 U	0.00018 U	0.00019 U	0.002 J	5.8
1,4-Dioxane	0.1	13	NA	NA	0.016 U	0.017 U	0.024 U	13 U
2,2-Dichloropropane	NS	NS	0.014 U	0.013 U	0.00025 U	0.00027 U	0.00038 U	0.2 U
2-Butanone	0.12	100	0.027 U	0.026 U	0.0003 U	0.00033 U	0.00046 U	0.24 U
2-Hexanone	NS	NS	0.027 U	0.026 U	0.00074 U	0.00081 U	0.0011 U	0.59 U
4-Ethyltoluene	NS	NS	0.0027 U	0.0026 U	0.00014 U	0.00015 U	0.00079	6.3
4-Methyl-2-pentanone	NS	NS	0.027 U	0.026 U	0.00027 U	0.0003 U	0.00041 U	0.22 U
Acetone	0.05	100	0.027 U	0.031	0.0012 U	0.0012 U	0.0086 J	1.6 J
Acrylonitrile	NS	NS	NA	NA	0.00057 U	0.00062 U	0.00087 U	0.46 U
Benzene	0.06	4.8	0.0027 U	0.0026 U	0.00013 U	0.00014 U	0.054	0.1 U
Bromobenzene	NS	NS	0.014 U	0.013 U	0.00023 U	0.00025 U	0.00035 U	0.18 U
Bromochloromethane	NS	NS	0.014 U	0.013 U	0.00031 U	0.00033 U	0.00047 U	0.24 U
Bromodichloromethane	NS	NS	0.0027 U	0.0026 U	0.00019 U	0.00021 U	0.00029 U	0.15 U
Bromoform	NS	NS	0.011 U	0.011 U	0.00026 U	0.00029 U	0.0004 U	0.21 U
Bromomethane	NS	NS	0.0054 U	0.0053 U	0.00038 U	0.00041 U	0.00057 U	0.3 U
Carbon disulfide	NS	NS	0.027 U	0.026 U	0.0012 U	0.0013 U	0.0019 U	0.98 U
Carbon tetrachloride	0.76	2.4	0.0027 U	0.0026 U	0.00023 U	0.00025 U	0.00036 U	0.18 U
Chlorobenzene	1.1	100	0.0027 U	0.0026 U	0.00039 U	0.00042 U	0.00059 U	0.31 U
Chloroethane	NS	NS	0.0054 U	0.0053 U	0.00035 U	0.00038 U	0.00054 U	0.28 U
Chloroform	0.37	49	0.0041 U	0.004 U	0.00041 U	0.00045 U	0.00063 U	0.33 U
Chloromethane	NS	NS	0.014 U	0.013 U	0.00033 U	0.00036 U	0.0005 U	0.26 U
cis-1,2-Dichloroethene	0.25	100	0.0027 U	0.0026 U	0.00016 U	0.00017 U	0.00024 U	0.13 U
cis-1,3-Dichloropropene	NS	NS	0.0027 U	0.0026 U	0.00013 U	0.00014 U	0.0002 U	0.1 U
Dibromochloromethane	NS	NS	0.0027 U	0.0026 U	0.00017 U	0.00019 U	0.00026 U	0.14 U
Dibromomethane	NS	NS	0.027 U	0.026 U	0.00018 U	0.0002 U	0.00028 U	0.14 U
Dichlorodifluoromethane	NS	NS	0.027 U	0.026 U	0.00021 U	0.00023 U	0.00032 U	0.17 U
Ethyl ether	NS	NS	NA	NA	0.00047 J	0.00062 J	0.00044 U	0.96 J
Ethylbenzene	1	41	0.0027 U	0.0026 U	0.00014 U	0.00015 U	0.0048	0.11 U
Hexachlorobutadiene	NS	NS	0.014 U	0.013 U	0.00025 U	0.00028 U	0.00039 U	0.2 U
Isopropylbenzene	NS	NS	0.0027 U	0.0026 U	0.00012 U	0.00012 U	0.00018 U	0.89
Methyl tert butyl ether	0.93	100	0.0054 U	0.0053 U	0.00009 U	0.0001 U	0.00014 U	0.075 U
Methylene chloride	0.05	100	0.027 U	0.026 U	0.0012 U	0.0013 U	0.0019 U	2.7 J
Naphthalene	12	100	0.014 U	0.013 U	0.00015 U	0.00017 U	0.0037 J	1.6 J
n-Butylbenzene	12	100	0.0027 U	0.0026 U	0.00013 U	0.00014 U	0.00019 U	2.5
n-Propylbenzene	3.9	100	0.0027 U	0.0026 U	0.00012 U	0.00013 U	0.00018 U	1.5
o-Chlorotoluene	NS	NS	0.014 U	0.013 U	0.00018 U	0.00019 U	0.00027 U	0.14 U
o-Xylene	NS	NS	0.0054 U	0.0053 U	0.00019 U	0.00021 U	0.0062	0.15 U
p/m-Xylene	NS	NS	0.0054 U	0.0053 U	0.00022 U	0.00024 U	0.029	1.2 J
p-Chlorotoluene	NS	NS	0.014 U	0.013 U	0.00015 U	0.00016 U	0.00022 U	0.12 U
p-Isopropyltoluene	NS	NS	0.0027 U	0.0026 U	0.00014 U	0.00015 U	0.00021 U	6.3
sec-Butylbenzene	11	100	0.0027 U	0.0026 U	0.00014 U	0.00015 U	0.00021 U	1.8
Styrene	NS	NS	0.0054 U	0.0053 U	0.00045 U	0.00049 U	0.00068 U	0.36 U
tert-Butylbenzene	5.9	100	0.014 U	0.013 U	0.00015 U	0.00016 U	0.00023 U	0.12 U
Tetrachloroethene	1.3	19	0.0027 U	0.0026 U	0.00016 U	0.00017 U	0.00024 U	0.12 U
Toluene	0.7	100	0.0041 U	0.004 U	0.00022 U	0.00024 U	0.076	0.17 U
trans-1,2-Dichloroethene	0.19	100	0.0041 U	0.004 U	0.00024 U	0.00026 U	0.00036 U	0.19 U
trans-1,3-Dichloropropene	NS	NS	0.0027 U	0.0026 U	0.00014 U	0.00015 U	0.0002 U	0.11 U
trans-1,4-Dichloro-2-butene	NS	NS	NA	NA	0.00044 U	0.00048 U	0.00066 U	0.35 U
Trichloroethene	0.47	21	0.0027 U	0.0026 U	0.00014 U	0.00015 U	0.00021 U	0.11 U
Trichlorofluoromethane	NS	NS	0.014 U	0.013 U	0.00043 U	0.00047 U	0.00066 U	0.34 U
Vinyl acetate	NS	NS	0.027 U	0.026 U	0.00015 U	0.00016 U	0.00022 U	0.12 U
Vinyl chloride	0.02	0.9	0.0054 U	0.0053 U	0.00013 U	0.00014 U	0.0002 U	0.1 U
Xylene (Total)	0.26	100	ND	ND	0.00019 U	0.00021 U	0.035	1.2 J

Table 2
487 West 129th Street
New York, NY

Subsurface (Phase II) Investigation Soil Analytical Results
 Volatile Organic Compounds

Client ID	NYSDEC Part 375 Unrestricted SCO	NYSDEC Part 375 Restricted Residential SCO	WC-3 3'-5' L1423865-09 10/7/2014 1	WC-3 26'-28' L1423865-10 10/7/2014 1	WC-4 7'-9' L1423865-11 10/7/2014 1	WC-4 26'-28' L1423865-12 10/7/2014 1	FB-1 L0802902-01 2/29/1908 1	TB-1 L0802902-11 2/25/1908 1
Lab Sample ID	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/L	ug/L
1,1,1,2-Tetrachloroethane	NS	NS	0.00035 U	0.00036 U	0.00032 U	0.00041 U	0.5 U	0.5 U
1,1,1-Trichloroethane	0.68	100	0.00012 U	0.00012 U	0.00011 U	0.00014 U	0.5 U	0.5 U
1,1,2,2-Tetrachloroethane	NS	NS	0.00011 U	0.00011 U	0.0001 U	0.00013 U	0.5 U	0.5 U
1,1,2-Trichloroethane	NS	NS	0.00034 U	0.00034 U	0.0003 U	0.00039 U	0.75 U	0.75 U
1,1-Dichloroethane	0.27	26	0.0001 U	0.0001 U	0.00009 U	0.00011 U	0.75 U	0.75 U
1,1-Dichloroethene	0.33	100	0.00029 U	0.0003 U	0.00026 U	0.00034 U	0.5 U	0.5 U
1,1-Dichloropropene	NS	NS	0.00016 U	0.00016 U	0.00014 U	0.00018 U	2.5 U	2.5 U
1,2,3-Trichlorobenzene	NS	NS	0.00016 U	0.00017 U	0.00015 U	0.00019 U	2.5 U	2.5 U
1,2,3-Trichloropropane	NS	NS	0.00018 U	0.00018 U	0.00016 U	0.00021 U	5 U	5 U
1,2,4,5-Tetramethylbenzene	NS	NS	0.00014 U	0.00015 U	0.00013 U	0.00017 U	NA	NA
1,2,4-Trichlorobenzene	NS	NS	0.0002 U	0.0002 U	0.00018 U	0.00023 U	2.5 U	2.5 U
1,2,4-Trimethylbenzene	3.6	52	0.00016 U	0.00016 U	0.00014 U	0.00018 U	2.5 U	2.5 U
1,2-Dibromo-3-chloropropane	NS	NS	0.00044 U	0.00045 U	0.00039 U	0.00051 U	2.5 U	2.5 U
1,2-Dibromoethane	NS	NS	0.00019 U	0.0002 U	0.00017 U	0.00022 U	2 U	2 U
1,2-Dichlorobenzene	1.1	100	0.00017 U	0.00017 U	0.00015 U	0.0002 U	2.5 U	2.5 U
1,2-Dichloroethane	0.02	3.1	0.00012 U	0.00013 U	0.00011 U	0.00014 U	0.5 U	0.5 U
1,2-Dichloroethane (total)	NS	NS	0.00016 U	0.00016 U	0.00014 U	0.00018 U	NA	NA
1,2-Dichloropropane	NS	NS	0.00025 U	0.00026 U	0.00023 U	0.00029 U	1.8 U	1.8 U
1,3,5-Trimethylbenzene	8.4	52	0.00016 U	0.00016 U	0.00014 U	0.00018 U	2.5 U	2.5 U
1,3-Dichlorobenzene	2.4	49	0.00015 U	0.00015 U	0.00013 U	0.00017 U	2.5 U	2.5 U
1,3-Dichloropropane	NS	NS	0.00016 U	0.00016 U	0.00014 U	0.00019 U	2.5 U	2.5 U
1,3-Dichloropropane, Total	NS	NS	0.00013 U	0.00013 U	0.00012 U	0.00015 U	NA	NA
1,4-Dichlorobenzene	1.8	13	0.00015 U	0.00016 U	0.00014 U	0.00018 U	2.5 U	2.5 U
1,4-Diethylbenzene	NS	NS	0.00018 U	0.00018 U	0.00016 U	0.0002 U	NA	NA
1,4-Dioxane	0.1	13	0.016 U	0.016 U	0.014 U	0.018 U	NA	NA
2,2-Dichloropropane	NS	NS	0.00025 U	0.00026 U	0.00022 U	0.00029 U	2.5 U	2.5 U
2-Butanone	0.12	100	0.0003 U	0.00031 U	0.00027 U	0.00035 U	5 U	5 U
2-Hexanone	NS	NS	0.00074 U	0.00075 U	0.00066 U	0.00085 U	5 U	5 U
4-Ethyltoluene	NS	NS	0.00014 U	0.00014 U	0.00012 U	0.00016 U	NA	NA
4-Methyl-2-pentanone	NS	NS	0.00027 U	0.00028 U	0.00024 U	0.00031 U	5 U	5 U
Acetone	0.05	100	0.0011 U	0.0012 U	0.001 U	0.0013 U	5 U	5 U
Acrylonitrile	NS	NS	0.00057 U	0.00058 U	0.00051 U	0.00066 U	NA	NA
Benzene	0.06	4.8	0.00013 U	0.00013 U	0.00012 U	0.00015 U	0.5 U	0.5 U
Bromobenzene	NS	NS	0.00023 U	0.00023 U	0.00021 U	0.00027 U	2.5 U	2.5 U
Bromochloromethane	NS	NS	0.0003 U	0.00031 U	0.00027 U	0.00035 U	2.5 U	2.5 U
Bromodichloromethane	NS	NS	0.00019 U	0.0002 U	0.00017 U	0.00022 U	0.5 U	0.5 U
Bromoform	NS	NS	0.00026 U	0.00027 U	0.00023 U	0.0003 U	2 U	2 U
Bromomethane	NS	NS	0.00037 U	0.00038 U	0.00034 U	0.00043 U	1 U	1 U
Carbon disulfide	NS	NS	0.0012 U	0.0012 U	0.0011 U	0.0014 U	5 U	5 U
Carbon tetrachloride	0.76	2.4	0.00023 U	0.00024 U	0.00021 U	0.00027 U	0.5 U	0.5 U
Chlorobenzene	1.1	100	0.00038 U	0.00039 U	0.00034 U	0.00044 U	0.5 U	0.5 U
Chloroethane	NS	NS	0.00035 U	0.00036 U	0.00031 U	0.0004 U	1 U	1 U
Chloroform	0.37	49	0.00041 U	0.00042 U	0.00037 U	0.00047 U	0.75 U	0.75 U
Chloromethane	NS	NS	0.00032 U	0.00033 U	0.00029 U	0.00038 U	2.5 U	2.5 U
cis-1,2-Dichloroethene	0.25	100	0.00016 U	0.00016 U	0.00014 U	0.00018 U	0.5 U	0.5 U
cis-1,3-Dichloropropene	NS	NS	0.00013 U	0.00013 U	0.00012 U	0.00015 U	0.5 U	0.5 U
Dibromochloromethane	NS	NS	0.00017 U	0.00017 U	0.00015 U	0.0002 U	0.5 U	0.5 U
Dibromomethane	NS	NS	0.00018 U	0.00018 U	0.00016 U	0.00021 U	5 U	5 U
Dichlorodifluoromethane	NS	NS	0.00021 U	0.00022 U	0.00019 U	0.00024 U	5 U	5 U
Ethyl ether	NS	NS	0.00029 U	0.00029 U	0.00026 U	0.00033 U	NA	NA
Ethylbenzene	1	41	0.00014 U	0.00014 U	0.00013 U	0.00016 U	0.5 U	0.5 U
Hexachlorobutadiene	NS	NS	0.00025 U	0.00026 U	0.00023 U	0.00029 U	0.6 U	0.6 U
Isopropylbenzene	NS	NS	0.00011 U	0.00012 U	0.0001 U	0.00013 U	0.5 U	0.5 U
Methyl tert butyl ether	0.93	100	0.00009 U	0.0001 U	0.00008 U	0.00011 U	1 U	1 U
Methylene chloride	0.05	100	0.0012 U	0.0028 J	0.0011 U	0.0046 J	5 U	5 U
Naphthalene	12	100	0.00015 U	0.00016 U	0.00014 U	0.00018 U	2.5 U	2.5 U
n-Butylbenzene	12	100	0.00013 U	0.00013 U	0.00011 U	0.00015 U	0.5 U	0.5 U
n-Propylbenzene	3.9	100	0.00012 U	0.00012 U	0.00011 U	0.00014 U	0.5 U	0.5 U
o-Chlorotoluene	NS	NS	0.00018 U	0.00018 U	0.00016 U	0.0002 U	2.5 U	2.5 U
o-Xylene	NS	NS	0.00019 U	0.00019 U	0.00017 U	0.00022 U	1 U	1 U
p/m-Xylene	NS	NS	0.00022 U	0.00022 U	0.0002 U	0.00085 J	1 U	1 U
p-Chlorotoluene	NS	NS	0.00015 U	0.00015 U	0.00013 U	0.00017 U	2.5 U	2.5 U
p-Isopropyltoluene	NS	NS	0.00014 U	0.00014 U	0.00012 U	0.00016 U	0.5 U	0.5 U
sec-Butylbenzene	11	100	0.00013 U	0.00014 U	0.00012 U	0.00016 U	0.5 U	0.5 U
Styrene	NS	NS	0.00044 U	0.00045 U	0.0004 U	0.00052 U	1 U	1 U
tert-Butylbenzene	5.9	100	0.00015 U	0.00015 U	0.00013 U	0.00017 U	2.5 U	2.5 U
Tetrachloroethene	1.3	19	0.00015 U	0.00016 U	0.00014 U	0.00018 U	0.5 U	0.5 U
Toluene	0.7	100	0.00022 U	0.00022 U	0.00019 U	0.00025 U	0.75 U	0.75 U
trans-1,2-Dichloroethene	0.19	100	0.00023 U	0.00024 U	0.00021 U	0.00027 U	0.75 U	0.75 U
trans-1,3-Dichloropropene	NS	NS	0.00013 U	0.00014 U	0.00012 U	0.00015 U	0.5 U	0.5 U
trans-1,4-Dichloro-2-butene	NS	NS	0.00043 U	0.00044 U	0.00039 U	0.0005 U	NA	NA
Trichloroethene	0.47	21	0.00014 U	0.00014 U	0.00012 U	0.00016 U	0.5 U	0.5 U
Trichlorofluoromethane	NS	NS	0.00043 U	0.00044 U	0.00038 U	0.0005 U	2.5 U	2.5 U
Vinyl acetate	NS	NS	0.00015 U	0.00015 U	0.00013 U	0.00017 U	5 U	5 U
Vinyl chloride	0.02	0.9	0.00013 U	0.00013 U	0.00012 U	0.00015 U	1 U	1 U
Xylene (Total)	0.26	100	0.00019 U	0.00019 U	0.00017 U	0.00085 J	ND	ND

Table 3
487 West 129th Street
New York, NY

Subsurface (Phase II) Investigation Soil Analytical Results
Semivolatile Organic Compounds

Client ID	NYSDEC Part 375 Unrestricted SCO	NYSDEC Part 375 Restricted Residential SCO	SB-1 (0-2') L0802902-02 2/29/2008 1	SB-2 (0-2') L0802902-03 2/29/2008 1	SB-2 (12-14') L0802902-04 2/29/2008 1	SB-3 (0-2') L0802902-05 2/29/2008 1	SB-4 (0-3') L0802902-06 2/29/2008 1	SB-4 (5-7') L0802902-07 2/29/2008 1
Lab Sample ID	mg/kg	mg/kg						
Date Sampled								
Dilution								
mg/kg								
1,2,4,5-Tetrachlorobenzene	NS	NS	1.5 U	7.9 U	1.6 U	38 U	37 U	36 U
1,2,4-Trichlorobenzene	NS	NS	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
1,2-Dichlorobenzene	1.1	100	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
1,3-Dichlorobenzene	2.4	49	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
1,4-Dichlorobenzene	1.8	13	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
2,4,5-Trichlorophenol	NS	NS	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
2,4,6-Trichlorophenol	NS	NS	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
2,4-Dichlorophenol	NS	NS	0.77 U	4 U	0.78 U	19 U	19 U	18 U
2,4-Dimethylphenol	NS	NS	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
2,4-Dinitrophenol	NS	NS	1.5 U	7.9 U	1.6 U	38 U	37 U	36 U
2,4-Dinitrotoluene	NS	NS	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
2,6-Dinitrotoluene	NS	NS	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
2-Chloronaphthalene	NS	NS	0.46 U	2.4 U	0.46 U	11 U	11 U	11 U
2-Chlorophenol	NS	NS	0.46 U	2.4 U	0.46 U	11 U	11 U	11 U
2-Methylnaphthalene	NS	NS	0.38 U	2 U	5.7	9.5 U	9.4 U	9 U
2-Methylphenol	0.33	100	0.46 U	2.4 U	0.46 U	11 U	11 U	11 U
2-Nitroaniline	NS	NS	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
2-Nitrophenol	NS	NS	1.5 U	7.9 U	1.6 U	38 U	37 U	36 U
3,3'-Dichlorobenzidine	NS	NS	0.77 U	4 U	0.78 U	19 U	19 U	18 U
3-Methylphenol/4-Methylphenol	0.33	100	0.46 U	2.4 U	0.46 U	11 U	11 U	11 U
3-Nitroaniline	NS	NS	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
4,6-Dinitro-o-cresol	NS	NS	1.5 U	7.9 U	1.6 U	38 U	37 U	36 U
4-Bromophenyl phenyl ether	NS	NS	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
4-Chloroaniline	NS	NS	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
4-Chlorophenyl phenyl ether	NS	NS	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
4-Nitroaniline	NS	NS	0.54 U	2.8 U	0.54 U	13 U	13 U	12 U
4-Nitrophenol	NS	NS	0.77 U	4 U	0.78 U	19 U	19 U	18 U
Acenaphthene	20	100	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
Acenaphthylene	100	100	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
Acetophenone	NS	NS	1.5 U	7.9 U	1.6 U	38 U	37 U	36 U
Anthracene	100	100	0.38 U	2 U	0.39 U	16	9.4 U	9 U
Benzo(a)anthracene	1	1	0.43	2 U	0.39 U	26	9.4 U	9 U
Benzo(a)pyrene	1	1	0.38	2 U	0.39 U	23	9.4 U	9 U
Benzo(b)fluoranthene	1	1	0.45	2 U	0.39 U	28	9.4 U	9 U
Benzo(ghi)perylene	100	100	0.38 U	2 U	0.39 U	14	9.4 U	9 U
Benzo(k)fluoranthene	0.8	3.9	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
Benzoic Acid	NS	NS	3.8 U	20 U	3.9 U	95 U	94 U	90 U
Benzyl Alcohol	NS	NS	0.77 U	4 U	0.78 U	19 U	19 U	18 U
Biphenyl	NS	NS	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
Bis(2-chloroethoxy)methane	NS	NS	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
Bis(2-chloroethyl)ether	NS	NS	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
Bis(2-chloroisopropyl)ether	NS	NS	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
Bis(2-Ethylhexyl)phthalate	NS	NS	0.77 U	4 U	0.78 U	19 U	19 U	18 U
Butyl benzyl phthalate	NS	NS	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
Carbazole	NS	NS	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
Chrysene	1	3.9	0.4	2 U	0.39 U	23	9.4 U	9 U
Dibenzo(a,h)anthracene	0.33	0.33	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
Dibenzofuran	7	59	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
Diethyl phthalate	NS	NS	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
Dimethyl phthalate	NS	NS	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
Di-n-butylphthalate	NS	NS	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
Di-n-octylphthalate	NS	NS	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
Fluoranthene	100	100	0.8	2 U	0.39 U	49	9.4 U	9 U
Fluorene	30	100	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
Hexachlorobenzene	0.33	1.2	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
Hexachlorobutadiene	NS	NS	0.77 U	4 U	0.78 U	19 U	19 U	18 U
Hexachlorocyclopentadiene	NS	NS	0.77 U	4 U	0.78 U	19 U	19 U	18 U
Hexachloroethane	NS	NS	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
Indeno(1,2,3-cd)Pyrene	0.5	0.5	0.38 U	2 U	0.39 U	12	9.4 U	9 U
Isophorone	NS	NS	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
Naphthalene	12	100	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
Nitrobenzene	NS	NS	0.38 U	2.1	9.9	9.5 U	9.4 U	9 U
NitrosoDiPhenylAmine(NDPA)/DPA	NS	NS	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
n-Nitrosodi-n-propylamine	NS	NS	1.1 U	6 U	1.2 U	28 U	28 U	27 U
p-Chloro-M-Cresol	NS	NS	0.38 U	2 U	0.39 U	9.5 U	9.4 U	9 U
Pentachlorophenol	0.8	6.7	1.5 U	7.9 U	1.6 U	38 U	37 U	36 U
Phenanthrene	100	100	0.85	2 U	0.53	51	9.4 U	9 U
Phenol	0.33	100	0.54 U	2.8 U	0.54 U	13 U	13 U	12 U
Pyrene	100	100	0.82	2 U	0.39 U	40	9.4 U	9 U

Note: † = Dilution factor varies.

Table 3
487 West 129th Street
New York, NY

Subsurface (Phase II) Investigation Soil Analytical Results
 Semivolatile Organic Compounds

Client ID	NYSDEC Part 375 Unrestricted SCO	NYSDEC Part 375 Restricted Residential SCO	SB-5 (0-3') L0802902-08 2/29/2008 1	SB-5 (5-7') L0802902-09 2/29/2008 1	WC-1-8'-10' L1423865-05 10/8/2014 1	WC-1-12'-14' L1423865-06 10/8/2014 1	WC-2-3'-5' L1423865-07 10/7/2014 1/100 †	WC-2-12'-14' L1423865-08 10/7/2014 1
Lab Sample ID	mg/kg	mg/kg						
1,2,4,5-Tetrachlorobenzene	NS	NS	1.4 U	14 U	0.059 U	0.065 U	0.064 U	0.063 U
1,2,4-Trichlorobenzene	NS	NS	0.36 U	3.5 U	0.062 U	0.069 U	0.068 U	0.066 U
1,2-Dichlorobenzene	1.1	100	0.36 U	3.5 U	0.062 U	0.069 U	0.068 U	0.066 U
1,3-Dichlorobenzene	2.4	49	0.36 U	3.5 U	0.06 U	0.066 U	0.065 U	0.064 U
1,4-Dichlorobenzene	1.8	13	0.36 U	3.5 U	0.058 U	0.064 U	0.063 U	0.061 U
2,4,5-Trichlorophenol	NS	NS	0.36 U	3.5 U	0.061 U	0.068 U	0.067 U	0.065 U
2,4,6-Trichlorophenol	NS	NS	0.36 U	3.5 U	0.036 U	0.04 U	0.039 U	0.038 U
2,4-Dichlorophenol	NS	NS	0.72 U	7.1 U	0.061 U	0.068 U	0.067 U	0.065 U
2,4-Dimethylphenol	NS	NS	0.36 U	3.5 U	0.056 U	0.063 U	0.062 U	0.06 U
2,4-Dinitrophenol	NS	NS	1.4 U	14 U	0.26 U	0.29 U	0.28 U	0.28 U
2,4-Dinitrotoluene	NS	NS	0.36 U	3.5 U	0.041 U	0.045 U	0.045 U	0.044 U
2,6-Dinitrotoluene	NS	NS	0.36 U	3.5 U	0.048 U	0.054 U	0.053 U	0.052 U
2-Chloronaphthalene	NS	NS	0.43 U	4.2 U	0.002 U	0.0022 U	0.22 U	0.0021 U
2-Chlorophenol	NS	NS	0.43 U	4.2 U	0.057 U	0.063 U	0.062 U	0.061 U
2-Methylnaphthalene	NS	NS	0.36 U	3.5 U	0.0009 U	0.001 U	3	0.19
2-Methylphenol	0.33	100	0.43 U	4.2 U	0.061 U	0.068 U	0.067 U	0.065 U
2-Nitroaniline	NS	NS	0.36 U	3.5 U	0.053 U	0.059 U	0.058 U	0.057 U
2-Nitrophenol	NS	NS	1.4 U	14 U	0.059 U	0.066 U	0.065 U	0.063 U
3,3'-Dichlorobenzidine	NS	NS	0.72 U	7.1 U	0.05 U	0.056 U	0.055 U	0.054 U
3-Methylphenol/4-Methylphenol	0.33	100	0.43 U	4.2 U	0.062 U	0.069 U	0.068 U	0.066 U
3-Nitroaniline	NS	NS	0.36 U	3.5 U	0.052 U	0.058 U	0.057 U	0.056 U
4,6-Dinitro-o-cresol	NS	NS	1.4 U	14 U	0.069 U	0.077 U	0.076 U	0.074 U
4-Bromophenyl phenyl ether	NS	NS	0.36 U	3.5 U	0.044 U	0.048 U	0.048 U	0.046 U
4-Chloroaniline	NS	NS	0.36 U	3.5 U	0.05 U	0.055 U	0.055 U	0.053 U
4-Chlorophenyl phenyl ether	NS	NS	0.36 U	3.5 U	0.058 U	0.064 U	0.063 U	0.061 U
4-Nitroaniline	NS	NS	0.51 U	5 U	0.051 U	0.057 U	0.056 U	0.054 U
4-Nitrophenol	NS	NS	0.72 U	7.1 U	0.061 U	0.068 U	0.067 U	0.065 U
Acenaphthene	20	100	0.36 U	3.5 U	0.0012 U	0.0013 U	10	0.01
Acenaphthylene	100	100	0.36 U	3.5 U	0.00084 U	0.00093 U	0.35 J	0.0009 U
Acetophenone	NS	NS	1.4 U	14 U	0.059 U	0.065 U	0.064 U	0.063 U
Anthracene	100	100	0.36 U	3.5 U	0.00074 U	0.00082 U	22	0.015
Benzo(a)anthracene	1	1	0.36	3.5 U	0.0012 U	0.0013 U	26	0.019
Benzo(a)pyrene	1	1	0.38	3.5 U	0.0017 U	0.0019 U	24	0.016
Benzo(b)fluoranthene	1	1	0.56	3.5 U	0.0018 U	0.002 U	31	0.02
Benzo(ghi)perylene	100	100	0.36 U	3.5 U	0.0021 U	0.0024 U	16	0.011
Benzo(k)fluoranthene	0.8	3.9	0.36 U	3.5 U	0.0018 U	0.002 U	11	0.0076 J
Benzoic Acid	NS	NS	3.6 U	35 U	0.19 U	0.21 U	0.21 U	0.2 U
Benzyl Alcohol	NS	NS	0.72 U	7.1 U	0.058 U	0.065 U	0.064 U	0.062 U
Biphenyl	NS	NS	0.36 U	3.5 U	0.062 U	0.069 U	0.95	0.067 U
Bis(2-chloroethoxy)methane	NS	NS	0.36 U	3.5 U	0.057 U	0.064 U	0.063 U	0.061 U
Bis(2-chloroethyl)ether	NS	NS	0.36 U	3.5 U	0.053 U	0.059 U	0.058 U	0.057 U
Bis(2-chloroisopropyl)ether	NS	NS	0.36 U	3.5 U	0.067 U	0.074 U	0.073 U	0.071 U
Bis(2-Ethylhexyl)phthalate	NS	NS	0.72 U	7.1 U	0.05 U	0.055 U	0.054 U	0.053 U
Butyl benzyl phthalate	NS	NS	0.36 U	3.5 U	0.037 U	0.041 U	0.04 U	0.039 U
Carbazole	NS	NS	0.36 U	3.5 U	0.041 U	0.045 U	6.9	0.043 U
Chrysene	1	3.9	0.36	3.5 U	0.0018 U	0.002 U	25	0.018
Dibenzo(a,h)anthracene	0.33	0.33	0.36 U	3.5 U	0.0021 U	0.0023 U	3.3	0.0024 J
Dibenzofuran	7	59	0.36 U	3.5 U	0.063 U	0.07 U	7.9	0.067 U
Diethyl phthalate	NS	NS	0.36 U	3.5 U	0.04 U	0.044 U	0.044 U	0.043 U
Dimethyl phthalate	NS	NS	0.36 U	3.5 U	0.048 U	0.053 U	0.053 U	0.051 U
Di-n-butylphthalate	NS	NS	0.36 U	3.5 U	0.036 U	0.04 U	0.04 U	0.039 U
Di-n-octylphthalate	NS	NS	0.36 U	3.5 U	0.046 U	0.052 U	0.051 U	0.05 U
Fluoranthene	100	100	0.45	3.5 U	0.0012 U	0.0013 U	69	0.056
Fluorene	30	100	0.36 U	3.5 U	0.0013 U	0.0014 U	11	0.013
Hexachlorobenzene	0.33	1.2	0.36 U	3.5 U	0.00067 U	0.00074 U	0.073 U	0.00071 U
Hexachlorobutadiene	NS	NS	0.72 U	7.1 U	0.00093 U	0.001 U	0.1 U	0.00099 U
Hexachlorocyclopentadiene	NS	NS	0.72 U	7.1 U	0.12 U	0.13 U	0.13 U	0.13 U
Hexachloroethane	NS	NS	0.36 U	3.5 U	0.001 U	0.0011 U	0.11 U	0.0011 U
Indeno(1,2,3-cd)Pyrene	0.5	0.5	0.36 U	3.5 U	0.0021 U	0.0024 U	16	0.01
Isophorone	NS	NS	0.36 U	3.5 U	0.05 U	0.056 U	0.055 U	0.054 U
Naphthalene	12	100	0.36 U	3.5 U	0.001 U	0.0011 U	5	0.36
Nitrobenzene	NS	NS	0.36 U	3.5 U	0.045 U	0.05 U	0.049 U	0.048 U
NitrosoDiPhenylAmine(NDPA)/DPA	NS	NS	0.36 U	3.5 U	0.04 U	0.044 U	0.044 U	0.042 U
n-Nitrosodi-n-propylamine	NS	NS	1.1 U	11 U	0.056 U	0.063 U	0.062 U	0.06 U
p-Chloro-M-Cresol	NS	NS	0.36 U	3.5 U	0.055 U	0.061 U	0.06 U	0.059 U
Pentachlorophenol	0.8	6.7	1.4 U	14 U	0.009 U	0.01 U	0.98 U	0.0096 U
Phenanthrene	100	100	0.36 U	3.5 U	0.0019 U	0.0021 U	81	0.057
Phenol	0.33	100	0.51 U	5 U	0.056 U	0.062 U	0.061 U	0.06 U
Pyrene	100	100	0.43	3.5 U	0.001 U	0.0011 U	53	0.051

Note: † = Dilution factor varies.

Table 3
487 West 129th Street
New York, NY

Subsurface (Phase II) Investigation Soil Analytical Results
Semivolatile Organic Compounds

Client ID	NYSDEC Part 375 Unrestricted SCO	NYSDEC Part 375 Restricted Residential SCO	WC-3 3'-5' L1423865-09 10/7/2014 1/2 †	WC-3 26'-28' L1423865-10 10/7/2014 1	WC-4-7'-9' L1423865-11 10/7/2014 1	WC-4 26'-28' L1423865-12 10/7/2014 1	FB-1 L0802902-01 2/29/2008 1
Lab Sample ID	mg/kg	mg/kg					ug/L
1,2,4,5-Tetrachlorobenzene	NS	NS	0.058 U	0.064 U	0.058 U	0.062 U	20 U
1,2,4-Trichlorobenzene	NS	NS	0.062 U	0.068 U	0.061 U	0.066 U	4.9 U
1,2-Dichlorobenzene	1.1	100	0.062 U	0.068 U	0.061 U	0.066 U	4.9 U
1,3-Dichlorobenzene	2.4	49	0.059 U	0.065 U	0.059 U	0.063 U	4.9 U
1,4-Dichlorobenzene	1.8	13	0.057 U	0.063 U	0.057 U	0.061 U	4.9 U
2,4,5-Trichlorophenol	NS	NS	0.061 U	0.067 U	0.06 U	0.065 U	4.9 U
2,4,6-Trichlorophenol	NS	NS	0.036 U	0.039 U	0.035 U	0.038 U	4.9 U
2,4-Dichlorophenol	NS	NS	0.061 U	0.067 U	0.06 U	0.065 U	9.8 U
2,4-Dimethylphenol	NS	NS	0.056 U	0.062 U	0.056 U	0.06 U	9.8 U
2,4-Dinitrophenol	NS	NS	0.26 U	0.28 U	0.26 U	0.28 U	29 U
2,4-Dinitrotoluene	NS	NS	0.041 U	0.044 U	0.04 U	0.043 U	5.9 U
2,6-Dinitrotoluene	NS	NS	0.048 U	0.053 U	0.048 U	0.051 U	4.9 U
2-Chloronaphthalene	NS	NS	0.004 U	0.0022 U	0.002 U	0.0021 U	5.9 U
2-Chlorophenol	NS	NS	0.057 U	0.062 U	0.056 U	0.061 U	5.9 U
2-Methylnaphthalene	NS	NS	0.012 J	0.00098 U	0.00089 U	0.00096 U	4.9 U
2-Methylphenol	0.33	100	0.061 U	0.066 U	0.06 U	0.065 U	5.9 U
2-Nitroaniline	NS	NS	0.053 U	0.058 U	0.052 U	0.057 U	4.9 U
2-Nitrophenol	NS	NS	0.059 U	0.064 U	0.058 U	0.063 U	20 U
3,3'-Dichlorobenzidine	NS	NS	0.05 U	0.055 U	0.05 U	0.053 U	49 U
3-Methylphenol/4-Methylphenol	0.33	100	0.062 U	0.068 U	0.061 U	0.066 U	5.9 U
3-Nitroaniline	NS	NS	0.052 U	0.057 U	0.051 U	0.056 U	4.9 U
4,6-Dinitro-o-cresol	NS	NS	0.069 U	0.076 U	0.068 U	0.074 U	20 U
4-Bromophenyl phenyl ether	NS	NS	0.043 U	0.047 U	0.043 U	0.046 U	4.9 U
4-Chloroaniline	NS	NS	0.05 U	0.054 U	0.049 U	0.053 U	4.9 U
4-Chlorophenyl phenyl ether	NS	NS	0.057 U	0.063 U	0.057 U	0.061 U	4.9 U
4-Nitroaniline	NS	NS	0.051 U	0.056 U	0.05 U	0.054 U	6.8 U
4-Nitrophenol	NS	NS	0.061 U	0.067 U	0.06 U	0.065 U	9.8 U
Acenaphthene	20	100	0.057	0.0013 U	0.0011 U	0.0012 U	4.9 U
Acenaphthylene	100	100	0.013 J	0.00092 U	0.00083 U	0.00089 U	4.9 U
Acetophenone	NS	NS	0.13 J	0.064 U	0.058 U	0.062 U	20 U
Anthracene	100	100	0.18	0.0008 U	0.00073 U	0.00078 U	4.9 U
Benzo(a)anthracene	1	1	0.51	0.0013 U	0.0012 U	0.0012 U	4.9 U
Benzo(a)pyrene	1	1	0.48	0.0019 U	0.0017 U	0.0018 U	4.9 U
Benzo(b)fluoranthene	1	1	0.63	0.002 U	0.0025 J	0.0019 U	4.9 U
Benzo(ghi)perylene	100	100	0.37	0.0023 U	0.0021 U	0.0022 U	4.9 U
Benzo(k)fluoranthene	0.8	3.9	0.21	0.002 U	0.0018 U	0.0019 U	4.9 U
Benzoic Acid	NS	NS	0.19 U	0.21 U	0.19 U	0.2 U	49 U
Benzyl Alcohol	NS	NS	0.058 U	0.064 U	0.057 U	0.062 U	9.8 U
Biphenyl	NS	NS	0.062 U	0.068 U	0.061 U	0.066 U	4.9 U
Bis(2-chloroethoxy)methane	NS	NS	0.057 U	0.062 U	0.056 U	0.061 U	4.9 U
Bis(2-chloroethyl)ether	NS	NS	0.053 U	0.058 U	0.052 U	0.056 U	4.9 U
Bis(2-chloroisopropyl)ether	NS	NS	0.066 U	0.073 U	0.066 U	0.071 U	4.9 U
Bis(2-Ethylhexyl)phthalate	NS	NS	0.049 U	0.054 U	0.049 U	0.053 U	4.9 U
Butyl benzyl phthalate	NS	NS	0.037 U	0.04 U	0.036 U	0.039 U	4.9 U
Carbazole	NS	NS	0.069 J	0.044 U	0.04 U	0.043 U	4.9 U
Chrysene	1	3.9	0.46	0.002 U	0.0024 J	0.0019 U	4.9 U
Dibenzo(a,h)anthracene	0.33	0.33	0.085	0.0023 U	0.0021 U	0.0022 U	4.9 U
Dibenzofuran	7	59	0.063 U	0.069 U	0.062 U	0.067 U	4.9 U
Diethyl phthalate	NS	NS	0.04 U	0.044 U	0.039 U	0.042 U	4.9 U
Dimethyl phthalate	NS	NS	0.048 U	0.052 U	0.047 U	0.051 U	4.9 U
Di-n-butylphthalate	NS	NS	0.036 U	0.04 U	0.036 U	0.039 U	4.9 U
Di-n-octylphthalate	NS	NS	0.046 U	0.051 U	0.046 U	0.049 U	4.9 U
Fluoranthene	100	100	1	0.0013 U	0.0026 J	0.0013 U	4.9 U
Fluorene	30	100	0.046	0.0014 U	0.0012 U	0.0014 U	4.9 U
Hexachlorobenzene	0.33	1.2	0.0013 U	0.00073 U	0.00066 U	0.00071 U	4.9 U
Hexachlorobutadiene	NS	NS	0.0018 U	0.001 U	0.00091 U	0.00098 U	9.8 U
Hexachlorocyclopentadiene	NS	NS	0.12 U	0.13 U	0.12 U	0.13 U	29 U
Hexachloroethane	NS	NS	0.002 U	0.0011 U	0.00098 U	0.001 U	4.9 U
Indeno(1,2,3-cd)Pyrene	0.5	0.5	0.31	0.0023 U	0.0021 U	0.0023 U	6.8 U
Isophorone	NS	NS	0.05 U	0.055 U	0.05 U	0.053 U	4.9 U
Naphthalene	12	100	0.025	0.0025 J	0.001 U	0.0011 U	4.9 U
Nitrobenzene	NS	NS	0.045 U	0.049 U	0.044 U	0.048 U	4.9 U
NitrosoDiPhenylAmine(NDPA)/DPA	NS	NS	0.04 U	0.043 U	0.039 U	0.042 U	4.9 U
n-Nitrosodi-n-propylamine	NS	NS	0.056 U	0.062 U	0.056 U	0.06 U	15 U
p-Chloro-M-Cresol	NS	NS	0.055 U	0.06 U	0.054 U	0.058 U	4.9 U
Pentachlorophenol	0.8	6.7	0.018 U	0.0098 U	0.0088 U	0.0095 U	9.8 U
Phenanthrene	100	100	0.64	0.002 U	0.0018 U	0.002 U	4.9 U
Phenol	0.33	100	0.056 U	0.061 U	0.055 U	0.06 U	6.8 U
Pyrene	100	100	0.9	0.0011 U	0.0039 J	0.0011 U	4.9 U

Note: † = Dilution factor varies.

Table 4
487 West 129th Street
New York, NY

Subsurface (Phase II) Investigation Soil Analytical Results
Metals

Client ID Lab Sample ID Date Sampled Dilution mg/kg	NYSDEC Part 375 Unrestricted SCO mg/kg	NYSDEC Part 375 Restricted Residential SCO mg/kg	SB-1 (0-2') L0802902-02 2/29/2008 1	SB-2 (0-2') L0802902-03 2/29/2008 1/10 †	SB-2 (12-14') L0802902-04 2/29/2008 1	SB-3 (0-2') L0802902-05 2/29/2008 1/10 †	SB-4 (0-3') L0802902-06 2/29/2008 1	SB-4 (5-7') L0802902-07 2/29/2008 1	SB-5 (0-3') L0802902-08 2/29/2008 1	SB-5 (5-7') L0802902-09 2/29/2008 1/10 †	WC-1-8'-10' L1423865-05 10/8/2014 2/1 ‡
Aluminum	NS	NS	12,000	7,100	8,800	8,100	9,000	7,200	11,000	5,700	9,100
Antimony	NS	NS	2.8 U	4	2.8 U	4.6	2.6 U	2.6 U	2.6 U	2.4 U	0.71 U
Arsenic	13	16	3.1	11	2.4	9.8	2.1	1.1	4.5	3.7	2.4
Barium	350	400	75	61	33	180	40	80	60	99	25
Beryllium	7.2	72	0.58	0.31	0.36	0.32	0.46	0.41	0.5	0.33	0.34 J
Cadmium	2.5	4.3	0.57 U	0.57 U	0.55 U	0.8	0.53 U	0.52 U	1.2	0.93	0.06 U
Calcium	NS	NS	4,400	10,000	13,000	20,000	1,900	1,900	9,500	40,000	550
Chromium	30	180	18	12	12	13	14	32	14	8.8	12
Cobalt	NS	NS	9.1	7.3	7.8	7.2	7.2	6.6	10	3.3	6.8
Copper	50	270	17	59	13	79	26	24	46	25	13
Iron	NS	NS	19,000	38,000	21,000	35,000	11,000	8,800	20,000	10,000	19,000
Lead	63	400	12	200	5.5	1,400	9.2	5.2	130	220	7.2
Magnesium	NS	NS	5,200	4,900	3,000	5,500	3,000	3,600	6,400	4,300	3,300
Manganese	1,600	2,000	260	370	450	320	280	620	310	240	280
Mercury	0.18	0.81	0.09 U	1.2	0.1 U	0.97	0.09 U	0.08 U	0.16	0.16	0.02 U
Nickel	30	310	20	16	16	16	19	20	32	8.5	14
Potassium	NS	NS	4,400	2,200	820	1,600	1,000	760	1,500	1,200	420
Selenium	3.9	180	2.8 U	2.8 U	2.8 U	2.8 U	2.6 U	2.6 U	2.6 U	2.4 U	0.47 J
Silver	2	180	0.57 U	0.57 U	0.55 U	0.55 U	0.53 U	0.52 U	0.53 U	0.49 U	0.18 U
Sodium	NS	NS	110	500	460	1,100	480	390	1,700	860	38 J
Thallium	NS	NS	2.8 U	2.8 U	2.8 U	2.8 U	2.6 U	2.6 U	2.6 U	2.4 U	0.36 U
Vanadium	NS	NS	29	18	14	20	19	17	18	11	13
Zinc	109	10,000	44	70	45	270	62	25	430	180	43

Notes: † = The dilution factor varies.

‡ = The dilution factor for Mercury is 1.

Table 4
487 West 129th Street
New York, NY

Subsurface (Phase II) Investigation Soil Analytical Results
Metals

Client ID Lab Sample ID Date Sampled Dilution mg/kg	NYSDEC Part 375 Unrestricted SCO mg/kg	NYSDEC Part 375 Restricted Residential SCO mg/kg	WC-1-12'-14' L1423865-06 10/8/2014 2/1 ‡	WC-2-3'-5' L1423865-07 10/7/2014 2/1 ‡	WC-2-12'-14' L1423865-08 10/7/2014 2/1 ‡	WC-3 3'-5' L1423865-09 10/7/2014 2/1/100 †	WC-3 26'-28' L1423865-10 10/7/2014 2/1 ‡	WC-4-7'-9' L1423865-11 10/7/2014 2/1 ‡	WC-4 26'-28' L1423865-12 10/7/2014 2/1 ‡	FB-1 L0802902-01 29-FEB-08 1
Aluminum	NS	NS	6,500	7,500	7,600	9,400	3,700	10,000	2,600	100 U
Antimony	NS	NS	2.2 J	8.6	0.77 U	0.7 U	0.76 U	0.72 U	0.75 U	50 U
Arsenic	13	16	5	8.8	1.3	2.9	0.7 J	2.4	0.88 J	5 U
Barium	350	400	20	120	44	80	1,800	31	46	10 U
Beryllium	7.2	72	0.25 J	0.34 J	0.31 J	0.34 J	0.26 J	0.34 J	0.24 J	5 U
Cadmium	2.5	4.3	0.07 U	0.57 J	0.07 U	1.1	1.5	0.06 U	0.07 U	5 U
Calcium	NS	NS	700	19,000	14,000	6,800	2,000	810	400	150
Chromium	30	180	10	19	12	14	30	13	8.2	10 U
Cobalt	NS	NS	5.1	9.6	6.6	6.7	98	7.5	11	20 U
Copper	50	270	11	120	14	29	14	13	14	10 U
Iron	NS	NS	14,000	54,000	18,000	20,000	12,000	18,000	13,000	50 U
Lead	63	400	4.4 J	460	53	150	7.1	8.1	2.6 J	10 U
Magnesium	NS	NS	2,400	3,500	3,100	3,200	1,300	3,000	900	100 U
Manganese	1,600	2,000	180	360	270	340	34,000	460	1,100	10 U
Mercury	0.18	0.81	0.02 U	0.72	0.07 J	0.23	0.02 U	0.02 U	0.02 U	0.2 U
Nickel	30	310	14	18	14	14	210	13	11	25 U
Potassium	NS	NS	380	860	560	880	1,400	500	420	2,500 U
Selenium	3.9	180	0.3 U	1 J	0.42 J	0.32 J	0.28 U	0.27 U	0.28 U	10 U
Silver	2	180	0.2 U	0.2 U	0.23 J	0.18 U	5.6	0.2 J	0.35 J	7 U
Sodium	NS	NS	47 J	260	77 J	240	300	99 J	84 J	2,000 U
Thallium	NS	NS	0.4 U	0.4 U	0.38 U	0.35 U	11	0.36 U	0.38 U	20 U
Vanadium	NS	NS	12	23	15	16	17	18	9.7	10 U
Zinc	109	10,000	29	360	72	440	100	34	15	50 U

Notes: † = The dilution factor varies.

‡ = The dilution factor for Mercury is 1.

Table 5
487 West 129th Street

New York, NY

Subsurface (Phase II) Investigation Soil Analytical Results

Polychlorinated Biphenyls & Pesticides

Client ID Lab Sample ID Date Sampled	NYSDEC Part 375 Unrestricted SCO mg/kg	NYSDEC Part 375 Restricted Residential SCO mg/kg	SB-1 (0-2') L0802902-02 2/29/2008	SB-2 (0-2') L0802902-03 2/29/2008	SB-2 (12-14') L0802902-04 2/29/2008	SB-3 (0-2') L0802902-05 2/29/2008	SB-4 (0-3') L0802902-06 2/29/2008	SB-4 (5-7') L0802902-07 2/29/2008	SB-5 (0-3') L0802902-08 2/29/2008	SB-5 (5-7') L0802902-09 2/29/2008
Polychlorinated Biphenyls - mg/kg										
Aroclor 1016	NS	NS	0.0383 U	0.0397 U	0.0388 U	0.0758 U	0.0374 U	0.0358 U	0.0362 U	0.0355 U
Aroclor 1221	NS	NS	0.0383 U	0.0397 U	0.0388 U	0.0758 U	0.0374 U	0.0358 U	0.0362 U	0.0355 U
Aroclor 1232	NS	NS	0.0383 U	0.0397 U	0.0388 U	0.0758 U	0.0374 U	0.0358 U	0.0362 U	0.0355 U
Aroclor 1242	NS	NS	0.0383 U	0.0397 U	0.0388 U	0.0758 U	0.0374 U	0.0358 U	0.0362 U	0.0355 U
Aroclor 1248	NS	NS	0.0383 U	0.0397 U	0.0388 U	0.0758 U	0.0374 U	0.0358 U	0.0362 U	0.0355 U
Aroclor 1254	NS	NS	0.0383 U	0.0397 U	0.0388 U	0.0758 U	0.0374 U	0.0358 U	0.0362 U	0.0355 U
Aroclor 1260	NS	NS	0.0383 U	0.0397 U	0.0388 U	0.0758 U	0.0374 U	0.0358 U	0.0362 U	0.0355 U
Aroclor 1262	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1268	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA
PCBs, Total	0.1	1	ND	ND	ND	ND	ND	ND	ND	ND

Pesticides - mg/kg

4,4'-DDD	0.0033	13	0.00383 U	0.00397 U	0.00388 U	0.0189 U	0.00374 U	0.00358 U	0.00362 U	0.00355 U
4,4'-DDE	0.0033	8.9	0.00383 U	0.00397 U	0.00388 U	0.0189 U	0.00374 U	0.00358 U	0.00362 U	0.00355 U
4,4'-DDT	0.0033	7.9	0.00383 U	0.00397 U	0.00388 U	0.0189 U	0.00374 U	0.00358 U	0.00362 U	0.00355 U
Aldrin	0.005	0.097	0.00383 U	0.00397 U	0.00388 U	0.0189 U	0.00374 U	0.00358 U	0.00362 U	0.00355 U
Alpha-BHC	0.02	0.48	0.00383 U	0.00397 U	0.00388 U	0.0189 U	0.00374 U	0.00358 U	0.00362 U	0.00355 U
Beta-BHC	0.036	0.36	0.00383 U	0.00397 U	0.00388 U	0.0189 U	0.00374 U	0.00358 U	0.00362 U	0.00355 U
Chlordane	0.094	4.2	0.0383 U	0.0397 U	0.0388 U	0.189 U	0.0374 U	0.0358 U	0.0362 U	0.0355 U
cis-Chlordane	0.094	4.2	NA	NA	NA	NA	NA	NA	NA	NA
Delta-BHC	0.04	100	0.00383 U	0.00397 U	0.00388 U	0.0189 U	0.00374 U	0.00358 U	0.00362 U	0.00355 U
Dieldrin	0.005	0.2	0.00383 U	0.00397 U	0.00388 U	0.0189 U	0.00374 U	0.00358 U	0.00362 U	0.00355 U
Endosulfan I	2.4	24	0.00383 U	0.00397 U	0.00388 U	0.0189 U	0.00374 U	0.00358 U	0.00362 U	0.00355 U
Endosulfan II	2.4	24	0.00383 U	0.00397 U	0.00388 U	0.0189 U	0.00374 U	0.00358 U	0.00362 U	0.00355 U
Endosulfan sulfate	2.4	24	0.00383 U	0.00397 U	0.00388 U	0.0189 U	0.00374 U	0.00358 U	0.00362 U	0.00355 U
Endrin	0.014	11	0.00383 U	0.00397 U	0.00388 U	0.0189 U	0.00374 U	0.00358 U	0.00362 U	0.00355 U
Endrin ketone	NS	NS	0.00383 U	0.00397 U	0.00388 U	0.0189 U	0.00374 U	0.00358 U	0.00362 U	0.00355 U
Heptachlor	0.042	2.1	0.00383 U	0.00397 U	0.00388 U	0.0189 U	0.00374 U	0.00358 U	0.00362 U	0.00355 U
Heptachlor epoxide	NS	NS	0.00383 U	0.00397 U	0.00388 U	0.0189 U	0.00374 U	0.00358 U	0.00362 U	0.00355 U
Lindane	0.1	1.3	0.00383 U	0.00397 U	0.00388 U	0.0189 U	0.00374 U	0.00358 U	0.00362 U	0.00355 U
Methoxychlor	NS	NS	0.0153 U	0.0159 U	0.0155 U	0.0758 U	0.015 U	0.0143 U	0.0145 U	0.0142 U
Toxaphene	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA
trans-Chlordane	NS	NS	0.00383 U	0.00397 U	0.00388 U	0.0189 U	0.00374 U	0.00358 U	0.00362 U	0.00355 U

Table 5
487 West 129th Street
New York, NY

Subsurface (Phase II) Investigation Soil Analytical Results
Polychlorinated Biphenyls & Pesticides

Client ID Lab Sample ID Date Sampled	NYSDEC Part 375 Unrestricted SCO mg/kg	NYSDEC Part 375 Restricted Residential SCO mg/kg	WC-1-8'-10' L1423865-05 10/8/2014	WC-1-12'-14' L1423865-06 10/8/2014	WC-2-3'-5' L1423865-07 10/7/2014	WC-2-12'-14' L1423865-08 10/7/2014	WC-3 3'-5' L1423865-09 10/7/2014	WC-3 26'-28' L1423865-10 10/7/2014	WC-4-7'-9' L1423865-11 10/7/2014	WC-4 26'-28' L1423865-12 10/7/2014	FB-1 L0802902-01 2/29/2008
Polychlorinated Biphenyls - mg/kg	mg/kg	mg/kg									
Aroclor 1016	NS	NS	0.00297 U	0.00323 U	0.00317 U	0.00313 U	0.00297 U	0.0032 U	0.00297 U	0.00317 U	0.1 U
Aroclor 1221	NS	NS	0.00346 U	0.00377 U	0.0037 U	0.00366 U	0.00346 U	0.00373 U	0.00346 U	0.0037 U	0.1 U
Aroclor 1232	NS	NS	0.0044 U	0.00479 U	0.0047 U	0.00465 U	0.0044 U	0.00474 U	0.0044 U	0.00471 U	0.1 U
Aroclor 1242	NS	NS	0.0046 U	0.005 U	0.00491 U	0.00486 U	0.0046 U	0.00495 U	0.0046 U	0.00492 U	0.1 U
Aroclor 1248	NS	NS	0.00317 U	0.00345 U	0.00339 U	0.00335 U	0.00317 U	0.00342 U	0.00317 U	0.00339 U	0.1 U
Aroclor 1254	NS	NS	0.00309 U	0.00336 U	0.0033 U	0.00326 U	0.00309 U	0.00333 U	0.00309 U	0.0033 U	0.1 U
Aroclor 1260	NS	NS	0.00286 U	0.00311 U	0.00306 U	0.00302 U	0.00286 U	0.00308 U	0.00286 U	0.00306 U	0.1 U
Aroclor 1262	NS	NS	0.00186 U	0.00203 U	0.00199 U	0.00197 U	0.00186 U	0.00201 U	0.00186 U	0.00199 U	NA
Aroclor 1268	NS	NS	0.00544 U	0.00592 U	0.00582 U	0.00575 U	0.00545 U	0.00587 U	0.00545 U	0.00582 U	NA
PCBs, Total	0.1	1	ND	ND	ND	ND	ND	ND	ND	ND	ND

Pesticides - mg/kg

4,4'-DDD	0.0033	13	0.000648 U	0.000709 U	0.0007 U	0.000678 U	0.000648 U	0.000691 U	0.000619 U	0.00069 U	0.042 U
4,4'-DDE	0.0033	8.9	0.00042 U	0.00046 U	0.000454 U	0.000439 U	0.00042 U	0.000448 U	0.000401 U	0.000447 U	0.042 U
4,4'-DDT	0.0033	7.9	0.00146 U	0.0016 U	0.00158 U	0.00153 U	0.00146 U	0.00156 U	0.0014 U	0.00156 U	0.042 U
Aldrin	0.005	0.097	0.00064 U	0.0007 U	0.000691 U	0.000669 U	0.000639 U	0.000682 U	0.000611 U	0.000681 U	0.021 U
Alpha-BHC	0.02	0.48	0.000215 U	0.000235 U	0.000232 U	0.000225 U	0.000215 U	0.000229 U	0.000205 U	0.000229 U	0.021 U
Beta-BHC	0.036	0.36	0.000689 U	0.000754 U	0.000744 U	0.00072 U	0.000688 U	0.000734 U	0.000658 U	0.000733 U	0.021 U
Chlordane	0.094	4.2	0.00602 U	0.00659 U	0.0065 U	0.00629 U	0.00602 U	0.00641 U	0.00575 U	0.00641 U	0.208 U
cis-Chlordane	0.094	4.2	0.000633 U	0.000693 U	0.000683 U	0.000662 U	0.000633 U	0.000674 U	0.000604 U	0.000674 U	NA
Delta-BHC	0.04	100	0.000356 U	0.000389 U	0.000384 U	0.000372 U	0.000356 U	0.000379 U	0.00034 U	0.000379 U	0.021 U
Dieldrin	0.005	0.2	0.000568 U	0.000622 U	0.000613 U	0.000594 U	0.000568 U	0.000605 U	0.000542 U	0.000604 U	0.042 U
Endosulfan I	2.4	24	0.000429 U	0.00047 U	0.000463 U	0.000449 U	0.000429 U	0.000457 U	0.00041 U	0.000457 U	0.021 U
Endosulfan II	2.4	24	0.000607 U	0.000665 U	0.000656 U	0.000635 U	0.000607 U	0.000647 U	0.00058 U	0.000646 U	0.042 U
Endosulfan sulfate	2.4	24	0.00036 U	0.000394 U	0.000389 U	0.000377 U	0.00036 U	0.000384 U	0.000344 U	0.000384 U	0.042 U
Endrin	0.014	11	0.00031 U	0.00034 U	0.000335 U	0.000324 U	0.00031 U	0.000331 U	0.000296 U	0.00033 U	0.042 U
Endrin ketone	NS	NS	0.000468 U	0.000512 U	0.000505 U	0.000489 U	0.000468 U	0.000498 U	0.000447 U	0.000498 U	0.042 U
Heptachlor	0.042	2.1	0.000407 U	0.000446 U	0.00044 U	0.000426 U	0.000407 U	0.000434 U	0.000389 U	0.000434 U	0.021 U
Heptachlor epoxide	NS	NS	0.00102 U	0.00112 U	0.0011 U	0.00107 U	0.00102 U	0.00109 U	0.000976 U	0.00109 U	0.021 U
Lindane	0.1	1.3	0.000338 U	0.00037 U	0.000365 U	0.000354 U	0.000338 U	0.000361 U	0.000323 U	0.00036 U	0.021 U
Methoxychlor	NS	NS	0.00106 U	0.00116 U	0.00114 U	0.00111 U	0.00106 U	0.00113 U	0.00101 U	0.00113 U	0.208 U
Toxaphene	NS	NS	0.00954 U	0.0104 U	0.0103 U	0.00997 U	0.00953 U	0.0102 U	0.00911 U	0.0102 U	NA
trans-Chlordane	NS	NS	0.0006 U	0.000656 U	0.000647 U	0.000627 U	0.000599 U	0.000639 U	0.000572 U	0.000638 U	0.021 U

Table 6
487 West 129th Street
New York, NY

Subsurface (Phase II) Investigation Groundwater Analytical Results
 Volatile Organic Compounds

Client ID	NYSDEC	GW-1	GW-2	GW-3	GW-4
Lab Sample ID	Class GA	L1423865-01	L1423865-02	L1423865-03	L1423865-04
Date Sampled	Ambient	10/8/2014	10/7/2014	10/8/2014	10/8/2014
Dilution	Standard	1	25	1	1
µg/L	µg/L				
1,1,1,2-Tetrachloroethane	5	0.7 U	18 U	0.7 U	0.7 U
1,1,1-Trichloroethane	5	0.7 U	18 U	0.7 U	0.7 U
1,1,2,2-Tetrachloroethane	5	0.14 U	3.6 U	0.14 U	0.14 U
1,1,2-Trichloroethane	1	0.5 U	12 U	0.5 U	0.5 U
1,1-Dichloroethane	5	0.7 U	18 U	0.7 U	0.7 U
1,1-Dichloroethene	5	0.14 U	3.6 U	0.14 U	0.14 U
1,1-Dichloropropene	5	0.7 U	18 U	0.7 U	0.7 U
1,2,3-Trichlorobenzene	5	0.7 U	18 U	0.7 U	0.7 U
1,2,3-Trichloropropane	0.04	0.7 U	18 U	0.7 U	0.7 U
1,2,4,5-Tetramethylbenzene	5	0.65 U	340	0.65 U	0.65 U
1,2,4-Trichlorobenzene	5	0.7 U	18 U	0.7 U	0.7 U
1,2,4-Trimethylbenzene	5	0.7 U	1,600	0.7 U	0.7 U
1,2-Dibromo-3-chloropropane	0.04	0.7 U	18 U	0.7 U	0.7 U
1,2-Dibromoethane	0.0006	0.65 U	16 U	0.65 U	0.65 U
1,2-Dichlorobenzene	3	0.7 U	18 U	0.7 U	0.7 U
1,2-Dichloroethane	0.6	0.13 U	3.3 U	0.13 U	0.13 U
1,2-Dichloroethene, Total	NS	1.6 J	18 U	0.94 J	20
1,2-Dichloropropane	1	0.13 U	3.3 U	0.13 U	0.13 U
1,3,5-Trimethylbenzene	5	0.7 U	410	0.7 U	0.7 U
1,3-Dichlorobenzene	3	0.7 U	18 U	0.7 U	0.7 U
1,3-Dichloropropane	5	0.7 U	18 U	0.7 U	0.7 U
1,3-Dichloropropene, Total	NS	0.14 U	3.6 U	0.14 U	0.14 U
1,4-Dichlorobenzene	3	0.7 U	18 U	0.7 U	0.7 U
1,4-Dioxane	NS	41 U	1,000 U	41 U	41 U
2,2-Dichloropropane	5	0.7 U	18 U	0.7 U	0.7 U
2-Butanone	50	1.9 U	48 U	1.9 U	1.9 U
2-Hexanone	50	1 U	25 U	1 U	1 U
4-Methyl-2-pentanone	NS	1 U	25 U	1 U	1 U
Acetone	50	1.5 U	36 U	1.5 U	1.5 U
Acrylonitrile	5	1.5 U	38 U	1.5 U	1.5 U
Benzene	1	0.16 U	4 U	0.16 U	0.16 U
Bromobenzene	5	0.7 U	18 U	0.7 U	0.7 U
Bromochloromethane	5	0.7 U	18 U	0.7 U	0.7 U
Bromodichloromethane	50	0.19 U	4.8 U	0.19 U	0.19 U
Bromoform	50	0.65 U	16 U	0.65 U	0.65 U
Bromomethane	5	0.7 U	18 U	0.7 U	0.7 U
Carbon disulfide	60	1 U	25 U	1 U	1 U
Carbon tetrachloride	5	0.13 U	3.4 U	0.13 U	0.13 U
Chlorobenzene	5	0.7 U	18 U	0.7 U	0.7 U
Chloroethane	5	0.7 U	18 U	0.7 U	0.7 U
Chloroform	7	0.7 U	18 U	0.7 U	0.7 U
Chloromethane	5	0.7 U	18 U	0.7 U	0.7 U
cis-1,2-Dichloroethene	5	1.6 J	18 U	0.94 J	20
cis-1,3-Dichloropropene	0.4	0.14 U	3.6 U	0.14 U	0.14 U
Dibromochloromethane	50	0.15 U	3.7 U	0.15 U	0.15 U
Dibromomethane	5	1 U	25 U	1 U	1 U
Dichlorodifluoromethane	5	1 U	25 U	1 U	1 U
Ethyl ether	NS	0.7 U	18 U	0.7 U	0.7 U
Ethylbenzene	5	0.7 U	300	0.7 U	0.7 U
Hexachlorobutadiene	0.5	0.7 U	18 U	0.7 U	0.7 U
Isopropylbenzene	5	0.7 U	120	0.7 U	0.7 U
Methyl tert butyl ether	10	0.7 U	18 U	0.7 U	0.7 U
Methylene chloride	5	0.7 U	18 U	0.7 U	0.7 U
Naphthalene	10	0.7 U	860	0.7 U	0.7 U
n-Butylbenzene	5	0.7 U	73	0.7 U	0.7 U
n-Propylbenzene	5	0.7 U	160	0.7 U	0.7 U
o-Chlorotoluene	5	0.7 U	18 U	0.7 U	0.7 U
o-Xylene	5	0.7 U	59 J	0.7 U	0.7 U
p/m-Xylene	5	0.7 U	800	0.7 U	0.7 U
p-Chlorotoluene	5	0.7 U	18 U	0.7 U	0.7 U
p-Diethylbenzene	NS	0.7 U	74	0.7 U	0.7 U
p-Ethyltoluene	NS	0.7 U	1,100	0.7 U	0.7 U
p-Isopropyltoluene	5	0.7 U	88	0.7 U	0.7 U
sec-Butylbenzene	5	0.7 U	18 U	0.7 U	0.7 U
Styrene	5	0.7 U	18 U	0.7 U	0.7 U
tert-Butylbenzene	5	0.7 U	18 U	0.7 U	0.7 U
Tetrachloroethene	5	0.82	4.5 U	0.58	11
Toluene	5	0.7 U	18 U	0.7 U	0.7 U
trans-1,2-Dichloroethene	5	0.7 U	18 U	0.7 U	0.7 U
trans-1,3-Dichloropropene	0.4	0.16 U	4.1 U	0.16 U	0.16 U
trans-1,4-Dichloro-2-butene	5	0.7 U	18 U	0.7 U	0.7 U
Trichloroethene	5	0.18 U	4.4 U	0.18 U	2.1
Trichlorofluoromethane	5	0.7 U	18 U	0.7 U	0.7 U
Vinyl acetate	NS	1 U	25 U	1 U	1 U
Vinyl chloride	2	0.33 U	8.2 U	0.33 U	1.9
Xylenes, Total	5	0.7 U	860 J	0.7 U	0.7 U

Table 7
487 West 129th Street
New York, NY

Subsurface (Phase II) Investigation Soil Analytical Results
Semivolatile Organic Compounds

Client ID	NYSDEC	GW-1	GW-2	GW-3	GW-4
Lab Sample ID	Class GA	L1423865-01	L1423865-02	L1423865-03	L1423865-04
Date Sampled	Ambient	10/8/2014	10/7/2014	10/8/2014	10/8/2014
Dilution	Standard	1	1/20 †	1	1
µg/L	µg/L				
1,2,4,5-Tetrachlorobenzene	5	0.36 U	0.36 U	0.36 U	0.36 U
1,2,4-Trichlorobenzene	5	0.21 U	0.21 U	0.21 U	0.21 U
1,2-Dichlorobenzene	3	0.3 U	0.3 U	0.3 U	0.3 U
1,3-Dichlorobenzene	3	0.35 U	0.35 U	0.35 U	0.35 U
1,4-Dichlorobenzene	3	0.32 U	0.32 U	0.32 U	0.32 U
2,4,5-Trichlorophenol	NS	0.75 U	0.75 U	0.75 U	0.75 U
2,4,6-Trichlorophenol	NS	0.78 U	0.78 U	0.78 U	0.78 U
2,4-Dichlorophenol	5	0.56 U	0.56 U	0.56 U	0.56 U
2,4-Dimethylphenol	50	0.58 U	0.58 U	0.58 U	0.58 U
2,4-Dinitrophenol	10	1.4 U	1.4 U	1.4 U	1.4 U
2,4-Dinitrotoluene	5	1 U	1 U	1 U	1 U
2,6-Dinitrotoluene	5	0.89 U	0.89 U	0.89 U	0.89 U
2-Chloronaphthalene	10	0.07 U	0.07 U	0.07 U	0.07 U
2-Chlorophenol	NS	0.58 U	0.58 U	0.58 U	0.58 U
2-Methylnaphthalene	NS	0.08 J	71	0.1 J	0.06 U
2-Methylphenol	NS	0.7 U	0.7 U	0.7 U	0.7 U
2-Nitroaniline	5	0.96 U	0.96 U	0.96 U	0.96 U
2-Nitrophenol	NS	1 U	1 U	1 U	1 U
3,3'-Dichlorobenzidine	5	0.48 U	0.48 U	0.48 U	0.48 U
3-Methylphenol/4-Methylphenol	NS	0.72 U	0.72 U	0.72 U	0.72 U
3-Nitroaniline	5	0.67 U	0.67 U	0.67 U	0.67 U
4,6-Dinitro-o-cresol	NS	1.4 U	1.4 U	1.4 U	1.4 U
4-Bromophenyl phenyl ether	NS	0.43 U	0.43 U	0.43 U	0.43 U
4-Chloroaniline	5	0.84 U	0.84 U	0.84 U	0.84 U
4-Chlorophenyl phenyl ether	NS	0.36 U	0.36 U	0.36 U	0.36 U
4-Nitroaniline	5	0.83 U	0.83 U	0.83 U	0.83 U
4-Nitrophenol	NS	1.1 U	1.1 U	1.1 U	1.1 U
Acenaphthene	20	0.2	0.43	0.06 U	0.06 U
Acenaphthylene	NS	0.05 U	0.05 U	0.05 U	0.05 U
Acetophenone	NS	0.43 U	0.43 U	0.43 U	0.43 U
Anthracene	50	0.1 J	0.35	0.06 U	0.06 U
Benzo(a)anthracene	0.002	0.07 J	0.24	0.1 J	0.06 U
Benzo(a)pyrene	ND	0.18 J	0.27	0.2	0.07 U
Benzo(b)fluoranthene	0.002	0.07 U	0.23	0.11 J	0.07 U
Benzo(ghi)perylene	NS	0.07 U	0.13 J	0.07 U	0.07 U
Benzo(k)fluoranthene	0.002	0.07 U	0.1 J	0.07 U	0.07 U
Benzoic Acid	NS	1.9 J	1 U	2.2 J	1.7 J
Benzyl Alcohol	NS	0.68 U	0.68 U	0.68 U	0.68 U
Biphenyl	5	0.24 U	1.9 J	0.24 U	0.24 U
Bis(2-chloroethoxy)methane	5	0.6 U	0.6 U	0.6 U	0.6 U
Bis(2-chloroethyl)ether	1	0.41 U	0.41 U	0.41 U	0.41 U
Bis(2-chloroisopropyl)ether	NS	0.6 U	0.6 U	0.6 U	0.6 U
Bis(2-Ethylhexyl)phthalate	5	0.93 U	0.93 U	2.5 J	1.5 J
Butyl benzyl phthalate	50	1.1 U	1.1 U	1.1 U	1.1 U
Carbazole	NS	0.37 U	0.37 U	0.37 U	0.37 U
Chrysene	0.002	0.06 J	0.23	0.09 J	0.05 U
Dibenzo(a,h)anthracene	NS	0.07 U	0.07 U	0.07 U	0.07 U
Dibenzofuran	NS	0.22 U	0.22 U	0.22 U	0.22 U
Diethyl phthalate	50	0.39 U	0.39 U	0.39 U	0.39 U
Dimethyl phthalate	50	0.33 U	0.33 U	0.33 U	0.33 U
Di-n-butylphthalate	50	0.77 U	0.77 U	0.77 U	0.77 U
Di-n-octylphthalate	50	1.2 U	1.2 U	1.2 U	1.2 U
Fluoranthene	50	0.25	0.77	0.24	0.04 U
Fluorene	50	0.11 J	0.6	0.06 J	0.06 U
Hexachlorobenzene	0.04	0.01 U	0.01 U	0.01 U	0.01 U
Hexachlorobutadiene	0.5	0.07 U	0.07 U	0.07 U	0.07 U
Hexachlorocyclopentadiene	5	0.58 U	0.58 U	0.58 U	0.58 U
Hexachloroethane	5	0.07 U	0.07 U	0.07 U	0.07 U
Indeno(1,2,3-cd)Pyrene	0.002	0.08 U	0.09 J	0.08 U	0.08 U
Isophorone	50	0.79 U	0.79 U	0.79 U	0.79 U
Naphthalene	10	0.34	330	0.28	0.1 J
Nitrobenzene	0.4	0.4 U	0.4 U	0.4 U	0.4 U
NitrosoDiPhenylAmine(NDPA)/DPA	50	0.34 U	0.34 U	0.34 U	0.34 U
n-Nitrosodi-n-propylamine	NS	0.64 U	0.64 U	0.64 U	0.64 U
P-Chloro-M-Cresol	NS	0.54 U	0.54 U	0.54 U	0.54 U
Pentachlorophenol	NS	0.19 U	0.19 U	0.19 U	0.19 U
Phenanthrene	50	0.5	1.3	0.37	0.06 U
Phenol	NS	0.27 U	0.27 U	0.27 U	0.27 U
Pyrene	50	0.2	0.69	0.16 J	0.06 U

Note: † = The dilution factor varies.

Table 8
487 West 129th Street
New York, NY

Subsurface (Phase II) Investigation Groundwater Analytical Results
Metals - Total & Dissolved

Client ID	NYSDEC	GW-1	GW-2	GW-3	GW-4
Lab Sample ID	Class GA	L1423865-01	L1423865-02	L1423865-03	L1423865-04
Date Sampled	Ambient	10/8/2014	10/7/2014	10/8/2014	10/8/2014
Dilution	Standard	1/20/200 †	1/20/100 †	1/20/100 †	1/20/100 †
Total Metals - µg/L	µg/L				
Aluminum	NS	22,100	37,800	20,300	48,400
Antimony	3	0.6 J	0.6 J	0.2 J	0.4 J
Arsenic	25	13.2	57.6	22.1	29.8
Barium	1,000	471.8	1,179	429.7	1,549
Beryllium	3	4	8.7	6.5	19.8
Cadmium	5	0.8	0.7	1.6	15.1
Calcium	NS	133,000	263,000	206,000	171,000
Chromium	50	107.4	99.7	113.1	180.8
Cobalt	NS	42.7	119.3	25.8	96.4
Copper	200	120.9	91	92.5	533.6
Iron	300	46,600	427,000	79,200	119,000
Lead	25	129.9	247.3	33.3	29.3
Magnesium	35,000	34,500	28,300	64,000	53,000
Manganese	300	3,741	16,770	5,939	28,260
Mercury	0.7	0.09 J	0.33	0.07 J	0.1 J
Nickel	100	95.2	103.5	200.6	731
Potassium	NS	12,600	33,300	20,800	17,100
Selenium	10	21	89	28	64
Silver	50	0.1 U	0.1 J	0.1 U	0.3
Sodium	20,000	210,000	17,600	321,000	150,000
Thallium	0.5	0.3	0.2	0.1 J	0.3
Vanadium	NS	76.9	135.8	74.8	68.8
Zinc	2,000	94.7	357.1	163.2	751.1

Dissolved Metals - µg/L

Aluminum	NS	21.4	21.1	2.69 J	189
Antimony	3	4.37	2.41 J	1.47 J	1.06 J
Arsenic	25	0.24 J	2.98	0.15 J	0.34 J
Barium	1,000	76.5	65.08	58.03	29.42
Beryllium	3	0.15 U	0.15 U	0.15 U	0.15 U
Cadmium	5	0.05 U	0.05 U	0.17 J	0.28
Calcium	NS	116,000	133,000	186,000	124,000
Chromium	50	0.69 J	0.7 J	0.84 J	1.75
Cobalt	NS	0.67	1.57	0.97	1.5
Copper	200	1.12	1.28	0.62 J	2.32
Iron	300	34.9 J	198	42.4 J	891
Lead	25	0.12 U	1.61	0.12 U	0.26 J
Magnesium	35,000	23,200	10,800	28,000	33,600
Manganese	300	67.92	1,115	209.5	551.2
Mercury	0.7	0.06 U	0.06 U	0.06 U	0.06 U
Nickel	100	3.37	1.54	9.48	11.51
Potassium	NS	12,200	20,600	16,800	13,200
Selenium	10	4.35 J	1 U	4.58 J	1.04 J
Silver	50	0.07 U	0.18 J	0.07 U	0.07 U
Sodium	20,000	164,000	13,200	318,000	164,000
Thallium	0.5	0.05 U	0.05 U	0.05 U	0.05 U
Vanadium	NS	0.55 U	0.55 U	0.55 U	0.86 J
Zinc	2,000	2.56 U	2.56 U	2.9 J	2.87 J

Note: † = Dilution factor varies.

Table 9
487 West 129th Street
New York, NY

Subsurface (Phase II) Investigation Groundwater Analytical Results
Polychlorinated Biphenyls & Pesticides

Client ID Lab Sample ID Date Sampled	NYSDEC Class GA Ambient Standard	GW-1 L1423865-01 10/8/2014	GW-2 L1423865-02 10/7/2014	GW-3 L1423865-03 10/8/2014	GW-4 L1423865-04 10/8/2014
Polychlorinated Biphenyls - µg/L	µg/L				
Aroclor 1016	NS	0.066 U	0.077 U	0.066 U	0.078 U
Aroclor 1221	NS	0.064 U	0.074 U	0.064 U	0.075 U
Aroclor 1232	NS	0.037 U	0.043 U	0.037 U	0.044 U
Aroclor 1242	NS	0.072 U	0.084 U	0.072 U	0.085 U
Aroclor 1248	NS	0.061 U	0.071 U	0.061 U	0.072 U
Aroclor 1254	NS	0.041 U	0.048 U	0.041 U	0.048 U
Aroclor 1260	NS	0.038 U	0.044 U	0.038 U	0.045 U
Aroclor 1262	NS	0.035 U	0.041 U	0.035 U	0.041 U
Aroclor 1268	NS	0.045 U	0.052 U	0.045 U	0.053 U
PCBs, Total	0.09	ND	ND	ND	ND

Pesticides - µg/L

4,4'-DDD	0.3	0.005 U	0.005 U	0.005 U	0.005 U
4,4'-DDE	0.2	0.004 U	0.004 U	0.004 U	0.004 U
4,4'-DDT	0.2	0.004 U	0.004 U	0.004 U	0.004 U
Aldrin	ND	0.002 U	0.002 U	0.002 U	0.002 U
Alpha-BHC	0.01	0.004 U	0.004 U	0.004 U	0.004 U
Beta-BHC	0.04	0.006 U	0.006 U	0.006 U	0.006 U
Chlordane	0.05	0.046 U	0.046 U	0.046 U	0.046 U
cis-Chlordane	0.05	0.007 U	0.007 U	0.007 U	0.007 U
Delta-BHC	0.04	0.005 U	0.005 U	0.005 U	0.005 U
Dieldrin	0.004	0.004 U	0.004 U	0.004 U	0.004 U
Endosulfan I	NS	0.003 U	0.003 U	0.003 U	0.003 U
Endosulfan II	NS	0.005 U	0.005 U	0.005 U	0.005 U
Endosulfan sulfate	NS	0.005 U	0.005 U	0.005 U	0.005 U
Endrin	ND	0.004 U	0.004 U	0.004 U	0.004 U
Endrin ketone	5	0.005 U	0.005 U	0.005 U	0.005 U
Heptachlor	0.04	0.003 U	0.003 U	0.003 U	0.003 U
Heptachlor epoxide	0.03	0.004 U	0.004 U	0.004 U	0.004 U
Lindane	0.05	0.004 U	0.004 U	0.004 U	0.004 U
Methoxychlor	35	0.007 U	0.007 U	0.007 U	0.007 U
Toxaphene	0.06	0.063 U	0.063 U	0.063 U	0.063 U
trans-Chlordane	0.05	0.006 U	0.006 U	0.006 U	0.006 U

Table 10
487 West 129th Street
New York, NY

Subsurface (Phase II) Investigation Soil Vapor Analytical Results
Volatile Organic Compounds

Client ID	NYSDOH Soil Vapor Intrusion Air Guideline Value µg/m ³	NYSDOH 2003 Soil Vapor Indoor Upper Fence µg/m ³	EPA 2001 BASE 90th percentile Indoor µg/m ³	NYSDOH 2005 HEI RIOPA 95th percentile Indoor µg/m ³	SV-1 L1424052-01 10/8/2014 2	SV-2 L1424052-02 10/7/2014 10	SV-3 L1424052-03 10/8/2014 1	SV-4 L1424052-04 10/8/2014 1	SV-5 L1424052-05 10/8/2014 1
1,1,1-Trichloroethane	NS	2.5	20.6	NS	2.18 U	10.9 U	1.09 U	1.09 U	1.09 U
1,1,2,2-Tetrachloroethane	NS	0.4	NS	NS	2.75 U	13.7 U	1.37 U	1.37 U	1.37 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	NS	2.5	3.5	NS	3.07 U	15.3 U	1.53 U	1.53 U	1.53 U
1,1,2-Trichloroethane	NS	0.4	<1.5	NS	2.18 U	10.9 U	1.09 U	1.09 U	1.09 U
1,1-Dichloroethane	NS	0.4	<0.7	NS	1.62 U	8.09 U	0.809 U	0.809 U	0.809 U
1,1-Dichloroethene	NS	0.4	<1.4	NS	1.59 U	7.93 U	0.793 U	0.793 U	0.793 U
1,2,4-Trichlorobenzene	NS	0.5	<6.8	NS	2.97 U	14.8 U	1.48 U	1.48 U	1.48 U
1,2,4-Trimethylbenzene	NS	9.8	9.5	NS	17.2	42.1	19.7	17.9	21.5
1,2-Dibromoethane	NS	0.4	<1.5	NS	3.07 U	15.4 U	1.54 U	1.54 U	1.54 U
1,2-Dichloro-1,1,2,2-tetrafluoroethane	NS	0.4	NS	NS	2.8 U	14 U	1.4 U	1.4 U	1.4 U
1,2-Dichlorobenzene	NS	0.5	<1.2	NS	2.4 U	12 U	1.2 U	1.2 U	1.2 U
1,2-Dichloroethane	NS	0.4	<0.9	NS	1.62 U	8.09 U	0.809 U	0.809 U	0.809 U
1,2-Dichloropropane	NS	0.4	<1.6	NS	1.85 U	9.24 U	0.924 U	0.924 U	0.924 U
1,3,5-Trimethylbenzene	NS	3.9	3.7	NS	5.36	28.8	5.6	4.66	6.49
1,3-Butadiene	NS	0.5	<3.0	NS	17.6	4.42 U	8.45	1.56	28.1
1,3-Dichlorobenzene	NS	0.5	<2.4	NS	2.4 U	12 U	1.2 U	1.2 U	1.2 U
1,4-Dichlorobenzene	NS	1.2	5.5	344	2.4 U	12 U	1.2 U	1.2 U	1.2 U
1,4-Dioxane	NS	NS	NS	NS	1.44 U	7.21 U	0.721 U	0.721 U	0.721 U
2,2,4-Trimethylpentane	NS	5	NS	NS	1.87 U	9.34 U	0.934 U	3.76	0.934 U
2-Butanone	NS	16	12	NS	15.2	13.2	14.5	7.96	20.7
2-Hexanone	NS	NS	NS	NS	1.64 U	8.2 U	0.82 U	0.82 U	0.82 U
3-Chloropropene	NS	NS	NS	NS	1.25 U	6.26 U	0.626 U	0.626 U	0.626 U
4-Ethyltoluene	NS	NS	3.6	NS	5.85	17.1	6.39	5.56	6.49
4-Methyl-2-pentanone	NS	1.9	6	NS	1.64 U	8.2 U	0.82 U	0.82 U	0.82 U
Acetone	NS	115	98.9	45.8	14.9	23.8 U	109	140	143
Benzene	NS	13	9.4	10	18.5	81.1	11	5.21	16.2
Benzyl chloride	NS	NS	<6.8	NS	2.07 U	10.4 U	1.04 U	1.04 U	1.04 U
Bromodichloromethane	NS	NS	NS	NS	2.68 U	13.4 U	1.34 U	1.34 U	1.34 U
Bromoform	NS	NS	NS	NS	4.14 U	20.7 U	2.07 U	2.07 U	2.07 U
Bromomethane	NS	0.5	<1.7	NS	1.55 U	7.77 U	0.777 U	0.777 U	0.777 U
Carbon disulfide	NS	NS	4.2	NS	110	10.6	10.2	6.63	16.8
Carbon tetrachloride	NS	1.3	<1.3	1.1	2.52 U	12.6 U	1.26 U	1.26 U	1.26 U
Chlorobenzene	NS	0.4	<0.9	NS	1.84 U	9.21 U	0.921 U	0.921 U	0.921 U
Chloroethane	NS	0.4	<1.1	NS	1.06 U	5.28 U	0.528 U	0.528 U	0.528 U
Chloroform	NS	1.2	1.1	6.34	5.32	9.77 U	2.89	1.37	2.03
Chloromethane	NS	4.2	3.7	NS	0.826 U	4.13 U	2.29	4.52	1.06
cis-1,2-Dichloroethene	NS	0.4	<1.9	NS	1.59 U	7.93 U	0.793 U	0.793 U	3.91
cis-1,3-Dichloropropene	NS	0.4	<2.3	NS	1.82 U	9.08 U	0.908 U	0.908 U	0.908 U
Cyclohexane	NS	6.3	NS	NS	7.61	967	23.8	3.24	11.5
Dibromochloromethane	NS	NS	NS	NS	3.41 U	17 U	1.7 U	1.7 U	1.7 U
Dichlorodifluoromethane	NS	10	16.5	NS	1.98 U	9.89 U	1.84	1.28	1.15
Ethyl Acetate	NS	NS	5.4	NS	3.6 U	18 U	1.8 U	1.8 U	1.8 U
Ethyl Alcohol	NS	1,300	210	NS	10.1	47.1 U	13.8	7.05	15.3
Ethylbenzene	NS	6.4	5.7	7.62	22.5	37.1	19.2	16	23.7
Heptane	NS	18	NS	NS	75.8	3,640	66	17.9	75.4
Hexachlorobutadiene	NS	0.5	<6.8	NS	4.27 U	21.3 U	2.13 U	2.13 U	2.13 U
iso-Propyl Alcohol	NS	NS	NS	NS	2.46 U	12.3 U	2.34	1.77	2.51
Methyl tert butyl ether	NS	14	11.5	36	1.44 U	7.21 U	0.721 U	0.721 U	0.721 U
Methylene chloride	60	16	10	7.5	3.47 U	17.4 U	3.26	1.74 U	1.74 U
n-Hexane	NS	14	10.2	NS	150	1,180	56.4	14	44.4
o-Xylene	NS	7.1	7.9	7.24	27.1	69.5	25.2	20.5	27.2
p/m-Xylene	NS	11	22.2	22.2	76.9	166	70.4	57.3	73.4
Styrene	NS	1.4	1.9	5.13	1.7 U	8.52 U	0.852 U	0.852 U	1.22
tert-Butyl Alcohol	NS	NS	NS	6.01	3.03 U	15.2 U	5.67	2.38	6
Tetrachloroethene	30	2.5	15.9	NS	2.71 U	13.6 U	1.76	1.36 U	16.3
Tetrahydrofuran	NS	0.8	NS	39.8	1.18 U	5.9 U	0.885	0.59 U	1.73
Toluene	NS	57	43	NS	89.3	114	69.7	61	75.4
trans-1,2-Dichloroethene	NS	NS	NS	NS	1.59 U	7.93 U	0.793 U	0.793 U	0.793 U
trans-1,3-Dichloropropene	NS	NC	<1.3	1.36	1.82 U	9.08 U	0.908 U	0.908 U	0.908 U
Trichloroethene	5	0.5	4.2	NS	2.15 U	10.7 U	1.07 U	1.07 U	3.47
Trichlorofluoromethane	NS	12	18.1	NS	2.25 U	11.2 U	1.12 U	1.12 U	1.43
Vinyl bromide	NS	NS	NS	NS	1.75 U	8.74 U	0.874 U	0.874 U	0.874 U
Vinyl chloride	NS	0.4	<1.9	NS	1.02 U	5.11 U	0.511 U	0.877	0.511 U

Tables 2-10
487 West 129th Street
New York, NY

Subsurface (Phase II) Investigation Analytical Results
Notes

GENERAL

- NS** : No cleanup objective listed.
- ND** : No detect.
- NA** : Not analyzed.
- U** : The analyte was not detected at the indicated concentration.
- J** : The concentration given is an estimated value.

FB, TB : Field blank, trip blank (aqueous matrix)

SOIL

Exceedences of Part 375 Unrestricted Soil Cleanup Objectives are highlighted in bold font.

Exceedences of Part 375 Restricted Residential Soil Cleanup Objectives are highlighted in gray.

Part 375 Soil Cleanup Objectives : Soil Clean-up Objectives listed in NYSDEC (New York State Department of Environmental Conservation) "Part 375" Regulations (6 NYCRR Part 375).

mg/kg : milligrams per kilogram = parts per million (ppm)

GROUNDWATER

Exceedences of NYSDEC Class GA Ambient Standard are highlighted in bold font.

NYSDEC Class GA Ambient Standard : New York State Department of Environmental Conservation Technical and Operational Guidance Series (1.1.1): Class GA Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

µg/L : micrograms per Liter = parts per billion (ppb)

SOIL VAPOR

NYSDOH Soil Vapor Intrusion Air Guidance Value : NYSDOH Air Guideline Values (AGVs) presented in the Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, dated October 2006 ("NYSDOH Vapor Intrusion Guidance Document").

NYSDOH 2003 Soil Vapor Upper Fence : Upper fence indoor air values from "Table C1. NYSDOH 2003: Study of Volatile Organic Chemicals in Air of Fuel Oil Heated Homes", published in the NYSDOH Soil Vapor Intrusion Guidance Document, Appendix C" (October 2006).

EPA 2001 BASE 90th percentile : 90th Percentile indoor air values from "Table C-2. EPA 2001: Building Assessment and Survey Evaluation (BASE) Database, SUMMA canister method", published in the NYSDOH Soil Vapor Intrusion Guidance Document, Appendix C" (October 2006).

HEI RIOPA 2005 95th percentile : 95th Percentile Indoor Air Values from Table C-5, Health Effects Institute (HEI) 2005: Relationship of Indoor, Outdoor and Personal Air, published in the NYSDOH Soil Vapor Intrusion Guidance Document, Appendix C" (October 2006).

µg/m³ : micrograms per cubic meter of air

APPENDIX 1

CITIZEN PARTICIPATION PLAN

The NYC Office of Environmental Remediation (OER) and Inner City Contracting LLC have established this Citizen Participation Plan because the opportunity for citizen participation is an important component of the NYC Voluntary Cleanup Program (NYC VCP). 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, Inner City Contracting LLC will maintain a repository for project documents and provide public notice at specified times throughout the remedial program. This Plan also takes into account potential environmental justice concerns in the community that surrounds the 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 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, Hannah Moore, who can be contacted about these issues or any others questions, comments or concerns that arise during the remedial process at (212) 442-6372.

Project Contact List. OER has established a Site Contact List for this project to provide public notices in the form of fact sheets to interested members of the Community. Communications will include updates on important information relating to the progress of the cleanup program at the Site as well as to request public comments on the cleanup plan. The Project Contact List includes owners and occupants of adjacent buildings and homes, principal administrators of nearby schools, hospitals and day care centers, the public water supplier that serves the area, established document repositories, the representative Community Board, City Council members, other elected representatives and any local Brownfield Opportunity Area (BOA) grantee organizations. Any member of the public or organization will be added to the Site Contact List on request. A copy of the Site Contact List is maintained by OER's project manager. If you would like to be added to the Project Contact List, contact NYC OER at (212) 788-8841 or by email at brownfields@cityhall.nyc.gov.

Repositories. A document repository is maintained in the nearest public library that maintains evening and weekend hours. This document repository is intended to house, for community review, all principal documents generated during the cleanup program including Remedial Investigation plans and reports, Remedial Action work plans and reports, and all public notices and fact sheets produced during the lifetime of the remedial project. Inner City Contracting LLC will inspect the repositories to ensure that they are fully populated with project information. The repository for this project is:

New York Public Library, George Bruce Branch
518 West 125th Street, New York, NY
212-662-9727

Hours of Operation:	Monday	12 PM – 7 PM
	Tuesday	11 AM – 6 PM
	Wednesday	12 PM – 7 PM
	Thursday	11 AM – 6 PM
	Friday	11 AM – 5 PM
	Saturday	10 AM – 5 PM
	Sunday	Closed

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

Public Notice and Public Comment. Public notice to all members of the Project Contact List is required at three major steps during the performance of the cleanup program (listed below) and at other points that may be required by OER. Notices will include Fact Sheets with descriptive project summaries, updates on recent and upcoming project activities, repository information, and important phone and email contact information. All notices will be prepared by Inner City Contracting LLC, reviewed and approved by OER prior to distribution, and mailed by Inner City Contracting LLC. Public comment is solicited in public notices for all work plans developed under the NYC Voluntary Cleanup Program. Final review of all work plans by OER will consider all public comments. Approval will not be granted until the public comment period has been completed.

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

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

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

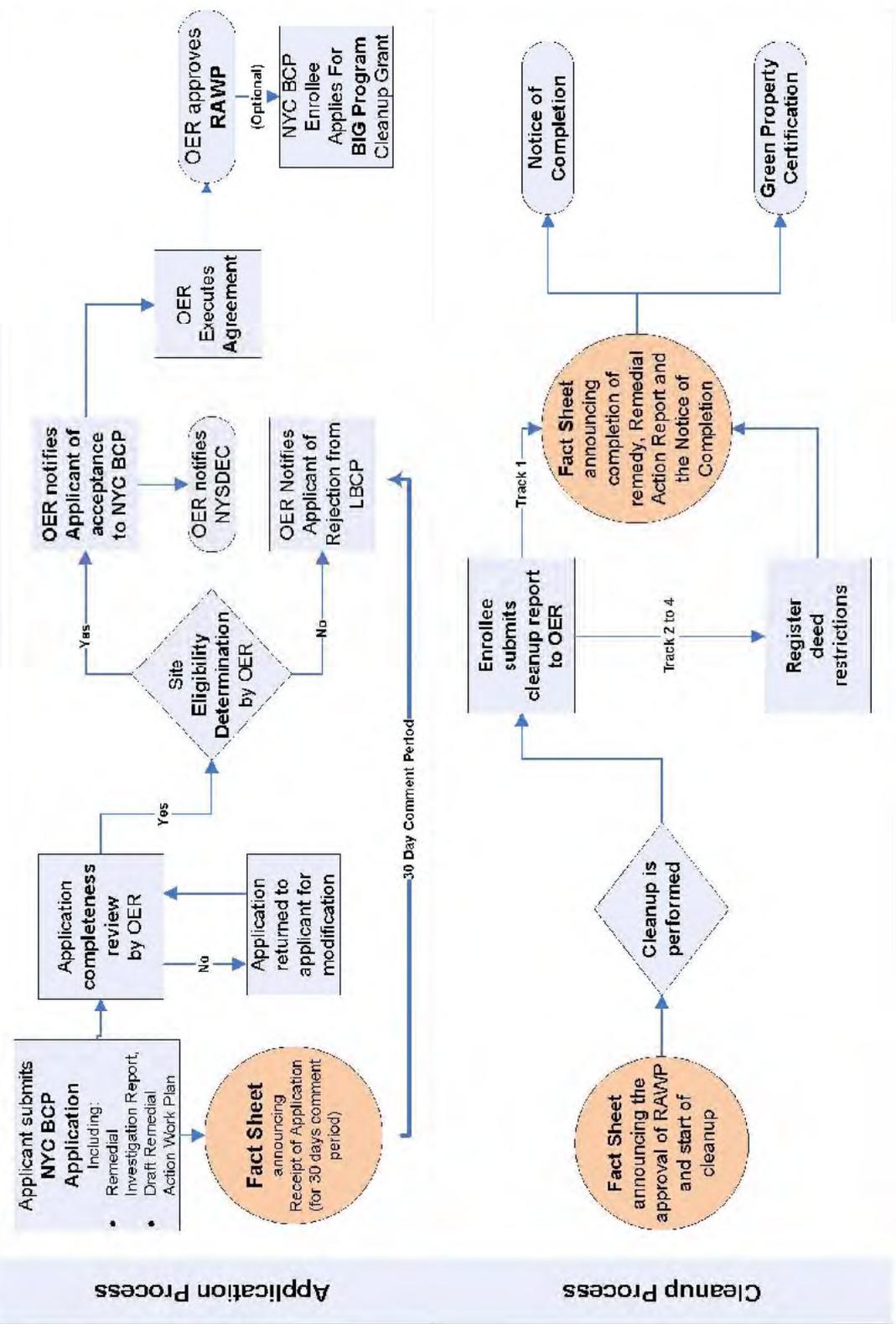
- **Public Notice announcing the approval of the RAWP and the start of remediation**

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

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

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

Flow Chart For NYC Brownfield Cleanup Program (NYC BCP)



APPENDIX 2

SUSTAINABILITY STATEMENT

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

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

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

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

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

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

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

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

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

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

Measures to limit the potential for recontamination include removal of all fill materials or (if Track 1 is not achieved) capping of residual fill materials with building foundations, and the use of a vapor barrier to limit the migration of soil vapor contamination. 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 storm-water and sewer discharges to NYC's sewage treatment plants during periods of precipitation, and reduces the volume of untreated influent to local surface waters.

An estimate of the enhanced 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 Brownfield Cleanup Program. Inner City Contracting LLC is participating in OER's Paperless Brownfield Cleanup Program. Under this program, submission of electronic documents will replace submission of hard copies for the review of project documents, communications and milestone reports.

Low-Energy Project Management Program. Inner City Contracting LLC is participating in OER's low-energy project management program. Under this program, whenever possible,

meetings are held using remote communication technologies, such as videoconferencing and teleconferencing to reduce energy consumption and traffic congestion associated with personal transportation.

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

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

APPENDIX 3

SOIL/MATERIALS MANAGEMENT PLAN

1.1 SOIL SCREENING METHODS

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

1.2 STOCKPILE METHODS

Excavated soil from known and 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 soil 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 soil and other materials shall be located at least of 50 feet from the Site 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 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. Soil proposed for reuse on-site will be managed as defined in this plan.

1.4 MATERIALS EXCAVATION, LOAD-OUT AND DEPARTURE

The PE/QEP overseeing the remedial action will:

- Oversee remedial work and the excavation and load-out of excavated material;
- Ensure that there is a party responsible for the safe execution of invasive and other work performed under this work plan;
- Ensure that Site development activities and development-related grading cuts will not interfere with, or otherwise impair or compromise the remedial activities proposed in this RAP;
- Ensure that the presence of utilities and easements on the Site has been investigated and that any identified risks from work proposed under this plan are properly addressed by appropriate parties;
- Ensure that all loaded outbound trucks are inspected and cleaned if necessary before leaving the Site; and
- 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 to minimize off-site disturbance. Off-site queuing will be minimized.

Outbound truck transport routes are in Section 5.8 of the RAWP. 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 Site.

1.6 MATERIALS DISPOSAL OFF-SITE

The following documentation will be established and reported by the P.E./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 P.E./QEP or Applicant to each disposal facility describing the material to be disposed and requesting written acceptance of the material. This letter will state that material to be disposed is regulated material generated at an environmental remediation site in New York under a governmental remediation program. The letter will provide the project identity and the name and phone number of the P.E./QEP or Applicant. The letter will include as an attachment a summary of all chemical data for the material being transported; and (2) a letter from each disposal facility stating it is in receipt of the correspondence (1, above) and is approved to accept the material. These documents will be included in the RCR.

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

All contaminated 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 soil taken off-Site will be handled as solid waste and will not be disposed at a Part 360-16 Registration Facility (also known as a Soil Recycling Facility).

Waste characterization will be performed for off-site disposal in a manner required by the receiving facility and in conformance with its applicable permits. Waste characterization sampling and analytical methods, sampling frequency, analytical results and QA/QC will be reported in the RCR. A manifest system for off-site transportation of exported materials will be employed. Manifest information will be reported in the RCR. Any hazardous wastes derived on-

site will be stored, transported, and disposed of in compliance with applicable laws and regulations.

1.7 MATERIALS REUSE ON-SITE

Soil and fill that is derived from the Site that does not exhibit evidence of contamination, and meets Track 1 SCOs, may be reused on-site beneath the building foundations. “Reuse on-site” means material that is excavated during the remedy or development, does not leave the Site, and is relocated within the same property and on comparable soil/fill material, and addressed pursuant to the Engineering Controls. The PE/QEP will ensure that reused materials are segregated from other materials to be exported from the Site and that procedures defined for material reuse in this RAP are followed.

Unless it exhibits evidence of contamination (e.g., odors, staining and/or elevated PID readings), native soil relocated during foundation construction will be reused on-site without additional testing, and will be capped by the buildings’ concrete foundations. Grossly contaminated soil, soil exhibiting evidence of contamination, and organic matter (wood, roots, stumps, etc.) will not be reused 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 any landscaping.

1.8 DEMARCATION

The new foundation slabs will act as the demarcation layer over the entire Site. The proposed excavation is anticipated to remove the petroleum-contaminated hotspot and extend beyond the fill layer into native soil, which may be considered uncontaminated depending on the findings of endpoint sampling.

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. Of note, the Site cap is not anticipated to include a soil component; although the on-site outdoor plaza may include landscaping, any such landscaping would be located above the garage level occupying the entire Site, and thus above the Site cap. Any soil imported as backfill or part of the Site cap will meet OER-approved

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

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

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

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

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

Source Screening and Testing

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

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

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

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

1.10 FLUIDS MANAGEMENT

All liquids to be removed from the Site, including dewatering fluids, will be handled, transported and disposed in accordance with applicable laws and regulations. Liquids discharged into the New York City sewer system will receive prior approval by New York City Department of Environmental Protection (DEP). The 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. Any groundwater exhibiting evidence of petroleum contamination (e.g., odor, sheen, and/or laboratory analytical data confirming contamination) will be properly pre-treated prior to discharge or otherwise properly removed in accordance with the applicable regulations (i.e., using a vacuum truck for a small quantity of contaminated water).

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 RAWP (silt fences and barriers, and hay bale checks) will be installed as necessary around the entire perimeter of the remedial construction area and inspected once a week and after every storm event to ensure that they are operating appropriately. Discharge locations will be inspected to determine whether erosion control measures are effective in preventing significant impacts to receptors. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by OER. All necessary repairs shall be made immediately. Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.

Undercutting or erosion of the silt fence toe anchor will be repaired immediately with appropriate backfill materials. Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

1.12 CONTINGENCY PLAN

This contingency plan is developed for the remedial construction to address the discovery of unknown structures or contaminated media during excavation. Identification of unknown contamination source areas during invasive Site work will be promptly communicated to OER's Project Manager. Any additional petroleum spills will be reported to the NYSDEC 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 soil and reported to OER. Chemical analytical testing will be performed for Full List volatiles and semi-volatiles, pesticides/PCBs, and TAL metals, as appropriate.

1.13 ODOR, DUST AND NUISANCE CONTROL

Odor Control

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

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

Dust Control

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

- Use of a dedicated water spray methodology for roads, excavation areas and stockpiles.
- Use of properly anchored tarps to cover stockpiles.
- Exercising extra care during dry and high-wind periods.
- Use of gravel or RCA 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 dust 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 P.E./QEP's responsible for certifying the Remedial Closure Report.

Other Nuisances

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

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

1.14 Import of Clean Cover

The entire Site is anticipated to be capped by concrete building foundations, and no soil is anticipated to be imported to the Site for use as clean cover. Although the on-site outdoor plaza may include landscaping, any such landscaping would be located above the garage level occupying the entire Site, and thus above the Site cap. If applicable, any soil imported as part of the Site cap will be uncontaminated, clean soil that meets the lesser of the appropriate NYSDEC 6 NYCRR Part 375-6.8(a) RRSCOs and the NYSDEC 6 NYCRR Part 375-6.8 Groundwater Protection SCOs.

The imported uncontaminated, clean soil cover will be from an approved source/facility and will be evaluated by the PE/QEP to ensure:

- 1) That a segregated stockpile for the required soil volume is properly maintained at the source and will not be comingled with any other material prior to importing and grading the clean soil material at the Site;
- 2) That the material does not include any solid waste, including construction and demolition material, as it's prohibited;
- 3) That screening for evidence of contamination by visual, olfactory and PID soil screening practices prior to testing at the source as well as upon importing to the Site for grading is completed; and
- 4) That a maximum five-part composite sample will be collected from the segregated stockpile at the source at a minimum frequency of one sample per 500 cubic yards and analyzed for the following Full List parameters:

VOCs by EPA Method 8260C (rev. 2006)

SVOCs by EPA Method 8270D (rev. 2007)

Pesticides by EPA Method 8081B (rev. 2000)

PCBs by EPA Method 8082A (rev. 2000)

TAL Metals by EPA Method 6010C (rev. 2007)

Upon receipt of the segregated stockpile analytical results collected at the source, a Clean Soil Sampling Report will be submitted to OER for review/approval prior to importing. The report will include the following:

- 1) Summary of number of samples collected and analyzed, tabulated data and comparison to the selected Site Use SCOs;
- 2) Analytical data sheets and chain of custody documentation;
- 3) Summary of soil volume to be imported;
- 4) Photographs from the segregated stockpile at the source with sample point locations identified;
- 5) An affidavit from the source/facility on company letterhead stating that the segregated stockpile for the soil volume to be imported has been properly maintained at the source and complies with the requirements listed above; and
- 6) A copy of the source/facility NYSDEC permit.

A highly visible demarcation barrier (i.e., orange geo-synthetic material or equivalent) will be installed beneath the clean soil/fill surface cover. Upon importing and grading the OER approved clean soil cover for the required soil volume on top of a highly visible demarcation barrier, the following documentation will be presented in the RCR:

1. Copies of purchase invoices;
2. Truck transportation slips from the source to the Site;
3. Confirmation of the volume of OER-approved clean soil cover material imported and graded at the site on top of highly visible demarcation barrier;
4. A Site plan depicting all areas where the OER-approved clean soil cover has been placed;
and
5. Photographs documenting the importing and grading of the OER-approved clean soil cover across the site with the underlying highly visible demarcation barrier (i.e. orange geo-synthetic material or equivalent).

Hazardous Materials Remedial Action Work Plan
487 West 129th Street
OER Project # 15RHAZ383M / City VCP # 15CVCP110M

APPENDIX 4

CONSTRUCTION HEALTH AND SAFETY PLAN

487 West 129th Street

NEW YORK, NY

Health and Safety Plan

CEQR # 07DCP076M

OER # [TO COME]

AKRF Project Number: 11978

Prepared for:

Inner City Contracting LLC
161 Suffolk Street
New York, NY 10002

Prepared by:



AKRF Engineering, P.C.
440 Park Avenue South, 7th Floor
New York, NY 10016
212-696-0670

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FIGURES

Figure 1 – Project Site Location and Nearest Hospital

APPENDICES

- APPENDIX A – Potential Health Effects from On-Site Contaminants
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- APPENDIX D – Emergency Hand Signals

1.0 PURPOSE

This Construction Health and Safety Plan (CHASP) was prepared for the 487 West 129th Street site (the “Site”) (Tax Block 1969, Lot 6). The Site is bounded by West 129th Street to the south, a vacant former warehouse and auto repair shop to the east, West 130th Street to the north, and a Metropolitan Opera stage set warehouse to the west. A location map is provided as Figure 1.

The purpose of this CHASP is to assign responsibilities, establish personnel protection standards and mandatory safety practices and procedures, and provide for contingencies that may arise during construction at the Site. The CHASP is intended to minimize health and safety risks resulting from the known or potential presence of subsurface hazardous materials.

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

2.0 APPLICABILITY

Work subject to this CHASP includes all activities that disturb the existing soil on-site. The contractors and their subcontractors involved in the construction project will provide a copy of this CHASP to their employees whose work involves any potential exposure to on-site soil, and will complete all work in accordance with this CHASP.

3.0 SITE DESCRIPTION

3.1 General Information

The Site is at an elevation of approximately 39 feet above the North Atlantic Vertical Datum of 1988 (NAVD88). Regional surface topography slopes down toward the southwest. Previous investigations indicated that the Site is underlain by approximately 5 to 12 feet of urban fill materials (sand, gravel, silt, brick, concrete, ash and glass). The fill was underlain by approximately 23 to 30 feet of apparent native soil (sand, gravel, and silt). Weathered bedrock was encountered approximately 35 to 61 feet below Site grade, and competent bedrock was encountered approximately 36 to 66 feet below Site grade, sloping down toward the south.

The previous investigations encountered groundwater at approximately 23.7 feet to 27 feet below grade at the Site. Apparent perched groundwater was identified approximately 10.5 feet to 13 feet below grade in the southwestern corner of the Site. Groundwater flow is believed to be generally in a southwesterly direction (toward the Hudson River). Groundwater elevation and flow direction may also be influenced by subsurface openings or obstructions such as basements, underground utilities, bedrock geology, and other factors.

A map showing the Site location and the route to the nearest hospital is provided as Figure 1.

3.2 Hazard Potential

The hazard potential at the Site was evaluated based on findings of a *Remedial Investigation (RI)* (AKRF, January 2015), and previous studies summarized in the RI. The RI indicated the following:

- Soil analytical results were compared to 6NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives (USCOs) and Restricted - Residential Use SCOs (RRSCOs). The laboratory analysis indicated concentrations of primarily petroleum-related volatile organic compounds (VOCs) above USCOs in samples collected in the southwestern corner of the Site; one VOC

- (1,2,4-trimethylbenzene) also exceeded its RRSCO in one sample. Somewhat elevated concentrations of acetone and methylene chloride (both of which are solvents, but also common laboratory artifacts) were detected in some soil samples; these concentrations were above USCOs, but well below RRSCOs. Elevated semi-volatile organic compound (SVOC) concentrations above USCOs and/or RRSCOs were also detected in some soil samples. Several metals exceeded their respective USCOs in the soil samples, with four (barium, lead, manganese, and mercury) also exceeding RRSCOs. No pesticides or polychlorinated biphenyls (PCBs) were detected in the soil samples analyzed. The detected VOC and SVOC concentrations were indicative of petroleum contamination in the southwestern corner of the Site and/or urban fill materials containing SVOCs. The detected concentrations of metals in the samples appeared to be primarily either naturally occurring or attributable to urban fill.
- Groundwater sample analytical results were compared to NYSDEC Class GA Ambient Water Quality Standards (drinking water standards) for comparison purposes, although groundwater is not used as a source of potable water in Manhattan. The laboratory analysis showed elevated concentrations, above Class GA standards, of petroleum-related VOCs in a groundwater sample from the southwestern corner of the Site. These VOCs were not detected in the other groundwater samples analyzed. VOCs associated with chlorinated solvents were detected in some groundwater samples above Class GA standards. SVOCs were detected in all four groundwater samples, with seven SVOCs exceeding Class GA standards. Certain metals were detected in the total and filtered groundwater samples at concentrations above Class GA standards, with levels generally higher in the unfiltered samples. No PCBs or pesticides were detected in the groundwater samples. The detected concentrations of petroleum-related VOCs were likely attributable to a release in the southwestern corner of the Site. The detected chlorinated VOCs were not identified in the soil samples, and were likely attributable to an off-site source. The detected SVOC concentrations were likely attributable to some combination of petroleum contamination in the southwestern corner of the Site and fill particles entrained in the samples. The detected metals, including those at concentrations above the Class GA standards, are typical of regional groundwater quality in Manhattan, and not indicative of an on-site release or spill.
 - Soil vapor sampling identified concentrations of VOCs generally associated with petroleum and solvents. There are no standards or guidelines for soil vapor, so detected concentrations were (conservatively) compared to indoor air ranges published in the 2006 *New York State Department of Health (NYSDOH) Guidance for Evaluating Soil Vapor Intrusion in the State of New York*. No VOCs were detected in exceedance of NYSDOH Air Guidance Values (AGVs). The detected VOCs were likely attributable to some combination of petroleum contamination in the southwestern corner of the Site, fill materials, and/or off-site sources.
 - Based on field observations of contamination above the soil-water interface and laboratory analytical results, Spill No. 1407581 was reported to the New York State Department of Environmental Conservation (NYSDEC) in October 2014.

3.3 Hazard Evaluation

The most likely routes of exposure are breathing of volatile and semi-volatile compounds or particulate-laden air released during soil disturbing activities, dermal contact, and accidental ingestion. Appendix A includes specific health effects from chemicals present or potentially present on-site. 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 contaminants 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, only acute effects are a potential concern.

This CHASP addresses potential environmental hazards from the presence of hazardous materials. It is not intended to address the normal hazards of construction work, which are separately covered by OSHA regulations and/or local and state construction codes and regulations.

3.3.1 Hazards of Concern

Check all that apply		
<input checked="" type="checkbox"/> Organic Chemicals	<input checked="" type="checkbox"/> Inorganic Chemicals	<input type="checkbox"/> Radiological
<input type="checkbox"/> Biological	<input type="checkbox"/> Explosive/Flammable	<input type="checkbox"/> Oxygen Deficient Atm
<input checked="" type="checkbox"/> Heat Stress	<input checked="" type="checkbox"/> Cold Stress	<input type="checkbox"/> Carbon Monoxide
Comments: No personnel are permitted to enter permit confined spaces.		

3.3.2 Physical Characteristics

Check all that apply		
<input checked="" type="checkbox"/> Liquid	<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Sludge
<input checked="" type="checkbox"/> Vapors	<input type="checkbox"/> Unknown	<input type="checkbox"/> Other
Comments:		

3.3.3 Hazardous Materials

Check all that apply					
Chemicals	Solids	Sludges	Solvents	Oils	Other
<input type="checkbox"/> Acids	<input checked="" type="checkbox"/> Ash	<input type="checkbox"/> Paints	<input checked="" type="checkbox"/> Halogens	<input type="checkbox"/> Transformer	<input type="checkbox"/> Lab
<input type="checkbox"/> Caustics	<input type="checkbox"/> Asbestos	<input type="checkbox"/> Metals	<input type="checkbox"/> Petroleum	<input type="checkbox"/> Other DF	<input type="checkbox"/> Pharm
<input type="checkbox"/> Pesticides	<input type="checkbox"/> Tailings	<input type="checkbox"/> POTW	<input type="checkbox"/> Other	<input type="checkbox"/> Motor or Hydraulic Oil	<input type="checkbox"/> Hospital
<input checked="" type="checkbox"/> Petroleum	<input checked="" type="checkbox"/> Other	<input type="checkbox"/> Other		<input type="checkbox"/> Gasoline	<input type="checkbox"/> Rad
<input type="checkbox"/> Inks	Fill material			<input checked="" type="checkbox"/> Fuel Oil	<input type="checkbox"/> MGP
<input type="checkbox"/> PCBs					<input type="checkbox"/> Mold
<input checked="" type="checkbox"/> Metals					<input type="checkbox"/> Cyanide
<input checked="" type="checkbox"/> Other: VOCs & SVOCs					

3.3.4 Chemicals of Concern

Chemicals	REL/PEL/STEL	Health Hazards
Barium	REL = 0.5 mg/m ³ PEL = 0.5 mg/m ³	(ingestion) Irritation of digestive system, muscle weakness, difficulty breathing, blood pressure changes
Benzene	REL = 0.1 ppm PEL = 1 ppm STEL = 5 ppm	Irritation eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, lassitude, dermatitis; bone marrow depression, potential occupational carcinogen.
Ethylbenzene	REL = 100 ppm PEL = 100 ppm	Irritation eyes, skin, mucous membrane; headache; dermatitis; narcosis, coma.
Fuel Oil	REL = 350 mg/m ³ PEL = 400 ppm	Nausea, irritation – eyes, hypertension, headache, light-headedness, loss of appetite, poor coordination; long-term exposure – kidney damage, blood clotting problems; potential carcinogen.
Lead	REL=0.1 mg/m ³ PEL=0.05 mg/m ³	Weakness, lassitude, insomnia; facial pallor, pale eye, anorexia, low-weight, malnutrition, constipation, abdominal pain, colic; anemia; gingival lead line; tremors, paralysis wrists and ankles; encephalopathy; kidney disease; irritation eyes; hypotension.
Mercury	REL = 0.1 mg/m ³ PEL = 0.05 mg/m ³	Irritation eyes, skin; cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis; tremor, insomnia, irritability, indecision, headache, lassitude (weakness, exhaustion); stomatitis, salivation; gastrointestinal disturbance, anorexia, weight loss; proteinuria.
Naphthalene	REL = 10 ppm PEL = 10 ppm	Irritation eyes; headache, confusion, excitement, malaise; nausea, vomiting, abdominal pain; irritation bladder; profuse sweating; jaundice; hematuria (blood in the urine), renal shutdown; dermatitis, optical neuritis, corneal damage.
Polycyclic Aromatic Hydrocarbons (PAHs)	PEL = 5 mg/m ³	Harmful effects to skin, bodily fluids, and ability to fight disease, reproductive problems; potential occupational carcinogen
Tetrachloroethene (PCE)	PEL = 100 ppm STEL = 200 ppm	Irritation eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, poor coordination; headache, drowsiness; skin erythema (skin redness); liver damage; potential occupational carcinogen
Toluene	REL = 100 ppm PEL = 200 ppm STEL = 300 ppm	Irritation eyes, nose; lassitude, confusion, euphoria, dizziness, headache; dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, insomnia; paresthesia; dermatitis; liver, kidney damage.
Xylenes	REL = 100 ppm PEL = 100 ppm	Irritation eyes, skin, nose, throat; dizziness, excitement, drowsiness, poor coordination, staggering gait; corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis.
Comments: REL = NIOSH Recommended Exposure Limit PEL = OSHA Permissible Exposure Limit STEL = OSHA Short Term Exposure Limit ppm = parts per million mg/m ³ = milligrams per cubic meter		

4.0 HEALTH AND SAFETY OFFICER

The contractor or engineer will designate one of its personnel as the Site Safety Officer (SSO). The SSO will be a competent person responsible for the implementation of this plan. The SSO will have completed

a 40-hour training course (updated by an annual refresher) that meets OSHA requirements of 29 CFR Part 1910, Occupational Safety and Health Standards. The SSO has stop-work authorization, which he/she will execute on his/her determination of an imminent safety hazard, emergency situation, or other potentially dangerous situation. If the SSO must be absent from the Site, he/she will designate a suitably qualified replacement that is familiar with the CHASP.

5.0 TRAINING

If evidence of contamination is found, all those who enter the work area where the contamination is present 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 being to:

- Make workers aware of the potential hazards they may encounter;
- Instruct workers on how to identify potential hazards,
- 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. Construction personnel will be responsible for identifying potential hazards in the work zone. The SSO or other suitably trained individual will be responsible for conducting the training program. Others who enter the Site must be accompanied by a suitably-trained construction worker.

6.0 GENERAL WORK PRACTICES

To protect the health and safety of the field personnel, all field personnel will adhere to the guidelines listed below during activities involving subsurface disturbance in contaminated areas.

- Eating, drinking, chewing gum or tobacco, and smoking are prohibited, except in designated areas on the Site. These areas will be designated by the SSO.
- Workers must wash their hands and face thoroughly on leaving the work area and before eating, drinking, or any other such activity. The workers should shower as soon as possible after leaving the Site.
- Contact with contaminated or suspected surfaces should be avoided.
- The buddy system should always be used; each buddy should watch for signs of fatigue, exposure, and heat stress.

7.0 PERSONAL PROTECTIVE EQUIPMENT & AIR MONITORING

7.1 Personal Protective Equipment

The personal protection equipment required for various kinds of site investigation tasks are based on 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response, Appendix B, "General Description and Discussion of the Levels of Protection and Protective Gear."

During the implementation of air monitoring, site personnel will wear, at a minimum, Level D personal protective equipment. The protection will be based on the air monitoring described in Section 7.2.

Level of Protection Summary

LEVEL OF PROTECTION & PPE	1 – Excavation	2 – Other Earth Moving Activities
Level D (x) Steel Toe Shoes (x) Hard Hat (within 25 ft of excavator) (x) Work Gloves (x) Safety Glasses () Face Shield (x) Ear Plugs (within 25 ft of drill rig/excavator) (x) Work Gloves (Latex if worker may handle/contact soil)	Yes	Yes
Level D – Modified (in addition to Level D) (x) Tyvek Coveralls (x) Nitrile Gloves () Overboots () Saranex Coveralls	As Necessary	As Necessary
Level C (in addition to Level D – Modified) () Half-Face Respirator (x) Full Face Respirator () Full-Face PAPR () Particulate Cartridge () Organic Cartridge (x) Dual Organic/Particulate Cartridge	If PID > 10 ppm (breathing zone)	If PID > 10 ppm (breathing zone)
Comments: Cartridges to be changed out at least once per shift unless warranted beforehand (e.g., more difficult to breathe or any odors detected).		

7.2 Work Zone Air Monitoring and Community Air Monitoring

As outlined in the RAP, real time air monitoring will be performed with a photoionization detector (PID) and with a particulate air monitor during sampling and excavation work in areas where petroleum or other contamination is encountered. Community air monitoring will be conducted during all intrusive Site activities disturbing soil (but not bedrock or decomposed rock). The air monitoring protocols, action levels and required responses are provided in the February 2015 RAP prepared for the Site.

Field personnel will be trained in the proper operation of all field instruments at the start of the field program. Instruction manuals for the equipment will be on file at the Site for referencing proper operation, maintenance and calibration procedures.

The equipment will be calibrated according to manufacturer specifications at the start of each day of fieldwork. If an instrument fails calibration, the project manager will be contacted immediately to obtain a replacement instrument and arrange for repairs. A calibration log will be maintained to record the date of each calibration, any failure to calibrate and corrective actions taken. The PID will be calibrated each day using 100 parts per million (ppm) isobutylene standard gas.

8.0 DECONTAMINATION PROCEDURES

8.1 Personnel Decontamination

Personnel decontamination (decon), if deemed necessary by the SSO, will take place in a designated decontamination area. This area will be delineated during each stage of work. Personnel decontamination will consist of the following steps:

- Soap and potable water wash and potable water rinse of gloves;
- Coverall removal (if applicable);
- Glove removal;
- Disposable clothing removal; and
- Field wash of hands and face.

8.2 Sampling Equipment Decontamination

Any non-disposable sampling equipment for confirmatory sampling or other equipment that is in contact with contaminated materials will be decontaminated in accordance with the following procedure:

- Double wash with solution of Simple Green® and clean tap water;
- Double rinse with clean tap water;
- Rinse with clean distilled water; and
- Allow equipment to air dry.

8.3 Heavy Equipment Decontamination

If heavy equipment comes in contact with contaminated materials, it will be decontaminated prior to being relocated to a clean area or leaving the Site. A designated decontamination pad will be constructed, where soil, dust, or oil will be washed off the exterior, undercarriage, and wheels or tracks of the equipment. Wash water will be collected for treatment and/or disposal.

9.0 EMERGENCY RESPONSE

9.1 Emergency Procedures

In the event that an emergency develops at the Site, the procedures delineated herein are to be immediately followed. Emergency conditions are considered to exist if:

- Any member of the field crew is involved in an accident or experiences any adverse effects or symptoms of exposure while on-site;
- A condition is discovered that suggests the existence of a situation creating a higher health hazard than anticipated; and
- A spill of oil or other hazardous materials.

General emergency procedures and specific procedures for personal injury and chemical exposure are described below. In the event of an accident or emergency, an Incident Report form should be filled out and placed in the project file. An example Incident Report form is provided in Appendix B. Information on emergency hand signals is provided in Appendix C.

9.1.1 Chemical Exposure

If a member of the field crew demonstrates symptoms of chemical exposure the procedures outlined below should be followed:

- Another team member (buddy) should remove the individual from the immediate area of contamination. The buddy should communicate to the SSO (via voice and hand signals) of the chemical exposure. The SSO should contact the appropriate emergency response agency.
- Precautions should be taken to avoid exposure of other individuals to the chemical.
- If the chemical is on the individual's clothing, the chemical should be neutralized or removed if it is safe to do so.
- If the chemical has contacted the skin, the skin should be washed with copious amounts of water.
- In case of eye contact, an emergency eye wash should be used. Eyes should be washed for at least 15 minutes.
- All chemical exposure incidents must be reported in writing to the Project Manager. The SSO is responsible for completing the Incident Report Form.

9.1.2 Personal Injury

In case of personal injury at the Site, the following procedures should be followed:

- Another team member (buddy) should signal the SSO that an injury has occurred.
- A field team member trained in first aid can administer treatment to an injured worker.
- If deemed necessary, the victim should then be transported to the nearest hospital or medical center. If necessary, an ambulance should be called to transport the victim.
- The SSO is responsible for making certain that an Incident Report Form is completed. This form is to be submitted to the AKRF Health and Safety Officer. Follow-up action should be taken to correct the situation that caused the accident.
- Any incident (near miss, property damage, first aid, medical treatment, etc.) must be reported.

A first-aid kit, eye-wash, and blood-borne pathogens kit will be kept on-site during the field activities.

9.1.3 Evacuation Procedures

- The SSO will initiate evacuation procedures by signaling to leave the Site or containment structure.
- All personnel in the work area should evacuate the area and meet in the common designated area.
- All personnel suspected to be in or near the contract work area should be accounted for and the whereabouts or missing persons determined immediately.
- The SSO will then give further instruction.

9.1.4 Procedures Implemented in the Event of a Major Fire, Explosion, or Emergency

- Notify the paramedics and/or fire department, as necessary;
- Signal the evacuation procedure previously outlined and implement the entire procedure;
- Isolate the area;
- Stay upwind of any fire;
- Keep the area surrounding the problem source clear after the incident occurs; and
- Complete accident report for and distribute to appropriate personnel.

9.1.5 Spill Response

All personnel must take every precaution to minimize the potential for spills during site operations. Any spill will be reported immediately to the SSO. The SSO will then determine and report any required spills to the NYCDEP and/or NYSDEC Hotlines. Spill control apparatus (sorberent materials) will be located on-site. All materials used for the cleanup of spills will be containerized and labeled separately from other wastes. The SSO, in consultation with the Project Manager, will determine if additional spill response measures are required.

9.2 Hospital Directions

The **Harlem Hospital Center** is located at 506 Lenox Avenue in New York, NY, as shown on Figure 1.

Hospital Name:	Harlem Hospital Center
Phone Number:	(212) 939-1000
Address/Location:	506 Lenox Avenue – New York, New York (The hospital entrance is on Lenox Avenue between West 135 th and West 137 th Streets)
Directions:	1. Go EAST on <i>West 129th Street</i> toward <i>Convent Avenue</i> 2. Turn RIGHT onto <i>Convent Avenue</i> 3. <i>Convent Avenue</i> becomes <i>Morningside Avenue</i> 4. Turn LEFT onto <i>West 125th Street / Dr. Martin Luther King Jr. Boulevard</i> 5. Turn RIGHT on <i>West 135th Street</i> 6. Turn LEFT on <i>Lenox Avenue / Malcolm X Boulevard</i> The hospital entrance will be to the RIGHT.

9.3 CHASP Contact Information

Company	Individual Name	Title	Contact Number
AKRF	Michelle Lapin	Project Director	646-388-9520 (office)
	Asya Bychkov	SSO	646-388-9533 (office) 917-569-8916 (cell)
Inner City Contracting LLC	Michael Feigenbaum	Client Representative	212-477-3057
Ambulance, Fire Department & Police Department	-	-	911
NYSDEC Spill Hotline	-	-	800-457-7362

10.0 APPROVAL & ACKNOWLEDGMENTS OF HASP

APPROVAL

Signed: _____ Date: _____
AKRF Project Manager

Signed: _____ Date: _____
AKRF Health and Safety Officer

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

AFFIDAVIT

I, _____ (name), of _____ (company name), have read the Health and Safety Plan (HASP) for the 487 West 129th Street site. I agree to conduct all on-site work in accordance with the requirements set forth in this HASP and understand that failure to comply with this HASP could lead to my removal from the Site.

Signed: _____ Company: _____ Date: _____

FIGURE 1
HOSPITAL ROUTE MAP

APPENDIX A
POTENTIAL HEALTH EFFECTS FROM ON-SITE CONTAMINANTS

This fact sheet answers the most frequently asked health questions (FAQs) about barium and barium compounds. For more information, call the ATSDR Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because these substances may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to barium occurs mostly in the workplace or from drinking contaminated water. Ingesting drinking water containing levels of barium above the EPA drinking water guidelines for relatively short periods of time can cause gastrointestinal disturbances and muscle weakness. Ingesting high levels for a long time can damage the kidneys. Barium and barium compounds have been found in at least 798 of the 1,684 National Priority List sites identified by the Environmental Protection Agency (EPA).

What is barium?

Barium is a silvery-white metal which exists in nature only in ores containing mixtures of elements. It combines with other chemicals such as sulfur or carbon and oxygen to form barium compounds.

Barium compounds are used by the oil and gas industries to make drilling muds. Drilling muds make it easier to drill through rock by keeping the drill bit lubricated. They are also used to make paint, bricks, ceramics, glass, and rubber.

Barium sulfate is sometimes used by doctors to perform medical tests and to take x-rays of the gastrointestinal tract.

What happens to barium when it enters the environment?

- Barium gets into the air during the mining, refining, and production of barium compounds, and from the burning of coal and oil.
- The length of time that barium will last in air, land, water, or sediments depends on the form of barium released.
- Barium compounds, such as barium sulfate and barium carbonate, which do not dissolve well in water, can last a long time in the environment.

Barium compounds, such as barium chloride, barium nitrate, or barium hydroxide, that dissolve easily in water usually do not last in these forms for a long time in the environment. The barium in these compounds that is dissolved in water quickly combines with sulfate or carbonate that are naturally found in water and become the longer lasting forms (barium sulfate and barium carbonate).

Fish and aquatic organisms can accumulate barium.

How might I be exposed to barium?

- Ingesting small amounts present in your food and water or breathing air containing very low levels of barium.
- Living in areas with unusually high natural levels of barium in the drinking water.
- Working in a job that involves barium production or use.
- Living or working near waste sites where barium has been disposed of.

How can barium affect my health?

The health effects of the different barium compounds depend on how well the compound dissolves in water or in the stomach contents. Barium compounds that do not dissolve well, such as barium sulfate, are not generally harmful.

ToxFAQs™ Internet address is <http://www.atsdr.cdc.gov/toxfaq.html>

Barium has been found to potentially cause gastrointestinal disturbances and muscular weakness when people are exposed to it at levels above the EPA drinking water standards for relatively short periods of time. Some people who eat or drink amounts of barium above background levels found in food and water for a short period may experience vomiting, abdominal cramps, diarrhea, difficulties in breathing, increased or decreased blood pressure, numbness around the face, and muscle weakness. Eating or drinking very large amounts of barium compounds that easily dissolve can cause changes in heart rhythm or paralysis and possibly death. Animals that drank barium over long periods had damage to the kidneys, decreases in body weight, and some died.

How likely is barium to cause cancer?

The Department of Health and Human Services (DHHS) and the International Agency for Research on Cancer (IARC) have not classified barium as to its carcinogenicity. The EPA has determined that barium is not likely to be carcinogenic to humans following ingestion and that there is insufficient information to determine whether it will be carcinogenic to humans following inhalation exposure.

How can barium affect children?

We do not know whether children will be more or less sensitive than adults to barium toxicity. A study in rats that swallowed barium found a decrease in newborn body weight; we do not know if a similar effect would be seen in humans.

How can families reduce the risks of exposure to barium?

The greatest potential source of barium exposure is through food and drinking water. However, the amount of barium in foods and drinking water are typically too low to be of concern.

Is there a medical test to determine whether I've been exposed to barium?

There is no routine medical test to determine whether you have been exposed to barium. Doctors can measure barium in body tissues and fluids, such as bones, blood, urine, and feces, using very complex instruments. These tests cannot be used to predict the extent of the exposure or potential health effects.

The geometric mean barium level measured in the U.S. general population aged 6 and older is reported by the Centers for Disease Control and Prevention (CDC) as 1.44 µg/g creatinine (measured in urine).

Has the federal government made recommendations to protect human health?

The EPA has set a limit of 2.0 milligrams of barium per liter of drinking water (2.0 mg/L), which is the same as 2 ppm.

The Occupational Safety and Health Administration (OSHA) has set Permissible Exposure Limits (PELs) of 0.5 milligrams of soluble barium compounds per cubic meter of workplace air (0.5 mg/m³) for 8 hour shifts and 40 hour work weeks. The OSHA limits for barium sulfate dust are 15 mg/m³ of total dust and 5 mg/m³ for respirable fraction.

The National Institute for Occupational Safety and Health (NIOSH) has set Recommended Exposure Limits (RELs) of 0.5 mg/m³ for soluble barium compounds. The NIOSH has set RELs of 10 mg/m³ (total dust) for barium sulfate and 5 mg/m³ (respirable fraction).

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2007. Toxicological Profile for Barium and Compounds (Update). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-800-232-4636, FAX: 770-488-4178. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html>. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.



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

HIGHLIGHTS: Benzene is a widely used chemical formed from both natural processes and human activities. Breathing benzene can cause drowsiness, dizziness, and unconsciousness; long-term benzene exposure causes effects on the bone marrow and can cause anemia and leukemia. Benzene has been found in at least 813 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is benzene?

(Pronounced bĕn'zĕn')

Benzene is a colorless liquid with a sweet odor. It evaporates into the air very quickly and dissolves slightly in water. It is highly flammable and is formed from both natural processes and human activities.

Benzene is widely used in the United States; it ranks in the top 20 chemicals for production volume. Some industries use benzene to make other chemicals which are used to make plastics, resins, and nylon and synthetic fibers. Benzene is also used to make some types of rubbers, lubricants, dyes, detergents, drugs, and pesticides. Natural sources of benzene include volcanoes and forest fires. Benzene is also a natural part of crude oil, gasoline, and cigarette smoke.

What happens to benzene when it enters the environment?

- Industrial processes are the main source of benzene in the environment.
- Benzene can pass into the air from water and soil.
- It reacts with other chemicals in the air and breaks down within a few days.
- Benzene in the air can attach to rain or snow and be carried back down to the ground.

- It breaks down more slowly in water and soil, and can pass through the soil into underground water.
- Benzene does not build up in plants or animals.

How might I be exposed to benzene?

- Outdoor air contains low levels of benzene from tobacco smoke, automobile service stations, exhaust from motor vehicles, and industrial emissions.
- Indoor air generally contains higher levels of benzene from products that contain it such as glues, paints, furniture wax, and detergents.
- Air around hazardous waste sites or gas stations will contain higher levels of benzene.
- Leakage from underground storage tanks or from hazardous waste sites containing benzene can result in benzene contamination of well water.
- People working in industries that make or use benzene may be exposed to the highest levels of it.
- A major source of benzene exposures is tobacco smoke.

How can benzene affect my health?

Breathing very high levels of benzene can result in death, while high levels can cause drowsiness, dizziness, rapid heart rate, headaches, tremors, confusion, and unconsciousness. Eating or drinking foods containing high levels of benzene can cause vomiting, irritation of the stomach, dizziness, sleepiness, convulsions, rapid heart rate, and death.

ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html>

The major effect of benzene from long-term (365 days or longer) exposure is on the blood. Benzene causes harmful effects on the bone marrow and can cause a decrease in red blood cells leading to anemia. It can also cause excessive bleeding and can affect the immune system, increasing the chance for infection.

Some women who breathed high levels of benzene for many months had irregular menstrual periods and a decrease in the size of their ovaries. It is not known whether benzene exposure affects the developing fetus in pregnant women or fertility in men.

Animal studies have shown low birth weights, delayed bone formation, and bone marrow damage when pregnant animals breathed benzene.

How likely is benzene to cause cancer?

The Department of Health and Human Services (DHHS) has determined that benzene is a known human carcinogen. Long-term exposure to high levels of benzene in the air can cause leukemia, cancer of the blood-forming organs.

Is there a medical test to show whether I've been exposed to benzene?

Several tests can show if you have been exposed to benzene. There is test for measuring benzene in the breath; this test must be done shortly after exposure. Benzene can also be measured in the blood, however, since benzene disappears rapidly from the blood, measurements are accurate only for recent exposures.

In the body, benzene is converted to products called metabolites. Certain metabolites can be measured in the urine. However, this test must be done shortly after exposure and is not a reliable indicator of how much benzene you have been exposed to, since the metabolites may be present in urine from other sources.

Has the federal government made recommendations to protect human health?

The EPA has set the maximum permissible level of benzene in drinking water at 0.005 milligrams per liter (0.005 mg/L). The EPA requires that spills or accidental releases into the environment of 10 pounds or more of benzene be reported to the EPA.

The Occupational Safety and Health Administration (OSHA) has set a permissible exposure limit of 1 part of benzene per million parts of air (1 ppm) in the workplace during an 8-hour workday, 40-hour workweek.

Glossary

Anemia: A decreased ability of the blood to transport oxygen.

Carcinogen: A substance with the ability to cause cancer.

CAS: Chemical Abstracts Service.

Chromosomes: Parts of the cells responsible for the development of hereditary characteristics.

Metabolites: Breakdown products of chemicals.

Milligram (mg): One thousandth of a gram.

Pesticide: A substance that kills pests.

References

This ToxFAQs information is taken from the 1997 Toxicological Profile for Benzene (update) produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop E-29, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 404-498-0093. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html> ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.



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

HIGHLIGHTS: Ethylbenzene is a colorless liquid found in a number of products including gasoline and paints. Breathing very high levels can cause dizziness and throat and eye irritation. Ethylbenzene has been found in at least 731 of the 1,467 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is ethylbenzene?

(Pronounced ěth' əl bĕn' zĕn')

Ethylbenzene is a colorless, flammable liquid that smells like gasoline. It is found in natural products such as coal tar and petroleum and is also found in manufactured products such as inks, insecticides, and paints.

Ethylbenzene is used primarily to make another chemical, styrene. Other uses include as a solvent, in fuels, and to make other chemicals.

What happens to ethylbenzene when it enters the environment?

- Ethylbenzene moves easily into the air from water and soil.
- It takes about 3 days for ethylbenzene to be broken down in air into other chemicals.
- Ethylbenzene may be released to water from industrial discharges or leaking underground storage tanks.
- In surface water, ethylbenzene breaks down by reacting with other chemicals found naturally in water.
- In soil, it is broken down by soil bacteria.

How might I be exposed to ethylbenzene?

- Breathing air containing ethylbenzene, particularly in areas near factories or highways.
- Drinking contaminated tap water.
- Working in an industry where ethylbenzene is used or made.
- Using products containing it, such as gasoline, carpet glues, varnishes, and paints.

How can ethylbenzene affect my health?

Limited information is available on the effects of ethylbenzene on people's health. The available information shows dizziness, throat and eye irritation, tightening of the chest, and a burning sensation in the eyes of people exposed to high levels of ethylbenzene in air.

Animals studies have shown effects on the nervous system, liver, kidneys, and eyes from breathing ethylbenzene in air.

How likely is ethylbenzene to cause cancer?

The EPA has determined that ethylbenzene is not classifiable as to human carcinogenicity.

ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html>

No studies in people have shown that ethylbenzene exposure can result in cancer. Two available animal studies suggest that ethylbenzene may cause tumors.

How can ethylbenzene affect children?

Children may be exposed to ethylbenzene through inhalation of consumer products, including gasoline, paints, inks, pesticides, and carpet glue. We do not know whether children are more sensitive to the effects of ethylbenzene than adults.

It is not known whether ethylbenzene can affect the development of the human fetus. Animal studies have shown that when pregnant animals were exposed to ethylbenzene in air, their babies had an increased number of birth defects.

How can families reduce the risk of exposure to ethylbenzene?

Exposure to ethylbenzene vapors from household products and newly installed carpeting can be minimized by using adequate ventilation.

Household chemicals should be stored out of reach of children to prevent accidental poisoning. Always store household chemicals in their original containers; never store them in containers children would find attractive to eat or drink from, such as old soda bottles. Gasoline should be stored in a gasoline can with a locked cap.

Sometimes older children sniff household chemicals, including ethylbenzene, in an attempt to get high. Talk with your children about the dangers of sniffing chemicals.

Is there a medical test to show whether I've been exposed to ethylbenzene?

Ethylbenzene is found in the blood, urine, breath, and

some body tissues of exposed people. The most common way to test for ethylbenzene is in the urine. This test measures substances formed by the breakdown of ethylbenzene. This test needs to be done within a few hours after exposure occurs, because the substances leave the body very quickly.

These tests can show you were exposed to ethylbenzene, but cannot predict the kind of health effects that might occur.

Has the federal government made recommendations to protect human health?

The EPA has set a maximum contaminant level of 0.7 milligrams of ethylbenzene per liter of drinking water (0.7 mg/L).

The EPA requires that spills or accidental releases into the environment of 1,000 pounds or more of ethylbenzene be reported to the EPA.

The Occupational Safety and Health Administration (OSHA) has set an occupational exposure limit of 100 parts of ethylbenzene per million parts of air (100 ppm) for an 8-hour workday, 40-hour workweek.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1999. Toxicological profile for ethylbenzene. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html> ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.



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

SUMMARY: Fuel oils are liquid mixtures produced from petroleum, and their use mostly involves burning them as fuels. Drinking or breathing fuel oils may cause nausea or nervous system effects. However, exposure under normal use conditions is not likely to be harmful. Fuel oils have been found in at least 26 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What are fuel oils?

(Pronounced fyoo'el oilz)

Fuel oils are a variety of yellowish to light brown liquid mixtures that come from crude petroleum. Some chemicals found in fuel oils may evaporate easily, while others may more easily dissolve in water.

Fuel oils are produced by different petroleum refining processes, depending on their intended uses. Fuel oils may be used as fuel for engines, lamps, heaters, furnaces, and stoves, or as solvents.

Some commonly found fuel oils include kerosene, diesel fuel, jet fuel, range oil, and home heating oil. These fuel oils differ from one another by their hydrocarbon compositions, boiling point ranges, chemical additives, and uses.

What happens to fuel oils when they enter the environment?

- Some chemicals found in fuel oils may evaporate into the air from open containers or contaminated soil or water.
- Some chemicals found in fuel oils may dissolve in water after spills to surface waters or leaks from underground storage tanks.

- Some chemicals found in fuel oils may stick to particles in water, which will eventually cause them to settle to the bottom sediment.
- Some of the chemicals found in fuel oils may be broken down slowly in air, water, and soil by sunlight or small organisms.
- Some of the chemicals found in fuel oils may build up significantly in plants and animals.

How might I be exposed to fuel oils?

- Using a home kerosene heater or stove, or using fuel oils at work.
- Breathing air in home or building basements that has been contaminated with fuel oil vapors entering from the soil.
- Drinking or swimming in water that has been contaminated with fuel oils from a spill or a leaking underground storage tank.
- Touching soil contaminated with fuel oils.
- Using fuel oils to wash paint or grease from skin or equipment.

How can fuel oils affect my health?

Little information is available about the health effects that may be caused by fuel oils. People who use kerosene

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stoves for cooking do not seem to have any health problems related to their exposure.

Breathing some fuel oils for short periods may cause nausea, eye irritation, increased blood pressure, headache, lightheadedness, loss of appetite, poor coordination, and difficulty concentrating. Breathing diesel fuel vapors for long periods may cause kidney damage and lower your blood's ability to clot.

Drinking small amounts of kerosene may cause vomiting, diarrhea, coughing, stomach swelling and cramps, drowsiness, restlessness, painful breathing, irritability, and unconsciousness. Drinking large amounts of kerosene may cause convulsions, coma, or death. Skin contact with kerosene for short periods may cause itchy, red, sore, or peeling skin.

How likely are fuel oils to cause cancer?

The International Agency for Research on Cancer (IARC) has determined that some fuel oils (heavy) may possibly cause cancer in humans, but for other fuel oils (light) there is not enough information to make a determination. IARC has also determined that occupational exposures to fuel oils during petroleum refining are probably carcinogenic in humans.

Some studies with mice have suggested that repeated contact with fuel oils may cause liver or skin cancer. However, other mouse studies have found this not to be the case. No studies are available in other animals or in people on the carcinogenic effects of fuel oils.

Is there a medical test to show whether I've been exposed to fuel oils?

There is no medical test that shows if you have been exposed to fuel oils. Tests are available to determine if some of

the chemicals commonly found in fuel oils are in your blood. However, the presence of these chemicals in blood may not necessarily mean that you have been exposed to fuel oils.

Has the federal government made recommendations to protect human health?

The Occupational Safety and Health Administration (OSHA) and the Air Force Office of Safety and Health (AFOSH) have set a permissible exposure level (PEL) of 400 parts of petroleum distillates per million parts of air (400 ppm) for an 8-hour workday, 40-hour workweek.

The National Institute for Occupational Safety and Health (NIOSH) recommends that average workplace air levels not exceed 350 milligrams of petroleum distillates per cubic meter of air (350 mg/m³) for a 40-hour workweek.

The Department of Transportation (DOT) lists fuel oils as hazardous materials and, therefore, regulates their transportation.

Glossary

Carcinogenic: Able to cause cancer.

CAS: Chemical Abstracts Service.

Evaporate: To change into a vapor or a gas.

Hydrocarbon: Any compound made up of hydrogen and carbon.

Milligram (mg): One thousandth of a gram.

ppm: Parts per million.

Sediment: Mud and debris that have settled to the bottom of a body of water.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for fuel oils. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop E-29, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 404-498-0093. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html> ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.



This fact sheet answers the most frequently asked health questions (FAQs) about lead. For more information, call the ATSDR Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to lead can happen from breathing workplace air or dust, eating contaminated foods, or drinking contaminated water. Children can be exposed from eating lead-based paint chips or playing in contaminated soil. Lead can damage the nervous system, kidneys, and reproductive system. Lead has been found in at least 1,272 of the 1,684 National Priority List sites identified by the Environmental Protection Agency (EPA).

What is lead?

Lead is a naturally occurring bluish-gray metal found in small amounts in the earth's crust. Lead can be found in all parts of our environment. Much of it comes from human activities including burning fossil fuels, mining, and manufacturing.

Lead has many different uses. It is used in the production of batteries, ammunition, metal products (solder and pipes), and devices to shield X-rays. Because of health concerns, lead from paints and ceramic products, caulking, and pipe solder has been dramatically reduced in recent years. The use of lead as an additive to gasoline was banned in 1996 in the United States.

What happens to lead when it enters the environment?

- Lead itself does not break down, but lead compounds are changed by sunlight, air, and water.
- When lead is released to the air, it may travel long distances before settling to the ground.
- Once lead falls onto soil, it usually sticks to soil particles.
- Movement of lead from soil into groundwater will depend on the type of lead compound and the characteristics of the soil.

How might I be exposed to lead?

- Eating food or drinking water that contains lead. Water pipes in some older homes may contain lead solder. Lead can leach out into the water.

- Spending time in areas where lead-based paints have been used and are deteriorating. Deteriorating lead paint can contribute to lead dust.

- Working in a job where lead is used or engaging in certain hobbies in which lead is used, such as making stained glass.

- Using health-care products or folk remedies that contain lead.

How can lead affect my health?

The effects of lead are the same whether it enters the body through breathing or swallowing. Lead can affect almost every organ and system in your body. The main target for lead toxicity is the nervous system, both in adults and children. Long-term exposure of adults can result in decreased performance in some tests that measure functions of the nervous system. It may also cause weakness in fingers, wrists, or ankles. Lead exposure also causes small increases in blood pressure, particularly in middle-aged and older people and can cause anemia. Exposure to high lead levels can severely damage the brain and kidneys in adults or children and ultimately cause death. In pregnant women, high levels of exposure to lead may cause miscarriage. High-level exposure in men can damage the organs responsible for sperm production.

How likely is lead to cause cancer?

We have no conclusive proof that lead causes cancer in humans. Kidney tumors have developed in rats and mice that had been given large doses of some kind of lead compounds. The Department of Health and Human Services

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(DHHS) has determined that lead and lead compounds are reasonably anticipated to be human carcinogens and the EPA has determined that lead is a probable human carcinogen. The International Agency for Research on Cancer (IARC) has determined that inorganic lead is probably carcinogenic to humans and that there is insufficient information to determine whether organic lead compounds will cause cancer in humans.

How can lead affect children?

Small children can be exposed by eating lead-based paint chips, chewing on objects painted with lead-based paint, or swallowing house dust or soil that contains lead.

Children are more vulnerable to lead poisoning than adults. A child who swallows large amounts of lead may develop blood anemia, severe stomachache, muscle weakness, and brain damage. If a child swallows smaller amounts of lead, much less severe effects on blood and brain function may occur. Even at much lower levels of exposure, lead can affect a child's mental and physical growth.

Exposure to lead is more dangerous for young and unborn children. Unborn children can be exposed to lead through their mothers. Harmful effects include premature births, smaller babies, decreased mental ability in the infant, learning difficulties, and reduced growth in young children. These effects are more common if the mother or baby was exposed to high levels of lead. Some of these effects may persist beyond childhood.

How can families reduce the risks of exposure to lead?

- Avoid exposure to sources of lead.
- Do not allow children to chew on mouth surfaces that may have been painted with lead-based paint.
- If you have a water lead problem, run or flush water that has been standing overnight before drinking or cooking with it.
- Some types of paints and pigments that are used as make-up or hair coloring contain lead. Keep these kinds of products away from children
- If your home contains lead-based paint or you live in an area contaminated with lead, wash children's hands and faces

often to remove lead dusts and soil, and regularly clean the house of dust and tracked in soil.

Is there a medical test to determine whether I've been exposed to lead?

A blood test is available to measure the amount of lead in your blood and to estimate the amount of your recent exposure to lead. Blood tests are commonly used to screen children for lead poisoning. Lead in teeth or bones can be measured by X-ray techniques, but these methods are not widely available. Exposure to lead also can be evaluated by measuring erythrocyte protoporphyrin (EP) in blood samples. EP is a part of red blood cells known to increase when the amount of lead in the blood is high. However, the EP level is not sensitive enough to identify children with elevated blood lead levels below about 25 micrograms per deciliter ($\mu\text{g}/\text{dL}$). These tests usually require special analytical equipment that is not available in a doctor's office. However, your doctor can draw blood samples and send them to appropriate laboratories for analysis.

Has the federal government made recommendations to protect human health?

The Centers for Disease Control and Prevention (CDC) recommends that states test children at ages 1 and 2 years. Children should be tested at ages 3–6 years if they have never been tested for lead, if they receive services from public assistance programs for the poor such as Medicaid or the Supplemental Food Program for Women, Infants, and Children, if they live in a building or frequently visit a house built before 1950; if they visit a home (house or apartment) built before 1978 that has been recently remodeled; and/or if they have a brother, sister, or playmate who has had lead poisoning. CDC considers a blood lead level of 10 $\mu\text{g}/\text{dL}$ to be a level of concern for children.

EPA limits lead in drinking water to 15 μg per liter.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2007. Toxicological Profile for lead (Update). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-800-232-4636, FAX: 770-488-4178. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html>. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.



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

HIGHLIGHTS: Exposure to mercury occurs from breathing contaminated air, ingesting contaminated water and food, and having dental and medical treatments. Mercury, at high levels, may damage the brain, kidneys, and developing fetus. This chemical has been found in at least 714 of 1,467 National Priorities List sites identified by the Environmental Protection Agency.

What is mercury?

(Pronounced mŭr/kyə-rē)

Mercury is a naturally occurring metal which has several forms. The metallic mercury is a shiny, silver-white, odorless liquid. If heated, it is a colorless, odorless gas.

Mercury combines with other elements, such as chlorine, sulfur, or oxygen, to form inorganic mercury compounds or "salts," which are usually white powders or crystals. Mercury also combines with carbon to make organic mercury compounds. The most common one, methylmercury, is produced mainly by microscopic organisms in the water and soil. More mercury in the environment can increase the amounts of methylmercury that these small organisms make.

Metallic mercury is used to produce chlorine gas and caustic soda, and is also used in thermometers, dental fillings, and batteries. Mercury salts are sometimes used in skin lightening creams and as antiseptic creams and ointments.

What happens to mercury when it enters the environment?

- Inorganic mercury (metallic mercury and inorganic mercury compounds) enters the air from mining ore deposits, burning coal and waste, and from manufacturing plants.
- It enters the water or soil from natural deposits, disposal of wastes, and volcanic activity.

- Methylmercury may be formed in water and soil by small organisms called bacteria.
- Methylmercury builds up in the tissues of fish. Larger and older fish tend to have the highest levels of mercury.

How might I be exposed to mercury?

- Eating fish or shellfish contaminated with methylmercury.
- Breathing vapors in air from spills, incinerators, and industries that burn mercury-containing fuels.
- Release of mercury from dental work and medical treatments.
- Breathing contaminated workplace air or skin contact during use in the workplace (dental, health services, chemical, and other industries that use mercury).
- Practicing rituals that include mercury.

How can mercury affect my health?

The nervous system is very sensitive to all forms of mercury. Methylmercury and metallic mercury vapors are more harmful than other forms, because more mercury in these forms reaches the brain. Exposure to high levels of metallic, inorganic, or organic mercury can permanently damage the brain, kidneys, and developing fetus. Effects on brain functioning may result in irritability, shyness, tremors, changes in vision or hearing, and memory problems.

Short-term exposure to high levels of metallic mercury vapors may cause effects including lung damage, nausea,

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vomiting, diarrhea, increases in blood pressure or heart rate, skin rashes, and eye irritation.

How likely is mercury to cause cancer?

There are inadequate human cancer data available for all forms of mercury. Mercuric chloride has caused increases in several types of tumors in rats and mice, and methylmercury has caused kidney tumors in male mice. The EPA has determined that mercuric chloride and methylmercury are possible human carcinogens.

How can mercury affect children?

Very young children are more sensitive to mercury than adults. Mercury in the mother's body passes to the fetus and may accumulate there. It can also pass to a nursing infant through breast milk. However, the benefits of breast feeding may be greater than the possible adverse effects of mercury in breast milk.

Mercury's harmful effects that may be passed from the mother to the fetus include brain damage, mental retardation, incoordination, blindness, seizures, and inability to speak. Children poisoned by mercury may develop problems of their nervous and digestive systems, and kidney damage.

How can families reduce the risk of exposure to mercury?

Carefully handle and dispose of products that contain mercury, such as thermometers or fluorescent light bulbs. Do not vacuum up spilled mercury, because it will vaporize and increase exposure. If a large amount of mercury has been spilled, contact your health department. Teach children not to play with shiny, silver liquids.

Properly dispose of older medicines that contain mercury. Keep all mercury-containing medicines away from children.

Pregnant women and children should keep away from

rooms where liquid mercury has been used.

Learn about wildlife and fish advisories in your area from your public health or natural resources department.

Is there a medical test to show whether I've been exposed to mercury?

Tests are available to measure mercury levels in the body. Blood or urine samples are used to test for exposure to metallic mercury and to inorganic forms of mercury. Mercury in whole blood or in scalp hair is measured to determine exposure to methylmercury. Your doctor can take samples and send them to a testing laboratory.

Has the federal government made recommendations to protect human health?

The EPA has set a limit of 2 parts of mercury per billion parts of drinking water (2 ppb).

The Food and Drug Administration (FDA) has set a maximum permissible level of 1 part of methylmercury in a million parts of seafood (1 ppm).

The Occupational Safety and Health Administration (OSHA) has set limits of 0.1 milligram of organic mercury per cubic meter of workplace air (0.1 mg/m³) and 0.05 mg/m³ of metallic mercury vapor for 8-hour shifts and 40-hour work weeks.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1999. Toxicological profile for mercury. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html> ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.



This fact sheet answers the most frequently asked health questions (FAQs) about naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because these substances may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to naphthalene, 1-methylnaphthalene, or 2-methylnaphthalene happens mostly from breathing air contaminated from the burning of wood, tobacco, or fossil fuels, industrial discharges, or moth repellents. Exposure to large amounts of naphthalene may damage or destroy some of your red blood cells. Naphthalene has caused cancer in animals. Naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene have been found in at least 687, 36, and 412, respectively, of the 1,662 National Priority List sites identified by the Environmental Protection Agency (EPA).

What are naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene?

Naphthalene is a white solid that evaporates easily. Fuels such as petroleum and coal contain naphthalene. It is also called white tar, and tar camphor, and has been used in mothballs and moth flakes. Burning tobacco or wood produces naphthalene. It has a strong, but not unpleasant smell. The major commercial use of naphthalene is in the manufacture of polyvinyl chloride (PVC) plastics. Its major consumer use is in moth repellents and toilet deodorant blocks.

1-Methylnaphthalene and 2-methylnaphthalene are naphthalene-related compounds. 1-Methylnaphthalene is a clear liquid and 2-methylnaphthalene is a solid; both can be smelled in air and in water at very low concentrations.

1-Methylnaphthalene and 2-methylnaphthalene are used to make other chemicals such as dyes and resins. 2-Methylnaphthalene is also used to make vitamin K.

What happens to naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene when they enter the environment?

- Naphthalene enters the environment from industrial and domestic sources, and from accidental spills.
- Naphthalene can dissolve in water to a limited degree and may be present in drinking water from wells close to hazardous waste sites and landfills.
- Naphthalene can become weakly attached to soil or pass through soil into underground water.
- In air, moisture and sunlight break it down within 1 day. In water, bacteria break it down or it evaporates into the air.
- Naphthalene does not accumulate in the flesh of animals or fish that you might eat.

1-Methylnaphthalene and 2-methylnaphthalene are expected to act like naphthalene in air, water, or soil because they have similar chemical and physical properties.

How might I be exposed to naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene?

- Breathing low levels in outdoor air.
- Breathing air contaminated from industrial discharges or smoke from burning wood, tobacco, or fossil fuels.
- Using or making moth repellents, coal tar products, dyes or inks could expose you to these chemicals in the air.
- Drinking water from contaminated wells.
- Touching fabrics that are treated with moth repellents containing naphthalene.
- Exposure to naphthalene, 1-methylnaphthalene and 2-methylnaphthalene from eating foods or drinking beverages is unlikely.

How can naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene affect my health?

Exposure to large amounts of naphthalene may damage or destroy some of your red blood cells. This could cause you to have too few red blood cells until your body replaces the destroyed cells. This condition is called hemolytic anemia. Some symptoms of hemolytic anemia are fatigue, lack of appetite, restlessness, and pale skin. Exposure to large amounts of naphthalene may also cause nausea, vomiting, diarrhea, blood in the urine, and a yellow color to the skin. Animals sometimes develop cloudiness in their eyes after swallowing high amounts of naphthalene. It is not clear whether this also develops in people. Rats and mice that breathed naphthalene vapors daily for a lifetime developed irritation and inflammation of their nose and lungs. It is unclear if naphthalene

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causes reproductive effects in animals; most evidence says it does not.

There are no studies of humans exposed to 1-methylnaphthalene or 2-methylnaphthalene.

Mice fed food containing 1-methylnaphthalene and 2-methylnaphthalene for most of their lives had part of their lungs filled with an abnormal material.

How likely are naphthalene, 1-methylnaphthalene, or 2-methylnaphthalene to cause cancer?

There is no direct evidence in humans that naphthalene, 1-methylnaphthalene, or 2-methylnaphthalene cause cancer.

However, cancer from naphthalene exposure has been seen in animal studies. Some female mice that breathed naphthalene vapors daily for a lifetime developed lung tumors. Some male and female rats exposed to naphthalene in a similar manner also developed nose tumors.

Based on the results from animal studies, the Department of Health and Human Services (DHHS) concluded that naphthalene is reasonably anticipated to be a human carcinogen. The International Agency for Research on Cancer (IARC) concluded that naphthalene is possibly carcinogenic to humans. The EPA determined that naphthalene is a possible human carcinogen (Group C) and that the data are inadequate to assess the human carcinogenic potential of 2-methylnaphthalene.

How can naphthalene, 1-methylnaphthalene, or 2-methylnaphthalene affect children?

Hospitals have reported many cases of hemolytic anemia in children, including newborns and infants, who either ate naphthalene mothballs or deodorants cakes or who were in close contact with clothing or blankets stored in naphthalene mothballs. Naphthalene can move from a pregnant woman's blood to the unborn baby's blood. Naphthalene has been detected in some samples of breast milk from the general U.S. population, but not at levels that are expected to be of concern.

There is no information on whether naphthalene has affected development in humans. No developmental abnormalities were observed in the offspring from rats, mice, and rabbits fed naphthalene during pregnancy.

We do not have any information on possible health effects of 1-methylnaphthalene or 2-methylnaphthalene on children.

How can families reduce the risks of exposure to naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene?

❑ Families can reduce the risks of exposure to naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene by avoiding smoking tobacco, generating smoke during cooking, or using

fireplaces or heating appliances in their homes.

❑ If families use naphthalene-containing moth repellents, the material should be enclosed in containers that prevent vapors from escaping, and kept out of the reach from children.

❑ Blankets and clothing stored with naphthalene moth repellents should be aired outdoors to remove naphthalene odors and washed before they are used.

❑ Families should inform themselves of the contents of air deodorizers that are used in their homes and refrain from using deodorizers with naphthalene.

Is there a medical test to determine whether I've been exposed to naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene?

Tests are available that measure levels of these chemicals and their breakdown products in samples of urine, feces, blood, maternal milk, or body fat. These tests are not routinely available in a doctor's office because they require special equipment, but samples can be sent to special testing laboratories. These tests cannot determine exactly how much naphthalene, 1-methylnaphthalene, or 2-methylnaphthalene you were exposed to or predict whether harmful effects will occur. If the samples are collected within a day or two of exposure, then the tests can show if you were exposed to a large or small amount of naphthalene, 1-methylnaphthalene, or 2-methylnaphthalene.

Has the federal government made recommendations to protect human health?

The EPA recommends that children not drink water with over 0.5 parts per million (0.5 ppm) naphthalene for more than 10 days or over 0.4 ppm for any longer than 7 years. Adults should not drink water with more than 1 ppm for more than 7 years. For water consumed over a lifetime (70 years), the EPA suggests that it contain no more than 0.1 ppm naphthalene.

The Occupational Safety and Health Administration (OSHA) set a limit of 10 ppm for the level of naphthalene in workplace air during an 8-hour workday, 40-hour workweek. The National Institute for Occupational Safety and Health (NIOSH) considers more than 500 ppm of naphthalene in air to be immediately dangerous to life or health. This is the exposure level of a chemical that is likely to impair a worker's ability to leave a contaminate area and therefore, results in permanent health problems or death.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2005. Toxicological Profile for Naphthalene, 1-Methylnaphthalene, and 2-Methylnaphthalene (Update). Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html>. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.



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

SUMMARY: Exposure to polycyclic aromatic hydrocarbons usually occurs by breathing air contaminated by wild fires or coal tar, or by eating foods that have been grilled. PAHs have been found in at least 600 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What are polycyclic aromatic hydrocarbons?

(Pronounced pŏl'ī-sī'klīk ār'ə-măt'īk hī'drə-kar'bənz)

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

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

What happens to PAHs when they enter the environment?

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

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

How might I be exposed to PAHs?

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

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- ❑ Nursing infants of mothers living near hazardous waste sites may be exposed to PAHs through their mother's milk.

How can PAHs affect my health?

Mice that were fed high levels of one PAH during pregnancy had difficulty reproducing and so did their offspring. These offspring also had higher rates of birth defects and lower body weights. It is not known whether these effects occur in people.

Animal studies have also shown that PAHs can cause harmful effects on the skin, body fluids, and ability to fight disease after both short- and long-term exposure. But these effects have not been seen in people.

How likely are PAHs to cause cancer?

The Department of Health and Human Services (DHHS) has determined that some PAHs may reasonably be expected to be carcinogens.

Some people who have breathed or touched mixtures of PAHs and other chemicals for long periods of time have developed cancer. Some PAHs have caused cancer in laboratory animals when they breathed air containing them (lung cancer), ingested them in food (stomach cancer), or had them applied to their skin (skin cancer).

Is there a medical test to show whether I've been exposed to PAHs?

In the body, PAHs are changed into chemicals that can attach to substances within the body. There are special tests that can detect PAHs attached to these substances in body tissues or blood. However, these tests cannot tell whether any

health effects will occur or find out the extent or source of your exposure to the PAHs. The tests aren't usually available in your doctor's office because special equipment is needed to conduct them.

Has the federal government made recommendations to protect human health?

The Occupational Safety and Health Administration (OSHA) has set a limit of 0.2 milligrams of PAHs per cubic meter of air (0.2 mg/m³). The OSHA Permissible Exposure Limit (PEL) for mineral oil mist that contains PAHs is 5 mg/m³ averaged over an 8-hour exposure period.

The National Institute for Occupational Safety and Health (NIOSH) recommends that the average workplace air levels for coal tar products not exceed 0.1 mg/m³ for a 10-hour workday, within a 40-hour workweek. There are other limits for workplace exposure for things that contain PAHs, such as coal, coal tar, and mineral oil.

Glossary

Carcinogen: A substance that can cause cancer.

Ingest: Take food or drink into your body.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for polycyclic aromatic hydrocarbons. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html> ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.



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

HIGHLIGHTS: Tetrachloroethylene is a manufactured chemical used for dry cleaning and metal degreasing. Exposure to very high concentrations of tetrachloroethylene can cause dizziness, headaches, sleepiness, confusion, nausea, difficulty in speaking and walking, unconsciousness, and death. Tetrachloroethylene has been found in at least 771 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is tetrachloroethylene?

(Pronounced tět'rə-klôr' 0-ěth'ə-lēn')

Tetrachloroethylene is a manufactured chemical that is widely used for dry cleaning of fabrics and for metal-degreasing. It is also used to make other chemicals and is used in some consumer products.

Other names for tetrachloroethylene include perchloroethylene, PCE, and tetrachloroethene. It is a nonflammable liquid at room temperature. It evaporates easily into the air and has a sharp, sweet odor. Most people can smell tetrachloroethylene when it is present in the air at a level of 1 part tetrachloroethylene per million parts of air (1 ppm) or more, although some can smell it at even lower levels.

What happens to tetrachloroethylene when it enters the environment?

- Much of the tetrachloroethylene that gets into water or soil evaporates into the air.
- Microorganisms can break down some of the tetrachloroethylene in soil or underground water.
- In the air, it is broken down by sunlight into other chemicals or brought back to the soil and water by rain.
- It does not appear to collect in fish or other animals that live in water.

How might I be exposed to tetrachloroethylene?

- When you bring clothes from the dry cleaners, they will release small amounts of tetrachloroethylene into the air.
- When you drink water containing tetrachloroethylene, you are exposed to it.

How can tetrachloroethylene affect my health?

High concentrations of tetrachloroethylene (particularly in closed, poorly ventilated areas) can cause dizziness, headache, sleepiness, confusion, nausea, difficulty in speaking and walking, unconsciousness, and death.

Irritation may result from repeated or extended skin contact with it. These symptoms occur almost entirely in work (or hobby) environments when people have been accidentally exposed to high concentrations or have intentionally used tetrachloroethylene to get a "high."

In industry, most workers are exposed to levels lower than those causing obvious nervous system effects. The health effects of breathing in air or drinking water with low levels of tetrachloroethylene are not known.

Results from some studies suggest that women who work in dry cleaning industries where exposures to tetrachloroethyl-

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ene can be quite high may have more menstrual problems and spontaneous abortions than women who are not exposed. However, it is not known if tetrachloroethylene was responsible for these problems because other possible causes were not considered.

Results of animal studies, conducted with amounts much higher than those that most people are exposed to, show that tetrachloroethylene can cause liver and kidney damage. Exposure to very high levels of tetrachloroethylene can be toxic to the unborn pups of pregnant rats and mice. Changes in behavior were observed in the offspring of rats that breathed high levels of the chemical while they were pregnant.

How likely is tetrachloroethylene to cause cancer?

The Department of Health and Human Services (DHHS) has determined that tetrachloroethylene may reasonably be anticipated to be a carcinogen. Tetrachloroethylene has been shown to cause liver tumors in mice and kidney tumors in male rats.

Is there a medical test to show whether I've been exposed to tetrachloroethylene?

One way of testing for tetrachloroethylene exposure is to measure the amount of the chemical in the breath, much the same way breath-alcohol measurements are used to determine the amount of alcohol in the blood.

Because it is stored in the body's fat and slowly released into the bloodstream, tetrachloroethylene can be detected in the breath for weeks following a heavy exposure.

Tetrachloroethylene and trichloroacetic acid (TCA), a breakdown product of tetrachloroethylene, can be detected in the blood. These tests are relatively simple to perform. These tests aren't available at most doctors' offices, but can be per-

formed at special laboratories that have the right equipment.

Because exposure to other chemicals can produce the same breakdown products in the urine and blood, the tests for breakdown products cannot determine if you have been exposed to tetrachloroethylene or the other chemicals.

Has the federal government made recommendations to protect human health?

The EPA maximum contaminant level for the amount of tetrachloroethylene that can be in drinking water is 0.005 milligrams tetrachloroethylene per liter of water (0.005 mg/L).

The Occupational Safety and Health Administration (OSHA) has set a limit of 100 ppm for an 8-hour workday over a 40-hour workweek.

The National Institute for Occupational Safety and Health (NIOSH) recommends that tetrachloroethylene be handled as a potential carcinogen and recommends that levels in workplace air should be as low as possible.

Glossary

Carcinogen: A substance with the ability to cause cancer.

CAS: Chemical Abstracts Service.

Milligram (mg): One thousandth of a gram.

Nonflammable: Will not burn.

References

This ToxFAQs information is taken from the 1997 Toxicological Profile for Tetrachloroethylene (update) produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html> ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.



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

HIGHLIGHTS: Exposure to toluene occurs from breathing contaminated workplace air, in automobile exhaust, some consumer products paints, paint thinners, fingernail polish, lacquers, and adhesives. Toluene affects the nervous system. Toluene has been found at 959 of the 1,591 National Priority List sites identified by the Environmental Protection Agency

What is toluene?

Toluene is a clear, colorless liquid with a distinctive smell. Toluene occurs naturally in crude oil and in the tolu tree. It is also produced in the process of making gasoline and other fuels from crude oil and making coke from coal.

Toluene is used in making paints, paint thinners, fingernail polish, lacquers, adhesives, and rubber and in some printing and leather tanning processes.

What happens to toluene when it enters the environment?

Toluene enters the environment when you use materials that contain it. It can also enter surface water and groundwater from spills of solvents and petroleum products as well as from leaking underground storage tanks at gasoline stations and other facilities.

When toluene-containing products are placed in landfills or waste disposal sites, the toluene can enter the soil or water near the waste site.

Toluene does not usually stay in the environment long.

Toluene does not concentrate or buildup to high levels in animals.

How might I be exposed to toluene?

Breathing contaminated workplace air or automobile exhaust.

Working with gasoline, kerosene, heating oil, paints, and lacquers.

Drinking contaminated well-water.

Living near uncontrolled hazardous waste sites containing toluene products.

How can toluene affect my health?

Toluene may affect the nervous system. Low to moderate levels can cause tiredness, confusion, weakness, drunken-type actions, memory loss, nausea, loss of appetite, and

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hearing and color vision loss. These symptoms usually disappear when exposure is stopped.

Inhaling High levels of toluene in a short time can make you feel light-headed, dizzy, or sleepy. It can also cause unconsciousness, and even death.

High levels of toluene may affect your kidneys.

How likely is toluene to cause cancer?

Studies in humans and animals generally indicate that toluene does not cause cancer.

The EPA has determined that the carcinogenicity of toluene can not be classified.

How can toluene affect children?

It is likely that health effects seen in children exposed to toluene will be similar to the effects seen in adults. Some studies in animals suggest that babies may be more sensitive than adults.

Breathing very high levels of toluene during pregnancy can result in children with birth defects and retard mental abilities, and growth. We do not know if toluene harms the unborn child if the mother is exposed to low levels of toluene during pregnancy.

How can families reduce the risk of exposure to toluene?

- Use toluene-containing products in well-ventilated areas.

- When not in use, toluene-containing products should be tightly covered to prevent evaporation into the air.

Is there a medical test to show whether I've been exposed to toluene?

There are tests to measure the level of toluene or its breakdown products in exhaled air, urine, and blood. To determine if you have been exposed to toluene, your urine or blood must be checked within 12 hours of exposure. Several other chemicals are also changed into the same breakdown products as toluene, so some of these tests are not specific for toluene.

Has the federal government made recommendations to protect human health?

EPA has set a limit of 1 milligram per liter of drinking water (1 mg/L).

Discharges, releases, or spills of more than 1,000 pounds of toluene must be reported to the National Response Center.

The Occupational Safety and Health Administration has set a limit of 200 parts toluene per million of workplace air (200 ppm).

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2000. Toxicological Profile for Toluene. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs™ Internet address is <http://www.atsdr.cdc.gov/toxfaq.html>. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.



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

SUMMARY: Exposure to xylene occurs in the workplace and when you use paint, gasoline, paint thinners and other products that contain it. People who breathe high levels may have dizziness, confusion, and a change in their sense of balance. This substance has been found in at least 658 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is xylene?

(Pronounced zī'lēn)

Xylene is a colorless, sweet-smelling liquid that catches on fire easily. It occurs naturally in petroleum and coal tar and is formed during forest fires. You can smell xylene in air at 0.08–3.7 parts of xylene per million parts of air (ppm) and begin to taste it in water at 0.53–1.8 ppm.

Chemical industries produce xylene from petroleum. It's one of the top 30 chemicals produced in the United States in terms of volume.

Xylene is used as a solvent and in the printing, rubber, and leather industries. It is also used as a cleaning agent, a thinner for paint, and in paints and varnishes. It is found in small amounts in airplane fuel and gasoline.

What happens to xylene when it enters the environment?

- Xylene has been found in waste sites and landfills when discarded as used solvent, or in varnish, paint, or paint thinners.
- It evaporates quickly from the soil and surface water into the air.

- In the air, it is broken down by sunlight into other less harmful chemicals.
- It is broken down by microorganisms in soil and water.
- Only a small amount of it builds up in fish, shellfish, plants, and animals living in xylene-contaminated water.

How might I be exposed to xylene?

- Breathing xylene in workplace air or in automobile exhaust.
- Breathing contaminated air.
- Touching gasoline, paint, paint removers, varnish, shellac, and rust preventatives that contain it.
- Breathing cigarette smoke that has small amounts of xylene in it.
- Drinking contaminated water or breathing air near waste sites and landfills that contain xylene.
- The amount of xylene in food is likely to be low.

How can xylene affect my health?

Xylene affects the brain. High levels from exposure for short periods (14 days or less) or long periods (more than 1 year) can cause headaches, lack of muscle coordination, dizziness, confusion, and changes in one's sense of balance. Exposure of

ToxFAQs Internet home page via WWW is <http://www.atsdr.cdc.gov/toxfaq.html>

people to high levels of xylene for short periods can also cause irritation of the skin, eyes, nose, and throat; difficulty in breathing; problems with the lungs; delayed reaction time; memory difficulties; stomach discomfort; and possibly changes in the liver and kidneys. It can cause unconsciousness and even death at very high levels.

Studies of unborn animals indicate that high concentrations of xylene may cause increased numbers of deaths, and delayed growth and development. In many instances, these same concentrations also cause damage to the mothers. We do not know if xylene harms the unborn child if the mother is exposed to low levels of xylene during pregnancy.

How likely is xylene to cause cancer?

The International Agency for Research on Cancer (IARC) has determined that xylene is not classifiable as to its carcinogenicity in humans.

Human and animal studies have not shown xylene to be carcinogenic, but these studies are not conclusive and do not provide enough information to conclude that xylene does not cause cancer.

Is there a medical test to show whether I've been exposed to xylene?

Laboratory tests can detect xylene or its breakdown products in exhaled air, blood, or urine. There is a high degree of agreement between the levels of exposure to xylene and the levels of xylene breakdown products in the urine. However, a urine sample must be provided very soon after exposure ends because xylene quickly leaves the body. These tests are not routinely available at your doctor's office.

Has the federal government made recommendations to protect human health?

The EPA has set a limit of 10 ppm of xylene in drinking water.

The EPA requires that spills or accidental releases of xylenes into the environment of 1,000 pounds or more must be reported.

The Occupational Safety and Health Administration (OSHA) has set a maximum level of 100 ppm xylene in workplace air for an 8-hour workday, 40-hour workweek.

The National Institute for Occupational Safety and Health (NIOSH) and the American Conference of Governmental Industrial Hygienists (ACGIH) also recommend exposure limits of 100 ppm in workplace air.

NIOSH has recommended that 900 ppm of xylene be considered immediately dangerous to life or health. This is the exposure level of a chemical that is likely to cause permanent health problems or death.

Glossary

Evaporate: To change from a liquid into a vapor or a gas.

Carcinogenic: Having the ability to cause cancer.

CAS: Chemical Abstracts Service.

ppm: Parts per million.

Solvent: A liquid that can dissolve other substances.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for xylenes (update). Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop E-29, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 404-498-0093. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html> ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.



APPENDIX B
WEST NILE VIRUS/St. LOUIS ENCEPHALITIS PREVENTION

WEST NILE VIRUS/ST. LOUIS ENCEPHALITIS PREVENTION

The following section is based upon information provided by the Centers for Disease Control (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 are 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.

APPENDIX C
REPORT FORMS

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 and sample analyses, action levels exceeded, and actions taken):

Comments:

Name: _____ Company: _____

Signature: _____ Title: _____

INJURED - ILL:

Name: _____ SSN: _____

Address: _____ Age: _____

Length of Service: _____ Time on Present Job: _____

Time/Classification: _____

SEVERITY OF INJURY OR ILLNESS:

___ Disabling ___ Non-disabling ___ Fatality

___ Medical Treatment ___ First Aid Only

ESTIMATED NUMBER OF DAYS AWAY FROM JOB: _____

NATURE OF INJURY 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

APPENDIX D
EMERGENCY HAND SIGNALS

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 5

PROPOSED DEVELOPMENT PLANS

PROPOSED NEW DEVELOPMENT FOR:
W. 129TH STREET
 487 WEST 129TH STREET NEW YORK, NEW YORK
BUILDING "A"

DRAWING SCHEDULE

ARCHITECTURAL	
T-001	COVER SHEET
C-001	SURVEY
C-002	SCHEMATIC SITE PLAN
C-003	PARKING PLAN
Z-001	ZONING ANALYSIS
Z-002	ZONING ANALYSIS
EN-001	ENERGY ANALYSIS
A-001	GENERAL NOTES
A-002	ACCESSIBILITY DIAGRAMS
A-003	ACCESSIBILITY DIAGRAMS
A-004	EGRESS PLANS
A-100	CELLAR FLOOR PLAN
A-101	FIRST FLOOR PLAN
A-102	2ND FLOOR PLAN
A-103	3RD THRU 7TH FLOOR PLAN
A-104	8TH & 9TH FLOOR PLAN
A-105	ROOF & BULKHEAD PLAN
A-200	FRONT ELEVATION
A-201	REAR ELEVATION
A-202	SIDE ELEVATION - EAST
A-203	SIDE ELEVATION - WEST
A-210	BUILDING CROSS SECTION A
A-211	BUILDING CROSS SECTION B
A-212	RAMP SECTION
A-400	TYPICAL WALL SECTION
A-401	TYPICAL WALL SECTION
A-510	KITCHEN ELEVATIONS AND DETAILS
A-511	BATHROOM ELEVATIONS & DETAILS
A-512	MISCELLANEOUS INTERIOR DETAILS
A-600	DOOR, FINISH, & LOUVER SCHEDULE
A-601	WINDOW SCHEDULE

DRAWING SCHEDULE

MECHANICAL	
M-101	MECHANICAL CELLAR FLOOR PLAN
M-102	MECHANICAL 1ST FLOOR PLAN
M-103	MECHANICAL 2ND FLOOR PLAN
M-104	MECHANICAL 3RD-7TH FLOOR PLAN
M-105	MECHANICAL 8TH FLOOR PLAN
M-106	MECHANICAL 9TH FLOOR PLAN
M-107	MECHANICAL ROOF PLAN
M-108	MECHANICAL ROOF BULKHEAD PLAN
M-201	MECHANICAL SCHEDULES AND NOTES
M-202	MECHANICAL SCHEDULES AND NOTES
M-203	MECHANICAL DETAILS
M-204	MECHANICAL DETAILS
M-205	MECHANICAL DETAILS
M-301	MECHANICAL RISERS
M-302	MECHANICAL RISERS

PLUMBING

P-101	PLUMBING CELLAR FLOOR PLAN
P-102	PLUMBING 1ST FLOOR PLAN
P-103	PLUMBING 2ND FLOOR PLAN
P-104	PLUMBING 3RD-7TH FLOOR PLAN
P-105	PLUMBING 8TH FLOOR PLAN
P-106	PLUMBING 9TH FLOOR PLAN
P-107	PLUMBING ROOF PLAN
P-108	PLUMBING BULKHEAD
P-201	PLUMBING NOTES AND SCHEDULE
P-202	PLUMBING DETAILS
P-203	PLUMBING DETAILS
P-204	PLUMBING DETAILS
P-205	PLUMBING NOTES AND SCHEDULE
P-301	PLUMBING RISER DIAGRAM
P-302	PLUMBING RISER DIAGRAM
P-303	PLUMBING RISER DIAGRAM
P-304	PLUMBING RISER DIAGRAM
P-305	PLUMBING RISER DIAGRAM

SPRINKLER

SP-101	SPRINKLER CELLAR FLOOR PLAN
SP-102	SPRINKLER 1ST FLOOR PLAN
SP-103	SPRINKLER 2ND FLOOR PLAN
SP-104	SPRINKLER 3RD-7TH FLOOR PLAN
SP-105	SPRINKLER 8TH FLOOR PLAN
SP-106	SPRINKLER 9TH FLOOR PLAN
SP-107	SPRINKLER ROOF PLAN
SP-201	SPRINKLER NOTES AND DETAILS
SP-202	SPRINKLER DETAILS
SP-203	SPRINKLER DETAILS
SP-301	SPRINKLER RISER DIAGRAM

STRUCTURAL

FO-001	FOUNDATION PLAN
FO-101	FOUNDATION DETAILS
FO-102	FOUNDATION DETAILS
FO-103	FOUNDATION DETAILS
FO-104	FOUNDATION DETAILS
S-001	1ST FLOOR FRAMING PLAN
S-001.1	CONNECTED PARKING LEVEL
S-002	2ND FLOOR FRAMING PLAN
S-003	3RD FLOOR FRAMING PLAN
S-004	4TH-7TH FLOOR FRAMING PLAN
S-005	8TH FLOOR FRAMING PLAN
S-006	9TH FLOOR FRAMING PLAN
S-007	ROOF FRAMING PLAN
S-101	MASONRY DETAILS AND NOTES
S-102	MASONRY DETAILS AND NOTES
S-201	STEEL DETAILS AND NOTES
S-301	PLANK DETAILS AND NOTES
S-302	PLANK DETAILS AND NOTES
S-303	PLANK DETAILS AND NOTES



APARTMENT DISTRIBUTION

BUILDING A					
	0BR.	1BR.	2BR.	3BR.	T.
1ST FLOOR	4	1	1	0	6
2ND FLOOR	4	2	2	0	8
3RD FLOOR	5	2	2	0	9
4TH FLOOR	5	2	2	0	9
5TH FLOOR	5	2	2	0	9
6TH FLOOR	5	2	2	0	9
7TH FLOOR	5	2	2	0	9
8TH FLOOR	0	2	3	0	5
9TH FLOOR	0	2	3	0	5
TOTAL	33	17	19	0	69
	48%	25%	28%	0%	100%

SPECIAL/PROGRESS INSPECTIONS:

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

THE FOLLOWING ITEMS OF WORK SHALL BE SUBJECT TO INSPECTIONS/ TESTS:

2008 CODE SPECIAL INSPECTIONS	BC	REQ'D	YES/NO
SPRAYED FIRE-RESISTANT MATERIALS	BC 1704.11		YES
EXTERIOR INSULATION FINISH SYSTEMS (EIFS)	BC 1704.12		YES
FIRESTOP, DRAFTSTOP, AND FIREBLOCK SYSTEMS	BC 1704.25		YES
2008 CODE PROGRESS INSPECTIONS			
ENERGY CODE COMPLIANCE INSPECTIONS	BC 109.3.5		YES
FIRE-RESISTANCE RATED CONSTRUCTION	BC 109.3.4		YES
TR-8 INSPECTIONS			
PROTECTION OF FOUNDATION INSULATION	1RCNY 5000-01/TABLE1		YES
INSULATION PLACEMENT AND R VALUES	1RCNY 5000-01/TABLE1		YES
FENESTRATION THERMAL VALUES AND RATINGS	1RCNY 5000-01/TABLE1		YES
FENESTRATION RATINGS FOR AIR LEAKAGE	1RCNY 5000-01/TABLE1		YES
FENESTRATION AREAS	1RCNY 5000-01/TABLE1		YES
AIR SEALING AND INSULATION- VISUAL	1RCNY 5000-01/TABLE1		YES
AIR SEALING AND INSULATION-TESTING	1RCNY 5000-01/TABLE1		YES
PROJECTION FACTORS	1RCNY 5000-01/TABLE1		YES
VESTIBULES	1RCNY 5000-01/TABLE1		YES

BUILDING TO BE FULLY SPRINKLERED:
 SPRINKLERS BEING FILED UNDER SPRINKLER APPLICATION

ASSOCIATED APPLICATIONS	DOB #
BUILDER'S PAVEMENT PLAN	
SPRINKLER/STANDPIPE	
FIRE ALARM	
FIRE PROTECTION PLAN	
EXCAVATION/SOE	



THIS SITE DOES NOT FALL UNDER A FLOOD HAZARD AS PER FLOOD INSURANCE RATE MAP #3604970079F



VICINITY MAP
 NOT TO SCALE

PROPOSED NEW DEVELOPMENT FOR:

W. 129TH STREET

487 WEST 129TH STREET
 NEW YORK, NEW YORK

BLOCK: 1969 LOT: 6

ARCHITECT:

AUFGANG ARCHITECTS LLC
 49 NORTH AIRMONT RD.
 SUFFERN, NY
 INFO@AUFGANG.COM 845.368.0004

DEVELOPER

STRUCTURAL ENGINEER:

BROOKER ENGINEERING, PLLC
 76 LAFAYETTE AVENUE
 SUFFERN, NEW YORK 10901
 TEL. 845-357-4411 FAX. 845-357-1896

MEP ENGINEER:

DI BARI ENGINEERING P.C.
 99 MAIN STREET
 DOBBS FERRY, NY 10952
 TEL. 914-479-9705 FAX 914-479-1234

AUFGANG ARCHITECTS

1-15-15	ISSUED AS PER DOB COMMENTS
DATE	SUBMISSIONS / REVISIONS

SHEET TITLE:

COVER SHEET

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SEAL & SIGNATURE



ISSUE DATE: PROJECT NO:

01/12/15 #1214

DRAWN BY: CHECKED BY:

Author Checker

SCALE: SHEET NO:

1/8" = 1'-0" 1 OF 31

DRAWING NO:

T-001.00

NYC DOB NUMBER: 121191780

PROPOSED NEW DEVELOPMENT FOR:

487 WEST 129TH STREET
478 WEST 130TH STREET
NEW YORK, NEW YORK

BLOCK: 1969 LOT: 5.6 & 7

ARCHITECT:
AUFGANG ARCHITECTS LLC
49 NORTH AIRMONT RD.
SUFFERN, NY
INFO@AUFANG.COM 845.368.0004

DEVELOPER:
THE GEORGE OF HARLEM MM LLC
161 Suffolk St.
New York, NY 10002
Tel. 212-477-3057

STRUCTURAL ENGINEER:
BROOKER ENGINEERING, PLLC
76 Lafayette Avenue,
Suffern NY 10801
Tel. 845-357-4411
Fax. 845-357-1896

MEP ENGINEER:
DI BARI ENGINEERING P.C.
99 Main Street
Dobbs Ferry, New York 10522
Tel. 914-479-9705
Fax. 914-479-1234

AUFANG ARCHITECTS

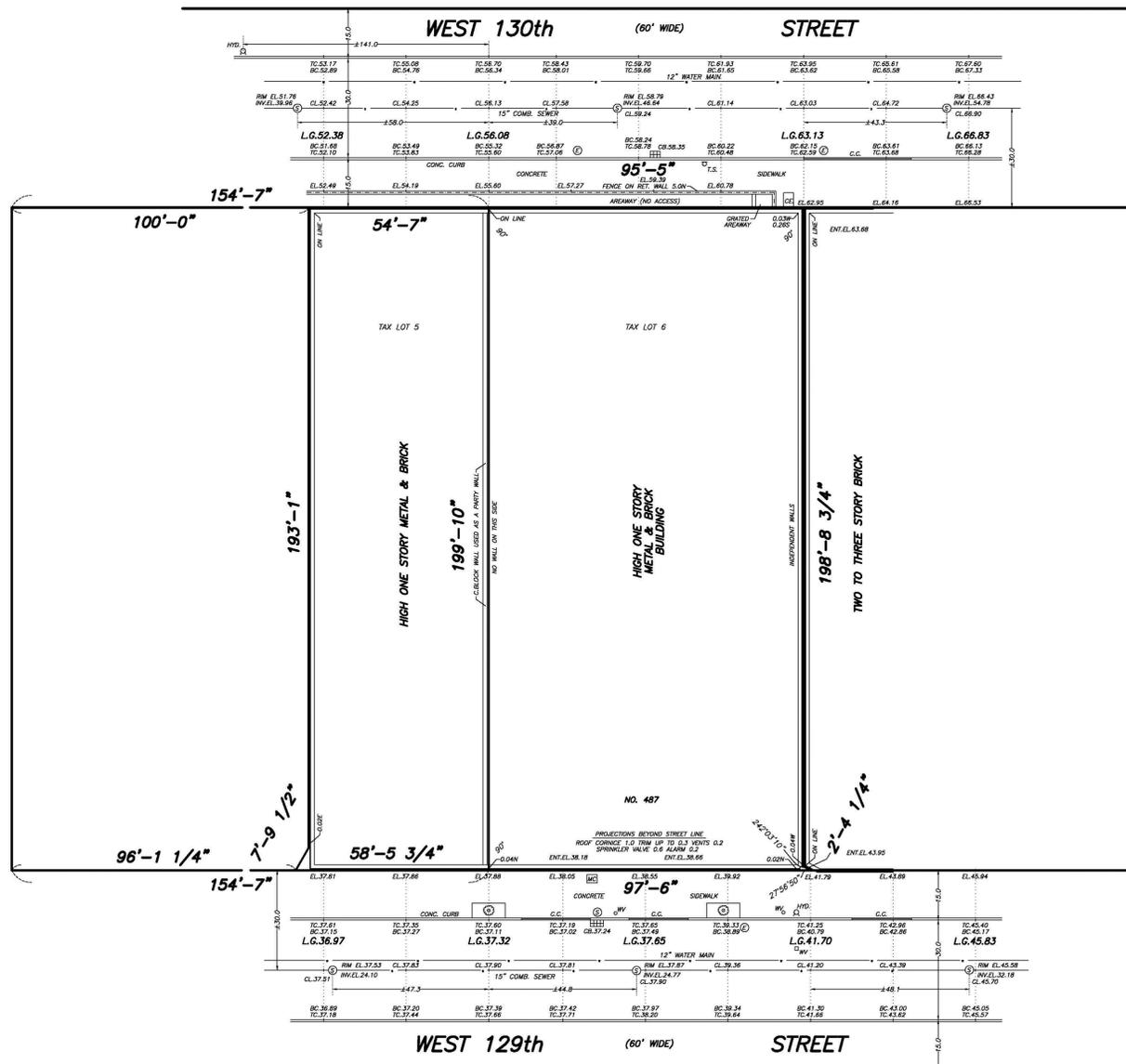
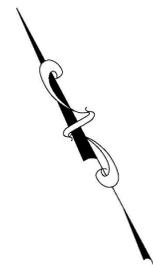
1-15-15	ISSUED AS PER DOB COMMENTS
11-03-14	ISSUED TO CLIENT FOR PRICING
09-02-14	ISSUED TO D.O.B. FOR REVIEW & COMMENT
DATE	SUBMISSIONS / REVISIONS

SHEET TITLE: SURVEY

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ISSUE DATE:	PROJECT NO:	
07-16-14	#1214	
DRAWN BY:	CHECKED BY:	
NJB	PC	
SCALE:	SHEET NO:	
AS NOTED	2 of 31	
DRAWING NO:		
C-001.00		
NYC DOB NUMBER:	121191780	

ARCHITECTURAL SURVEY

REF. NO. M1969-6



LEGEND:

TRAFFIC LIGHT	8 T.L.
FIRE HYDRANT	15 F.H.D.
LIGHT POLE	14 L.P.
CATCH BASIN	C.B.
TREE	T.
UTILITY POLE	U.P.
WALKER	W.
OVERHEAD SERVICE WIRING	GAS-C.V. WATER-W.V. C.U.S.W.
TRAFFIC SIGN	D.T.S.
LEGAL DRINKS	L.G.
FEDESTRIAN RAMP	F.R.
FIRE PULL BOX	F.B.
CURB AND CURB CUT	C.C.
CONCRETE	C.C.
PARKING METER	P.M.
TELEPHONE	T.E.L.
METAL COVER	M.C.

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NOTES:
ELEVATIONS SHOWN ARE REFERENCED TO THE NAD 83 DATUM WHICH IS 1.10 FEET ABOVE MEAN SEA LEVEL AT SANDY HOOK AS ESTABLISHED BY THE U.S. COAST AND GEODETIC SURVEY AND IS 1.85 FEET BELOW MANHATTAN DATUM. MANHATTAN DATUM IS 2.70' ABOVE MEAN SEA LEVEL AT SANDY HOOK AS ESTABLISHED BY THE U.S. COAST AND GEODETIC SURVEY. 10.00 (MD)=11.65 (NAV088).

INVERT ELEVATION ARE DERIVED FROM CITY AGENCY RECORDS WHEN NOT AVAILABLE BY FIELD SURVEY.

ONLY SEWER AND WATER UTILITIES ARE SHOWN. CONSULT WITH APPROPRIATE UTILITY COMPANIES AND/OR AGENCIES PRIOR TO DESIGNING IMPROVEMENTS.

SUBSURFACE UTILITIES SHOWN ARE TAKEN FROM RECORDS OF GOVERNMENTAL AGENCIES AND UTILITY COMPANIES UNLESS OTHERWISE SHOWN.

COVER OR DEPTH OF UTILITIES IS NOT SHOWN AND MUST BE VERIFIED WITH PROPER AGENCIES PRIOR TO CONSTRUCTION OF PROJECT.

UNDERGROUND, OVERHEAD AND GROUND LEVEL UTILITIES ARE NOT GUARANTEED AS TO ACCURACY, EXACT LOCATION, TYPE OR USE, ACTIVE OR INACTIVE. VERIFICATION IS MANDATORY WITH MUNICIPAL AGENCIES, PUBLIC AND PRIVATE UTILITY COMPANIES PRIOR TO TAKING TITLE AND/OR DESIGN WORK. BOUNDARIES ARE NOT GUARANTEED UNLESS SO NOTED.

UNDERGROUND UTILITIES MUST BE VERIFIED AND MARKED OUT BEFORE CONSTRUCTION. ALL APPROPRIATE UTILITY COMPANIES AND/OR AGENCIES MUST BE NOTIFIED AT LEAST 72 HOURS PRIOR TO ANY CONSTRUCTION, EXCAVATION OR DEMOLITION AT OR NEAR THE PROPERTY IN ACCORDANCE WITH NYS CODE RULE 753.

ALL OPERATIONS OF UNDERGROUND FACILITIES AND ALL EXCAVATORS ARE OBLIGATED TO COMPLY WITH ARTICLE 35 OF THE GENERAL BUSINESS LAW AND WITH PROVISIONS OF INDUSTRIAL CODE PART (RULE NO. 35) BEFORE ANY EXCAVATION OR DEMOLITION IS COMMENCED. EVERY EXCAVATOR IS REQUIRED BY THESE LAWS TO GIVE ADVANCE NOTICE TO EVERY OPERATOR OF UNDERGROUND FACILITIES OF HIS INTENT TO PERFORM EXCAVATION OR DEMOLITION WORK IN THE SPECIFIED AREA.

EMPIRE STATE LAND SURVEYOR, P.C. AND FRANK GALLUZZO, PLS MAKES NO CLAIM AND DOES NOT GUARANTEE THAT THE 'SEWERS' SHOWN HEREON ARE PUBLIC AND THAT THE LOT OR LOTS DEPICTED ON THIS SURVEY WILL BE ABLE TO CONNECT TO SAME.

A THOROUGH INVESTIGATION BY THE OWNER, DEVELOPER AND/OR THE ARCHITECT MUST BE MADE WITH THE NEW YORK CITY SEWER DEPARTMENT ON THE FEASIBILITY TO CONNECT TO THE EXISTING SEWER LINES BEFORE PURCHASING AND/OR DESIGNING.

THIS SURVEY WAS PREPARED IN A ELECTRONIC MEDIA FORMAT. IT IS UNDERSTOOD AND AGREED THAT EMPIRE STATE LAND SURVEYOR, P.C. AND FRANK GALLUZZO, PLS UPON RELEASE OF THESE ELECTRONIC FILES NO LONGER MAINTAINS CONTROL OF ITS USE, REUSE OR MODIFICATION. ONLY THE DIMENSIONS SHOWN ON THE HARD COPY ORIGINAL RECORD SIGNED AND SEALED DOCUMENTS PREPARED BY THIS OFFICE WILL BE CERTIFIED FOR ACCURACY. THE USER OF THIS ELECTRONIC MEDIA ACCEPTS FULL RESPONSIBILITY AND LIABILITY FOR ANY CONSEQUENCES ARISING OUT OF USE OF THIS DATA.

PROPERTY LINE DIMENSIONS SHOWN ARE DERIVED FROM DEEDS AND TAX MAPS. THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OF TITLE AND IS SUBJECT TO ANY STATE OF FACTS THAT MAY BE REVEALED BY AN EXAMINATION OF SUCH.

THIS IS TO CERTIFY THAT THERE ARE NO VISIBLE STREAMS OR NATURAL WATER COURSES ON THE PROPERTY EXCEPT AS SHOWN ON THIS SURVEY.

THE USE OF ANY INFORMATION ON THIS SURVEY CONSTITUTES AN AGREEMENT TO ALL OF THE ABOVE.

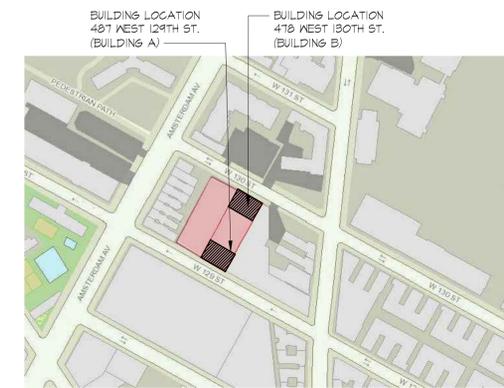
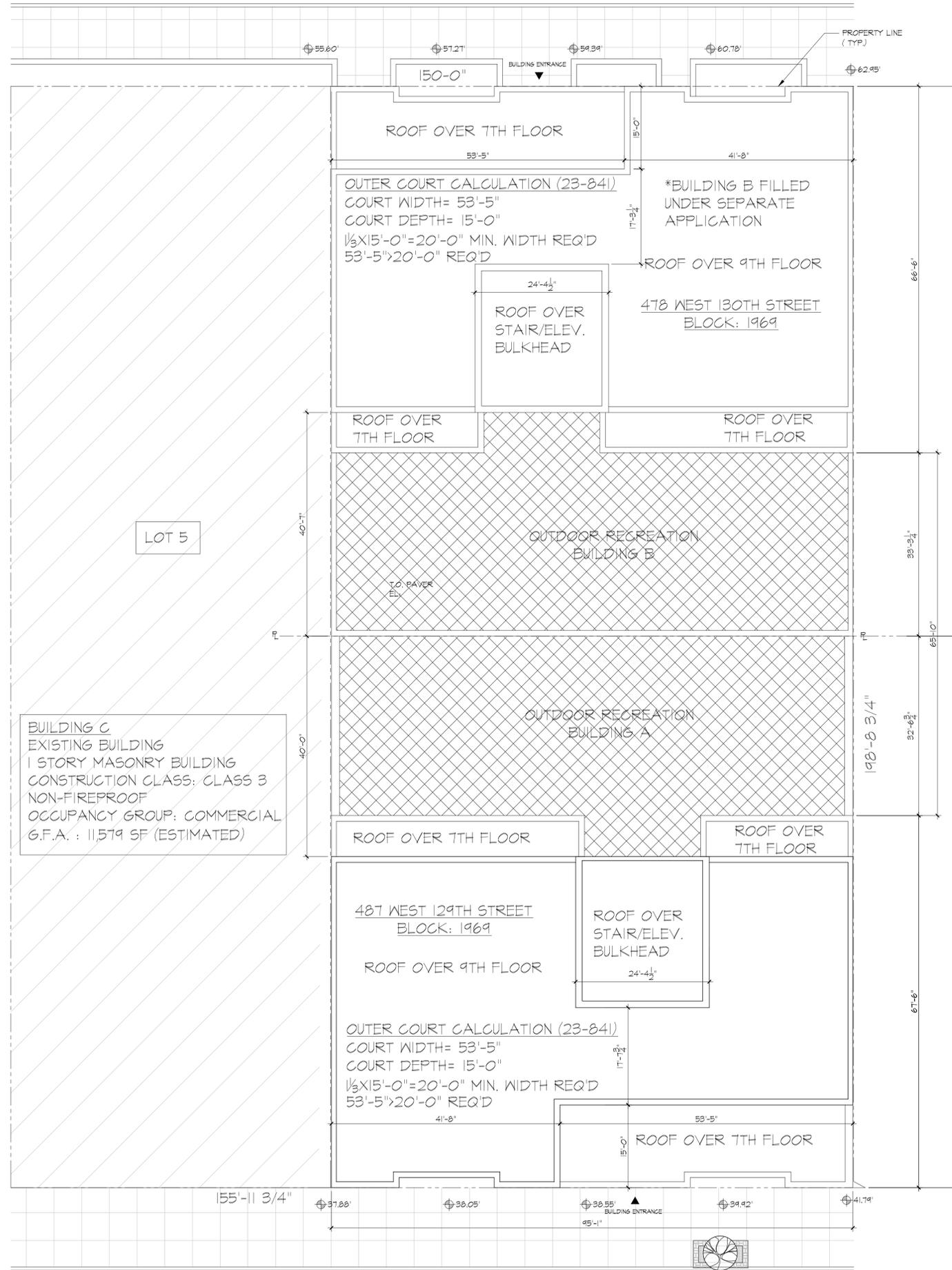
2.	JANUARY 6, 2015	TAX LOT 5 ADDED
1.	JUNE 30, 2014	ARCHITECTURAL SURVEY
NO.	DATE	REVISION
MAP OF PROPERTY SITUATED IN MANHATTAN NEW YORK COUNTY, N.Y. TAX SECT.: 7 TAX BLOCK: 1969 TAX LOT(S): 6 Empire State Land Surveyor, P.C. Frank I. Galluzzo Professional Land Surveyor Records of Albert A. Bianco Stephen J. Reid - M. Berry Carman - G. W. Haviland Vandewater & Lapp - Robert E. Carlin - William J. Daly 1005 Glen Cove Avenue, Glen Head, NY, 11545 (516)-248-6901		
SURVEYED: JUNE 5, 2014		

GENERAL NOTES:

1. ALL FILL USED BELOW SLABS UNDER BUILDINGS AND IN PAVED AREAS SHALL BE QUALITY SANDY MATERIAL AND SHALL BE COMPACTED IN 12" LAYERS TO 95% DENSITY TO PREVENT SETTLEMENT AS PER ASTM D1557, METHOD C.
2. CONTRACTOR MUST ALSO FOLLOW ALL REQUIREMENTS FOR PREPARATION, CLEARING, PROOF ROLLING, AND FILL REPLACEMENT RECOMMENDED BY A REPORT ON SOIL AND FOUNDATION INVESTIGATION.
3. ALL FILL SHALL BE COMPACTED WITH SOIL COMPACTION EQUIPMENT RATHER THAN BY HAND TAMPING (EXCEPT AROUND PIPES, ETC.)
4. THE THICKNESS OF FILL LAYERS PLACED SHALL BE COMPATIBLE WITH THE TYPE OF COMPACTION EQUIPMENT USED.
5. THE ATTAINMENT OF SPECIFIED DENSITIES SHALL BE VERIFIED BY FIELD DENSITY TESTS MADE BY AN INDEPENDENT TESTING LABORATORY ON EACH LAYER OF MATERIAL COMPACTED, ONE TEST PER 5000 SQ. FT. OF SURFACE AREA SHALL BE MADE ON EACH LAYER WITHIN THE BUILDING.

EROSION AND SEDIMENT CONTROL PLAN - CONSTRUCTION SEQUENCE

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



LEGEND:

- TRAFFIC DIRECTIONS
- EXISTING TRAFFIC SIGN
- EXISTING UTILITY POLE
- EXISTING HYDRANT
- EXISTING BUS STOP
- EXISTING ELECTRIC BOX
- EXISTING TRAFFIC LIGHTS POST
- EXISTING LIGHT POST
- BUILDING ENTRY
- RESIDENTIAL EGRESS
- PROPOSED LONDON PLANE 1/4" X 1/4" TREE PIT
- BENCH
- STORM DRAIN
- EXTERIOR LIGHTING
- LAWN
- CONCRETE BLOCK PAVERS

NOTE: PLEASE REFER TO THE QUALITY HOUSING CHART FOR THE RECREATION SPACE CALCULATIONS.

NOTE: PLEASE REFER TO THE SOE DRAWINGS FOR SHEETING, SHORING & UNDERPINNING DETAILS.

PROPOSED NEW DEVELOPMENT FOR:

487 WEST 129TH STREET
478 WEST 130TH STREET
NEW YORK, NEW YORK

BLOCK: 1969 LOT: 5,6&7

ARCHITECT:

AUFGANG ARCHITECTS LLC
49 NORTH AIRMONT RD.
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

AUFGANG ARCHITECTS

DEVELOPER:
THE GEORGE OF HARLEM MM LLC
161 Suffolk St.
New York, NY 10002
Tel. 212-477-3057

STRUCTURAL ENGINEER:
BROOKER ENGINEERING, PLLC
76 Lafayette Avenue,
Suffern NY 10601
Tel. 845-357-4411
Fax. 845-357-1896

MEP ENGINEER:
DI BARI ENGINEERING P.C.
99 Main Street
Dobbs Ferry, New York 10522
Tel. 914-479-9705
Fax. 914-479-1234

1-15-15	ISSUED AS PER DOB COMMENTS
11-03-14	ISSUED TO CLIENT FOR PRICING
09-02-14	ISSUED TO D.O.B. FOR REVIEW & COMMENT
DATE	SUBMISSIONS / REVISIONS

SHEET TITLE:
SCHEMATIC SITE PLAN

THIS DRAWING IS AN INSTRUMENT OF SERVICE AND SHALL REMAIN THE PROPERTY OF AUFGANG ARCHITECTS LLC. WHETHER THE PROJECT FOR WHICH IT IS MADE IS COMPLETED OR NOT, THIS DRAWING SHALL NOT BE USED BY THE OWNER OR OTHERS ON OTHER PROJECTS, FOR ADDITIONS TO THIS PROJECT OR FOR COMPLETION OF THIS PROJECT BY OTHERS EXCEPT BY AGREEMENT IN WRITING WITH AUFGANG ARCHITECTS LLC. SUBMISSION OR DISTRIBUTION TO ANY OTHER REGULATORY AGENCIES OR FOR OTHER PURPOSES IN CONNECTION WITH THIS PROJECT IS NOT TO BE CONSTRUED AS PUBLICATION IN VIOLATION OF THE RIGHTS OF AUFGANG ARCHITECTS LLC. REPRODUCTION OR PUBLICATION BY ANY METHOD IN WHOLE OR IN PART IS PROHIBITED. TITLE TO THIS DRAWING BELONGS TO AUFGANG ARCHITECTS LLC WITHOUT PREJUDICE.



ISSUE DATE:	PROJECT NO:
07-16-14	#1214
DRAWN BY:	CHECKED BY:
NJB	PC
SCALE:	SHEET NO:
AS NOTED	3 of 31

DRAWING NO:
C-002.00
NYC DOB NUMBER: 121191780

SCHEMATIC SITE PLAN

SCALE: 3/32" = 1'-0"

PROPOSED NEW
DEVELOPMENT FOR:

**W. 129TH
STREET**

487 WEST 129TH STREET
NEW YORK, NEW YORK

BLOCK: 1969 LOT: 6

ARCHITECT:

AUFGANG ARCHITECTS LLC
49 NORTH AIRMONT RD.
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER

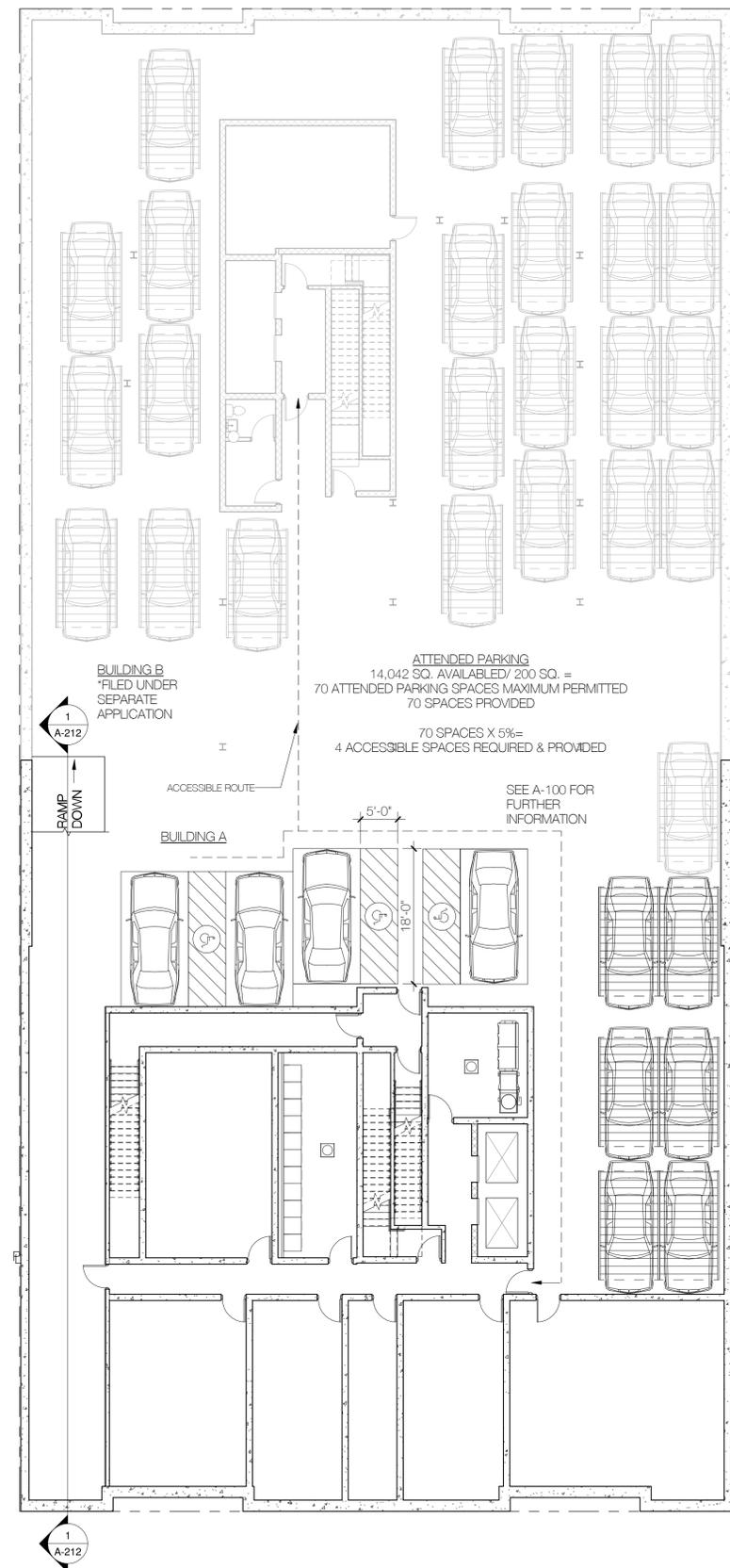
STRUCTURAL ENGINEER:

BROOKER ENGINEERING, PLLC
76 LAFAYETTE AVENUE
SUFFERN, NEW YORK 10901
TEL. 845-357-4411
FAX. 845-357-1896

MEP ENGINEER:

DI BARI ENGINEERING P.C.
99 MAIN STREET
DOBBS FERRY, NY 10952
TEL. 914-479-9705
FAX 914-479-1234

**AUFGANG
ARCHITECTS**



1 CELLAR PLAN
C-003 3/32" = 1'-0"

1-15-16	ISSUED AS PER DOB COMMENTS
DATE	SUBMISSIONS / REVISIONS

SHEET TITLE:

PARKING PLAN

THIS DRAWING IS AN INSTRUMENT OF SERVICE AND SHALL REMAIN THE PROPERTY OF AUFGANG ARCHITECTS LLC, WHETHER THE PROJECT FOR WHICH IT IS MADE IS EXECUTED OR NOT. THIS DRAWING SHALL NOT BE USED BY THE OWNER OR OTHERS ON OTHER PROJECTS, FOR NOTIONS TO THIS PROJECT OR FOR COMPLETION OF THIS PROJECT BY OTHERS EXCEPT BY AGREEMENT IN WRITING WITH AUFGANG ARCHITECTS LLC. SUBMISSION OR DISTRIBUTION TO MEET OTHER REGULATORY REQUIREMENTS OR FOR OTHER PURPOSES IN CONNECTION WITH THIS PROJECT IS NOT TO BE CONSIDERED AS REPRODUCTION OR MODIFICATION OF THE RESULTS OF AUFGANG ARCHITECTS LLC. REPRODUCTION OR MODIFICATION BY ANY METHOD IN WHOLE OR IN PART IS PROHIBITED. TITLE TO THIS DRAWING BELONGS TO AUFGANG ARCHITECTS LLC WITHOUT PREJUDICE.

SEAL & SIGNATURE

ISSUE DATE:	PROJECT NO:
12/23/14	#1214
DRAWN BY:	CHECKED BY:
Author	Checker
SCALE:	SHEET NO:
3/32" =	4 OF 31
DRAWING NO. 1'-0"	
C-003.00	
NYC DOB NUMBER:	121191780

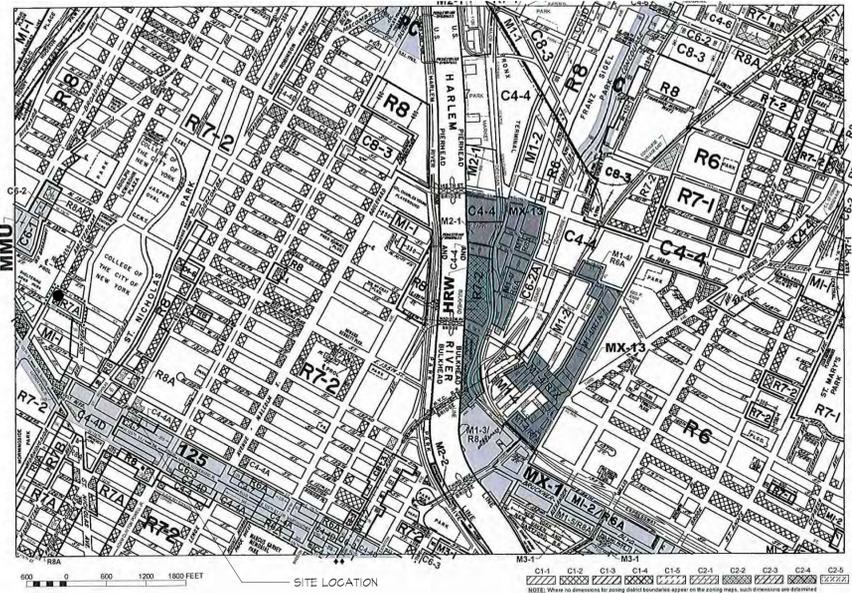
ZONING CALCULATION

487 WEST 129TH STREET
Block: 1969
Lot: 6 & 5
Zoning: R7-A
Map: 5c
Community District: 9

1/16/2015

PERMITTED/REQUIRED	PROPOSED	REMARKS	RES.
RESIDENTIAL - (Use Group 2) R-7A LOT AREA			
Lot 6 Lot 5 TOTAL	19,067.00 Sq Ft 11,643.00 Sq Ft 30,710.00 Sq Ft		
LOT COVERAGE			
Building A Building B	Existing non residential building in a residence district 6,186.00 Sq Ft 6,105.00 Sq Ft		
FLOOR AREA RATIO	65% 4.00 MAX	12,291.00 Sq. Ft. 3.18	23-145
GROSS FLOOR AREA			
	122,840.00 SQ. FT.	BUILDING A 47,317.00 BUILDING B 50,302.00 97,619.00 SQ.FT.	23-145
NO. OF APARTMENTS			
GFA Proposed Comm. Facility - Building C - Total /#88	115,543 Sq Ft 6,345 Sq Ft 11,579 Sq Ft 97,619 Sq.Ft	BUILDING A 69 BUILDING B 71	23-22
HEIGHTS			
MAX BASE HEIGHT MAX BUILDING HEIGHT	65'-0" 80'-0"	BUILDING A 62'-3 1/2" 79'-11 1/2"	BUILDING B 61'-7 1/2" 79'-3 1/4"
INITIAL SETBACK ABOVE BASE HEIGHT			
	15'-0" MIN	15'-0"	23-633
YARD REGULATIONS			
FRONT SIDE REAR YARD EQUIVALENT	NONE 80'-0" midway between 2 streets	NONE 65'-10"	23-48 23-632
COMMUNITY FACILITY LOT AREA			
	0.00	0.00	23-145
FLOOR AREA RATIO			
	4.00 MAX	0.21	24-10
GROSS FLOOR AREA			
	121,222.56 SQ FT MAX	BUILDING A 0.00 BUILDING B 6,345.00	24-10
PARKING			
Apartments @ 50%		BUILDING A 34.5 BUILDING B 35.5	25-23
TOTAL	70 Spaces	70 Spaces	
MIXED DEVELOPMENT TOTAL LOT AREA (Lots 5 and 6)			
		30,710.00 Sq Ft	OK
FLOOR AREA RATIO			
	4.00 MAX	3.76	23-145
GROSS FLOOR AREA			
		11,579.00 Sq Ft. Existing on Building C 97,619.00 Proposed Residential (Buildings A+B) 6,345.00 Proposed Comm. Facility (on Building B)	OK OK OK
MAX. SQ. FT. PERMITTED	122,840.00 SQ. FT.	115,543.00 SQ. FT.	23-145

* 27,696 Sq.Ft. Air Rights from lot 5



ZONING MAP
This information is provided for informational purposes only. It is not intended to constitute an offer of insurance or any other financial product. For more information, please contact your broker.

Major Zoning Classifications:
R - RESIDENTIAL DISTRICT
C - COMMERCIAL DISTRICT
M - MANUFACTURING DISTRICT

SPECIAL PURPOSE DISTRICT
The Special Purpose District (SPD) is a district that is established by the City Council to provide for the development and use of land in a specific area of the City. SPDs are established by the City Council and are subject to the same zoning regulations as other districts.

Effective Date(s) of Rezoning:
12-09-2009 C 080339 ZMM

Special Requirements:
For a list of lots subject to CEQR environmental requirements, see APPENDIX C.
For a list of lots subject to "D" residential designations, see APPENDIX D.
For Incidental Housing designated areas on this map, see APPENDIX E.

CITY MAP CHANGES:
AS CORRECTED 10-18-10
AS CORRECTED 08-09-10

MAP KEY

3b	3d
5c	6a
5d	6b
6c	6d

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Approximate Address Identified: 487 W 129th St, New York, New York, 10027

Updated FEMA Flood Hazard Data
FEMA flood hazard data currently available for coastal areas of New York and New Jersey is provided below to help you understand the current flood risk to your property and to guide recovery and rebuilding efforts.
Note: This tool provides Flood Zone and Base Flood Elevation (BFE) information for areas affected by coastal flood risk. However, riverine flood zone information will also be revealed by the tool in communities where preliminary FEMA's have been released.

Effective Flood Insurance Data
This information is from the effective Flood Insurance Rate Map for your community. It is used to determine who must buy flood insurance and how much it costs. It may also be used by your community to regulate development in flood prone areas.

Attribute Name | **Attribute Value**

What is the most recent FEMA flood hazard data source available for this location?
FEMA Flood Insurance Rate Map (FIRM) | N/A

What is my property's Base Flood Elevation (BFE)?
If you do know, the flood depth will be shown instead of an elevation. For N/A results, please contact your local floodplain administrator for more information. | N/A

What is my property's Flood Zone?
For N/A results, please contact your local floodplain administrator for more information. | N/A

What is the estimated annual elevation in this location?
See licensed surveyor for exact elevation of your building. | N/A

What does my FEMA Flood Hazard Map Panel Look Like?
Link to Preliminary FIRM | N/A
Link to Map Tool | N/A

View your property on our Interactive Web Tool
Link to Preliminary FIRM | N/A
Link to FEMA Flood Hazard Map Panel | N/A

Where can I get the GIS data for my property area?
Link to Preliminary FIRM | N/A
Link to FEMA Flood Hazard Map Panel | N/A

ZONING MAP
NOT TO SCALE



TAX MAP
NOT TO SCALE



PROPOSED NEW DEVELOPMENT FOR:
W. 129TH STREET
 487 WEST 129TH STREET
 NEW YORK, NEW YORK
 BLOCK: 1969 LOT: 6

ARCHITECT:
 AUFANG ARCHITECTS LLC
 49 NORTH AIRMONT RD.
 SUFFERN, NY
 INFO@AUFANG.COM 845.368.0004

DEVELOPER

STRUCTURAL ENGINEER:
 BROOKER ENGINEERING, PLLC
 76 LAFAYETTE AVENUE
 SUFFERN, NEW YORK 10901
 TEL. 845-357-4411
 FAX. 845-357-1896

MEP ENGINEER:
 DI BARI ENGINEERING P.C.
 99 MAIN STREET
 DOBBS FERRY, NY 10952
 FAX 914-479-1234

AUFANG ARCHITECTS

WALL TYPE LEGEND

- ◆ 0-1 TYPICAL PARTITION - (1) LAYER 5/8" TYPE "X" GYPSUM BOARD ON EACH SIDE OF 2-1/2" METAL STUDS @ 16" O.C.
- ◆ 0-2 BATHROOM CHASE WALL PARTITION - (1) LAYER 5/8" TYPE "X" WATER RESISTANT GYPSUM BOARD ONE SIDE OF 2-1/2" METAL STUDS @ 16" O.C.
- ◆ 0-3 2" RIGID INSULATION
- ◆ 1-1 1 HOUR RATED TENANT SEPARATION PARTITION - (1) LAYER OF 5/8" TYPE "X" GYPSUM BOARD ON EACH SIDE OF 3-5/8" METAL STUDS @ 16" O.C. WITH 5-1/2" SOUND ATTENUATION INSULATION. EXTEND STUDS & GYPSUM BOARD UP TO UNDERSIDE OF CONCRETE DECK & SEAL TIGHT TO UNDERSIDE OF CONCRETE DECK AND/OR ROOF DECK W/ CONT. FIRESTOP SEALANT & PRESARFING INSULATION (UL # U419) (STC 51)
- ◆ 1-2 1 HOUR RATED CHASEWALL - (1) LAYER 5/8" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2-1/2" METAL STUDS @ 24" O.C. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF FLOOR/DECK OR ROOF DECK. SEAL TIGHT TO UNDERSIDE OF FLOOR/DECK W/ CONT. FIRESTOP SEALANT. (UL #442) (PROVIDE INSUL. AS REQ'D TO ACHIEVE A MIN STC RATING OF 50)
- ◆ 1-3 1 HOUR RATED EXTERIOR PARTITION - (2) LAYERS OF 5/8" TYPE "X" GYPSUM BOARD INSIDE & OUT. EXTERIOR GYPSUM BOARD SHEATHING (OUTSIDE) OVER 6" GA 12 GALV. METAL STUDS @ 16" O.C. WITH 5-1/2" BATT INSULATION (UNFACED) (R-15) (UL #424)
- ◆ 1-4 1 HOUR RATED EXTERIOR PARTITION (FURRING) - SIM. TO 1-3 WITH INTERIOR FURRING AS REQ'D TO ALIGN WITH INTERIOR PARTITION
- ◆ 2-1 2 HOUR RATED CMU WALL - CMU WITH CONT. GALVANIZED HORIZONTAL TRUSSES TYPE REINFORCING AT ALTERNATE BLOCK COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE DECK OR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND PRESARFING INSULATION WHERE GAP EXIST. BETWEEN TOP OF WALL AND BOTTOM OF DECK (UL #U906)
- ◆ 2-2 2 HOUR RATED CMU WALL (FURRING) - 2-2 SIM. WITH FURRING. (1) LAYER 5/8" TYPE "X" GYPSUM BOARD OVER 1 1/2" METAL CHANNELS @ 16" O.C.
- ◆ 2-3 2 HOUR RATED INTERIOR BEARING PARTITION - (2) LAYERS 5/8" TYPE "X" GYPSUM BOARD ON EACH SIDE 6" METAL STUDS @ 16" O.C. WITH 5-1/2" SOUND ATTENUATION INSULATION. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF FLOOR DECK OR ROOF DECK. SEAL TIGHT TO DECK W/ CONT. FIRESTOP SEALANT & PRESARFING. (GA FILE #WP-1522 STC 55-59)
- ◆ 2-4 2 HOUR RATED INTERIOR NON-BEARING PARTITION - (2) LAYERS 5/8" TYPE "X" GYPSUM BOARD ON EACH SIDE 6" METAL STUDS @ 16" O.C. WITH 5-1/2" SOUND ATTENUATION INSULATION. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF FLOOR DECK OR ROOF DECK. SEAL TIGHT TO DECK W/ CONT. FIRESTOP SEALANT & PRESARFING. (GA FILE #WP-1522 STC 55-59)
- ◆ 2-5 2 HOUR RATED EXTERIOR CMU WALL - CMU WITH CONT. GALVANIZED HORIZONTAL TRUSSES TYPE REINFORCING AT ALTERNATE BLOCK COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE DECK OR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND PRESARFING INSULATION WHERE GAP EXIST. BETWEEN TOP OF WALL AND BOTTOM OF DECK (UL #U906)
- ◆ 2-6 2 HOUR RATED EXTERIOR CMU WALL (3-5/8" FURRING) - 2-5 SIM. WITH FURRING. (1) LAYER 5/8" TYPE "X" GYPSUM BOARD ON 3-5/8" GALV. METAL STUDS @ 16" O.C. WITH 3 1/2" (R-15) BATT INSULATION (UNFACED)
- ◆ 2-7 2 HOUR RATED INTERIOR CMU WALL (2" FURRING) - CMU WITH CONT. GALVANIZED HORIZONTAL TRUSSES TYPE REINFORCING AT ALTERNATE BLOCK COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE DECK OR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND PRESARFING INSULATION WHERE GAP EXIST. BETWEEN TOP OF WALL AND BOTTOM OF DECK (UL #U906) (FURRING. (1) LAYER 5/8" TYPE "X" GYPSUM BOARD OVER 7/8" METAL CHANNELS @ 16" O.C.
- ◆ 2-8 2 HOUR RATED INTERIOR CMU WALL (1 1/2" FURRING) - 2-7 SIM. WITH FURRING. (1) LAYER 5/8" TYPE "X" GYPSUM BOARD OVER 1 1/2" METAL CHANNELS @ 16" O.C.
- ◆ 2-9 2 HOUR RATED INTERIOR BEARING WALL (FURRING) - SIM TO 2-3 WITH INTERIOR FURRING AS REQ'D TO ALIGN WITH EXTERIOR WALL
- ◆ 3-1 3 HOUR RATED WALL - (1) LAYER 5/8" TYPE "X" GYPSUM BOARD OVER 7/8" METAL HAT CHANNELS @ 24" O.C. OVER 2 HR RATED CONCRETE WALL WITH CONT. GALVANIZED HORIZONTAL TRUSSES TYPE REINFORCING AT ALTERNATE COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE FLOOR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND PRESARFING INSULATION WHERE A GAP EXISTS BETWEEN TOP OF WALL AND BOTTOM OF CONCRETE DECK (UL #U114) (PROVIDE STC RATING OF 50-54 COMPACTOR CHUTE FOR SHAFT ADJACENT TO DWELLING UNITS)

- LEGEND:**
- CONCRETE BLOCK WALL
 - CONCRETE FOUNDATION WALL
 - MASONRY VENEER
 - GYPSUM BOARD PARTITION - SEE PLAN FOR SIZE
 - PARTITION - SEE WALL TYPE LEGEND
 - HANDICAP ACCESSIBLE APARTMENT UNIT
 - HANDICAP - HEARING & VISUALLY IMPAIRED UNIT
 - WINDOW - SEE WINDOW SCHEDULE ON DWG. A-601
 - DOOR & FRAME - SEE DOOR SCHEDULE DRAWING A-600
 - CARBON MONOXIDE DETECTOR
 - EXIT LIGHT AND SIGN - CEILING MOUNTED
 - SUSPENDED GYPSUM BOARD
 - REMOVABLE KITCHEN BASE CABINET - 2'-0" WIDE X 2'-0" DEEP
 - 30"x48" CLEAR FLOOR SPACE
 - 1" FLOOR TURNING SPACE
 - 5'-0" DIAMETER CLEAR HANDICAP FLOOR TURNING SPACE

1-15-15	ISSUED AS PER DOB COMMENTS
11-03-14	ISSUED CLIENT FOR PRICING
09-02-14	TO D.O.B. FOR REVIEW & COMMENT
DATE	SUBMISSIONS / REVISIONS

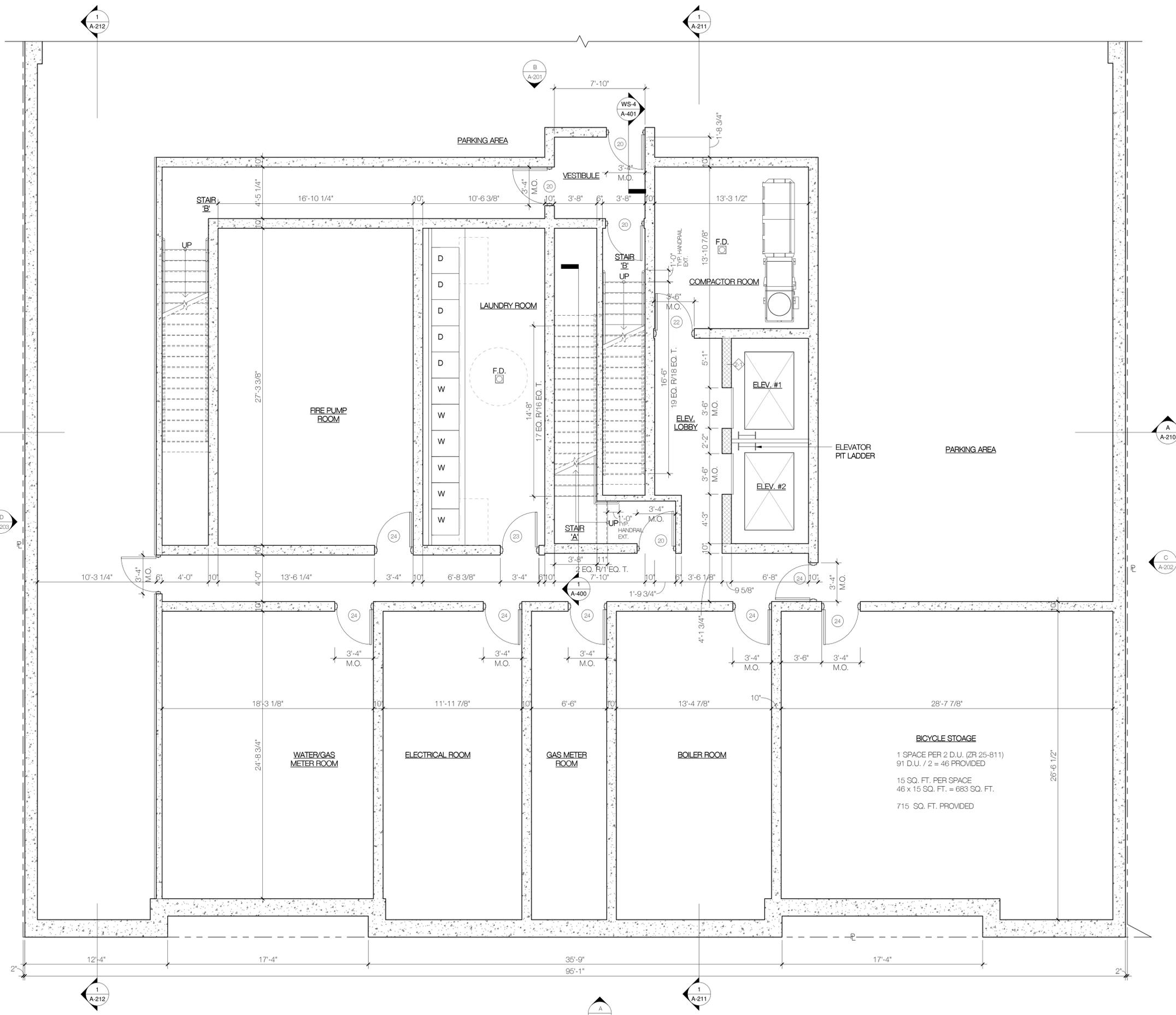
SHEET TITLE:
CELLAR FLOOR PLAN

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SEAL & SIGNATURE



ISSUE DATE:	PROJECT NO:
07/31/14	#1214
DRAWN BY:	CHECKED BY:
NJB	PC
SCALE:	SHEET NO:
1/4" = 1'-0"	12 OF 31
DRAWING NO:	
A-100.00	
NYC DOB NUMBER:	121191780



CELLAR FLOOR PLAN
 1/4" = 1'-0"

PROPOSED NEW DEVELOPMENT FOR:
W. 129TH STREET
 487 WEST 129TH STREET
 NEW YORK, NEW YORK
 BLOCK: 1969 LOT: 6

ARCHITECT:
 AUFGANG ARCHITECTS P.L.L.C.
 49 NORTH AIRMONT RD.
 SUFFERN, NY
 INFO@AUFANG.COM 845.368.0004

DEVELOPER

STRUCTURAL ENGINEER:
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 76 LAFAYETTE AVENUE
 SUFFERN, NEW YORK 10901
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 FAX. 845-357-1896

MEP ENGINEER:
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 99 MAIN STREET
 DOBBS FERRY, NY 10952
 TEL. 914-479-9705
 FAX 914-479-1234

AUFANG ARCHITECTS

- WALL TYPE LEGEND**
NON-RATED
- 1-1 TYPICAL PARTITION - (1) LAYER 5/8" TYPE "X" GYPSUM BOARD ON EACH SIDE OF 2-1/2" METAL STUDS @ 16" O.C.
 - 1-2 BATHROOM CHASE WALL PARTITION - (1) LAYER 5/8" TYPE "X" WATER RESISTANT GYPSUM BOARD ONE SIDE OF 2-1/2" METAL STUDS @ 16" O.C.
 - 1-3 2" RIGID INSULATION
- 1 HOUR RATED**
- 1-1 1 HOUR RATED TENANT SEPARATION PARTITION - (1) LAYER OF 5/8" TYPE "X" GYPSUM BOARD ON EACH SIDE OF 3-5/8" METAL STUDS @ 16" O.C. WITH 5-1/2" SOUND ATTENUATION INSULATION. EXTEND STUDS & GYPSUM BOARD UP TO UNDERSIDE OF CONCRETE DECK & SEAL TIGHT TO UNDERSIDE OF CONCRETE DECK AND/OR ROOF DECK W/ CONT. FIRESTOP SEALANT WHERE GAP EXISTS. BETWEEN TOP OF WALL AND BOTTOM OF DECK (UL #1006).
 - 1-2 1 HOUR RATED CHASE WALL - (1) LAYER 5/8" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2-1/2" METAL STUDS @ 24" O.C. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF FLOOR DECK OR ROOF DECK. SEAL TIGHT TO UNDERSIDE OF FLOOR DECK W/ CONT. FIRESTOP SEALANT (UL #419) (STC 51).
 - 1-3 1 HOUR RATED EXTERIOR PARTITION - (2) LAYERS OF 5/8" TYPE "X" GYPSUM BOARD. (1) 1/2" EXP EXTERIOR GYPSUM BOARD SHEATHING (OUTSIDE) OVER 6" GA 12 GALV. METAL STUDS @ 16" O.C. WITH 5-1/2" BATT INSULATION (UNFACED) (R-15) (UL #424).
 - 1-4 1 HOUR RATED EXTERIOR PARTITION (FURRING) - SIM. TO 1-3 WITH INTERIOR FURRING AS REQ'D TO ALIGN WITH INTERIOR PARTITION.
 - 2-1 2 HOUR RATED CMU WALL - CMU WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE BLOCK COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE DECK OR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FRESHEN INSULATION WHERE GAP EXISTS. BETWEEN TOP OF WALL AND BOTTOM OF DECK (UL #1006).
 - 2-2 2 HOUR RATED CMU WALL (FURRING) - 2.2 SIM. WITH FURRING. (1) LAYER 5/8" TYPE "X" GYPSUM BOARD OVER 1 1/2" METAL CHANNELS @ 16" O.C.
 - 2-3 2 HOUR RATED INTERIOR BEARING PARTITION - (2) LAYERS 5/8" TYPE "X" GYPSUM BOARD ON EACH SIDE 6" METAL STUDS @ 16" O.C. WITH 5-1/2" SOUND ATTENUATION INSULATION. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF FLOOR DECK OR ROOF DECK. SEAL TIGHT TO DECK W/ CONT. FIRESTOP SEALANT & FRESHENING. (GA FILE #WP-1522 STC 55-59).
 - 2-4 2 HOUR RATED INTERIOR NON-BEARING PARTITION - (2) LAYERS 5/8" TYPE "X" GYPSUM BOARD ON EACH SIDE 6" METAL STUDS @ 16" O.C. WITH 5-1/2" SOUND ATTENUATION INSULATION. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF FLOOR DECK OR ROOF DECK. SEAL TIGHT TO DECK W/ CONT. FIRESTOP SEALANT & FRESHENING. (GA FILE #WP-1522 STC 55-59).
 - 2-5 2 HOUR RATED EXTERIOR CMU WALL - CMU WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE BLOCK COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE DECK OR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FRESHENING INSULATION WHERE GAP EXISTS. BETWEEN TOP OF WALL AND BOTTOM OF DECK (UL #1006).
 - 2-6 2 HOUR RATED EXTERIOR CMU WALL (3-5/8" FURRING) - 2.5 SIM. WITH FURRING. (1) LAYER 5/8" TYPE "X" GYPSUM BOARD ON 3-5/8" GALV. METAL STUDS @ 16" O.C. WITH 3/4" (R-15) BATT INSULATION UNFACED.
 - 2-7 2 HOUR RATED INTERIOR CMU WALL (2" FURRING) - CMU WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE BLOCK COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE DECK OR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FRESHENING INSULATION WHERE GAP EXISTS. BETWEEN TOP OF WALL AND BOTTOM OF DECK (UL #1006).
 - 2-8 2 HOUR RATED INTERIOR CMU WALL (1 1/2" FURRING) - 2" SIM. WITH FURRING. (1) LAYER 5/8" TYPE "X" GYPSUM BOARD OVER 1 1/2" METAL CHANNELS @ 16" O.C.
 - 2-9 2 HOUR RATED INTERIOR BEARING WALL (FURRING) - SIM. TO 2-3 WITH INTERIOR FURRING AS REQ'D TO ALIGN WITH EXTERIOR WALL.
- 3 HOUR RATED**
- 3-1 3 HOUR RATED WALL - (1) LAYER 5/8" TYPE "X" GYPSUM BOARD OVER 7/8" METAL HAT CHANNELS @ 24" O.C. OVER 2 HR RATED CONCRETE WALL WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE BLOCK COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE FLOOR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FRESHENING INSULATION WHERE A GAP EXISTS BETWEEN TOP OF WALL AND BOTTOM OF CONCRETE DECK (UL #1014). PROVIDE STC RATINGS OF 50-54 COMPACTOR CHUTE FOR SHAFT ADJACENT TO DWELLING UNITS).

- LEGEND:**
- CONCRETE BLOCK WALL
 - CONCRETE FOUNDATION WALL
 - MASONRY VENEER
 - GYPSUM BOARD PARTITION - SEE PLAN FOR SIZE
 - PARTITION - SEE WALL TYPE LEGEND
 - HANDICAP ACCESSIBLE APARTMENT UNIT
 - HANDICAP - HEARING & VISUALLY IMPAIRED UNIT
 - WINDOW - SEE WINDOW SCHEDULE ON DWG. A-601
 - DOOR & FRAME - SEE DOOR SCHEDULE DRAWING A-600
 - CARBON MONOXIDE DETECTOR
 - EXIT LIGHT AND SIGN - CEILING MOUNTED
 - SUSPENDED GYPSUM BOARD
 - REMOVABLE KITCHEN BASE CABINET - 2'-0" WIDE x 2'-0" DEEP
 - 30"x48" CLEAR FLOOR SPACE
 - 1" FLOOR TURNING SPACE
 - 5'-0" DIAMETER CLEAR HANDICAP FLOOR TURNING SPACE

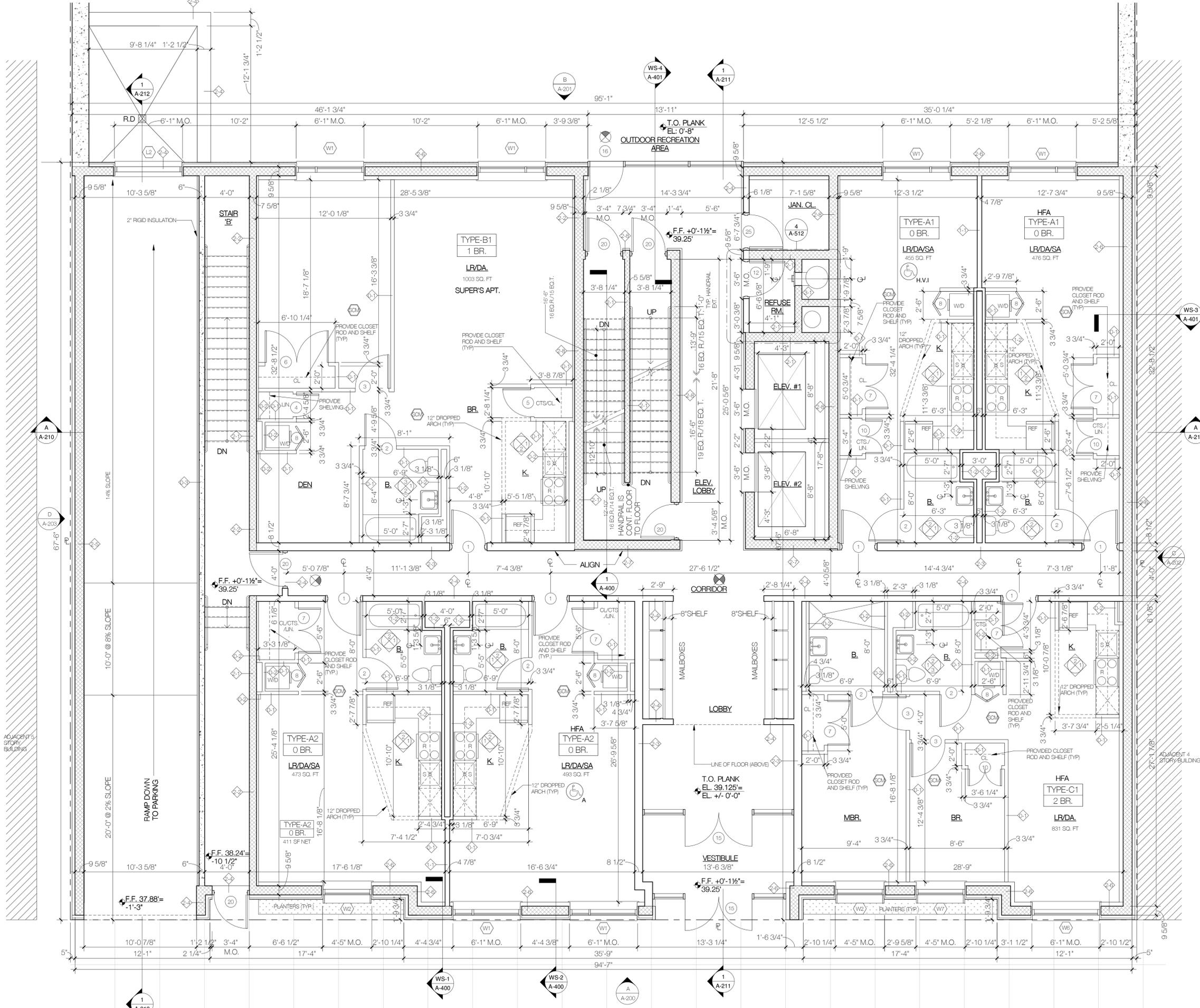
1-15-15	ISSUED AS PER DOB COMMENTS
11-03-14	ISSUED CLIENT FOR PRICING
09-02-14	TO D.O.B. FOR REVIEW & COMMENT
DATE	SUBMISSIONS / REVISIONS

SHEET TITLE:
FIRST FLOOR PLAN

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12/23/14	#1214
DRAWN BY:	CHECKED BY:
NJB	PC
SCALE:	SHEET NO:
1/4" = 1'-0"	13 OF 31
DRAWING NO:	
A-101.00	
NYC DOB NUMBER:	121191780



FIRST FLOOR PLAN
 1/4" = 1'-0"

PROPOSED NEW DEVELOPMENT FOR:

W. 129TH STREET

487 WEST 129TH STREET
NEW YORK, NEW YORK
BLOCK: 1969 LOT: 6

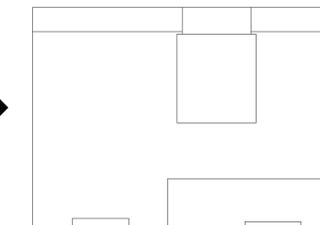
ARCHITECT:
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DEVELOPER

STRUCTURAL ENGINEER:
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AUFGANG ARCHITECTS



KEY PLAN
SCALE: NTS.



A FRONT ELEVATION
3/16" = 1'-0"

1-15-15	ISSUED AS PER DOB COMMENTS
11-03-14	ISSUED CLIENT FOR PRICING
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DATE	SUBMISSIONS / REVISIONS

SHEET TITLE:
FRONT ELEVATION

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ISSUE DATE:	PROJECT NO:
07/31/14	#1214
DRAWN BY:	CHECKED BY:
NJB	PC
SCALE:	SHEET NO:
As indicated	18 OF 31
DRAWING NO:	
	A-200.00
NYC DOB NUMBER:	121191780

PROPOSED NEW DEVELOPMENT FOR:

W. 129TH STREET

487 WEST 129TH STREET
NEW YORK, NEW YORK
BLOCK: 1969 LOT: 6

ARCHITECT:

AUFGANG ARCHITECTS LLC
49 NORTH AIRMONT RD.
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER

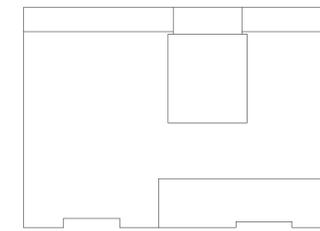
STRUCTURAL ENGINEER:

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FAX 914-479-1234

AUFGANG ARCHITECTS



KEY PLAN
SCALE: NTS.



B REAR ELEVATION
A-201 3/16" = 1'-0"

1-15-15	ISSUED AS PER DOB COMMENTS
11-03-14	ISSUED CLIENT FOR PRICING
09-02-14	TO D.O.B. FOR REVIEW & COMMENT
DATE	SUBMISSIONS / REVISIONS

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REAR ELEVATION

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07/31/14	#1214
DRAWN BY:	CHECKED BY:
NJB	PC
SCALE:	SHEET NO:
As indicated	19 OF 31
DRAWING NO:	
	A-201.00
NYC DOB NUMBER:	121191780

PROPOSED NEW DEVELOPMENT FOR:
W. 129TH STREET
 487 WEST 129TH STREET
 NEW YORK, NEW YORK
 BLOCK: 1969 LOT: 6

ARCHITECT:
 AUFGANG ARCHITECTS LLC
 49 NORTH AIRMONT RD.
 SUFFERN, NY
 INFO@AUFGANG.COM 845.368.0004

DEVELOPER

STRUCTURAL ENGINEER:
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 SUFFERN, NEW YORK 10901
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 DI BARI ENGINEERING P.C.
 99 MAIN STREET
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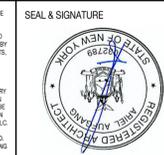
AUFGANG ARCHITECTS

1-15-15	ISSUED AS PER DOB COMMENTS
11-03-14	ISSUED CLIENT FOR PRICING
09-02-14	TO D.O.B. FOR REVIEW & COMMENT
DATE	SUBMISSIONS / REVISIONS

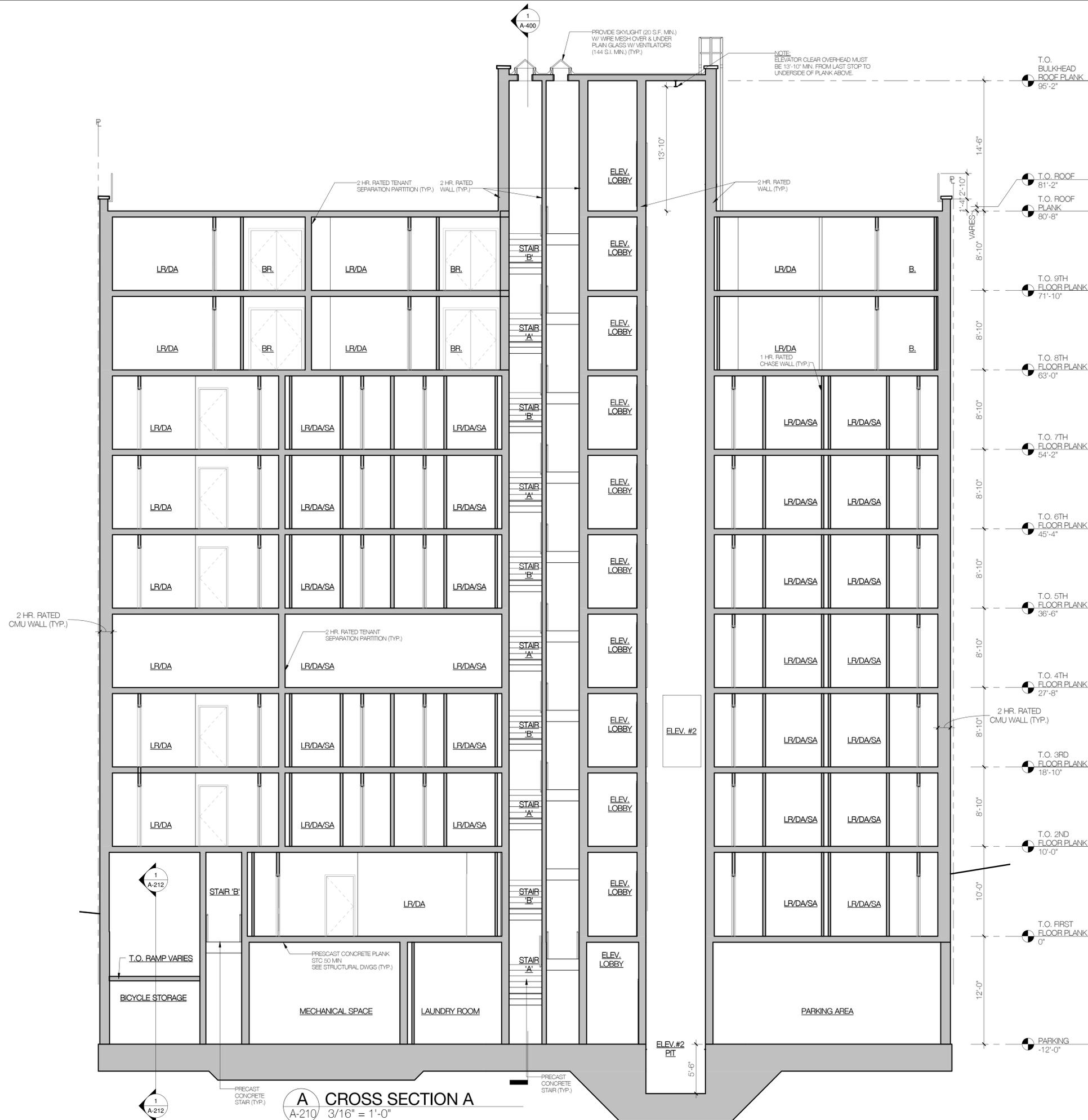
SHEET TITLE:

BUILDING CROSS SECTION A

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ISSUE DATE:	PROJECT NO:
08/08/14	#1214
DRAWN BY:	CHECKED BY:
NJB	PC
SCALE:	SHEET NO:
3/16" = 1'-0"	22 OF 31
DRAWING NO.:	
A-210.00	
NYC DOB NUMBER:	121191780



A CROSS SECTION A
 3/16" = 1'-0"

PROPOSED NEW DEVELOPMENT FOR:

W. 129TH STREET

487 WEST 129TH STREET
NEW YORK, NEW YORK

BLOCK: 1969 LOT: 6

ARCHITECT:

AUFGANG ARCHITECTS LLC
49 NORTH AIRMONT RD.
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER

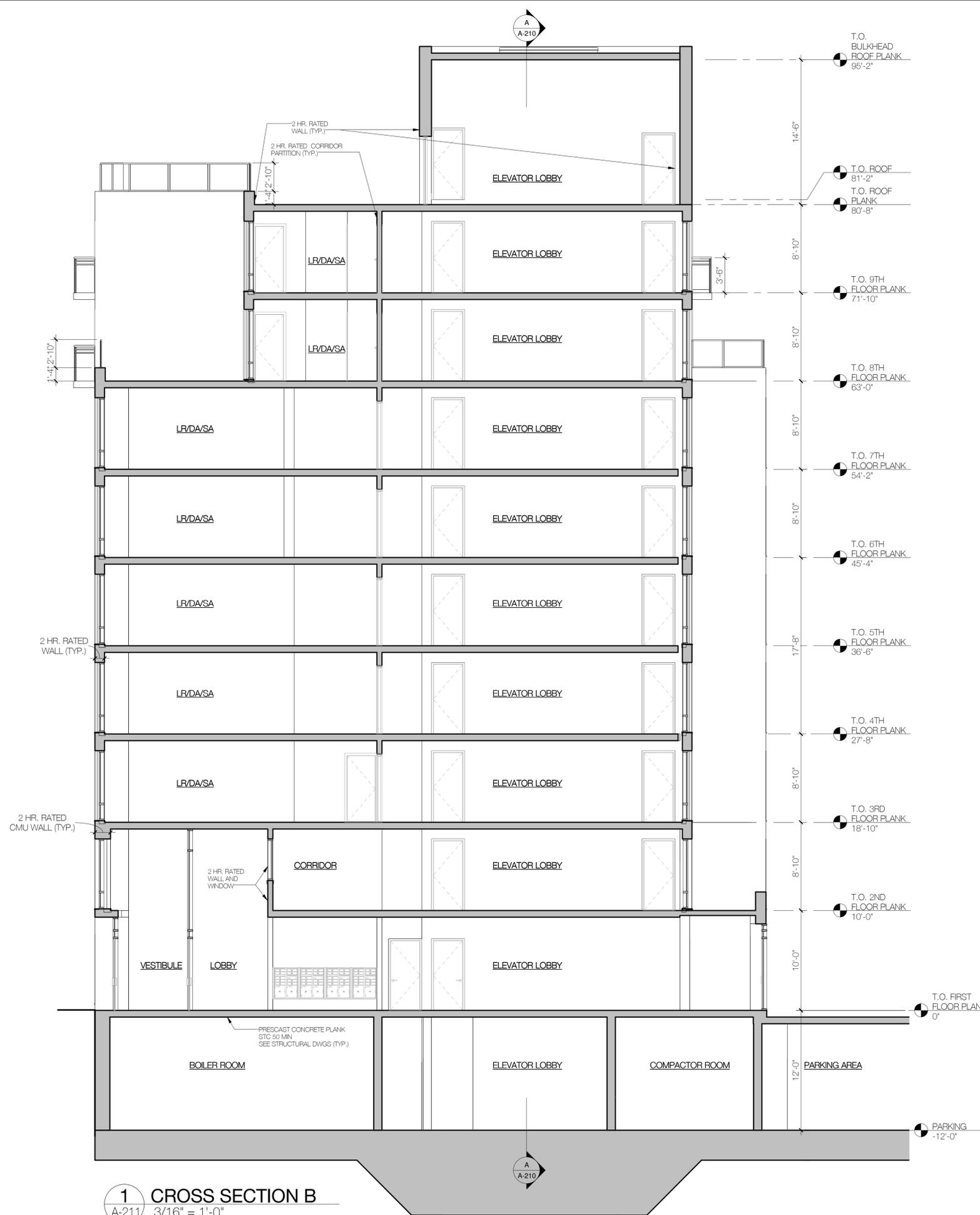
STRUCTURAL ENGINEER:

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SUFFERN, NEW YORK 10901
TEL. 845-357-4411
FAX. 845-357-1896

MEP ENGINEER:

DI BARI ENGINEERING P.C.
99 MAIN STREET
DOBBS FERRY, NY 10952
TEL. 914-479-9705
FAX 914-479-1234

AUFGANG ARCHITECTS



1 CROSS SECTION B
A-211 3/16" = 1'-0"

1-15-15	ISSUED AS PER DOB COMMENTS
DATE	SUBMISSIONS / REVISIONS

SHEET TITLE:

BUILDING CROSS SECTION B

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12/23/14	#1214
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Author	Checker
SCALE:	SHEET NO:
3/16" =	23 OF 31
DRAWING NO. 1'-0"	

A-211.00

NYC DOB NUMBER: 121191780

AUFANG ARCHITECTS

1-15-15	ISSUED AS PER DOB COMMENTS
11-13-14	ISSUED TO CLIENT FOR PRICING
09-02-14	ISSUED TO D.O.B. FOR REVIEW & COMMENT
DATE	SUBMISSIONS / REVISIONS

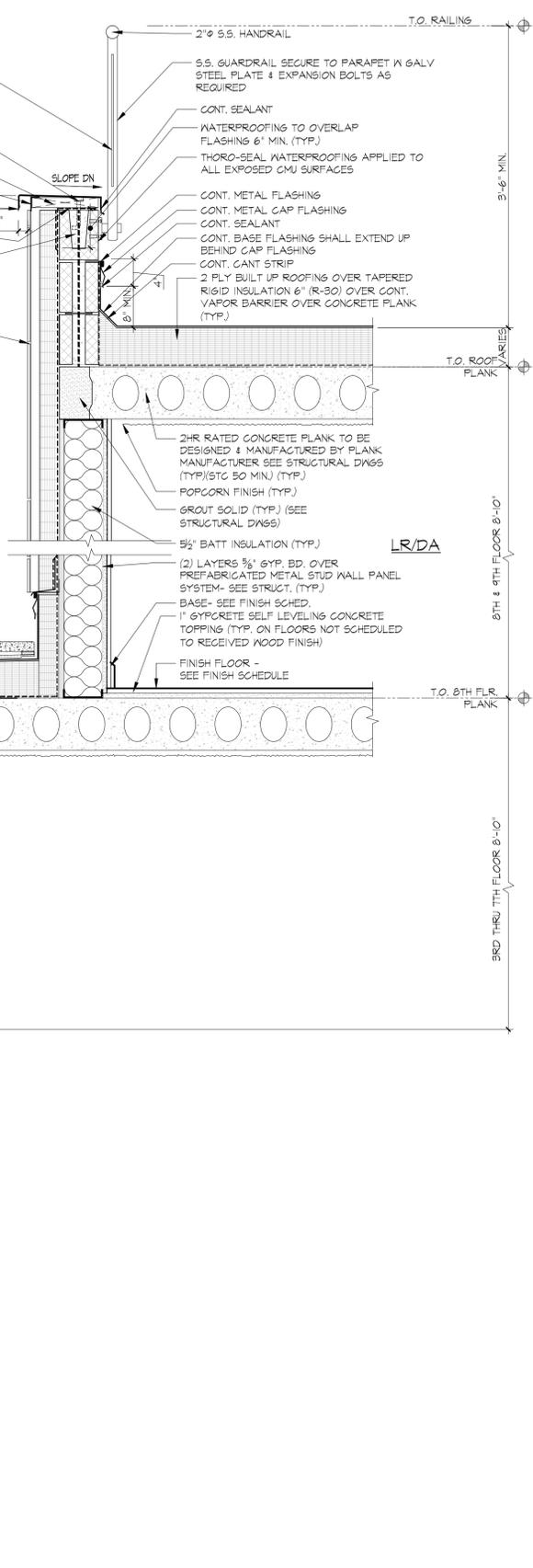
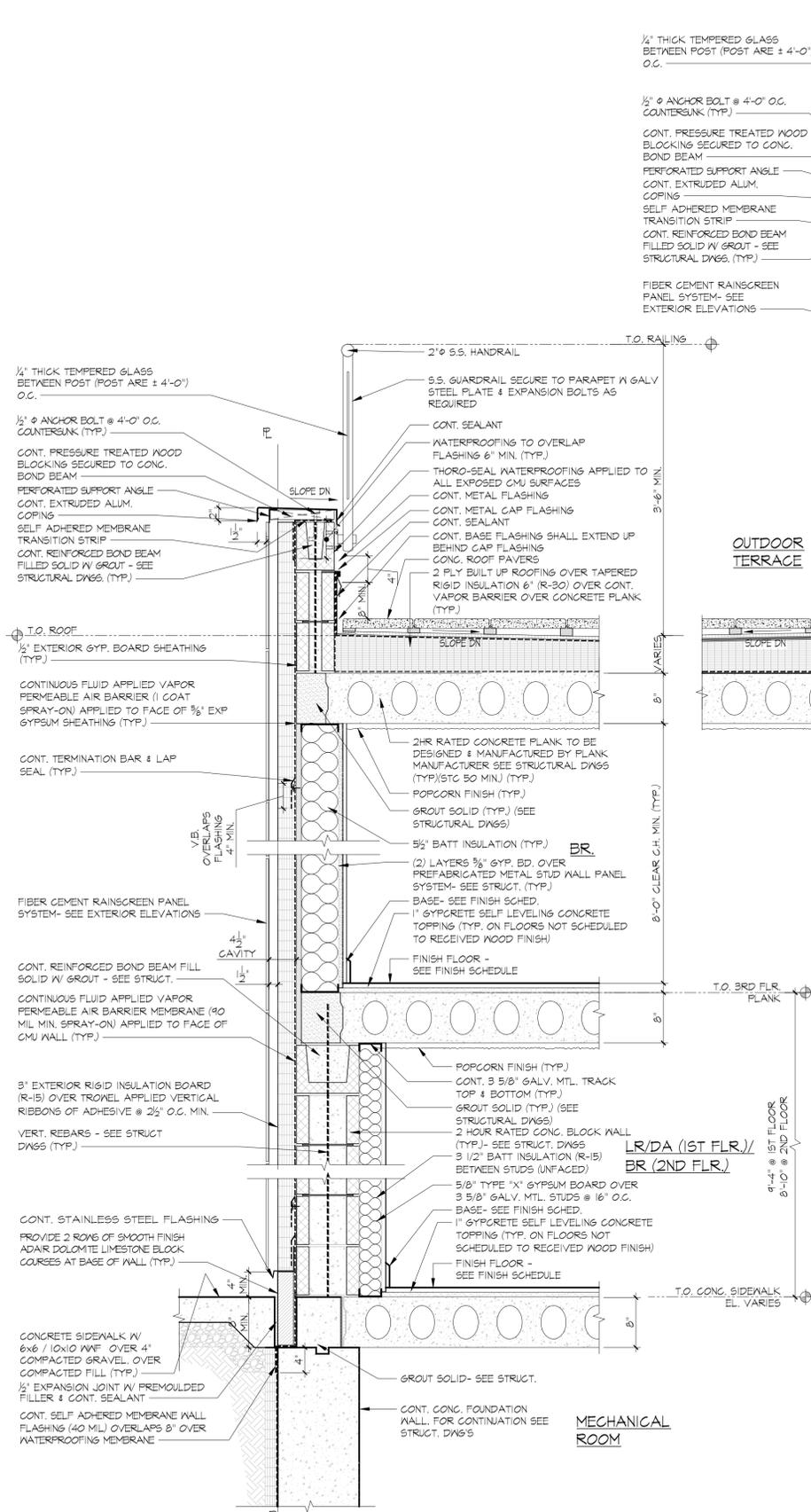
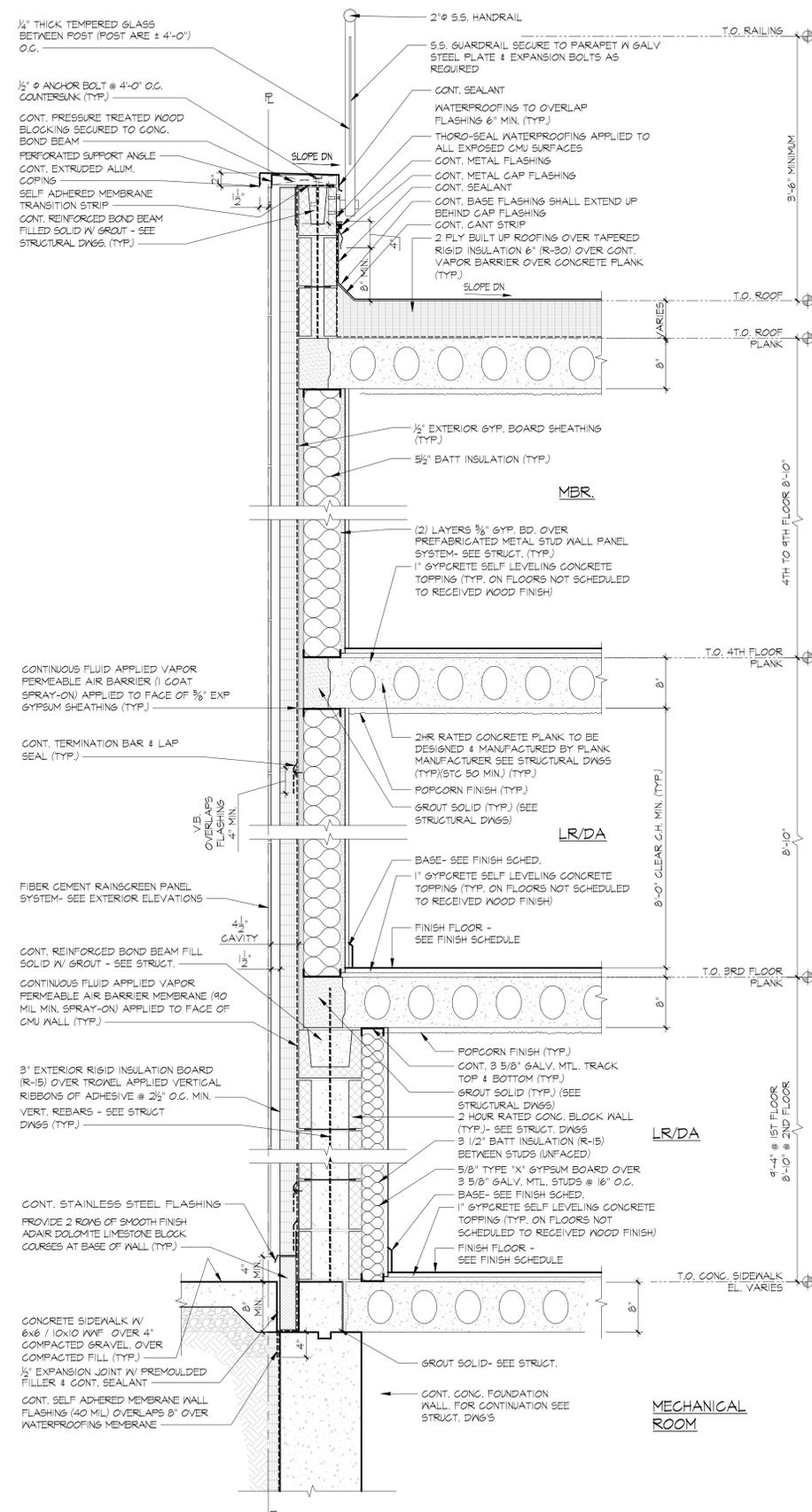
SHEET TITLE:
TYPICAL WALL SECTIONS

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NJB	PC
SCALE:	SHEET NO:
AS NOTED	XX of XX

DRAWING NO:
A-400.00
NYC DOB NUMBER: 121191780



AUFANG ARCHITECTS

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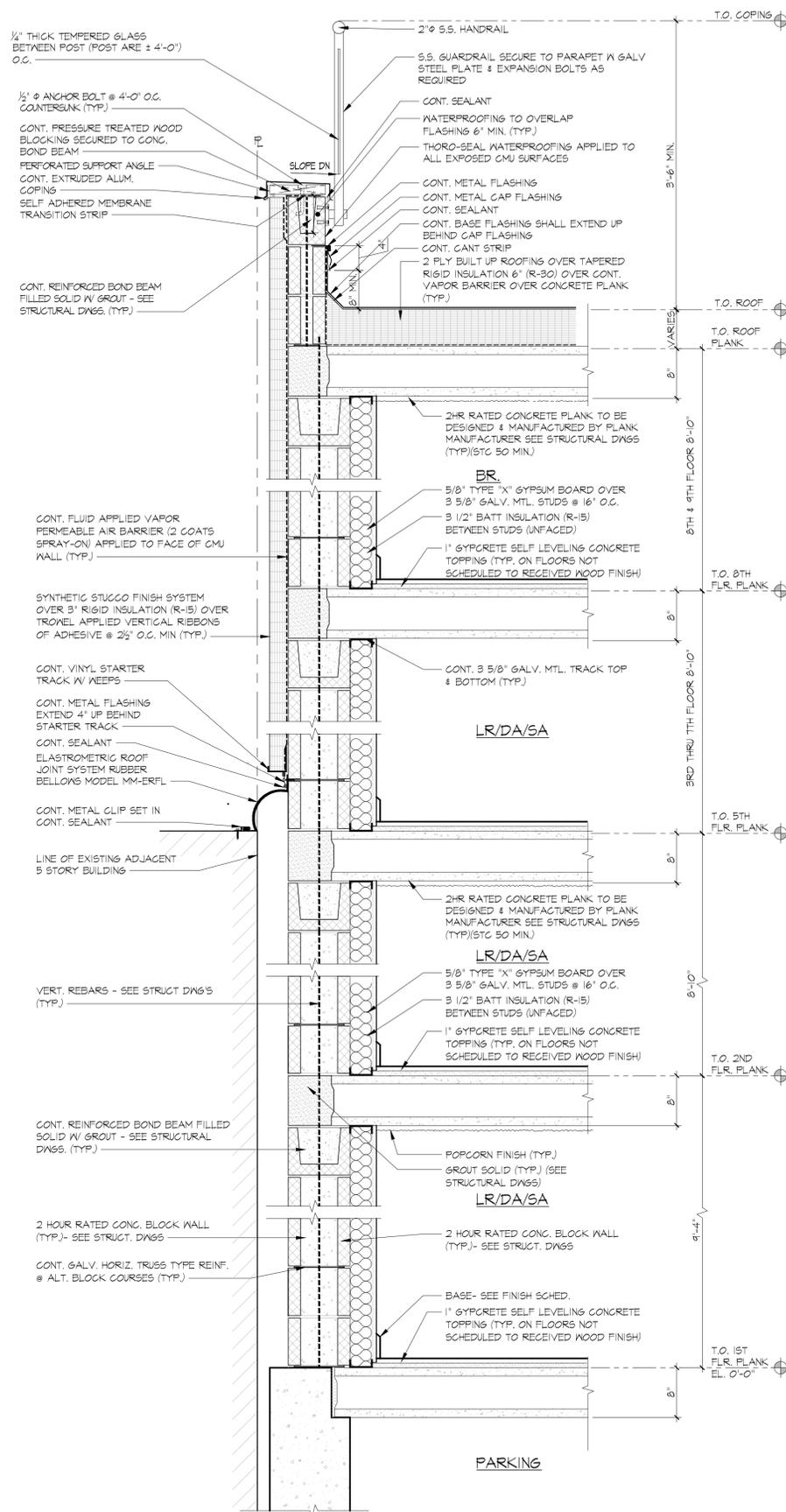
SHEET TITLE:

TYPICAL WALL SECTIONS

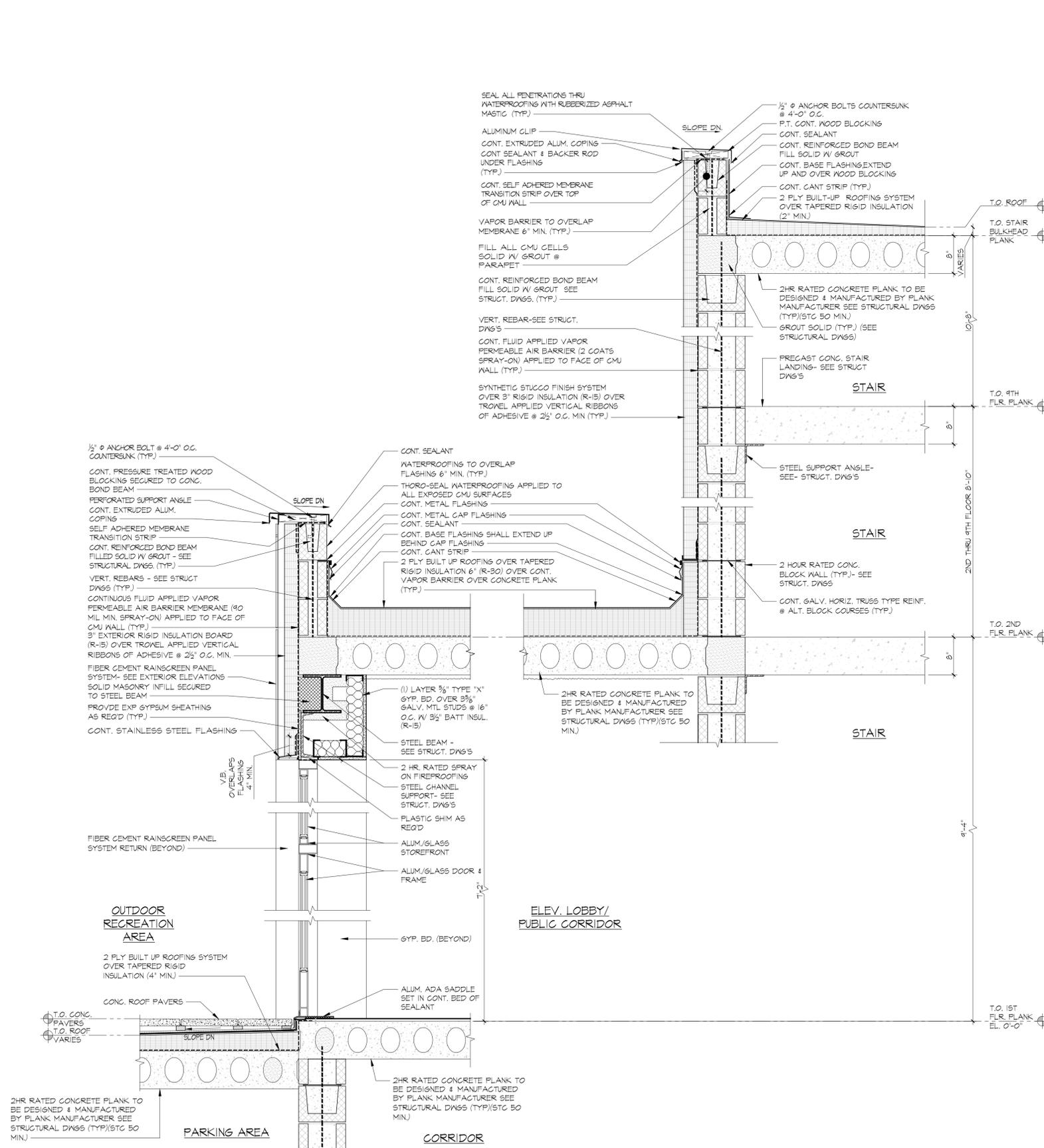
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AS NOTED	XX of XX
DRAWING NO:	
A-401.00	
NYC DOB NUMBER:	121191780



NS-3 TYPICAL WALL SECTION
SCALE: 1" = 1'-0"
A-101 THRU 105



NS-4 TYPICAL WALL SECTION
SCALE: 1" = 1'-0"
A-101 THRU 105

PROPOSED NEW DEVELOPMENT FOR:

487 WEST 129TH STREET
NEW YORK, NEW YORK
BLOCK: 1969 LOT: 5

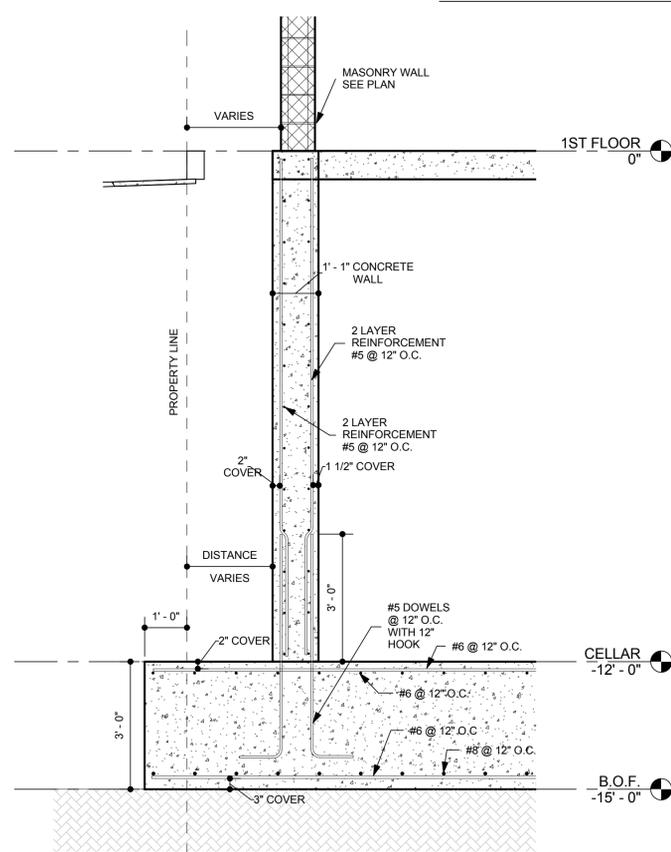
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INFO@AUFANG.COM 845.368.0004

DEVELOPER:
NAME
ADDRESS
CITY, STATE, ZIP
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FAX. 845-357-1896

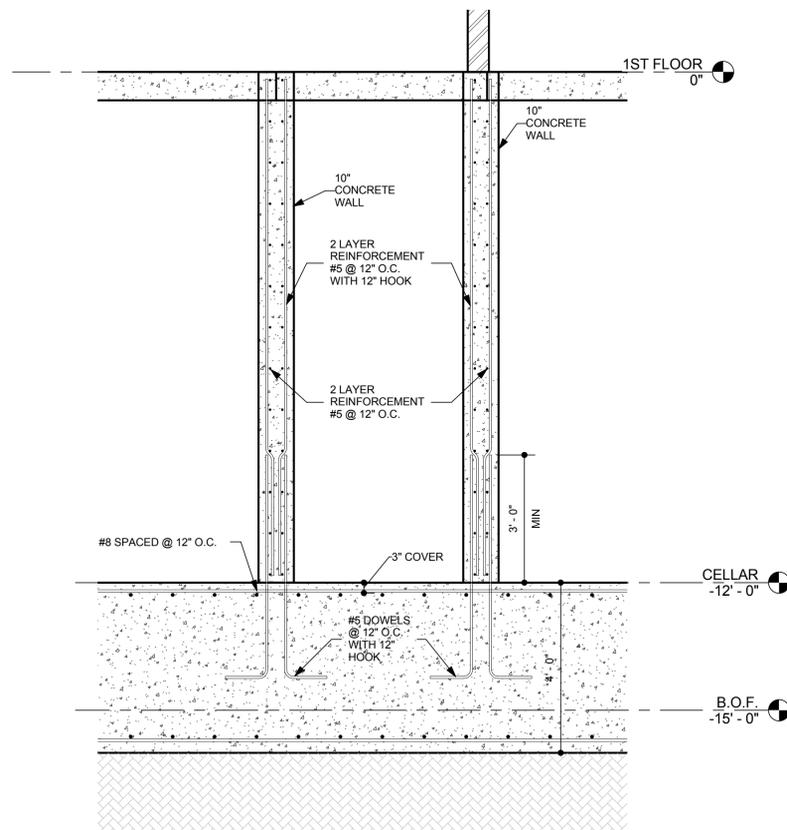
MEP ENGINEER:
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TEL. 914-479-9705
FAX. 914-479-1234

AUFANG
ARCHITECTS



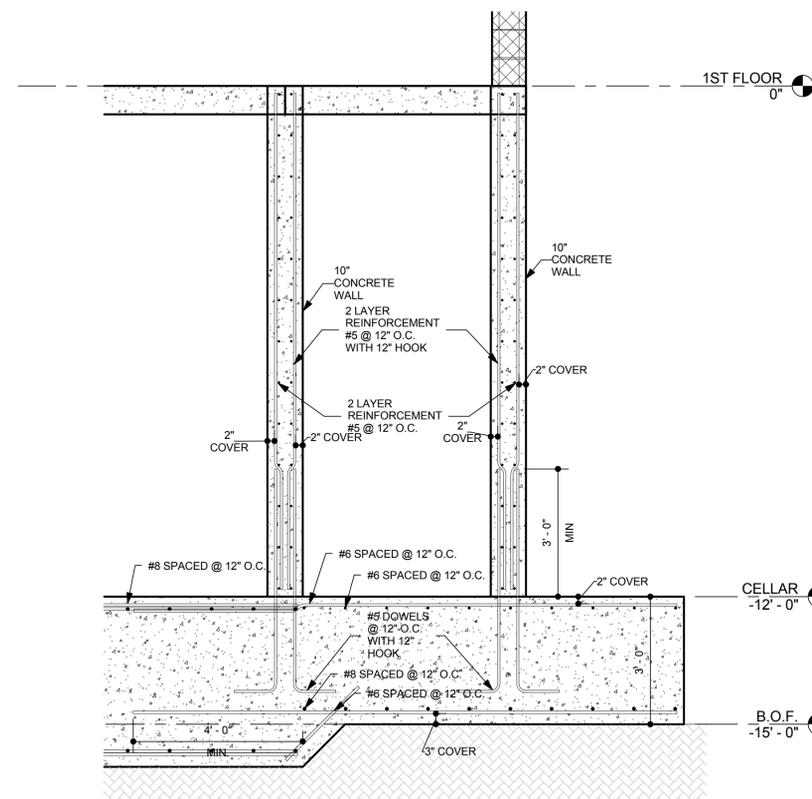
DETAIL 1- SOUTHERN WALL

1/2" = 1'-0"



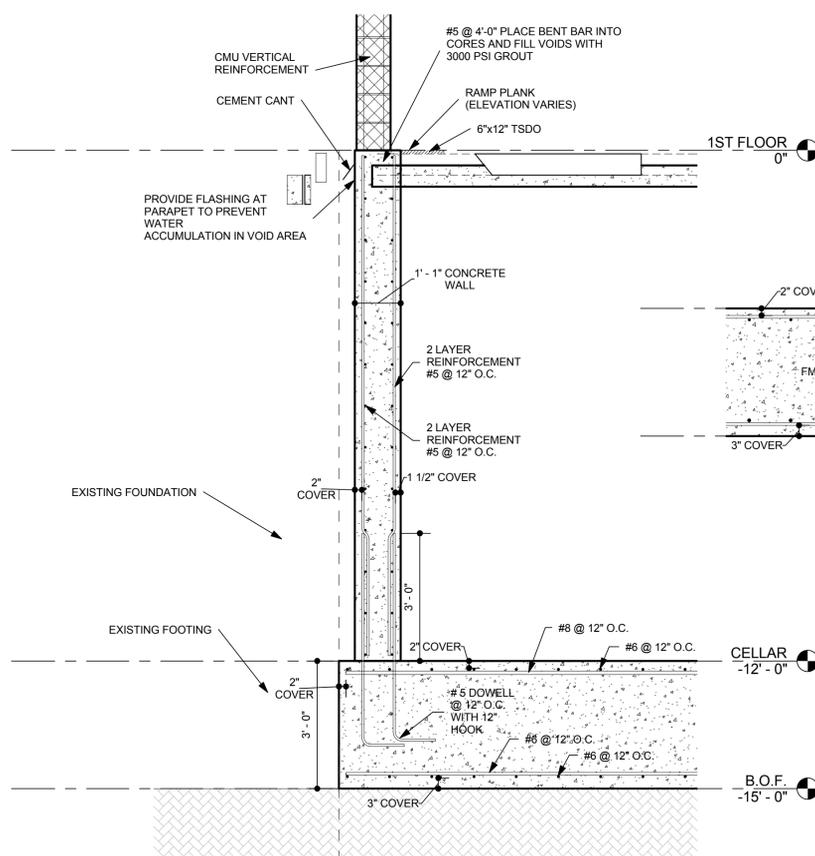
DETAIL 2- CONCRETE ON MAT

1/2" = 1'-0"



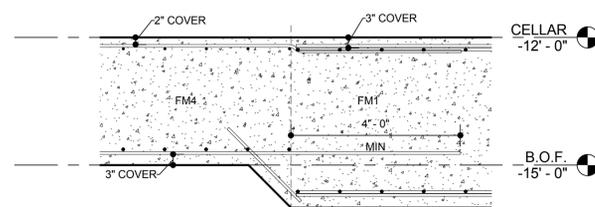
DETAIL 3- NORTHERN WALL

1/2" = 1'-0"



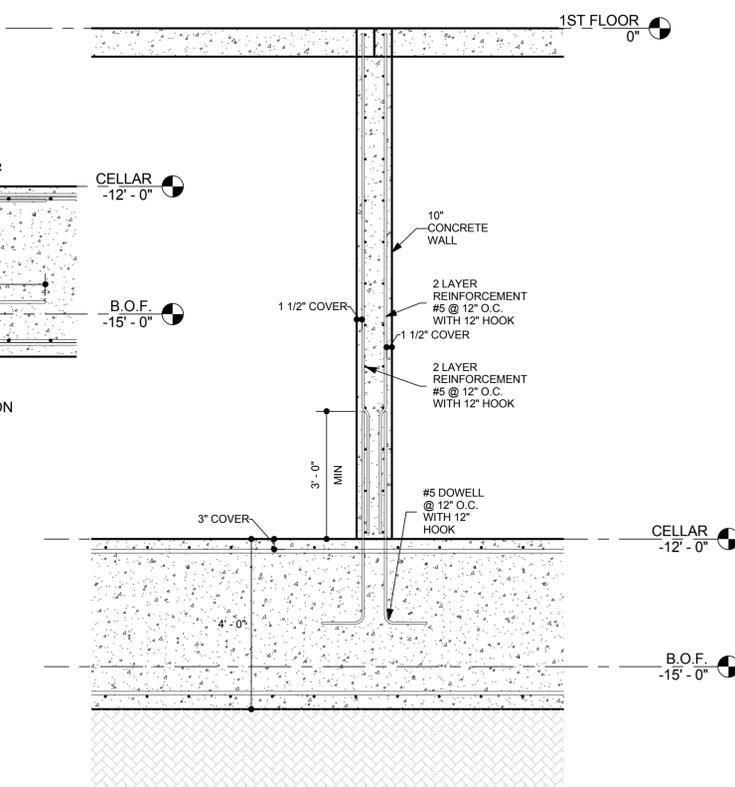
DETAIL 4- WESTERN WALL

1/2" = 1'-0"



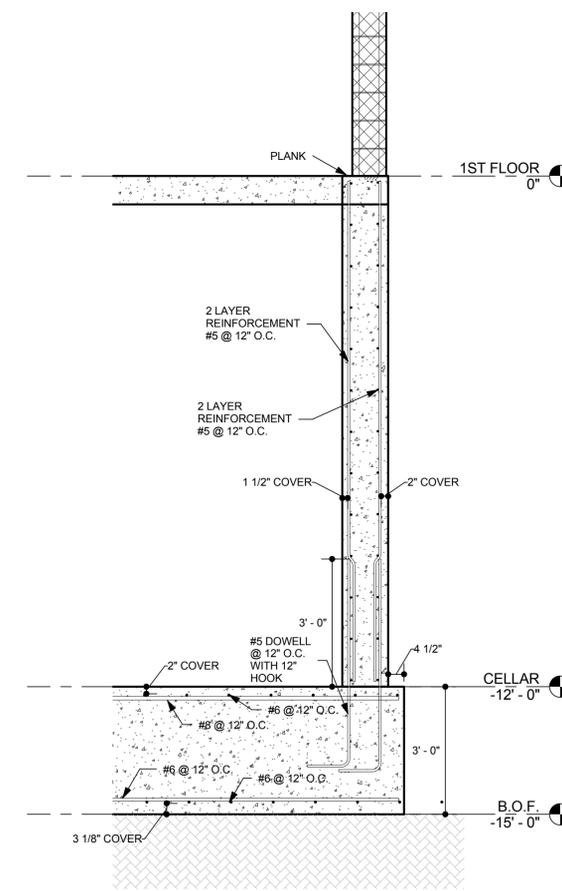
DETAIL 5- MAT TRANSITION

1/2" = 1'-0"



DETAIL 6- CONCRETE ON MAT

1/2" = 1'-0"



DETAIL 7- EASTERN WALL

1/2" = 1'-0"

11/13/14	ISSUED TO CLIENT FOR PRICING
8/25/14	ISSUED TO DOB FOR REVIEW AND COMMENT
DATE	SUBMISSIONS / REVISIONS

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SCALE:	SHEET NO:
AS NOTED	XX OF XX

DRAWING NO: **FO-104.00**

NYC DOB NUMBER:

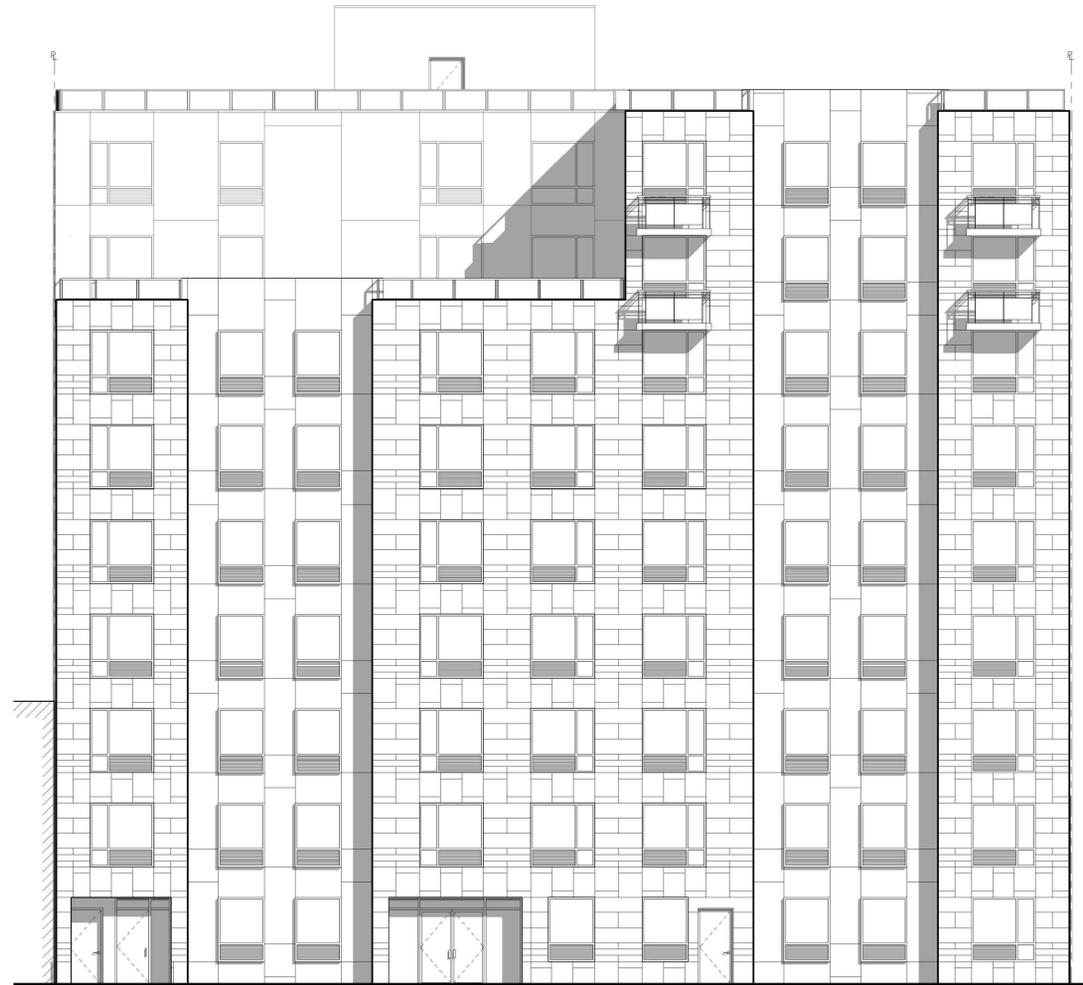
PROPOSED HOUSING DEVELOPMENT FOR: W. 130TH STREET 478 WEST 130TH STREET, NEW YORK, NEW YORK BUILDING "B"

PROPOSED NEW
DEVELOPMENT FOR:

478 WEST 130TH STREET
NEW YORK, NEW YORK

BLOCK: 1969 LOT: 6

ARCHITECT:
AUFGANG ARCHITECTS LLC
49 NORTH AIRMONT RD.
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004



FRONT ELEVATION
NOT TO SCALE

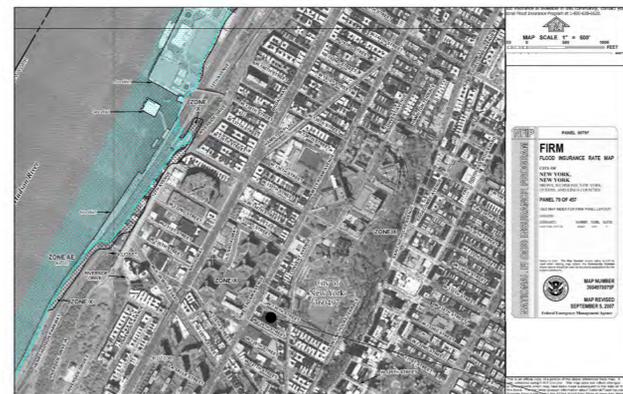
DRAWING SCHEDULE:

ARCHITECTURAL

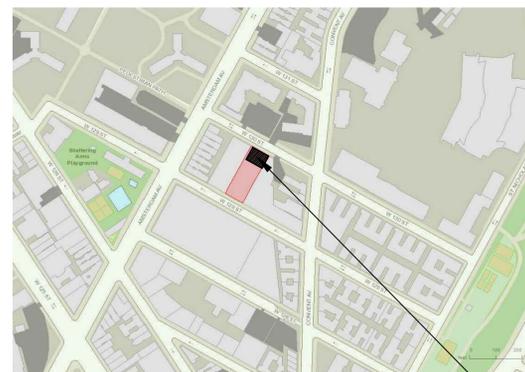
- T-001 COVER SHEET
- C-001 SURVEY
- C-002 SCHEMATIC SITE PLAN
- C-003 PARKING PLAN
- Z-001 ZONING ANALYSIS
- Z-002 ZONING ANALYSIS
- EN-001 ENERGY ANALYSIS
- A-001 GENERAL NOTES
- A-002 ACCESSIBILITY DIAGRAMS
- A-003 ACCESSIBILITY DIAGRAMS
- A-004 EGRESS PLANS
- A-101 CELLAR PLAN
- A-102 BASEMENT PLAN
- A-103 FIRST FLOOR PLAN
- A-104 2ND FLOOR PLAN
- A-105 3RD THRU 7TH FLOOR PLAN
- A-106 8TH & 9TH FLOOR PLAN
- A-107 ROOF PLAN
- A-200 FRONT ELEVATION
- A-201 REAR ELEVATION
- A-202 SIDE ELEVATION - WEST
- A-203 SIDE ELEVATION - EAST
- A-210 BUILDING CROSS SECTION
- A-400 TYPICAL WALL SECTION
- A-510 KITCHEN ELEVATIONS AND DETAILS
- A-511 BATHROOM ELEVATIONS & DETAILS
- A-512 MISCELLANEOUS INTERIOR DETAILS
- A-600 DOOR & FINISH SCHEDULE
- A-601 WINDOW SCHEDULE

STRUCTURAL

- FO-001 FOUNDATION PLAN
- FO-101 FOUNDATION DETAILS
- FO-102 FOUNDATION DETAILS
- FO-104 FOUNDATION DETAILS
- S-002 CELLAR 1 FRAMING PLAN
- S-003 BASEMENT FRAMING PLAN
- S-004 1ST FLOOR FRAMING PLAN
- S-005 2ND FLOOR FRAMING PLAN
- S-006 3RD FLOOR FRAMING PLAN
- S-007 4TH -7TH FLOOR FRAMING PLAN
- S-008 8TH FLOOR FRAMING PLAN
- S-009 9TH FLOOR FRAMING PLAN
- S-010 ROOF FRAMING PLAN
- S-101 MASONRY DETAILS AND NOTES
- S-102 MASONRY DETAILS AND NOTES
- S-201 STEEL DETAILS AND NOTES
- S-301 PLANK DETAILS AND NOTES
- S-302 PLANK DETAILS AND NOTES
- S-303 PLANK DETAILS AND NOTES



SITE LOCATION



VICINITY MAP
NOT TO SCALE



BUILDING "B"
BLOCK: 1969
LOT: 5

THIS SITE DOES NOT FALL UNDER A FLOOD HAZARD AS PER
FLOOD INSURANCE RATE MAP #3604970079F

65% PROGRESS SET -
NOT FOR CONSTRUCTION / BID
DRAWINGS ARE SUBJECT TO CHANGE

DATE: 11-03-14

AUFGANG
ARCHITECTS

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Fax. 845-357-1896

MEP ENGINEER:
DI BARI ENGINEERING P.C.
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Dobbs Ferry, New York 10522
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Fax. 914-479-1234

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DATE	SUBMISSIONS / REVISIONS

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COVER SHEET

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SEAL & SIGNATURE

ISSUE DATE:	PROJECT NO:
07-16-14	#1214
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MB	PC
SCALE:	SHEET NO:
AS NOTED	XX of XX

DRAWING NO:

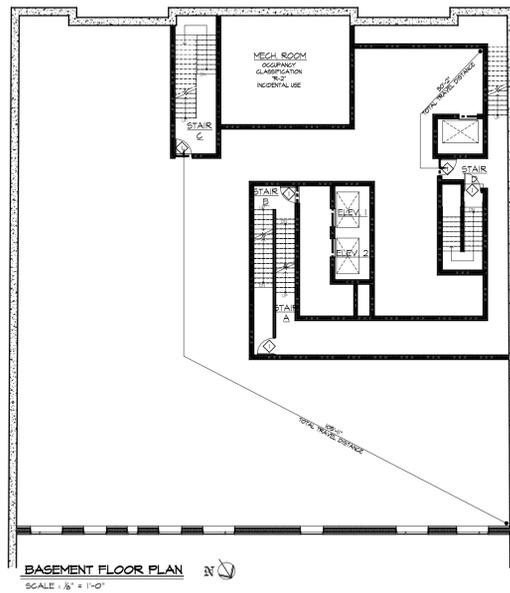
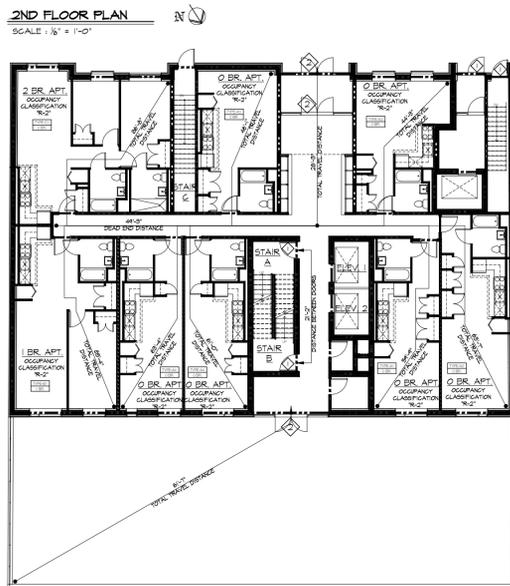
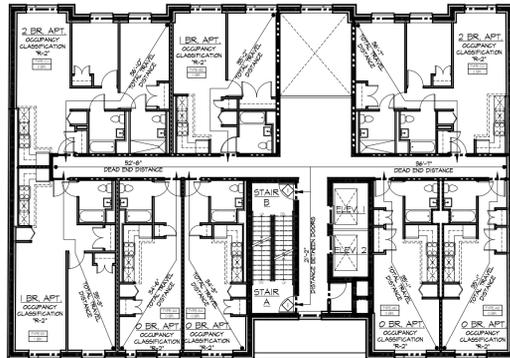
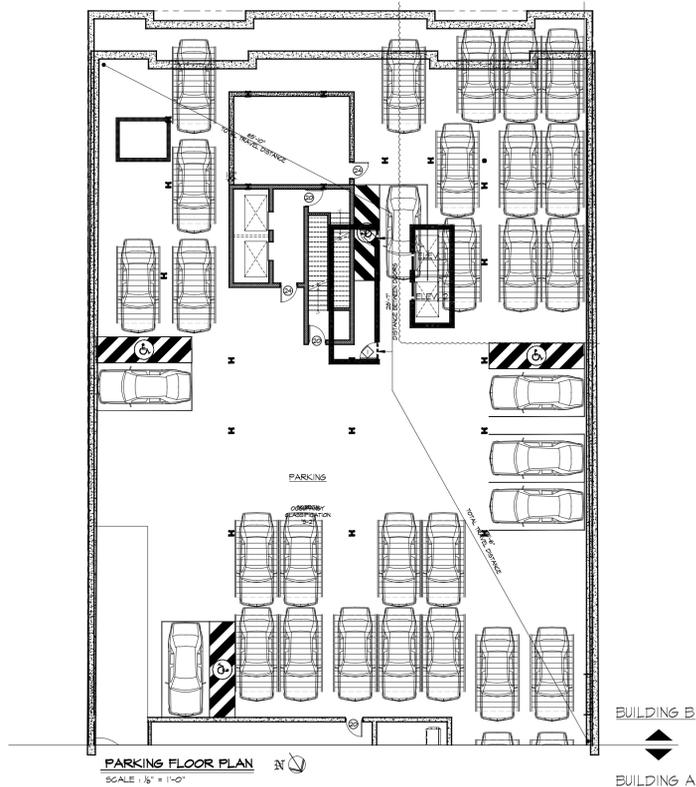
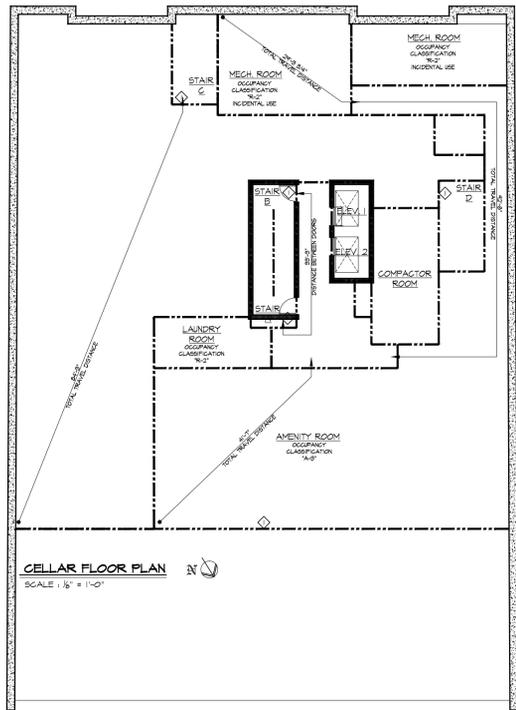
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NYC DOB NUMBER:

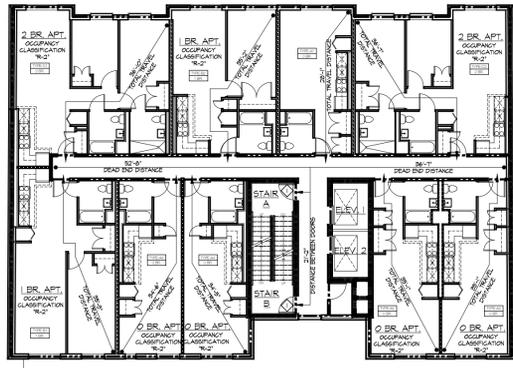
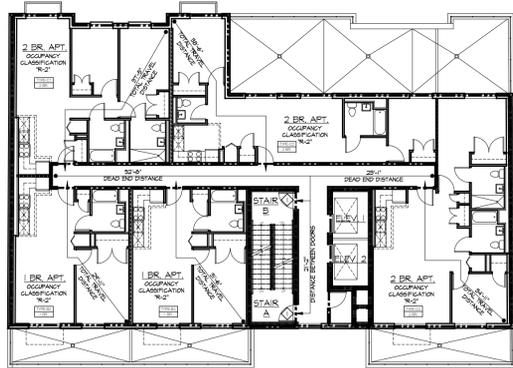
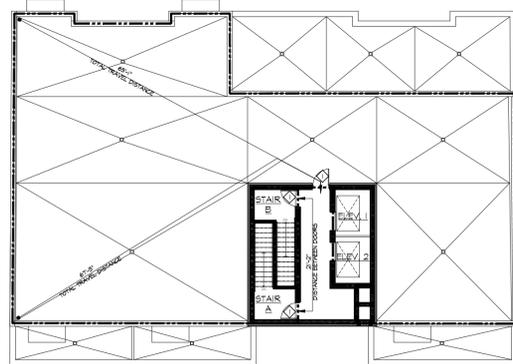
FIRE PROTECTION:
 BUILDING IS FULLY SPRINKLERED AND EQUIPPED WITH AN ALTERNATIVE FIRE EXTINGUISHING SYSTEM, A STAND PIPE SYSTEM, SMOKE VENTS, A FIRE ALARM AND DETECTION SYSTEM & A FIRE COMMAND CENTER, IN COMPLIANCE WITH THE NYC BUILDING CODE, NYC FIRE CODE & LOCAL FIRE DEPARTMENT REQUIREMENTS.

EGRESS NOTES: CHAPTER 10

1. MEANS OF EGRESS SHALL HAVE A CEILING HEIGHT NOT LESS THAN 7'-6" (BC 1003).
2. OCCUPANT LOAD AS DETERMINED ON TABLE 1004.1.2
3. EXIT AND ACCESS REQUIREMENTS ARE TO BE CALCULATED AS PER TABLE 1005.1 AS PER SECTION BC 1005.
4. EXITS, EXIT DISCHARGES AND PUBLIC CORRIDORS SHALL BE ILLUMINATED AT ALL TIMES, AS PER BC 1006.
 - 4.A. PUBLIC CORRIDORS AND EXITS SHALL BE PROVIDED WITH ARTIFICIAL LIGHT FIXTURES SUPPLYING AT LEAST TWO FOOT CANDLES MEASURED AT THE FLOOR LEVEL, TO BE MAINTAINED CONTINUOUSLY THROUGHOUT EXITS AND THEIR ACCESS FACILITIES FOR THEIR FULL LENGTH (BC 1006.2).
 - 4.B. EXIT LIGHTINGS, EXIT SIGNS & THE PORTION OF THE EXTERIOR EXIT DISCHARGE IMMEDIATELY ADJACENT TO EXIT DISCHARGE DOORWAYS SHALL BE CONNECTED TO AN EMERGENCY POWER SYSTEM FOR A DURATION NOT LESS THAN 90 MINUTES & SHALL CONSIST OF STORAGE BATTERIES, UNIT EQUIPMENT OR AN ON-SITE GENERATOR. (BC 1006.3).
5. ALL EXITS SHALL BE KEPT READILY ACCESSIBLE AND UNOBSTRUCTED AT ALL TIMES AS PER SECTION BC 1007.
6. DOORS ARE TO COMPLY WITH ALL APPLICABLE REQUIREMENTS OF SECTION BC 1008 INCLUDING, BUT NOT LIMITED TO THE FOLLOWING:
 - 6.A. CLEAR OPENING OF 32"(MIN) IS REQUIRED AND SHALL BE MEASURED BETWEEN THE FACE OF THE DOOR AND THE STOP, WITH THE DOOR OPEN 90 DEGREES. (SECTION BC 1008.1.1).
 - 6.B. DOOR HEIGHT NOT TO BE LESS THAN 6'-8" (BC 1008.1.1.3).
 - 6.C. ALL EXIT DOORS ARE TO OPEN IN THE DIRECTION OF EGRESS (1008.1.2) FLOOR LEVELS ON BOTH SIDES OF ALL EXIT AND CORRIDOR DOORS ARE TO BE LEVEL AND AT THE SAME ELEVATION FOR A DISTANCE AT LEAST EQUAL TO THE WIDTH OF THE DOOR (1008.1.4).
 - 6.D. EXIT DOORS SHALL BE READILY OPENABLE AT ALL TIMES FROM THE SIDE FROM WHICH EGRESS IS TO BE MADE. DOORS OPENING ONTO INTERIOR ENCLOSED STAIRS SHALL NOT BE LOCKED FROM EITHER SIDE EXCEPT THAT DOORS MAY BE LOCKED TO PREVENT ACCESS TO THE STAIR FROM THE OUTSIDE AT STREET LEVEL AS PER SECTION 1008.1.8.
 - 6.E. PANIC AND FIRE EXIT HARDWARE SHALL BE INSTALLED ON ALL EGRESS DOORS FROM OCCUPANCY GROUP 'A' OR 'E' HAVING AN OCCUPANT LOAD OF 15 PEOPLE OR MORE AS PER SECTION 1008.1.9.
 - 6.F. REQUIRED EXITS & SMOKE DOORS ARE TO BE SELF-CLOSING (BC 715.3.1) WITH A 1-1/2 HOUR FIRE PROTECTION RATINGS (TABLE 715.3) EXCEPT IN THE FIRST STORY OF EXTERIOR WALLS FACING A STREET THAT HAVE A FIRE SEPARATION DISTANCE OF GREATER THAN 15'-0" (BC 704.8.2) THEN DOORS NEED NOT TO BE RATED.
7. STAIRWAYS SHALL COMPLY WITH ALL APPLICABLE REQUIREMENTS STATED IN SECTIONS BC 1009 & 1019 INCLUDING, BUT NOT LIMITED TO THE FOLLOWING:
 - 7.A. STAIR WIDTH SHALL BE DETERMINED AS SPECIFIED IN SECTION 1005.1, BUT SUCH WIDTH SHALL NOT BE LESS THAN 44" (BC 1009.1) OR 36" (BC 1009.1.2).
 - 7.B. AREA OF RESCUE ASSISTANCE SHALL BE 30' X 48' FOR EACH 200 OCCUPANTS, AS PER SECTION 1007.6.1.
 - 7.C. THE CLEAR HEADROOM SHALL BE AT LEAST 6'-8" MINIMUM, AS SPECIFIED IN SECTION 1009.2.1 (R-2 OCCUPANCY).
 - 7.D. LANDINGS AND PLATFORMS PROVIDED AT THE HEAD AND FOOT OF EACH FLIGHT OF STAIRS SHALL HAVE A MINIMUM WIDTH PERPENDICULAR TO THE DIRECTION OF TRAVEL OF AT LEAST THE WIDTH OF THE STAIR. IN STRAIGHT RUN STAIRS, THE DISTANCE BETWEEN STAIRS WITHIN THE RUN SHALL NEED NOT BE MORE THAN 48". NO DOOR SHALL SWING ONTO A LANDING AND REDUCE THE EGRESS REQUIRED CLEAR WIDTH OF THE STAIR OR STAIR PLATFORM TO BE LESS THAN 75% OF THE REQUIRED WIDTH, OR WHEN FULLY OPEN, THE DOOR SHALL NOT PROJECT MORE THAN 1" INTO THE LANDING AS PER SECTION 1009.4.
 - 7.E. RISERS, TREADS, STRINGERS, LANDINGS, PLATFORMS AND GUARDS EXCLUSIVE OF HANDRAILS, SHALL BE BUILT OF NONCOMBUSTIBLE MATERIALS. WHEN TWO STAIRS ARE CONTAINED WITHIN THE SAME ENCLOSURE, EACH STAIR SHALL BE SEPARATED FROM THE OTHER BY NONCOMBUSTIBLE CONSTRUCTION HAVING A FIRE RESISTANCE RATING EQUAL TO THAT REQUIRED FOR THE STAIR ENCLOSURE (BC 1009.5).
 - 7.F. STAIRS SHALL HAVE HANDRAILS ON EACH SIDE (EXCEPT STAIRS LESS THAN 44" IN WIDTH) HAVING FINGER CLEARANCE OF 1-1/2" MIN, PROJECTING NOT MORE THAN 4-1/2" INTO THE REQUIRED STAIR WIDTH. HEIGHT OF HANDRAIL SHALL BE UNIFORM, NOT LESS THAN 34" AND NOT MORE THAN 38" MEASURED ABOVE THE STAIR TREAD NOSING. HANDRAILS SHALL BE DESIGNED IN COMPLIANCE WITH SECTION 1009.11.
 - 7.G. THE MAXIMUM VERTICAL RISE OF A SINGLE FLIGHT OF STAIRS BETWEEN FLOORS IS NOT TO EXCEED 12' EXCEPT IN OCCUPANCY GROUP A AND I WHERE THE VERTICAL RISE IS NOT TO EXCEED 8'-0" (SECTION 1009.6).
 - 7.H. ALL INTERIOR STAIRS SHALL EXTEND UP TO THE ROOF (BC 1009.12.1).
 - 7.I. INTERIOR REQUIRED STAIRS EXTENDING TO THE ROOF SHALL BE VENTED AS PER THE REQUIREMENTS OF SECTION 910.5.
 - 7.J. STAIR EXIT DOORS SHALL BE PLACED A DISTANCE APART EQUAL TO NO LESS THAN 15'-0" IN R2 OCCUPANCY (SECTION 1014.2.1.3).
8. EGRESS CORRIDORS SHALL COMPLY WITH ALL APPLICABLE REQUIREMENTS STATED IN SECTIONS BC 1011, 1013 THRU 1018, 1020 THRU 1023, 1024 & 1026 INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
 - 8.A. PROTRUDING OBJECTS ARE PERMITTED TO EXTEND BELOW THE MIN. CEILING HEIGHT REQUIRED PROVIDED THAT A MIN. HEADROOM OF 7'-0" IN HEIGHT IS REQUIRED OVER ANY WALKING SURFACE NOT MORE THAN 50% OF THE CEILING AREA CAN BE REDUCED IN HEIGHT BY PROTRUDING OBJECTS SO AS TO OBSTRUCT FULL VIEW OF EXIT SIGNS. (SECTION 1003.3.1).
 - 8.B. CORRIDOR WIDTH SHALL BE DETERMINED AS PER SECTION 1005.1, BUT NOT LESS THAN 44".
 - 8.C. DEAD END CORRIDORS SHALL NOT EXCEED 80'-0" IN LENGTH (BC 1016.3).
 - 8.D. DOORS WHEN THEY FULLY OPEN & HANDRAILS SHALL NOT REDUCE THE REQUIRED WIDTH BY MORE THAN 1". DOORS IN ANY POSITION SHALL NOT REDUCE THE REQUIRED WIDTH BY MORE THAN 1/2. OTHER NONSTRUCTURAL PROJECTIONS ARE PERMITTED TO PROJECT INTO THE REQUIRED WIDTH 1/2" ON EACH SIDE (BC 1020.2).
 - 8.E. THE FINISHES IN ALL EXITS SHALL BE OF NONCOMBUSTIBLE MATERIALS AS PER CHAPTER 8 AND SUB-SECTION 1003.4 OF SECTION BC 1003.
 - 8.F. THE LOCATION OF EVERY EXIT ON EVERY FLOOR SHALL BE CLEARLY INDICATED BY EXIT SIGNS (SECTION BC 1011). EXIT SIGN SHALL BE PLACED APART, SO THAT NO POINT IN THE EXIT CORRIDOR IS MORE THAN 100'-0"



SYMBOL LEGEND	
-----	3 HR RATED WALL
-----	2 HR RATED WALL
-----	1 HR RATED WALL
⊗	CEILING MOUNTED EXIT SIGN
⊕	WALL MOUNTED EXIT SIGN
⊕	SIGN AT ELEVATOR LANDING
◇	3'-0" WIDE DOOR (1 LEAF) EXIT CAPACITY = 34' / 0.2 = 170
◇	6'-0" WIDE DOOR (2 LEAFS) EXIT CAPACITY = 68' / 0.2 = 340
⊕	SMOKE DETECTOR
⊕	HEAT DETECTOR
⊕	SMOKE / CARBON MONOXIDE DETECTOR



PROPOSED NEW DEVELOPMENT FOR:

478 WEST 130TH STREET
 NEW YORK, NEW YORK

BLOCK: 1969 LOT: 6

ARCHITECT:
 AUFGANG ARCHITECTS LLC
 49 NORTH AIRMONT RD.
 SUFFERN, NY
 INFO@AUFANG.COM 845.368.0004

AUFANG ARCHITECTS

STRUCTURAL ENGINEER:
 BROOKER ENGINEERING, PLLC
 75 Lafayette Avenue,
 Suffern NY 10801
 Tel. 845-357-4411
 Fax. 845-357-1896

MEP ENGINEER:
 DI BARI ENGINEERING P.C.
 93 Main Street
 Dobbs Ferry, New York 10522
 Tel. 914-479-9705
 Fax. 914-479-1234

11-03-14	ISSUED TO CLIENT FOR PRICING
09-02-14	ISSUED TO D.O.B. FOR REVIEW & COMMENT
DATE	SUBMISSIONS / REVISIONS

SHEET TITLE:
 EGRESS PLANS

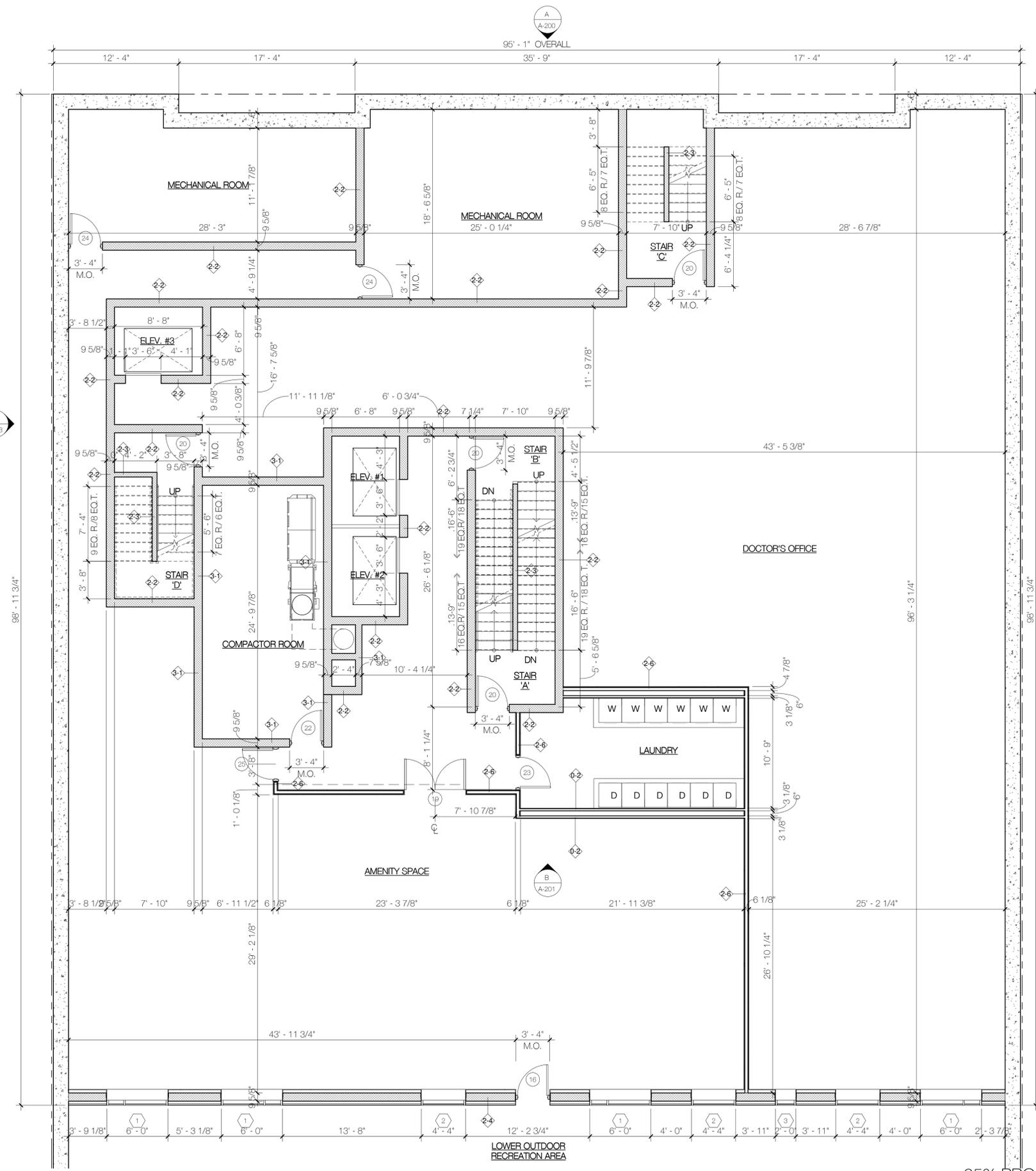
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07-16-14	#1214
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DRAWING NO:	
A-004.00	
NYC DOB NUMBER:	

65% PROGRESS SET - NOT FOR CONSTRUCTION / BID DRAWINGS ARE SUBJECT TO CHANGE

DATE: 11-03-14



CELLAR FLOOR PLAN
3/16" = 1'-0"

65% PROGRESS SET -
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DRAWINGS ARE SUBJECT TO CHANGE
DATE: 11-03-14

WALL TYPE LEGEND

- 0-1 TYPICAL PARTITION - (1) LAYER 5/8" TYPE "X" GYPSUM BOARD ON EACH SIDE OF 2-1/2" METAL STUDS @ 16" O.C.
- 0-2 BATH-ROOM CHASE WALL PARTITION - (1) LAYER 5/8" TYPE "X" WATER RESISTANT GYPSUM BOARD ONE SIDE OF 2-1/2" METAL STUDS @ 16" O.C.
- 1 HOUR RATED
- 1-1 1 HOUR RATED TENANT SEPARATION PARTITION - (1) LAYER OF 5/8" TYPE "X" GYPSUM BOARD ON EACH SIDE OF 3-5/8" METAL STUDS @ 16" O.C. WITH 3-1/2" SOUND ATTENUATION INSULATION. EXTEND STUDS & GYPSUM BOARD UP TO UNDERSIDE OF CONCRETE DECK & SEAL TIGHT TO UNDERSIDE OF CONCRETE DECK AND/OR ROOF DECK W/ CONT. FIRESTOP SEALANT & FRESAFING INSULATION (UL # U419) (STC 51)
- 1-2 1 HOUR RATED CHASE WALL - (1) LAYER 5/8" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2-1/2" METAL STUDS @ 24" O.C. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF FLOOR DECK OR ROOF DECK. SEAL TIGHT TO UNDERSIDE OF FLOOR DECK OR ROOF DECK. SEAL TIGHT TO DECK W/ CONT. FIRESTOP SEALANT & FRESAFING INSULATION (UL # U442) (PROVIDE INSUL. AS REQ'D TO ACHIEVE A MIN STC RATING OF 50)
- 1-3 1 HOUR RATED EXTERIOR PARTITION - (2) LAYERS OF 5/8" TYPE "X" GYPSUM BOARD, (INSIDE) 1/2" EXP EXTERIOR GYPSUM BOARD SHEATHING (OUTSIDE) OVER 6" GA 12 GALV. METAL STUDS @ 16" O.C. WITH 5-1/2" BATT INSULATION UNFACED (R-15) (UL # R424)
- 2 HOUR RATED
- 2-1 2 HOUR RATED INTERIOR PARTITION - (2) LAYERS 5/8" TYPE "X" GYPSUM BOARD ON EACH SIDE 6" METAL STUDS @ 16" O.C. WITH 3-1/2" SOUND ATTENUATION INSULATION. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF FLOOR DECK OR ROOF DECK. SEAL TIGHT TO DECK W/ CONT. FIRESTOP SEALANT & FRESAFING INSULATION (UL # WP-1522 STC 55-59)
- 2-2 2 HOUR RATED CMU WALL - CMU WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE BLOCK COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE DECK OR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FRESAFING INSULATION WHERE GAP EXIST. BETWEEN TOP OF WALL AND BOTTOM OF DECK (UL # U906)
- 2-3 2 HOUR RATED EXTERIOR CMU WALL - (3-5/8" FURRING) - CMU WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE BLOCK COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE DECK OR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FRESAFING INSULATION WHERE GAP EXIST. BETWEEN TOP OF WALL AND BOTTOM OF DECK (UL # U906) FURRING: (1) LAYER 5/8" TYPE "X" GYPSUM BOARD OVER 5/8" GALV. METAL STUDS @ 16 O.C. WITH 3/2" (R-15) BATT INSULATION UNFACED
- 2-4 2 HOUR RATED INTERIOR CMU WALL (1/2" FURRING) - CMU WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE BLOCK COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE DECK OR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FRESAFING INSULATION WHERE GAP EXIST. BETWEEN TOP OF WALL AND BOTTOM OF DECK (UL # U906) FURRING: (1) LAYER 5/8" TYPE "X" GYPSUM BOARD OVER 1-1/2" METAL CHANNELS @ 16" O.C.
- 3 HOUR RATED
- 3-1 3 HOUR RATED WALL - (1) LAYER 5/8" TYPE "X" GYPSUM BOARD OVER 7/8" METAL HAT CHANNELS @ 24" O.C. OVER 2 HR RATED CONCRETE WALL WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE FLOOR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FRESAFING INSULATION WHERE A GAP EXISTS BETWEEN TOP OF WALL AND BOTTOM OF CONCRETE DECK (UL # U914) (PROVIDE STC RATING OF 50-54 COMPACTOR CHUTE FOR SHAFT ADJACENT TO DWELLING UNITS)

- LEGEND:**
- CONCRETE BLOCK WALL
 - CONCRETE FOUNDATION WALL
 - MASONRY VENEER
 - GYPSUM BOARD PARTITION - SEE PLAN FOR SIZE
 - PARTITION - SEE WALL TYPE LEGEND
 - HANDICAP ACCESSIBLE APARTMENT UNIT
 - HANDICAP - HEARING & VISUALLY IMPAIRED UNIT
 - H.V.I.
 - WINDOW - SEE WINDOW SCHEDULE ON DWG. A-601
 - DOOR & FRAME - SEE DOOR SCHEDULE DRAWING A-600
 - CARBON MONOXIDE DETECTOR
 - EXIT LIGHT AND SIGN - CEILING MOUNTED
 - SUSPENDED GYPSUM BOARD
 - REMOVABLE KITCHEN BASE CABINET - 2'-0" WIDE x 2'-0" DEEP
 - 30"x48" CLEAR FLOOR SPACE
 - 5'-0" DIAMETER CLEAR HANDICAP FLOOR TURNING SPACE
 - REVERSABLE DOOR SWING MORTISE HINGE & LATCH BLANKS

PROPOSED NEW DEVELOPMENT FOR:

478 WEST 130TH STREET
NEW YORK, NEW YORK
BLOCK: 1969 LOT: 5

ARCHITECT:
AUFGANG ARCHITECTS LLC
49 NORTH AIRMONT RD.
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:
NAME
ADDRESS
CITY, STATE, ZIP
TEL.
FAX.

STRUCTURAL ENGINEER:
BROOKER ENGINEERING, PLLC
76 Lafayette Avenue
Suffern, New York 10901
Tel. 845-357-4411
FAX. 845-357-1896

MEP ENGINEER:
DI BARI ENGINEERING P.C.
89 Main Street
Dobbs Ferry, New York 10952
TEL. 914-479-9705
FAX. 914-479-1234

AUFGANG ARCHITECTS

DATE	ISSUE / REVISION
11-03-14	ISSUED CLIENT FOR PRICING
09-02-14	ISSUED TO D.O.B. FOR REVIEW & COMMENT
DATE	SUBMISSIONS / REVISIONS

CELLAR PLAN

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NJB	PC
SCALE:	SHEET NO:
AS NOTED	XX OF XX
DRAWING NO:	
	A-101.00
NYC DOB NUMBER:	

PROPOSED NEW
DEVELOPMENT FOR:

478 WEST 130TH STREET
NEW YORK, NEW YORK
BLOCK: 1969 LOT: 5

ARCHITECT:
AUFGANG ARCHITECTS LLC
49 NORTH AIRMONT RD.
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

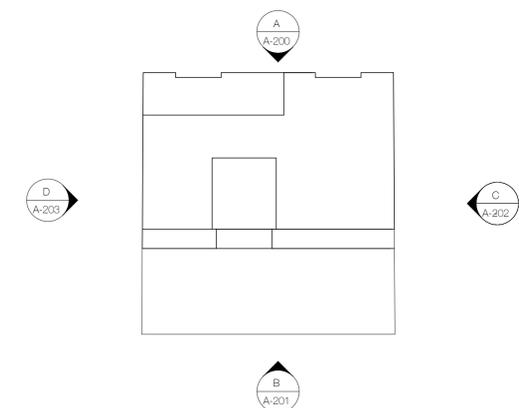
DEVELOPER:
NAME
ADDRESS
CITY, STATE, ZIP
TEL.
FAX.
STRUCTURAL ENGINEER:
BROOKER ENGINEERING, PLLC
76 Lafayette Avenue
Suffern, New York 10901
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MEP ENGINEER:
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A FRONT ELEVATION
A-200 1/8" = 1'-0"

65% PROGRESS SET -
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DATE: 11-03-14



KEY PLAN
SCALE: NTS.

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FRONT ELEVATION

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DRAWING NO:	A-200.00
NYC DOB NUMBER:	

PROPOSED NEW
DEVELOPMENT FOR:

478 WEST 130TH STREET
NEW YORK, NEW YORK
BLOCK: 1969 LOT: 5

ARCHITECT:
AUFGANG ARCHITECTS LLC
49 NORTH AIRMONT RD.
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:
NAME
ADDRESS
CITY, STATE, ZIP
TEL.
FAX.

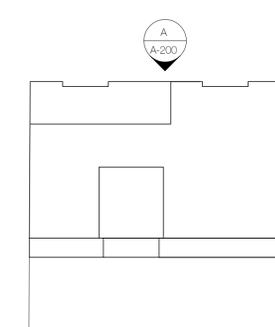
STRUCTURAL ENGINEER:
BROOKER ENGINEERING, PLLC
76 Lafayette Avenue
Suffern, New York 10901
Tel. 845-357-4411
FAX. 845-357-1896

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Dobbs Ferry, New York 10952
TEL. 914-479-9705
FAX. 914-479-1234

AUFGANG
ARCHITECTS



B REAR ELEVATION
A-201 1/8" = 1'-0"



KEY PLAN
SCALE: NTS.

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SHEET TITLE:
REAR ELEVATION

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NYC DOB NUMBER:	

PROPOSED NEW DEVELOPMENT FOR:

478 WEST 130TH STREET
NEW YORK, NEW YORK
BLOCK: 1969 LOT: 5

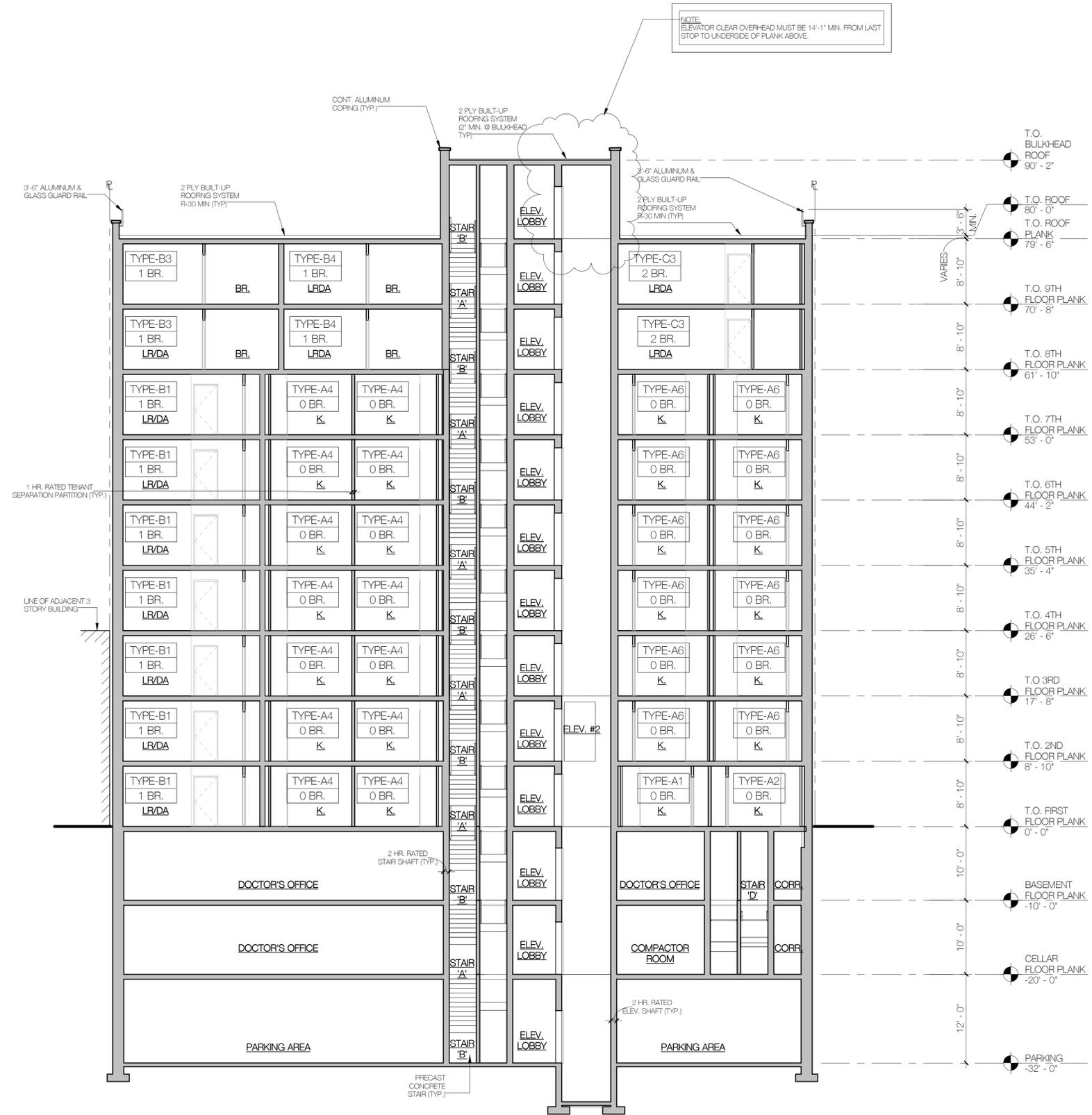
ARCHITECT:
AUFGANG ARCHITECTS LLC
49 NORTH AIRMONT RD.
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:
NAME
ADDRESS
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STRUCTURAL ENGINEER:
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76 Lafayette Avenue
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Dobbs Ferry, New York 10952
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FAX. 914-479-1234

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ARCHITECTS



NOTE:
ELEVATOR CLEAR OVERHEAD MUST BE 14'-1\"/>

A CROSS SECTION A
A-210 1/8" = 1'-0"

65% PROGRESS SET -
NOT FOR CONSTRUCTION / BID
DRAWINGS ARE SUBJECT TO CHANGE
DATE: 11-03-14

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BUILDING CROSS SECTION

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AS NOTED	XX OF XX
DRAWING NO:	
	A-210.00
NYC DOB NUMBER:	

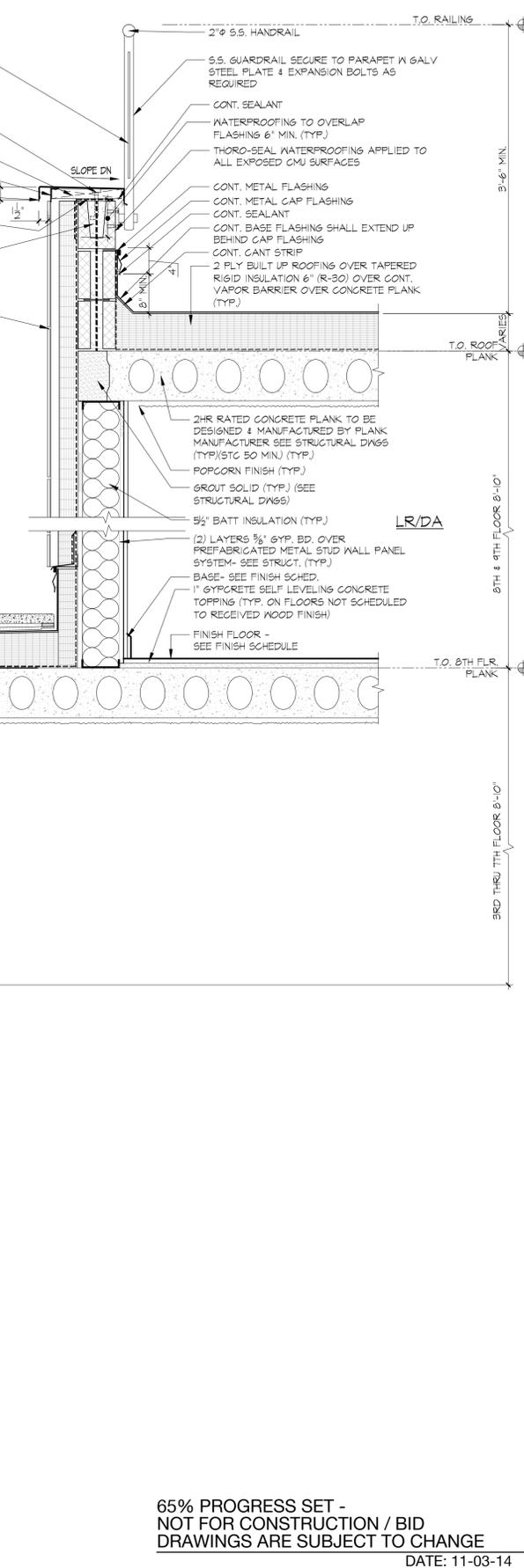
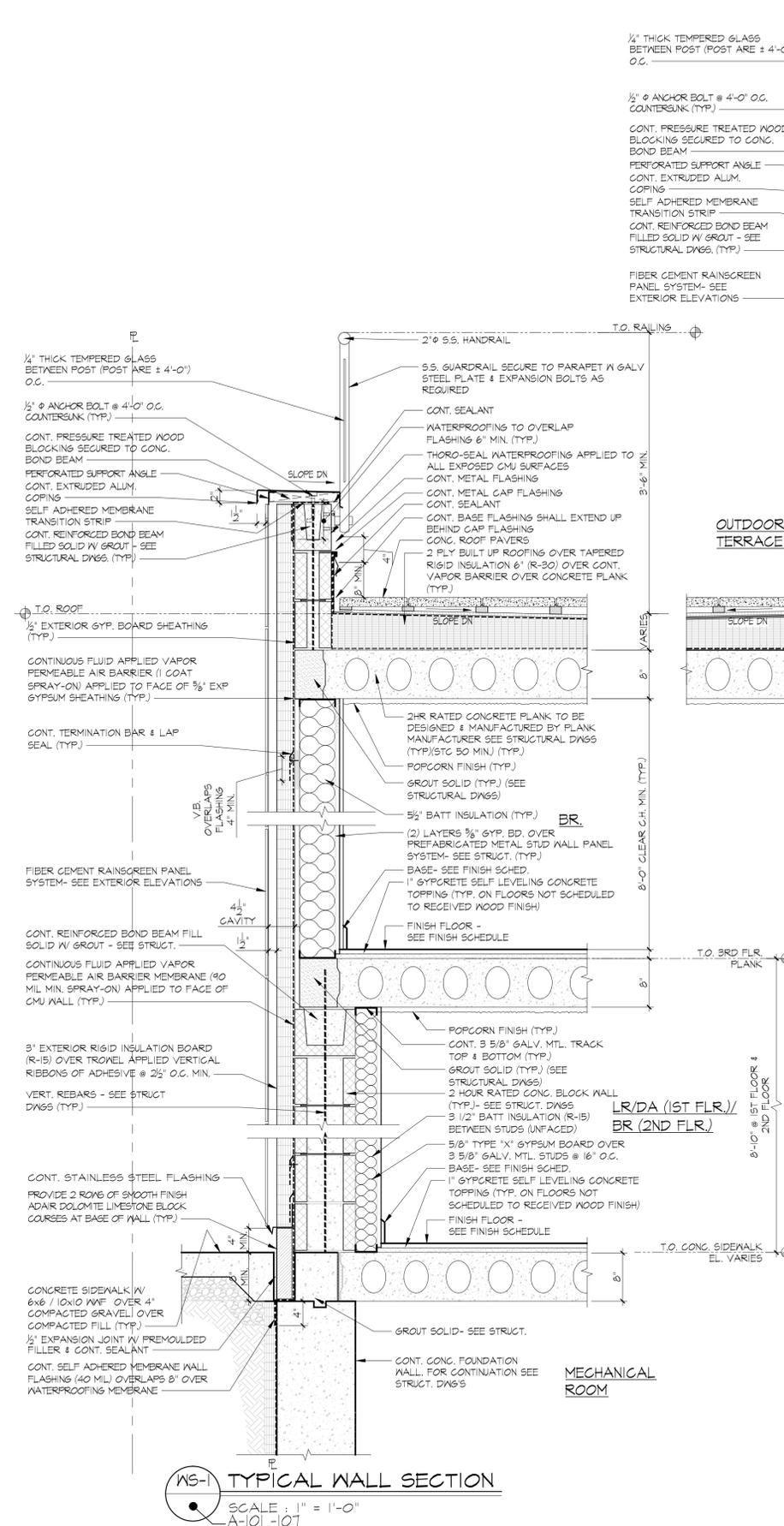
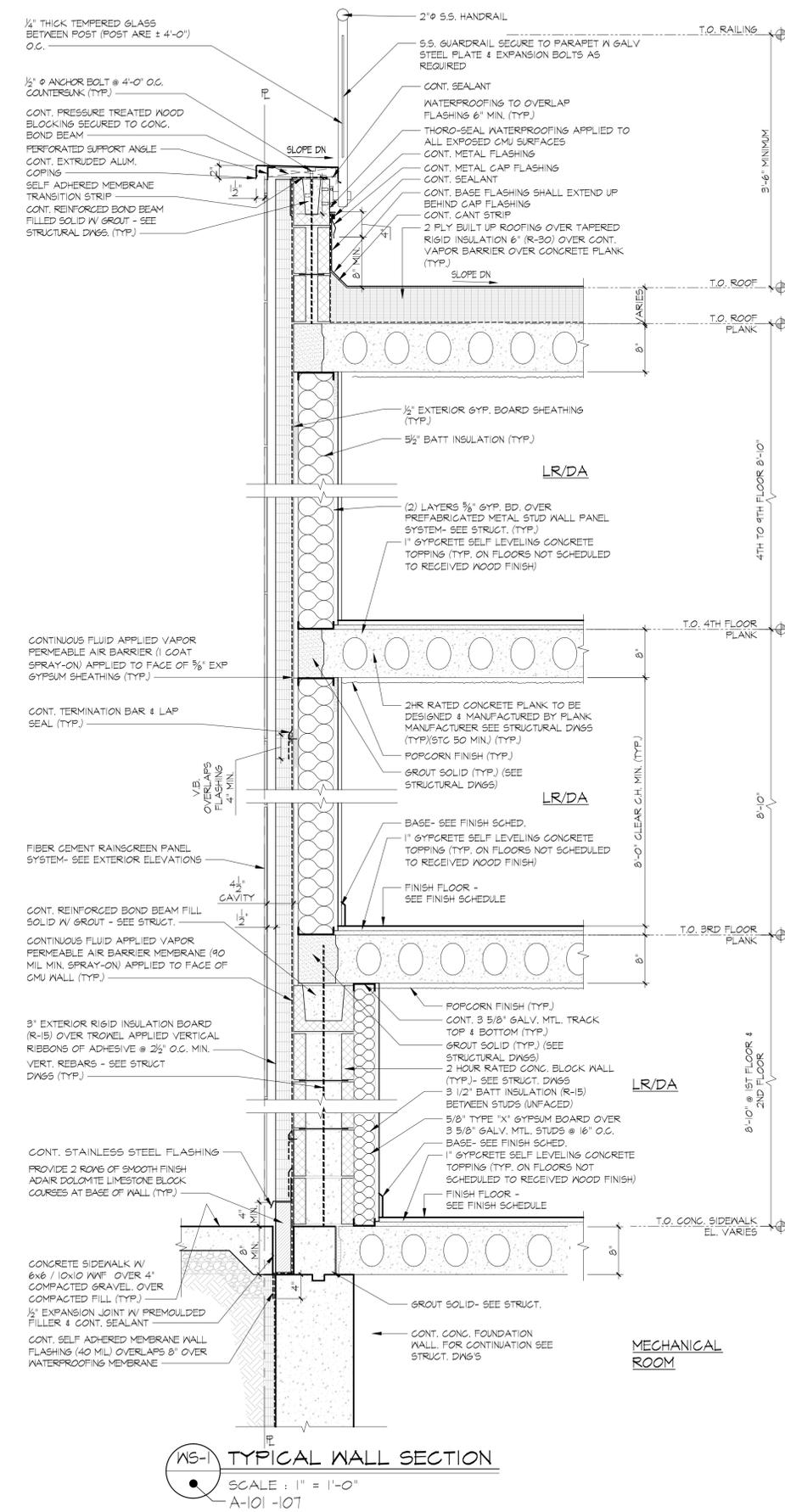
AUFGANG ARCHITECTS

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TYPICAL WALL SECTIONS

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PROPOSED NEW
DEVELOPMENT FOR:

478 WEST 130TH STREET
NEW YORK, NEW YORK

BLOCK: 1969 LOT: 5

ARCHITECT:

AUFGANG ARCHITECTS LLC
49 NORTH AIRMONT RD.
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:

NAME
ADDRESS
CITY, STATE, ZIP
TEL.
FAX.

STRUCTURAL ENGINEER:

BROOKER ENGINEERING, PLLC
76 Lafayette Avenue
Suffern, New York 10901
Tel. 845-357-4411
FAX. 845-357-1896

MEP ENGINEER:

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TEL. 914-479-9705
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AUFGANG
ARCHITECTS

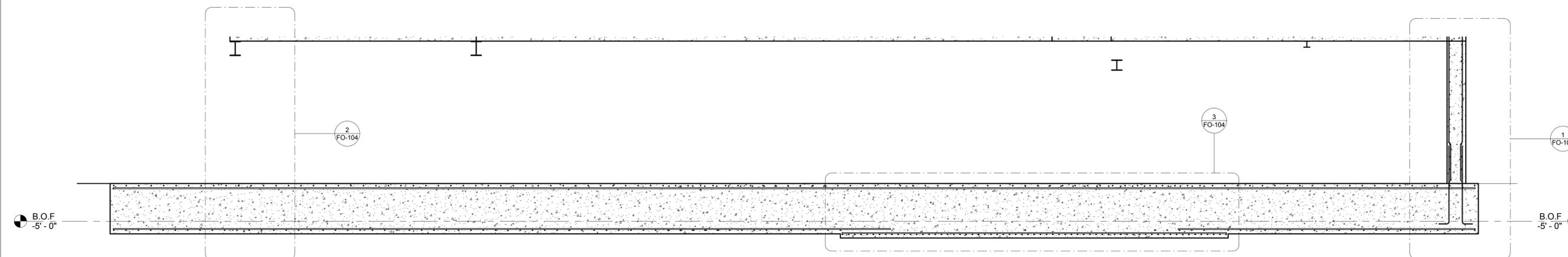
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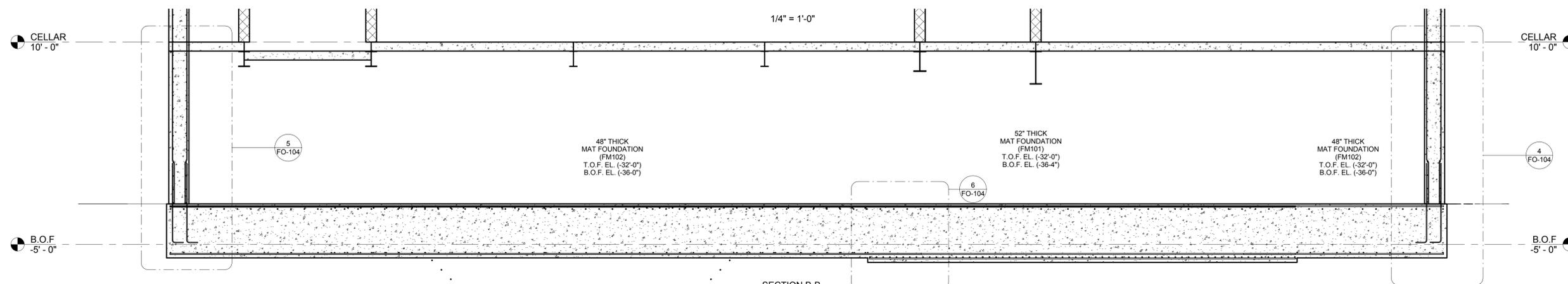
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08/04/14	#1214
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	FO-102
NYC DOB NUMBER:	



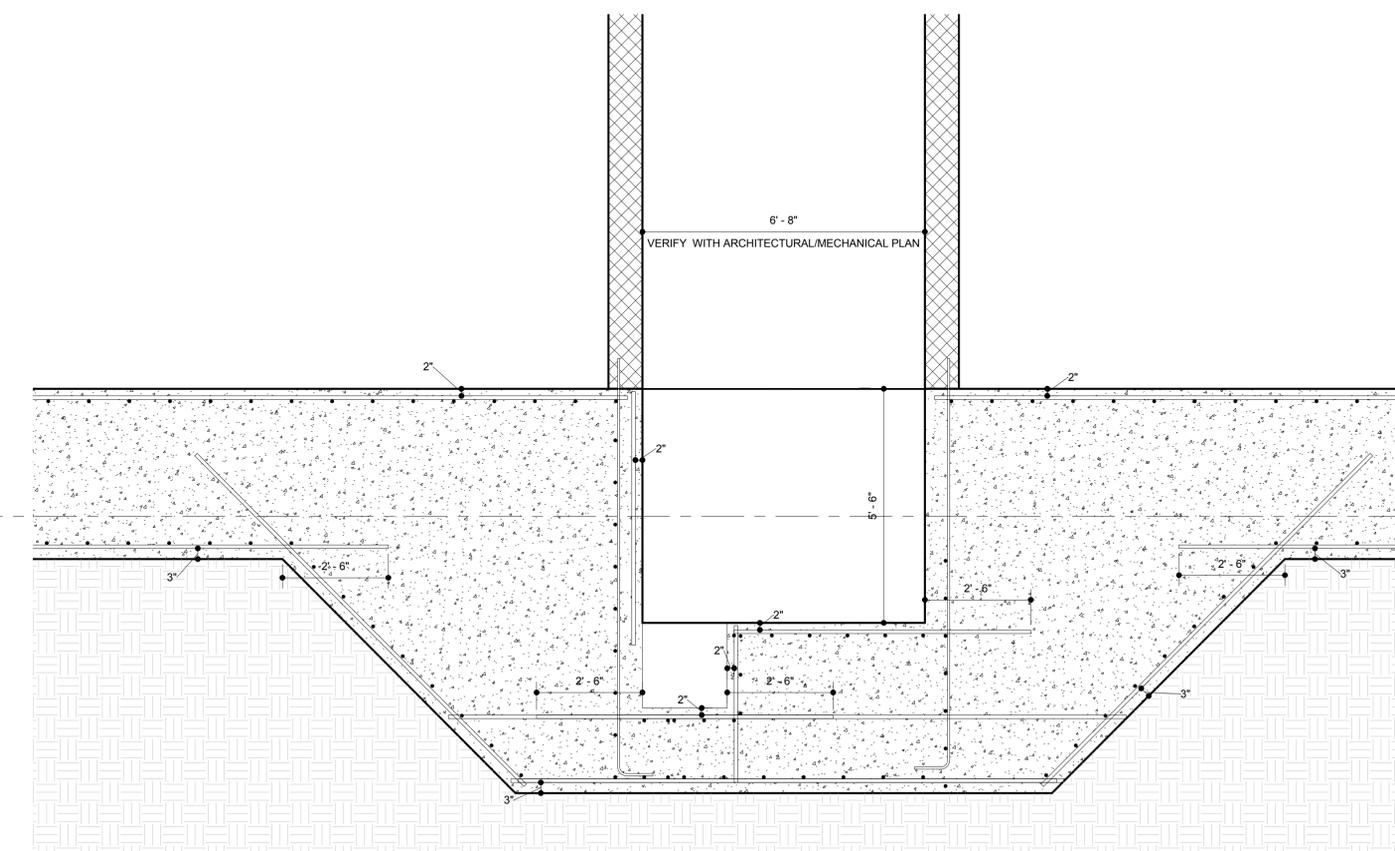
SECTION A-A

1/4" = 1'-0"



SECTION B-B

1/4" = 1'-0"



SECTION C-C

1/2" = 1'-0"

PROPOSED NEW
DEVELOPMENT FOR:

478 WEST 130TH STREET
NEW YORK, NEW YORK

BLOCK: 1969

LOT: 5

ARCHITECT:

AUFGANG ARCHITECTS LLC
49 NORTH AIRMONT RD.
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:

NAME
ADDRESS
CITY, STATE, ZIP
TEL.
FAX.

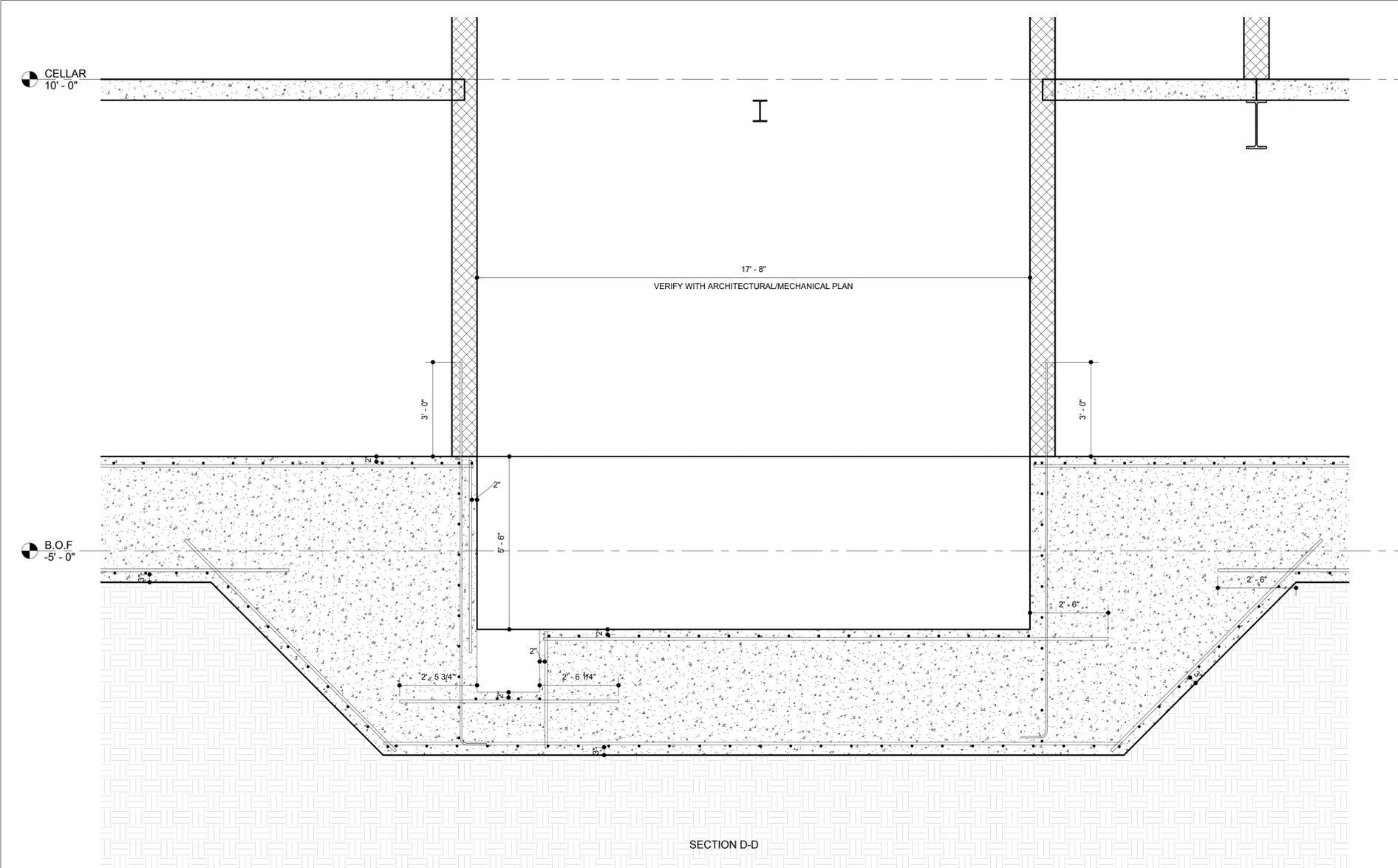
STRUCTURAL ENGINEER:

BROOKER ENGINEERING, PLLC
76 Lafayette Avenue
Suffern, New York 10901
Tel. 845-357-4411
FAX. 845-357-1896

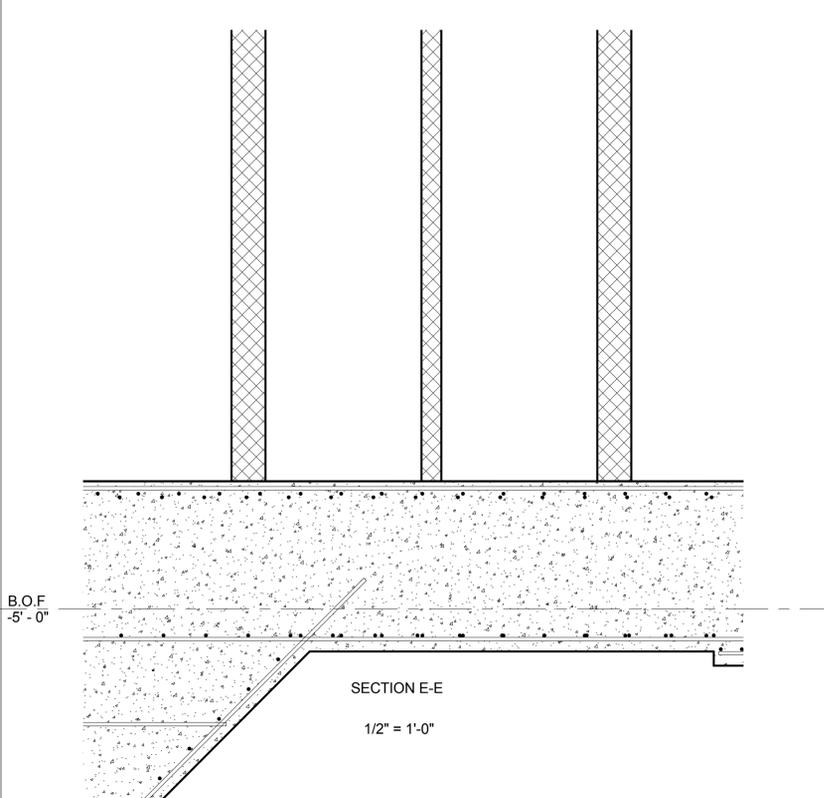
MEP ENGINEER:

DI BARI ENGINEERING P.C.
99 Main Street
Dobbs Ferry, New York 10952
TEL. 914-479-9705
FAX. 914-479-1234

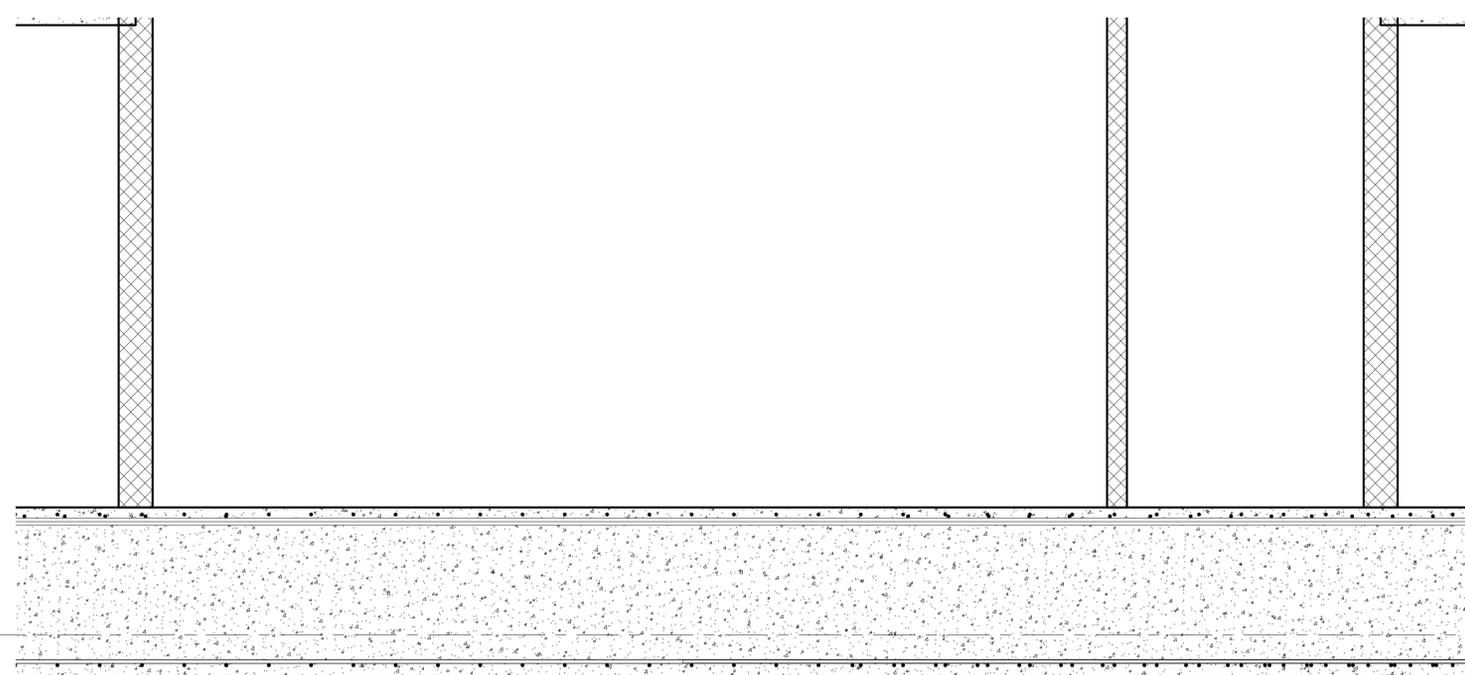
AUFGANG
ARCHITECTS



SECTION D-D
1/2" = 1'-0"



SECTION E-E
1/2" = 1'-0"



CMU ON MAT
1/2" = 1'-0"

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ISSUE DATE:	PROJECT NO:	
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Author	Checker	
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AS NOTED	XX OF XX	
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PROPOSED NEW
DEVELOPMENT FOR:

478 WEST 130TH STREET
NEW YORK, NEW YORK
BLOCK: 1969 LOT: 5

ARCHITECT:

AUFGANG ARCHITECTS LLC
49 NORTH AIRMONT RD.
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:

NAME
ADDRESS
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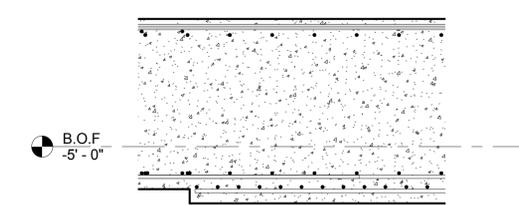
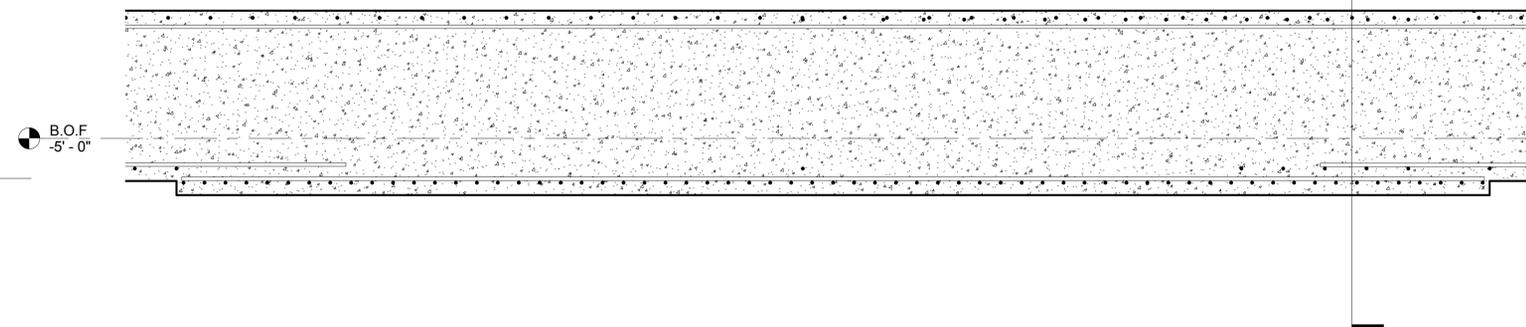
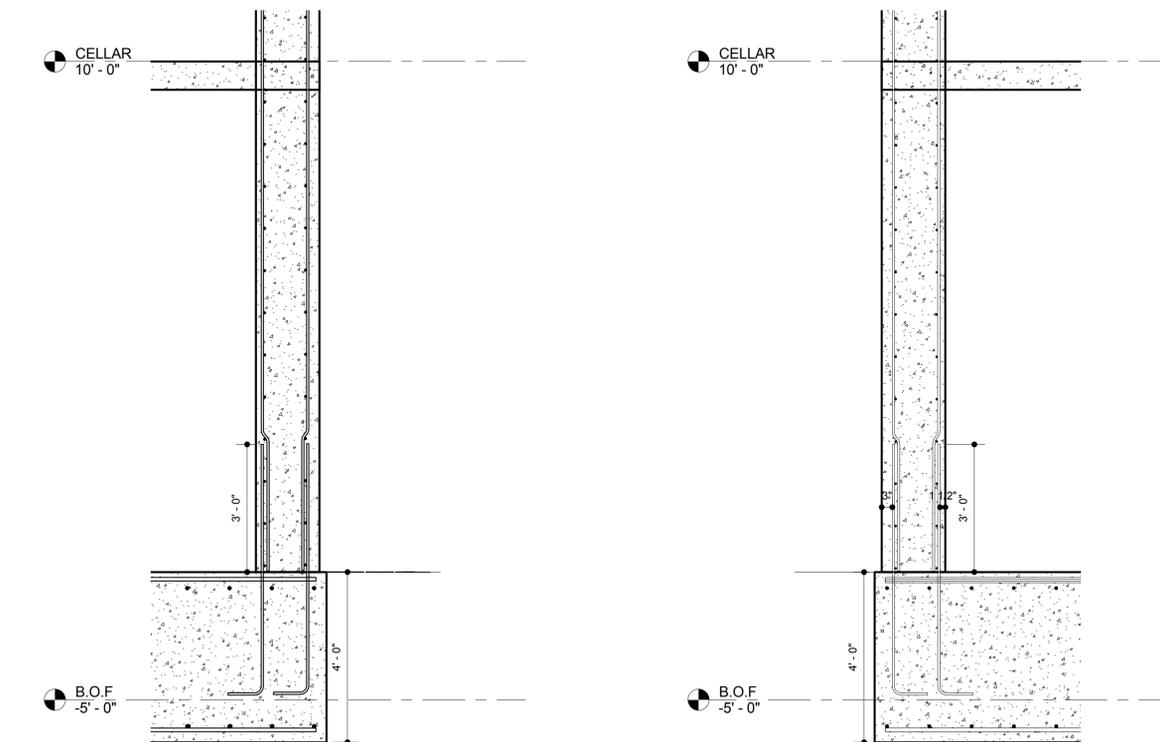
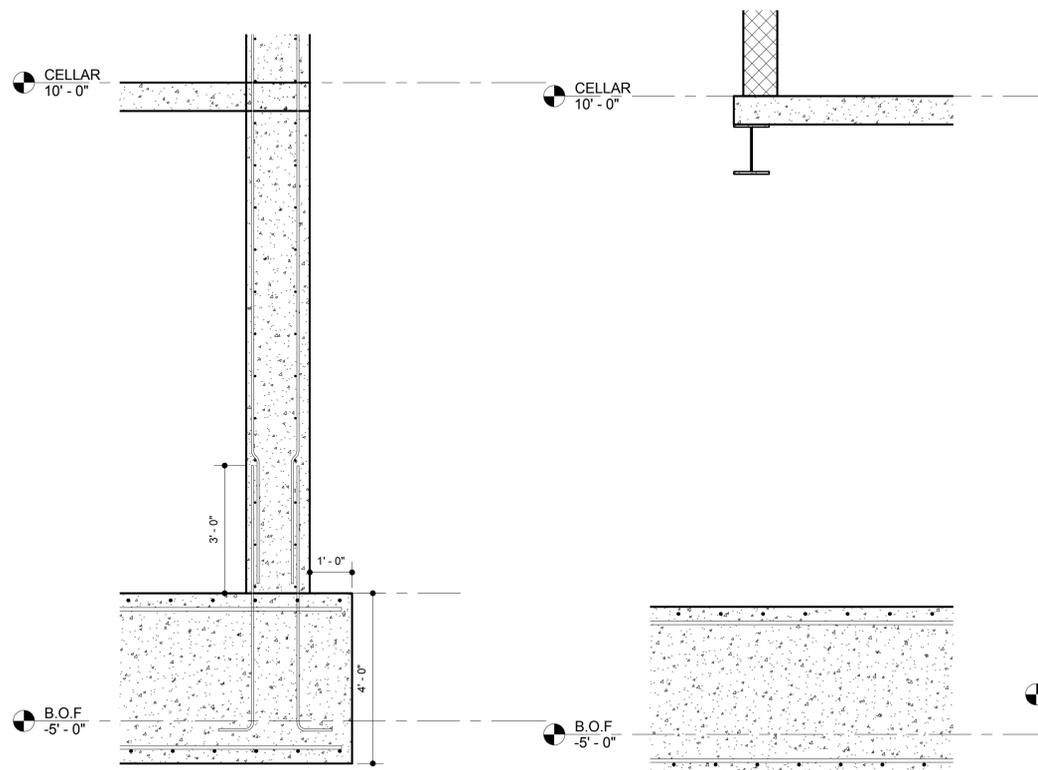
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FO-104

NYC DOB NUMBER: