

31-12 38TH AVENUE
LONG ISLAND CITY, NEW YORK

Remedial Action Work Plan

NYC BCP Number: 15CVCP167Q
OER Project Number 15EH-A267Q
OER VCP Project # 15CVCO167Q

Prepared for:

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Long Island City, NY 11101

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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
VCA	Voluntary Cleanup Agreement
MNA	Monitored Natural Attenuation
NOC	Notice of Completion
NYC VCP	New York City Voluntary Cleanup Program
NYC DEP	New York City Department of Environmental Protection
NYC DOHMH	New York State Department of Health and Mental Hygiene
NYCRR	New York Codes Rules and Regulations
NYC OER	New York City Office of Environmental Remediation
NYS DEC	New York State Department of Environmental Conservation
NYS DEC DER	New York State Department of Environmental Conservation Division of Environmental Remediation
NYS DOH	New York State Department of Health
NYS DOT	New York State Department of Transportation
ORC	Oxygen-Release Compound
OSHA	United States Occupational Health and Safety Administration
PE	Professional Engineer

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

CERTIFICATION

I, Joseph Horowitz, am a Professional Engineer licensed in the State of New York. I have primary direct responsibility for implementation of the remedial action for the 31-12 38th Avenue, LIC Site, OER Project No. 15EH-A267Q.

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

Joseph Horowitz

Name

35166

NYS PE License Number



J. Horowitz

Signature

October 12, 2015

Date

QEP Name

QEP Signature

Date

EXECUTIVE SUMMARY

Fortress DK Group, LLC has enrolled in the New York City Voluntary Brownfield Cleanup Program (NYC VCP) to investigate and remediate a number-square foot site located at 31-12 38th Avenue, in Queens, New York. A remedial investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP). The remedial action described in this document provides for the protection of public health and the environment consistent with the intended property use, complies with applicable environmental standards, criteria and guidance and conforms with applicable laws and regulations.

Site Location and Current Usage

The Site is located at 31-12¹ 38th Avenue in the Long Island City section of Queens, New York and is identified as Block 382 and Lot 17 on the New York City Tax Map. **Figure 1** shows the Site location. The Site is 4,480-square feet and is bounded by 38th Avenue to the north, residential property to the south, and commercial properties to the east and west. A map of the site boundary is shown in **Figure 2**. Currently, the Site is a vacant 2-story residential and commercial building with a one-story garage on the southwest side of the property.

Summary of Proposed Redevelopment Plan

The proposed building consists of a cellar containing parking, elevator pit and utility rooms; first floor commercial space, including a terrace and residential space on floors two through seven, providing a total of 18 apartments, including one duplex on the sixth floor. The building will encompass the entire lot footprint. Gross building areas are as follows:

¹ At the time the RI was performed, the site was identified as 31-14 38th Avenue. The address has since been changed to 31-12 38th Avenue.

<u>Building Use</u>	<u>Gross Area (SF)</u>
Commercial	2,407
Residential	<u>15,591</u>
TOTAL	17,998

The above gross areas do not include the cellar space (4,411 sq. ft.)

The cellar will require excavation to a depth of approximately 14 feet below existing grade. Excavation volume is estimated at 2,025 cubic yards. The cellar will include vehicle ramp, elevator room; utility spaces and attended parking for nine (9) cars. The first (ground) floor will include bicycle storage, residential lobby and commercial space.

Cellar and ground floor will occupy the full depth of the lot; upper floors will be partially set back from the rear lot line.

Superstructure will consist of steel beams, supporting concrete floor slabs on corrugated metal deck. Substructure will be reinforced concrete walls, spread and continuous footings; the cellar floor will be slab-on-grade with vapor barrier beneath. Exterior walls will be of metal studs with face brick.

Apartments will be heated and cooled by individual thru-wall A/C units, using electricity for cooling and natural gas for heating. Domestic hot water will be provided by individual electric hot water heaters in each apartment.

Summary of Environmental Findings

1. Elevation of the property ranges from 30 to 32 feet.
2. Depth to groundwater ranges from approximately 21 to 22 feet at the Site.
3. Groundwater flow is generally from north to south beneath the Site.
4. Bedrock was not encountered at the Site during the investigation.

5. The stratigraphy of the site, from the surface, consists predominately of natural fine to medium sand to at least 15 feet below ground surface. Trace amounts of fill were identified in shallow zones (less than six feet) of the three exterior borings.
6. Soil/fill sample results were compared to NYSDEC Unrestricted Use Soil Cleanup Objectives and Restricted Residential Soil Cleanup Objectives as presented in 6NYCRR Part 375-6.8. No VOC, pesticide or PCB exceedances were identified in the soil samples collected. SVOC exceedances of the SCOs were limited to polycyclic aromatic hydrocarbons (PAHs) in one shallow sample. The PAHs included benzo(a)anthracene, which exceeded both the Unrestricted and Restricted Residential Use SCOs, and benzo(k)fluoranthene and chrysene which only exceeded the Unrestricted Use SCOs. The detection of benzo(a)anthracene (1.18 mg/Kg) was marginal and only slightly above the Restricted Residential Use SCO of 1 mg/Kg. Metals exceedances of the Unrestricted Use SCOs were identified in five samples which were predominantly identified in the shallow (0 to 2 foot) interval. The exceedances of the Unrestricted Use SCOs were all relatively low and included lead, nickel, selenium, mercury and zinc. Exceedances of the Restricted Residential Use SCOs were limited to the shallow (0 to 2 foot) interval at one location. The exceedances of the Restricted Use SCOs included arsenic, barium, copper and lead. The concentrations of arsenic (16.4 mg/Kg) and barium (433 mg/Kg) in the sample only slightly exceeding the respective Restricted Residential Use SCOs of 16 mg/Kg and 400 mg/Kg. The concentrations of copper (375 mg/Kg) and lead (648 mg/Kg) were also relatively low, remaining within the same order of magnitude as the respective Restricted Residential Use SCOs of 270 mg/Kg and 400 mg/Kg.
7. Groundwater sample results were compared to New York State 6NYCRR Part 703.5 Class GA groundwater quality standards (GQS). Groundwater samples collected during the investigations contained no VOC, SVOC, pesticide or PCB exceedances. Metals exceedances of the AWQS in the unfiltered samples were identified in each of the three samples and included barium, magnesium, manganese, nickel and sodium in each of the three samples, as well as beryllium, cadmium and copper in GW-2 and selenium in GW-3. The number of exceedances in the filtered samples was significantly less than those in the unfiltered samples. The exceedances in the filtered samples included only magnesi-

um (GW-1 and GW-3), manganese in GW-3 and sodium in all three samples. The magnesium and sodium concentrations above the GQS reached the maximum values of 69,500 ug/L and 201,000 ug/L in GW-3. The GQS for magnesium and sodium are 35,000 ug/L and 20,000 ug/L, respectively. The concentration of manganese in GW-3 (393 ug/L) was only slightly above the GQS of 300 ug/L.

8. Soil vapor results collected during the RI were compared to the compounds listed in Table 3.1 Air Guideline Values derived by the New York State Department of Health (NYSDOH) in the NYSDOH Final Guidance for Evaluating Soil Vapor Intrusion, dated October 2006. Soil vapor samples collected during the RI showed low to moderate levels of petroleum related and chlorinated VOCs in all soil vapor samples. Total concentrations of petroleum-related VOCs (BTEX) ranged from 38.2 $\mu\text{g}/\text{m}^3$ to 123.5 $\mu\text{g}/\text{m}^3$. Chlorinated VOCs including tetrachloroethene (PCE) (max of 35 $\mu\text{g}/\text{m}^3$) and trichloroethene (TCE) (max of 3.20 $\mu\text{g}/\text{m}^3$) were detected in all soil vapor samples. Carbon tetrachloride was detected in one of the three soil vapor samples with a concentration of 0.31 $\mu\text{g}/\text{m}^3$ and 1,1,1-trichloroethane (TCA) was not detected in any of the samples. None of the detected concentrations of PCE, TCE and carbon tetrachloride were above the monitoring level ranges established within the State DOH soil vapor guidance matrix level ranges established within the NYSDOH Final Guidance on Soil Vapor Intrusion.

Summary of the Remedy

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

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and implementation of a Citizen Participation Plan.

2. Perform a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
3. Establish Track 1 Soil Cleanup Objectives (SCOs) with a Track 4 alternative. Excavation and removal of soil/fill exceeding SCOs.
4. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID.
5. Transportation and off-site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media onsite.
6. Removal of underground storage tanks, if any, and closure of petroleum spills, if any found on the Site, in compliance with applicable local, State and Federal laws and regulations.
7. If Track 1 SCOs are not achieved, demarcation of residual soil/fill.
8. Import of materials to be used for backfill (if any) in compliance with this plan and in accordance with applicable laws and regulations.
9. Installation of a minimum 20 mil vapor barrier system beneath the building slab and outside foundation sidewalls below grade.
10. As part of development, construction and maintenance of an engineered cover consisting of a six-inch reinforced concrete cellar floor slab, to prevent human exposure to residual soil/fill remaining under the Site;
11. Site mobilization involving Site security setup, equipment mobilization, utility markouts and marking & staking excavation areas.
12. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.

13. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
14. Submission of a RAR that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, lists any changes from this RAWP, and, if Track 1 SCOs are not achieved, describes all Engineering and Institutional Controls to be implemented at the Site.
15. If Track 1 SCOs are not achieved, submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.
- 16.** If Track 1 SCOs are not achieved, the property will continue to be registered with an E-Designation at the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls in this RAWP and a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

Community Protection Statement

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

This cleanup plan provides a very high level of protection for neighboring communities. This cleanup plan 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 BCP, a thorough cleanup study of this property (called a remedial investigation) has been performed to identify past property usage, to sample and test soils, groundwater and soil vapor, and identify contaminant sources present on the property. The cleanup plan has been designed to address all contaminant sources that have been identified during the study of this property.

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

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

Health and Safety Plan. This cleanup plan includes a Health and Safety Plan 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. 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 will be a qualified employee of the Contractor and may be the Contractor's Superintendent, if qualified. Pending award of contract, the Site Safety Coordinator will be Mr. Yuk Lam, P.E., who can be reached at 718-767-2833.

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

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

Odor, Dust and Noise Control. This cleanup plan includes actions for odor and dust control. These actions are designed to prevent off-Site odor and dust nuisances and includes steps to be taken if nuisances are detected. Generally, dust is managed by application of physical covers and by water sprays. Odors are controlled by limiting the area of open excavations, physical covers, spray foams and by a series of other actions (called operational measures). The project is also required to comply with NYC noise control standards. If you observe problems in these areas, please contact the onsite Project Manager, Mr. Yuk Lam, P.E., 718-767-2883 or NYC Office of Environmental Remediation Project Manager, Dr. Zachariah Schreiber, 212-788-3056

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

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

Hours of Operation. The hours for operation of cleanup will comply with the NYC Department of Buildings construction code requirements or according to specific variances issued by that agency. For this cleanup project, the hours of operation are 7:30 a.m. through 6:00 p.m., Monday through Friday..

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

Complaint Management. The contractor performing this cleanup is required to address all complaints. If you have any complaints, you can call the facility Project Manager, Mr. Yuk Lam, P.E., at 718-767-2883,, the NYC Office of Environmental Remediation Project Manager, Dr. Zachariah Schreiber at 212-788-3056, or call 311 and mention the Site is in the NYC Voluntary Cleanup Program.

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

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

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

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

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

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

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

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

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

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

Final Report. The results of all cleanup work will be fully documented in a final report (called a Remedial Action Report) that will be available for you to review in the public document repositories located at

Queens Library, Long Island City Branch,

37-33 21st Street

Long Island City, NY 11101

Tel. 718-752-3700.

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

REMEDIAL ACTION WORK PLAN

1.0 SITE BACKGROUND

Fortress D Group, LLC has enrolled in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a property located at 31-12 38th Avenue, in the Long Island City section of Queens, 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 31-12² 38th Avenue in the Long Island City section of Queens, New York and is identified as Block 382 and Lot 17 on the New York City Tax Map. **Figure 1** shows the Site location. The Site is 4,480-square feet and is bounded by 38th Avenue to the north, residential property to the south, and commercial properties to the east and west. A map of the site boundary is shown in **Figure 2**. Currently, the Site is a vacant 2-story residential building with a one-story garage on the southwest side of the property.

1.2 Proposed Redevelopment Plan

The proposed future use of the Site will consist of a new, cellar plus 7-story mixed-use building, occupying the entire 4,498 sq. ft. site, which is approximately rectangular. Building layout is presented in the Architectural Drawings, **Appendix E**_[zs1]. The current zoning designation is M1-2/R6A and the proposed uses are consistent with existing zoning. The proposed

² At the time the RI was performed, the site was identified as 31-14 38th Avenue. The address has since been changed to 31-12 38th Avenue.

building will include: a cellar containing parking, elevator pit and utility rooms; first floor commercial space, including a terrace and residential space on floors two through seven, providing a total of 18 apartments, including one duplex on the sixth floor. Gross building areas are as follows:

Building Use	Gross Area (SF)
Commercial	2,407
Residential	15,591
TOTAL	17,998

The above gross areas do not include the cellar space (4,411sq. ft.)

The cellar will require excavation to a depth of approximately 14 feet below existing grade. Excavation volume is estimated at 2 025 cubic yards. The cellar will include vehicle ramp, elevator room; utility spaces and attended parking for nine (9) cars. The first (ground) floor will include bicycle storage, residential lobby and commercial space.

Cellar and ground floor will occupy the full depth of the lot; upper floors will be partially set back from the rear lot line.

Superstructure will consist of steel beams, supporting concrete floor slabs on corrugated metal deck. Substructure will be reinforced concrete walls, spread and continuous footings; the cellar floor will be slab-on-grade with vapor barrier beneath. Exterior walls will be of metal studs with face brick.

Apartments will be heated and cooled by individual thru-wall A/C units, using electricity for cooling and natural gas for heating. Domestic hot water will be provided by individual electric hot water heaters in each apartment.

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

1.3 Description of Surrounding Property

The immediate surrounding properties consist of a 2-story residence to the south, and commercial properties to north (across 38th Avenue), east and west. The surrounding neighborhood is a mix of residential along with commercial, industrial/manufacturing, parking and public facilities and institutions. There are no public schools, day care centers or hospitals located within a 500-foot radius. The NYCTA elevated subway line (N/Q) runs along 31st Street, about 100 ft. NW of the Site.

Figure 3 shows the surrounding land usage.

1.4 Remedial Investigation

A remedial investigation was performed and the results are documented in a companion document called “*Remedial Investigation Report, 31-14 38th Avenue³, Queens, New York*”, dated January 2015 (RIR).

a. Summary of Past Uses of Site and Areas of Concern

The current structure on the site was built approximately 1920. It is believed that the property has primarily been used as a private residence. Currently, the property is vacant and owned by Paulovich Realty Corporation⁴. The property currently consists of two residential units and two commercial units. The adjacent commercial business to the west (Tire Shop) rents the garage and side parking area.

Areas of Concern were limited to the potential presence of a heating oil UST underneath the driveway

b. Summary of the Work Performed under the Remedial Investigation

³ At the time of the RIR, the property was known as 31-14 38th Avenue; subsequently, the address was changed to 31-12 38th Avenue.

⁴ Ownership shown is as of the RIR. Subsequently, the property was purchased by the present owner, Fortress Dk Group, LLC.

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Installed five soil borings across the entire project Site, and collected 10 soil samples for chemical analysis from the soil borings to evaluate soil quality;
3. Installed three groundwater monitoring wells throughout the Site to establish groundwater flow and collected three groundwater samples for chemical analysis to evaluate groundwater quality;
4. Installed three soil vapor probes around Site perimeter and collected three samples for chemical analysis.

c. Summary of Environmental Findings

1. Elevation of the property ranges from 30 to 32 feet.
2. Depth to groundwater ranges from approximately 21 to 22 feet at the Site.
3. Groundwater flow is generally from north to south beneath the Site.
4. Bedrock was not encountered at the Site during the investigation.
5. The stratigraphy of the site, from the surface, consists predominately of natural fine to medium sand to at least 15 feet below ground surface. Trace amounts of fill were identified in shallow zones (less than six feet) of the three exterior borings.
6. Soil/fill sample results were compared to NYSDEC Unrestricted Use Soil Cleanup Objectives and Restricted Residential Soil Cleanup Objectives as presented in 6NYCRR Part 375-6.8. No VOC, pesticide or PCB exceedances were identified in the soil samples collected. SVOC exceedances of the SCOs were limited to polycyclic aromatic hydrocarbons (PAHs) in one shallow sample. The PAHs included benzo(a)anthracene, which exceeded both the Unrestricted and Restricted Residential Use SCOs, and benzo(k)fluoranthene and chrysene which only exceeded the Unrestricted Use SCOs. The detection of benzo(a)anthracene (1.18 mg/Kg) was marginal and only slightly above the Restricted Residential Use SCO of 1 mg/Kg. Metals exceedances of the Unrestricted Use SCOs were identified in five samples which were predominantly identified in the shallow

(0 to 2 foot) interval. The exceedances of the Unrestricted Use SCOs were all relatively low and included lead, nickel, selenium, mercury and zinc. Exceedances of the Restricted Residential Use SCOs were limited to the shallow (0 to 2 foot) interval at one location. The exceedances of the Restricted Use SCOs included arsenic, barium, copper and lead. The concentrations of arsenic (16.4 mg/Kg) and barium (433 mg/Kg) in the sample only slightly exceeding the respective Restricted Residential Use SCOs of 16 mg/Kg and 400 mg/Kg. The concentrations of copper (375 mg/Kg) and lead (648 mg/Kg) were also relatively low, remaining within the same order of magnitude as the respective Restricted Residential Use SCOs of 270 mg/Kg and 400 mg/Kg.

7. Groundwater sample results were compared to New York State 6NYCRR Part 703.5 Class GA groundwater quality standards (GQS). Groundwater samples collected during the investigations contained no VOC, SVOC, pesticide or PCB exceedances. Metals exceedances of the AWQS in the unfiltered samples were identified in each of the three samples and included barium, magnesium, manganese, nickel and sodium in each of the three samples, as well as beryllium, cadmium and copper in GW-2 and selenium in GW-3. The number of exceedances in the filtered samples was significantly less than those in the unfiltered samples. The exceedances in the filtered samples included only magnesium (GW-1 and GW-3), manganese in GW-3 and sodium in all three samples. The magnesium and sodium concentrations above the GQS reached the maximum values of 69,500 ug/L and 201,000 ug/L in GW-3. The GQS for magnesium and sodium are 35,000 ug/L and 20,000 ug/L, respectively. The concentration of manganese in GW-3 (393 ug/L) was only slightly above the GQS of 300 ug/L.
8. Soil vapor results collected during the RI were compared to the compounds listed in Table 3.1 Air Guideline Values derived by the New York State Department of Health (NYSDOH) in the NYSDOH Final Guidance for Evaluating Soil Vapor Intrusion, dated October 2006. Soil vapor samples collected during the RI showed low to moderate levels of petroleum related and chlorinated VOCs in all soil vapor samples. Total concentrations of petroleum-related VOCs (BTEX) ranged from 38.2 $\mu\text{g}/\text{m}^3$ to 123.5 $\mu\text{g}/\text{m}^3$. Chlorinated VOCs including tetrachloroethene (PCE) (max of 35 $\mu\text{g}/\text{m}^3$) and trichloroethene (TCE) (max of 3.20 $\mu\text{g}/\text{m}^3$) were detected in all soil vapor samples. Carbon tetrachloride was de-

tected in one of the three soil vapor samples with a concentration of 0.31 µg/m³ and 1,1,1-trichloroethane (TCA) was not detected in any of the samples. None of the detected concentrations of PCE, TCE and carbon tetrachloride were above the monitoring level ranges established within the State DOH soil vapor guidance matrix level ranges established within the NYSDOH Final Guidance on Soil Vapor Intrusion.

For more detailed results, consult the RIR. Based on an evaluation of the data and information from the RIR and this RAWP, disposal of significant amounts of hazardous waste is not suspected at this site. Tables 1, 2 and 3 from the RIR are attached herewith as **Tables 2, 4 and 5**, respectively.

2.0 REMEDIAL ACTION OBJECTIVES

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

Groundwater

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

Soil

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

Soil Vapor

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

3.0 REMEDIAL ALTERNATIVES ANALYSIS

3.1 Alternatives

Following is a description of the alternatives to be considered. A minimum of two (2) remedial alternatives (including a Track 1 scenario) are evaluated, as follows:

Alternative 1 involves:

- Establishment of Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs);
- Removal of all soil/fill exceeding Unrestricted Use SCOs throughout the Site and confirmation that Track 1 Unrestricted Use SCOs have been achieved with post-excavation endpoint sampling. Based on the results of the remedial investigation it is anticipated that excavation to a depth of 12 ft., as required for this site, will be sufficient to remove all historic fill at the Site. If soil/fill containing analytes at concentrations above Track 1 Unrestricted Use SCOs is still present at the base of the excavation after removal of soil is complete, additional excavation would be performed to ensure complete removal of soil that does not meet Track 1 Unrestricted Use SCOs.
- No engineering or institutional controls are required for a Track 1 cleanup, but a vapor barrier waterproofing system would be installed beneath the basement floorslab and behind foundation walls of the new building as a part of development, to prevent any potential future exposures from off-site soil vapor; and
- Placement of a final cover, consisting of the cellar floor slab, over the entire site, as part of construction.

Alternative 2 involves:

- Establishment of Track 4 Site-Specific SCOs, as shown in **Table 1**:
- Removal of all soil/fill exceeding the Track 4 Site Specific SCOs and confirmation that Track 4 has been achieved with post-excavation endpoint sampling. If soil/fill containing metals exceeding the above-listed concentration limits are still present after removal of all soil required for construction is complete, additional excavation would be performed to ensure complete removal of soil that does not meet the Track 4 Site-Specific SCOs.

- As part of construction, installation of a minimum 20-mil vapor barrier beneath the cellar floorslab and behind foundation walls.
- Placement of a composite cover system over the entire site, consisting of the cellar floorslab and exterior foundation walls, to prevent exposure to remaining soil/fill as well as future exposures from off-site vapor.
- Continued registration as an E-Designated property to memorialize the remedial action and the Engineering and Institutional Controls required by this RAWP.

3.2 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 contaminated soil/fill exceeding Track 1 Unrestricted Use SCOs and groundwater protection standards, thus eliminating potential for direct contact with contaminated soil/fill once construction is complete and eliminating the risk of contamination leaching into groundwater. Potential future migration of soil vapors from offsite into the new building would be prevented by installation of the vapor barrier system.

Alternative 2 would achieve comparable protections of human health and the environment by excavating the existing soil at the Site and by ensuring that remaining on-site soil/fill meets Track 4 Site-Specific SCOs and by placement of Institutional and Engineering controls, including a composite cover system. The composite cover system would prevent direct contact with any remaining on-site soil/fill. Establishment of Track 4 Site-Specific SCOs would minimize the risk of contamination leaching into groundwater. Potential future migration of off-site soil vapors into the new building would be prevented by the garage exhaust system and by installation of a vapor barrier system.

3.3 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 installing a vapor barrier/waterproofing system below the new building's basement slab and continuing the vapor barrier around foundation walls.

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 installation of a vapor barrier.

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

Short-term effectiveness and impacts

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

Both alternatives have similar-short term effectiveness during their respective implementations, as each requires excavation of historic fill material. Both alternatives would result in short-term dust generation impacts associated with excavation, handling, load out of materials,

and truck traffic. For both alternatives, focused attention to means and methods, including community air monitoring and appropriate truck routing, would minimize or negate the overall impact of these activities and any significant differences between these alternatives.

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

Long-term effectiveness and permanence

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

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

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

protection in perpetuity.

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

Reduction of toxicity, mobility, or volume of contaminated material

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

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

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

Alternative 1 would eliminate a greater total mass of contaminants on Site. Placement of a composite cover system and vapor barrier will lower toxicity by eliminating potential exposures to remaining soil, groundwater, and soil vapor. Groundwater use restrictions will reduce toxicity by ensuring that there is no use of on-Site groundwater for potable purposes.

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, administra-

tive feasibility (e.g. obtaining permits for remedial activities), and availability of services and materials.

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

Cost effectiveness

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

Since the new building requires excavation to a depth of 14 ft., the costs associated with both Alternative 1 and Alternative 2 will likely be comparable. However, Alternative 1 might require additional soil excavation.

Long-term costs for Alternative 2 are likely higher than for Alternative 1 since the property will retain its E-designation. In both cases, appropriate public health and environmental protections are achieved.

Each alternative combines the remedial action with construction of the building. Each alternative is also cost effective in that it will select the closest and most appropriate disposal site to reduce soil transportation and disposal costs.

Community Acceptance

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

Based on the overall goals of the remedial program, the intended Site use and initial permitting, no community opposition is anticipated for either alternative. This RAWP will be subject to public review under the NYC VCP and will provide the opportunity for detailed public input. This public comment will be considered by OER prior to approval of this plan. The

Citizen Participation Plan for the project is provided in **Appendix A**. Observations here will be supplemented by public comment received on the RAWP.

Land use

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

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

Sustainability of the Remedial Action

This criterion evaluates the overall sustainability of the remedial action alternatives and the degree to which sustainable means are employed to implement the remedial action including those that take into consideration NYC's sustainability goals defined in *PlaNYC: A Greener, Greater New York*. Sustainability goals may include: maximizing the recycling and reuse of

non-virgin materials; reducing the consumption of virgin and non-renewable resources; minimizing energy consumption and greenhouse gas emissions; improving energy efficiency; and promotion of the use of native vegetation and enhancing biodiversity during landscaping associated with Site development.

The remedial plan would take into consideration the shortest trucking routes during off-site disposal of 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. While **Alternative 2** might potentially result in lower energy usage based on reducing the volume of material transported off-site, both alternatives are comparable with respect to the opportunity to achieve sustainable remedial action. A complete list of green remedial activities considered as part of the NYC VCP is included in the **Sustainability Statement**, included as **Appendix B**.

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

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and implementation of a Citizen Participation Plan.
2. Perform a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
3. Establish Track 1 Soil Cleanup Objectives (SCOs) with a Track 4 alternative. Excavation and removal of soil/fill exceeding SCOs.
4. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID.
5. Transportation and off-site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media onsite.
6. Removal of underground storage tanks, if any, and closure of petroleum spills, if any found on the Site, in compliance with applicable local, State and Federal laws and regulations.
7. If Track 1 SCOs are not achieved, demarcation of residual soil/fill.

8. Import of materials to be used for backfill (if any) in compliance with this plan and in accordance with applicable laws and regulations.
9. Installation of a minimum 20 mil vapor barrier system beneath the building slab and outside foundation sidewalls below grade.
10. As part of development, construction and maintenance of an engineered cover consisting of a six-inch reinforced concrete cellar floor slab, to prevent human exposure to residual soil/fill remaining under the Site;
11. Site mobilization involving Site security setup, equipment mobilization, utility markouts and marking & staking excavation areas.
12. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
13. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
14. Submission of a RAR that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, lists any changes from this RAWP, and, if Track 1 SCOs are not achieved, describes all Engineering and Institutional Controls to be implemented at the Site.
15. If Track 1 SCOs are not achieved, submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.
16. If Track 1 SCOs are not achieved, the property will continue to be registered with an E-Designation at the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls in this RAWP and a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance

of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

4.2 Soil Cleanup Objectives and Soil/Fill Management

Track 1 Unrestricted Use Soil Cleanup Objectives (UUSCOs) are proposed for this project. The SCOs for this Site are listed in **Table 1**. 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 C**. The location of planned excavations is shown in **Figure 5** (Site Excavation Diagram).

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

Estimated Soil/Fill Removal Quantities

The total quantity of soil/fill expected to be excavated and disposed off-Site is 2,025 cu. yds (3,280 tons).

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

End-Point Sampling

Removal actions for development purposes under this plan will be performed in conjunction with end-point (confirmation) soil sampling. Three (3) confirmation samples will be collected from the base of the excavation at locations to be determined by OER. For comparison to Track 1 SCOs, analytes will include VOCs, SVOCs, pesticides, PCBs and metals according to analytical methods described below. See **Table 1**. For comparison to Track 4 SCOs, if applicable, analytes will include only trigger compounds and elements established on the Track 4 SCO list shown below and repeated in **Table 2**.

Track 4 Site-Specific SCOs	
Substance	SCO
Arsenic	23 ppm
Barium	500 ppm
Lead	800 ppm

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

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

Post-remediation end-point sample locations and depth will be biased towards the areas and depths of highest contamination identified during previous sampling episodes unless field indicators such as field instrument measurements or visual identification of contamination 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 ELAP certified labs will be used for all confirmation and end-point sample analyses. Labs performing confirmation and end-point sample analyses will be reported in the RAR. The RAR will provide a tabular and map summary of all confirmation and end-point sample results and will include all data including non-detects and applicable standards and/or guidance values. End-point (confirmation) samples will be analyzed for compounds and elements as described above, utilizing the following methodology:

Soil analytical methods will include:

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

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

Quality Assurance/Quality Control

QA/QC protocol for end point sampling will include at least one (1) duplicate sample for each 20 samples collected plus sufficient field and lab blank samples to assess sampling and lab artifacts.

Import and Reuse of Soils

Imported soils will be limited to clean soil, used temporarily to fill the existing cellar for safety purposes, following demolition of the building and prior to start of excavation. However, should import or reuse of soils already onsite become required, such import or reuse of soils shall be performed in conformance with the Soil/Materials Management Plan in **Appendix C**.. The estimated quantity of onsite soil/fill expected to be reused/relocated on Site is 0 tons.

4.3 Engineering Controls

Track 1 remedial actions do not require Engineering Controls. If Track 1 SCOs are not achieved, the following Engineering Controls will be employed:

- Cover system consisting of 6-inch thick concrete cellar slab plus 20 mil vapor barrier over the entire site;
- Vapor barrier under the slab shall be Vaporblock Plus, 20 Mil Vapor & Gas Barrier by Raven Industries.
- Composite Cover System

Exposure to residual soil/fill will be prevented by an engineered cover system over the entire Site. This composite cover system is comprised of the 6-inch thick concrete cellar slab.

The composite cover system is a permanent engineering control for the Site. If Track 1 cleanup criteria are not achieved, a Site Management Plan (SMP) will be included in the Remedial Action Report. The SMP will include provisions for the cover system to be inspected and reported on at specified intervals. A Soil Management Plan will be included in the Site Management Plan, which will outline the procedures to be followed in the event that the composite cover system and underlying residual soil/fill are disturbed after the remedial action is complete.

- Vapor Barrier

Migration of soil vapor will be mitigated with a combination of building slab and vapor barrier, as shown in **Figures 6** and **7**. Details of the vapor barrier are shown in **Figures 8** and **9** as well as in the architectural drawings, **Appendix E**. Vapor barrier will be Vaporblock Plus

VBP20 by Raven Industries. See **Appendix F** for manufacturer's catalogue cuts of the vapor barrier.

4.4 Institutional Controls

In the event that Track 1 SCOs are not achieved, Institutional Controls (IC) will be incorporated in this remedial action to manage residual soil/fill and render the Site protective of public health and the environment. Institutional Controls are listed below. Long-term employment of EC/ICs will be implemented under a site-specific Site Management Plan (SMP) that will be included in the RAR. The property will continue to be registered with an E-Designation by the NYC Buildings Department.

Institutional Controls for this remedial action are:

- The property will continue to be registered with an E-Designation by the NYC Buildings Department. This RAWP includes a description of all ECs and ICs and summarizes the requirements of the Site Management Plan which will note that the property owner and property owner's successors and assigns must comply with the approved SMP;
- Submittal of a Site Management Plan in the RAR for approval by OER that provides procedures for appropriate operation, maintenance, monitoring, inspection, reporting and certification of ECs. SMP will require that the property owner and property owner's successors and assigns will submit to OER a periodic written statement that certifies that: (1) controls employed at the Site are unchanged from the previous certification or that any changes to the controls were approved by OER; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. OER retains the right to enter the Site in order to evaluate the continued maintenance of any controls. This certification shall be submitted at a frequency to be determined by OER in the SMP and will comply with RCNY §43-1407(1)(3).
- Vegetable gardens and farming on the Site are prohibited in contact with residual soil materials;

- Use of groundwater underlying the Site is prohibited without treatment rendering it safe for its intended use;
- All future activities on the Site that will disturb residual material must be conducted pursuant to the soil management provisions in an approved SMP;
- The Site will be used for 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 the DCR and 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 Brown-field 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 March 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

The main Area of Concern (AOC) is a suspect heating oil tank which may be located under the driveway adjoining the building. The main contaminants of concern are listed in **Table 1**^[zs2] and **Table 2** for Unrestricted Use (Track 1) and Restricted Use (Track 4), respectively.

Nature, Extent, Fate and Transport of Contaminants

Potential contaminants at the Site include encounters with groundwater, soil and soil vapor.

1. Volatile Organic Compounds (VOCs)

No VOCs or PCBs were detected in any of the soil and groundwater samples collected during the remedial investigation (RI).

Soil vapor samples collected during the RI showed low to moderate levels of petroleum related and chlorinated VOCs in all soil vapor samples. Total concentrations of petroleum-related VOCs (BTEX) ranged from 38.2 µg/m³ to 123.5 µg/m³. Chlorinated VOCs including tetrachloroethene (PCE) (max of 35 µg/m³) and trichloroethene (TCE) (max of 3.20µg/m³) were detected

in all soil vapor samples. Carbon tetrachloride was detected in one of the three soil vapor samples with a concentration of 0.31 µg/m³ and 1,1,1-trichloroethane (TCA) was not detected in any of the samples. None of the detected concentrations of PCE, TCE and carbon tetrachloride were above the monitoring level ranges established within the State DOH soil vapor guidance matrix level ranges established within the NYSDOH Final Guidance on Soil Vapor Intrusion.

VOCs may cause contact dermatitis. Direct contact can be irritating to the skin and produce itching, burning, swelling and redness. Direct contact or exposure to vapors may be irritating to the eyes. Conjunctivitis may result from prolonged exposure. High levels of exposure to SVOCs, though not anticipated during work activities conducted during this project, may increase the risk of cancer including lung, kidney and skin cancer. Poisoning may occur by ingestion of large doses, inhalation or skin absorption.

The major route of entry for the work activities to be conducted at this site is through direct contact. Exposure is most likely when handling soil. Inhalation may occur when the soil is disturbed causing respirable and nuisance dust particles to become airborne.

2. Semi-volatile organic compounds

No SVOC exceedances were detected in any of the groundwater samples. SVOC exceedances of the SCOs detected in the soil samples were limited to polycyclic aromatic hydrocarbons (PAHs) in one shallow sample. The PAHs included benzo(a)anthracene, which exceeded both the Unrestricted and Restricted Residential Use SCOs, and ben-zo(k)fluoranthene and chrysene which only exceeded the Unrestricted Use SCOs. The detection of benzo(a)anthracene (1.18 mg/Kg) was marginal and only slightly above the Restricted Residential Use SCO of 1 mg/Kg.

3. Metals

Metals exceedances of the Unrestricted Use Site Cleanup Objectives (UUSCOs) were identified in five soil samples which were predominantly in the shallow (0 to 2 foot) interval. Exceedances of the Unrestricted Use SCOs were all relatively low and included lead, nickel, selenium, mercury and zinc. Exceedances of the Restricted Residential Use SCOs were limited to the shallow (0 to 2 foot) interval at one location. The exceedances of the Restricted Use SCOs included arsenic, barium, copper and lead. The concentrations of arsenic (16.4 mg/Kg) and barium

(433 mg/Kg) in the sample only slightly exceeded their respective Restricted Residential Use SCOs of 16 mg/Kg and 400 mg/Kg. The concentrations of copper (375 mg/Kg) and lead (648 mg/Kg) were also relatively low, remaining within the same order of magnitude as the respective Restricted Residential Use SCOs of 270 mg/Kg and 400 mg/Kg.

Metals exceedances of the Ambient Water Quality Standards (AWQS) in the unfiltered samples were identified in each of the three samples. The compounds exceeding the AWQS included barium, magnesium, manganese, nickel and sodium in each of the three samples, as well as beryllium, cadmium and copper in GW-2 and selenium in GW-3. The number of exceedances in the filtered samples was significantly less than those in the unfiltered samples. The exceedances in the filtered samples included only magnesium (GW-1 and GW-3), manganese in GW-3, and sodium in all three samples. The magnesium and sodium concentrations above the GQS reached the maximum values of 69,500 ug/L and 201,000 ug/L in GW-3. The GQS for magnesium and sodium are 35,000 ug/L and 20,000 ug/L, respectively. The concentration of manganese in GW-3 (393 ug/L) was only slightly above the GQS of 300 ug/L. The analysis of unfiltered samples can be affected by sediment entrained within the sample; as such, the filtered samples are generally considered to be more representative of groundwater quality.

Exposure to high concentrations of copper through inhalation can cause irritation of the eyes, nose, pharynx, nasal septum. Ingestion may cause a metallic taste. Skin irritation may result from direct contact with skin. Damage to the liver and kidneys may occur.

Exposure to high concentrations of selenium may cause eye, skin, nose and throat irritation, headache, chills, fever, bronchitis, a metallic taste in the mouth, garlic breath, gastrointestinal disturbance, dermatitis, and eye and skin burns.

The primary route of exposure is through inhalation of dust particles when soil is disturbed and becomes airborne.

4. Asbestos-Containing Materials

No asbestos-containing materials (ACM) were identified onsite, so these are not considered a potential concern.

5. Polychlorinated Biphenyls

As polychlorinated Biphenyls (PCBs) have not been identified onsite, they are not considered a potential concern at this site.

Potential Routes of Exposure

An exposure pathway is the means by which an individual may come into contact with a Site-derived contaminant. 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. These elements of an exposure pathway may be based on past, present, or future events.

Existence of Human Health Exposure

Receptor Populations

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

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

1. Commercial Businesses (up to 0.25 mile) – existing and future
2. Residential Buildings (up to 0.25 mile) – existing and future
3. Building Construction/Renovation (up to 0.25 mile) – existing and future
4. Pedestrians, Trespassers, Cyclists (up to .25 mile) – existing and future
5. Schools (up to .25 mile) – present and future.

Overall Human Health Exposure Assessment

Based upon this analysis, complete on-Site exposure pathways appear to be present only during the current unremediated phase and the remedial action (construction) phase. At present, on-site exposure is prevented by limiting access and Site activity. During remedial construction,

on-site and off-site exposures to contaminated soil or fill material will be addressed through dust controls, and through the implementation of the Community Air Monitoring Program (included in the Construction Health and Safety Plan, **Appendix D**), the Soil/Materials Management Plan (**Appendix C**) and other elements of the Construction Health and Safety Plan (**Appendix D**).

Once the site is developed, there will be no complete exposure pathway. The vapor barrier will prevent vapor intrusion. The concrete cover will prevent contact with residual soil or groundwater. Even if Track 1 cleanup objectives are not achieved, continued protection after the remedial action will be maintained by the implementation of site management, including periodic inspection and certification of the performance of remedial controls. This assessment takes into consideration the reasonably anticipated use of the site, which includes a residential structure, site-wide impervious surface cover cap, and a subsurface vapor barrier system for the building. Potential post-construction use of groundwater is not considered an option because the site is served by a public water supply and groundwater in this area of New York City is not used as a potable water source. There are no surface waters in close proximity to the Site that could be impacted or threatened.

Environmental Media & Exposure Route	Human Exposure Assessment for Proposed Remedial Action
Direct contact with surface and subsurface soils	<ul style="list-style-type: none"> (Track 2 or 4) The main opportunity for human exposure will occur during remediation, primarily when handling soil or by inhalation of soil dust. The former affects primarily site workers. The latter affects site workers and potentially persons in the neighborhood. Soil contact risks will be mitigated by use of protective equipment and procedures as set forth in the CHASP. Dust inhalation will be avoided by proper procedures as well as air monitoring during soil handling, also as set forth in the CHASP. Once work is complete,

	<p>there is no direct contact with soil because the site will be completely covered with an engineered composite cover. Future contact with soil will be prevented by the implementation of a Site Management Plan and Soil and Materials Management Plan for any future ground intrusive work.</p> <ul style="list-style-type: none"> • (Track 1) Human exposure during remediation is the same as described above for Track 2 or 4. Once remediation is complete, there is no potential for direct contact or inhalation because all soils in excess of Track 1 SCO's will have been removed from the site.
<p>Ingestion of groundwater</p>	<ul style="list-style-type: none"> • The area is served by an upstate water supply and groundwater is not used for potable water supply. Groundwater use for potable supply onsite is prohibited by municipal law.
<p>Direct contact with groundwater</p>	<ul style="list-style-type: none"> • (Track 2 or 4) Contact during remediation is unlikely because the water table is found at a depth of about 21-22 ft. below grade, whereas cellar excavation is only to a depth of about 12 ft. below grade. Once remediation is complete, there is no potential for direct contact with groundwater because the site will be completely covered with an engineered composite cover. Future contact with groundwater will be prevented by

	<p>the implementation of a Site Management Plan and Soil and Materials Management Plan for any future ground intrusive work, such as a well.</p> <ul style="list-style-type: none"> • (Track 1) Contact during remediation is unlikely for the reasons discussed above for Track 2 or 4. Once remediation has been completed, all soils in excess of Track 1 SCO's and Groundwater Protection Standards will have been removed from the site so that groundwater is not impacted by site conditions.
<p>Direct contact with soil vapor</p>	<ul style="list-style-type: none"> • Contact with soil vapor is possible during remediation. This primarily affects site workers, rather than the public. Following procedures set forth in the CHASP will mitigate this risk. • Once remediation is complete, contact with soil vapor will be prevented by a soil vapor barrier over the entire site.

5.0 REMEDIAL ACTION MANAGEMENT

5.1 Project Organization and Oversight

Principal personnel who will participate in the remedial action include:

Design Engineer and Project Manager	Professional Engineer (Environmental Engineer)
Yuk Lam, P.E. Lam Engineer, P.C. 48-91 187 Street Fresh Meadows, NY 11365 Tel. 718-767-2883 Cell 917-659-8195 lamengineerpc@gmail.com	Joseph Horowitz Joseph Horowitz, P.E.. 76-06 137 Street Flushing, NY 11367 Tel. 718-544-5105 Horow137@aol.com

The Professional Engineer (PE) for this project is listed above.

5.2 Site Security

Site access will be controlled by gated entrances to the fenced property. Fencing will be by means of a NYC Dept. of Buildings (DOB) approved construction fence.

5.3 Work Hours

The hours for operation of remedial construction will be from 7:30 a.m. to 5:30 p.m. These hours conform to the New York City Department of Buildings construction code requirements.

5.4 Construction Health and Safety Plan (CHASP)

The Health and Safety Plan is included in **Appendix D**. The Site Safety Coordinator will be a qualified employee of the contractor, to be designated following award of contract. Remedial work performed under this RAWP will be in full compliance with applicable health and safety laws and regulations, including Site and OSHA worker safety requirements and HAZWOPER requirements. Confined space entry, if any, will comply with OSHA requirements and industry standards and will address potential risks. The parties performing the remedial construction work will ensure that performance of work is in compliance with the HASP and applicable laws and regulations. The HASP pertains to remedial and invasive work performed at the Site until the issuance of the Notice of Completion.

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

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

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

5.5 Community Air Monitoring Plan

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

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

cent to a school or residence. Exceedances of action levels observed during performance of the Community Air Monitoring Plan (CAMP) will be reported to the OER Project Manager and included in the Daily Report.

VOC Monitoring, Response Levels, and Actions

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

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be 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 (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

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

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

5.6 Agency Approvals

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

5.7 Site Preparation

Pre-Construction Meeting

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

Mobilization

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

Utility Marker Layouts, Easement Layouts

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

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

Dewatering

Dewatering is not anticipated.

Equipment and Material Staging

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

Stabilized Construction Entrance

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

Truck Inspection Station

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

Extreme Storm Preparedness and Response Contingency Plan

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

Storm Preparedness

Preparations in advance of an extreme storm event will include the following: containerized hazardous materials and fuels will be removed from the property; loose materials will be secured to prevent dislocation and blowing by wind or water; heavy equipment such as excavators and generators will be removed from holes, trenches and depressions on the property to high ground or removed from the property; an inventory of the property with photographs will be performed to establish conditions for the site and equipment prior to the event; stockpile covers for soil and fill will be secured by adding weights such as sandbags for added security and worn or ripped stockpile covers will be replaced with competent covers; stockpiled hazardous wastes will be removed from the property; stormwater management systems will be inspected and fortified, including, as necessary: clean and reposition silt fences, hay bales; clean storm sewer filters and traps; and secure and protect pumps and hosing.

Storm Response

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

to remove and clean dislocated material will be submitted to OER and implemented following approval by OER and granting of site access by the property owner. Impacted offsite areas may require characterization based on site conditions, at the discretion of OER. If onsite petroleum spills are identified, a qualified environmental professional will determine the nature and extent of the spill and report to NYS DEC's spill hotline at DEC 800-457-7362. If the source of the spill is ongoing and can be identified, it should be stopped if this can be done safely. Potential hazards will be addressed immediately, consistent with guidance issued by NYS DEC.

Storm Response Reporting

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

5.8 Traffic Control

Drivers of trucks leaving the NYC VCP Site with soil/fill will be instructed to proceed without stopping in the vicinity of the site to prevent neighborhood impacts. The planned route on local roads for trucks leaving the site will be determined following award of contract and selection of disposal sites.

5.9 Demobilization

Demobilization will include:

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

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

5.10 Reporting and Record Keeping

Daily Reports

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

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

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

Record Keeping and Photo-Documentation

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

5.11 Complaint Management

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

5.12 Deviations from the Remedial Action Work Plan

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

- Reasons for deviating from the approved RAWP;
- Effect of the deviations on overall remedy; and

- Determination that the remedial action with the deviation(s) is protective of public health and the environment.

5.13 Data Usability Summary Report (DUSR)

The primary objective of a Data Usability Summary Report (DUSR) is to determine whether or not data meets the site specific criteria for data quality and data use. The DUSR provides an evaluation of analytical data without third party data validation. The DUSR for post-remedial samples collected during implementation of this RAWP will be included in the Remedial Action Report (RAR).

6.0 REMEDIAL ACTION REPORT

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

- Information required by this RAWP;
- As-built drawings for all constructed remedial elements, required certifications, manifests and other written and photographic documentation of remedial work performed under this remedy;
- Site Management Plan (if Track 1 is not achieved);
- Description of any changes in the remedial action from the elements provided in this RAWP and associated design documents;
- Tabular summary of all end point sampling results and all material characterization results, QA/QC results for end-point sampling, and other sampling and chemical analysis performed as part of the remedial action and DUSR;
- Test results or other evidence demonstrating that remedial systems are functioning properly;
- Account of the source area locations and characteristics of all contaminated material removed from the Site including a map showing source areas;
- Account of the disposal destination of all contaminated material removed from the Site. Documentation associated with disposal of all material will include transportation and disposal records, and letters approving receipt of the material.
- Account of the origin and required chemical quality testing for material imported onto the Site.
- Recorded Declaration of Covenants and Restrictions.

- Continue registration of the property with an E-Designation by the NYC Department of Buildings.
- Reports and supporting material will be submitted in digital form.

Remedial Action Report Certification

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

I, _____, 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 Site name Site Site number.

I, _____, am a qualified Environmental Professional. I had primary direct responsibility for implementation remedial program for the Site name Site Site number. (Optional)

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

7.0 SCHEDULE

The table below presents a schedule for the proposed remedial action and reporting. If the schedule for remediation and development activities changes, it will be updated and submitted to OER. Currently, a five week remediation period is anticipated. Schedule assumes that demolition has been completed. Note that site is also subject to a RAP for air.

Schedule Milestone	Weeks from Remedial Action Start	Duration (weeks)
OER Approval of RAWP	0	-
Fact Sheet 2 announcing start of remedy	0	-
Mobilization	3	2
Remedial Excavation, vapor barrier and cellar construction	5	5
Demobilization	n.a.	
Submit Remedial Action Report - HazMat	15	-
OER issues Final Notice of Satisfaction	24	

FIGURES



Figure 1: Site Location Map

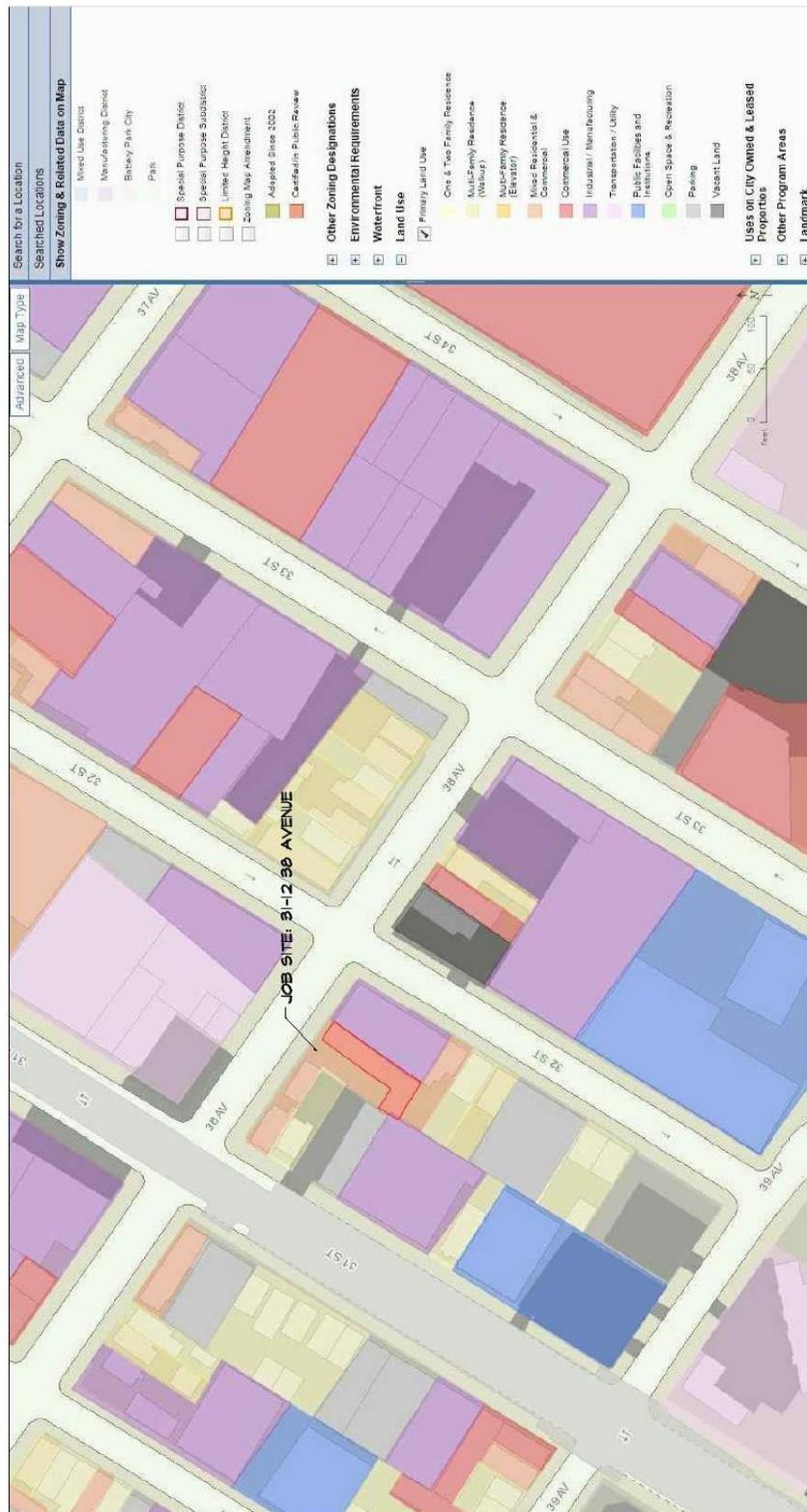


Figure 3: Surrounding Land Usage (from NYC ZOLA Map)

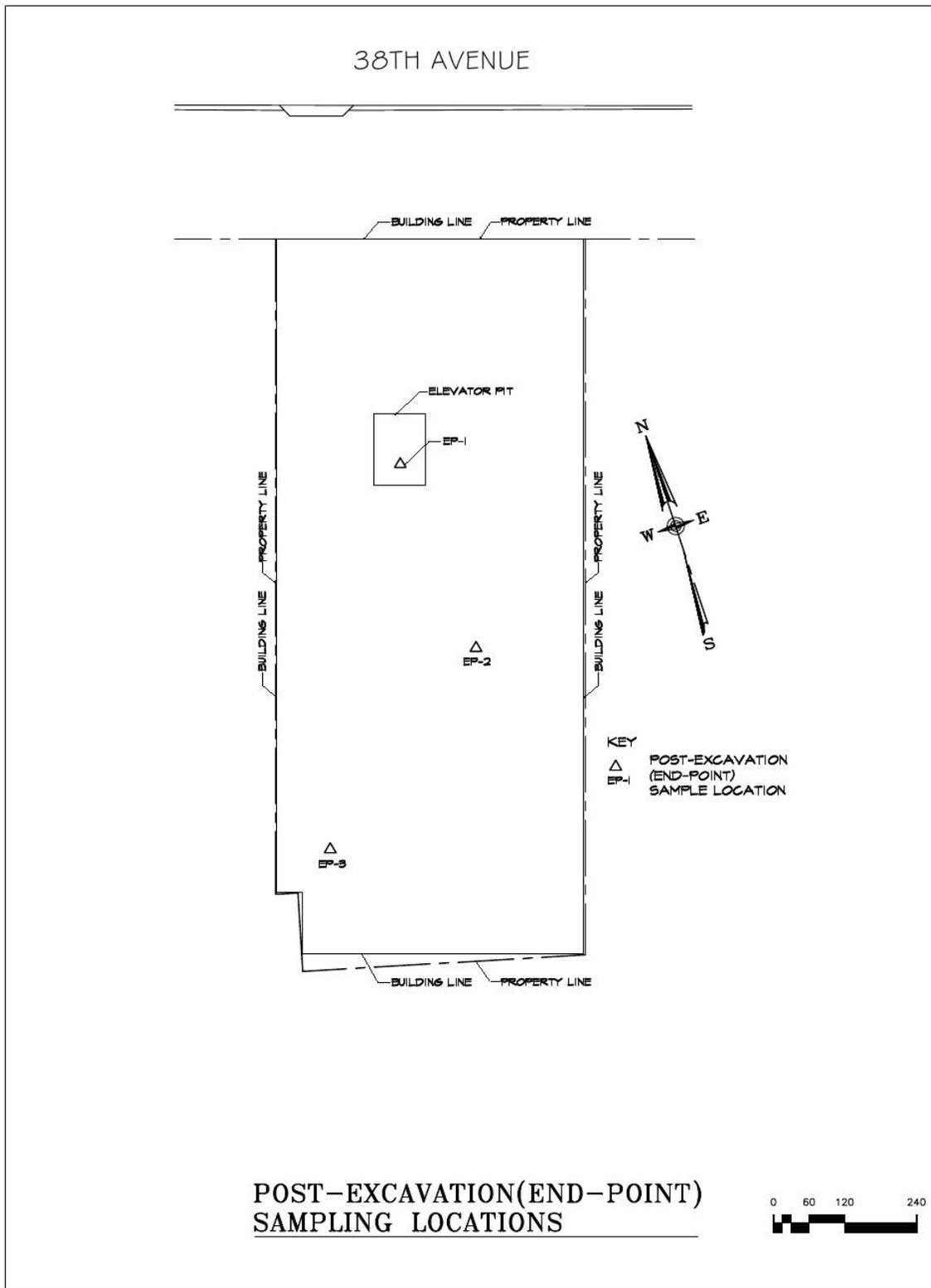


Figure 4: End Point Sample Locations

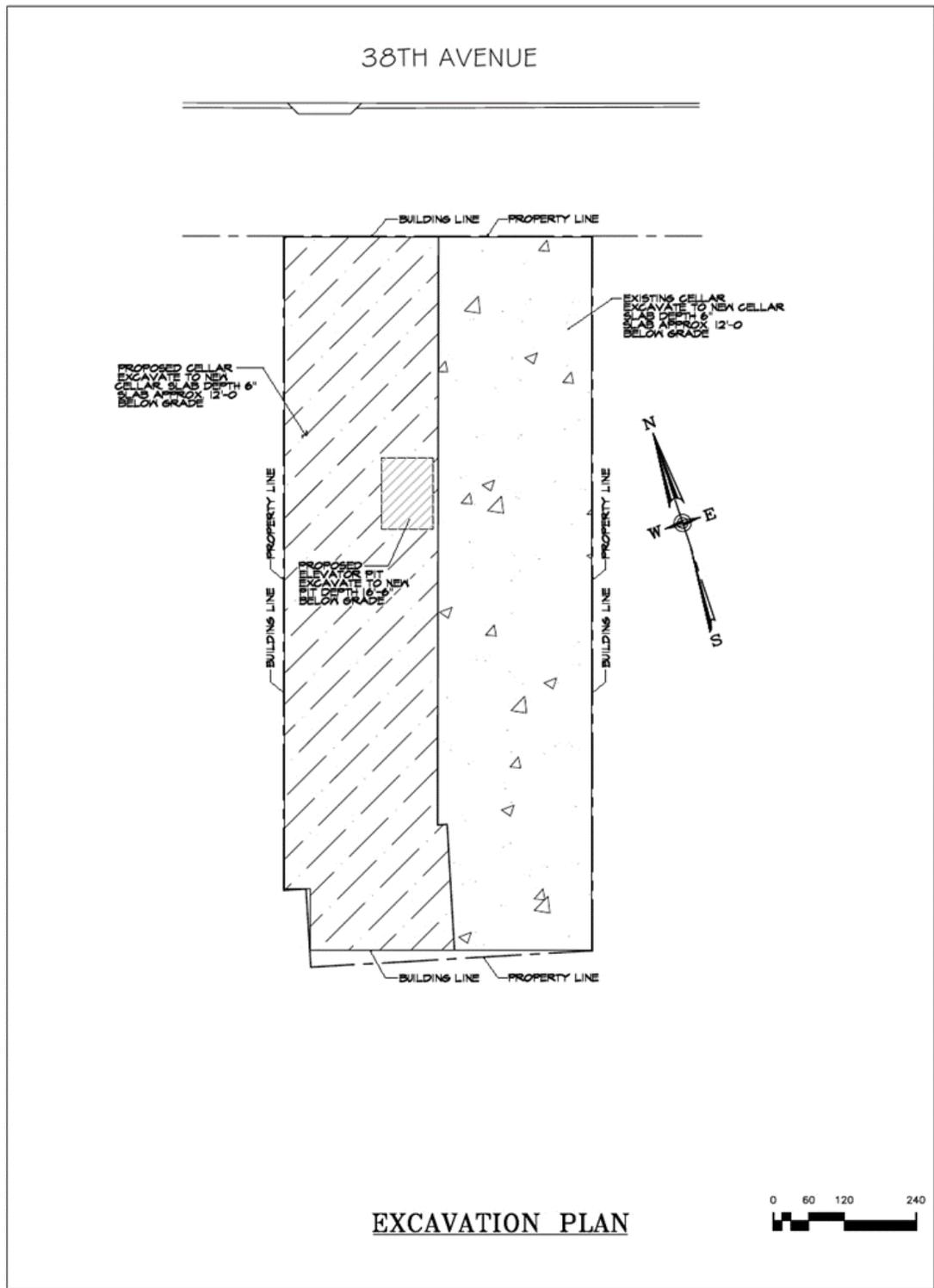


Figure 5: Site Excavation Diagram

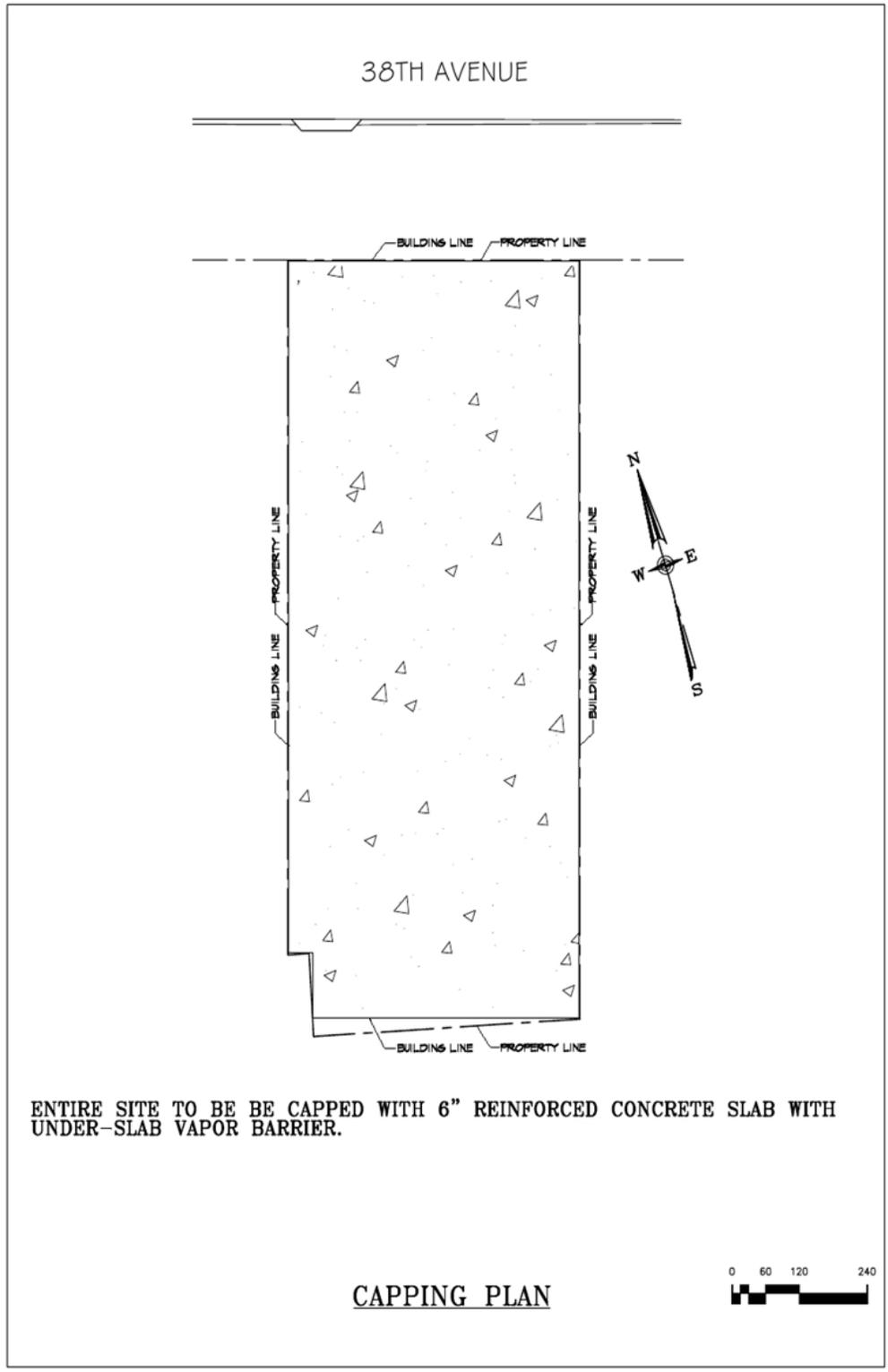


Figure 6: Site Wide Cover System Plan (Capping Plan)

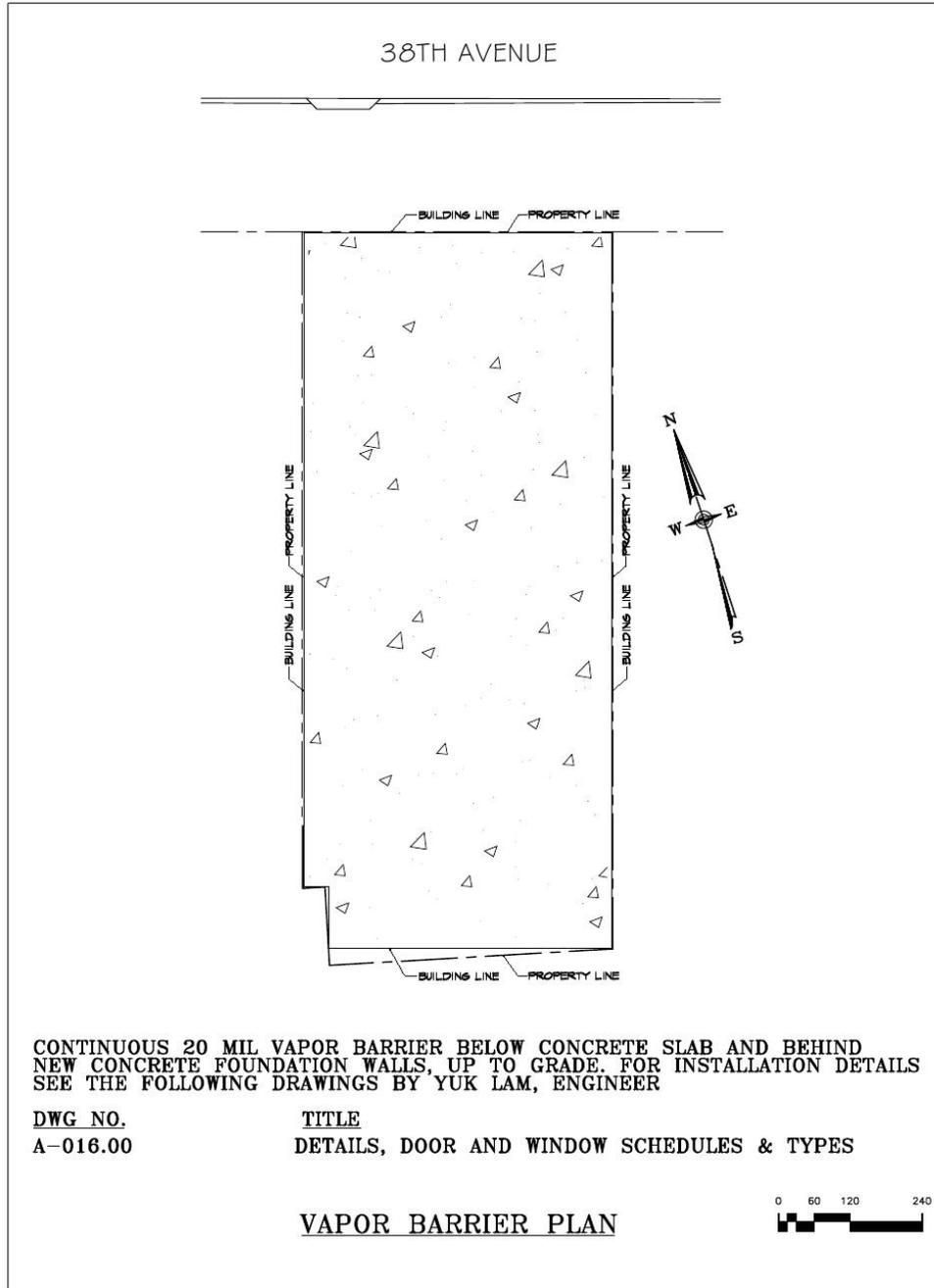


Figure 7: Vapor Barrier Plan

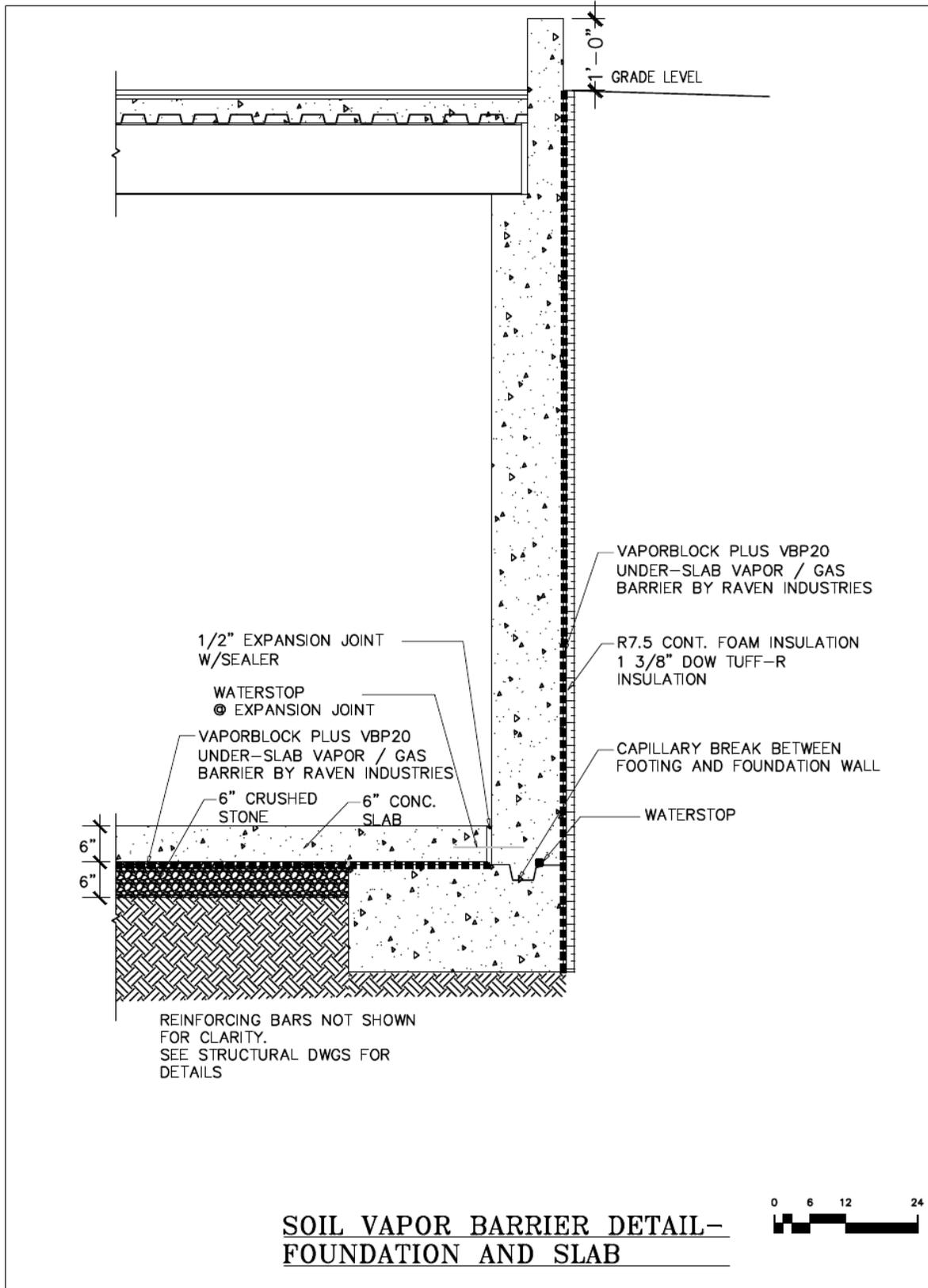


Figure 8: Vapor Barrier Detail – Foundation and Slab

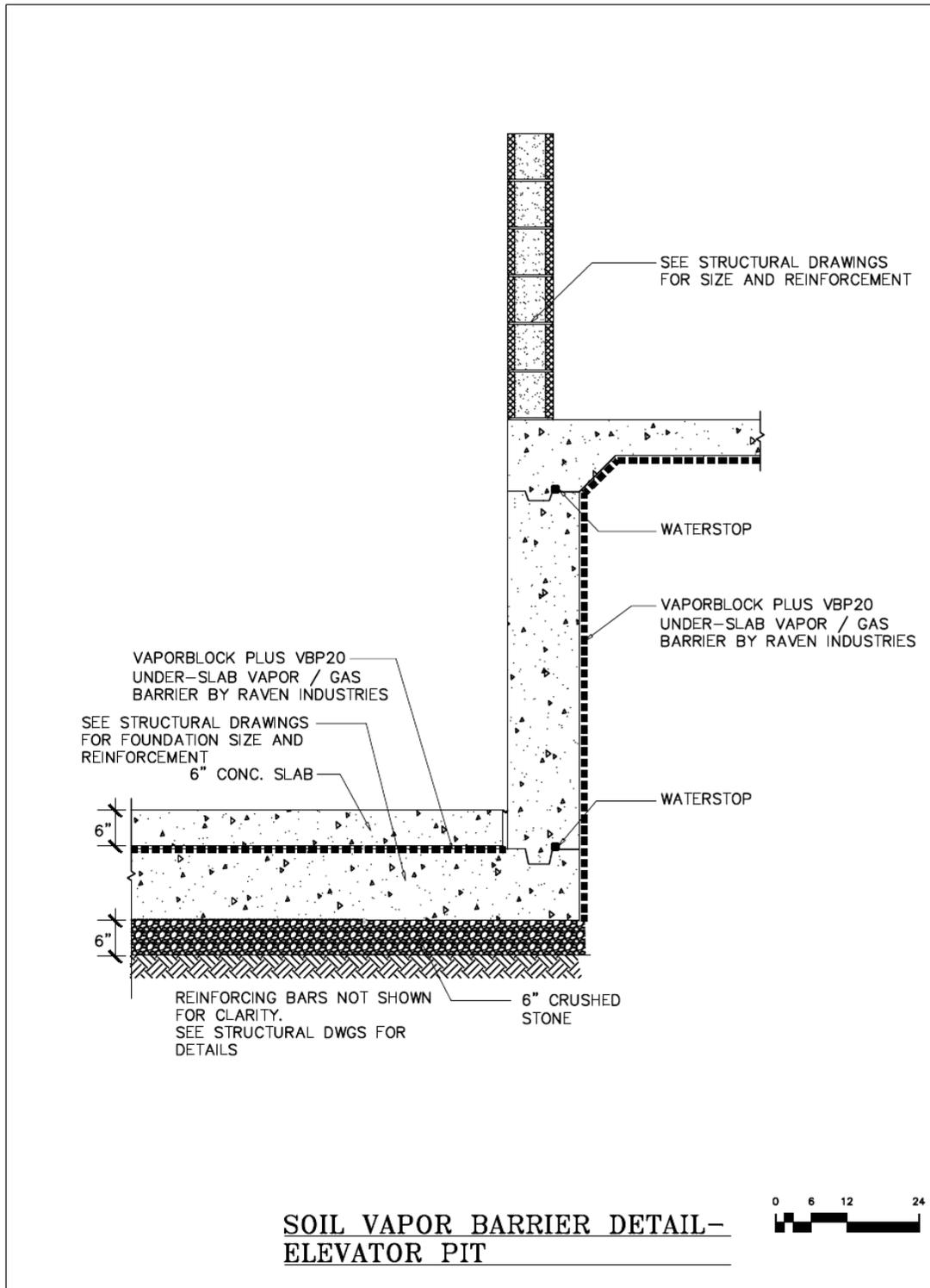


Figure 9: Vapor Barrier Detail – Elevator Pit

TABLES

Table 1:
Unrestricted Use Soil Cleanup Levels
Per
6 NYCRR Part 375
Dated December 14, 2006

Soil Cleanup Objective Tables.

(a) Unrestricted use soil cleanup objectives.

Table 375-6.8(a): Unrestricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Unrestricted Use
Metals		
Arsenic	7440-38-2	13 ^c
Barium	7440-39-3	350 ^c
Beryllium	7440-41-7	7.2
Cadmium	7440-43-9	2.5 ^c
Chromium, hexavalent ^e	18540-29-9	1 ^b
Chromium, trivalent ^e	16065-83-1	30 ^c
Copper	7440-50-8	50
Total Cyanide ^{e, f}		27
Lead	7439-92-1	63 ^c
Manganese	7439-96-5	1600 ^c
Total Mercury		0.18 ^c
Nickel	7440-02-0	30
Selenium	7782-49-2	3.9 ^c
Silver	7440-22-4	2
Zinc	7440-66-6	109 ^c
PCBs/Pesticides		
2,4,5-TP Acid (Silvex) ^f	93-72-1	3.8
4,4'-DDE	72-55-9	0.0033 ^b
4,4'-DDT	50-29-3	0.0033 ^b
4,4'-DDD	72-54-8	0.0033 ^b
Aldrin	309-00-2	0.005 ^c
alpha-BHC	319-84-6	0.02

beta-BHC	319-85-7	0.036
Chlordane (alpha)	5103-71-9	0.094

Table 375-6.8(a): Unrestricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Unrestricted Use
delta-BHC ^g	319-86-8	0.04
Dibenzofuran ^f	132-64-9	7
Dieldrin	60-57-1	0.005 ^c
Endosulfan I ^{d,f}	959-98-8	2.4
Endosulfan II ^{d,f}	33213-65-9	2.4
Endosulfan sulfate ^{d,f}	1031-07-8	2.4
Endrin	72-20-8	0.014
Heptachlor	76-44-8	0.042
Lindane	58-89-9	0.1
Polychlorinated biphenyls	1336-36-3	0.1
Semivolatile organic compounds		
Acenaphthene	83-32-9	20
Acenaphthylene ^f	208-96-8	100 ^a
Anthracene ^f	120-12-7	100 ^a
Benz(a)anthracene ^f	56-55-3	1 ^c
Benzo(a)pyrene	50-32-8	1 ^c
Benzo(b)fluoranthene ^f	205-99-2	1 ^c
Benzo(g,h,i)perylene ^f	191-24-2	100
Benzo(k)fluoranthene ^f	207-08-9	0.8 ^c
Chrysene ^f	218-01-9	1 ^c
Dibenz(a,h)anthracene ^f	53-70-3	0.33 ^b
Fluoranthene ^f	206-44-0	100 ^a
Fluorene	86-73-7	30

Indeno(1,2,3-cd)pyrene ^f	193-39-5	0.5 ^c
m-Cresol ^f	108-39-4	0.33 ^b
Naphthalene ^f	91-20-3	12
o-Cresol ^f	95-48-7	0.33 ^b

Table 375-6.8(a): Unrestricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Unrestricted Use
p-Cresol ^f	106-44-5	0.33 ^b
Pentachlorophenol	87-86-5	0.8 ^b
Phenanthrene ^f	85-01-8	100
Phenol	108-95-2	0.33 ^b
Pyrene ^f	129-00-0	100
Volatile organic compounds		
1,1,1-Trichloroethane ^f	71-55-6	0.68
1,1-Dichloroethane ^f	75-34-3	0.27
1,1-Dichloroethene ^f	75-35-4	0.33
1,2-Dichlorobenzene ^f	95-50-1	1.1
1,2-Dichloroethane	107-06-2	0.02 ^c
cis -1,2-Dichloroethene ^f	156-59-2	0.25
trans-1,2-Dichloroethene ^f	156-60-5	0.19
1,3-Dichlorobenzene ^f	541-73-1	2.4
1,4-Dichlorobenzene	106-46-7	1.8
1,4-Dioxane	123-91-1	0.1 ^b
Acetone	67-64-1	0.05
Benzene	71-43-2	0.06
n-Butylbenzene ^f	104-51-8	12
Carbon tetrachloride ^f	56-23-5	0.76
Chlorobenzene	108-90-7	1.1

Chloroform	67-66-3	0.37
Ethylbenzene ^f	100-41-4	1
Hexachlorobenzene ^f	118-74-1	0.33 ^b
Methyl ethyl ketone	78-93-3	0.12
Methyl tert-butyl ether ^f	1634-04-4	0.93
Methylene chloride	75-09-2	0.05

Table 375-6.8(a): Unrestricted Use Soil Cleanup Objectives

Contaminant	CAS Number	Unrestricted Use
n - Propylbenzene ^f	103-65-1	3.9
sec-Butylbenzene ^f	135-98-8	11
tert-Butylbenzene ^f	98-06-6	5.9
Tetrachloroethene	127-18-4	1.3
Toluene	108-88-3	0.7
Trichloroethene	79-01-6	0.47
1,2,4-Trimethylbenzene ^f	95-63-6	3.6
1,3,5-Trimethylbenzene ^f	108-67-8	8.4
Vinyl chloride ^f	75-01-4	0.02
Xylene (mixed)	1330-20-7	0.26

All soil cleanup objectives (SCOs) are in parts per million (ppm).

Footnotes

^a The SCOs for unrestricted use were capped at a maximum value of 100 ppm. See Technical Support Document (TSD), section 9.3.

^b For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the Track 1 SCO value.

^c For constituents where the calculated SCO was lower than the rural soil background concentration, as determined by the Department and Department of Health rural soil survey, the rural soil background concentration is used as the Track 1 SCO value for this use of the site.

^d SCO is the sum of endosulfan I, endosulfan II and endosulfan sulfate.

^e The SCO for this specific compound (or family of compounds) is considered to be met if the analysis for the total species of this contaminant is below the specific SCO.

^f Protection of ecological resources SCOs were not developed for contaminants identified in Table 375-6.8(b) with “NS”. Where such contaminants appear in Table 375-6.8(a), the applicant may be required by the Department to calculate a protection of ecological resources SCO according to the TSD.

Table 2:
Restricted Use (Track 4) Soil Cleanup Levels

Track 4 Site-Specific SCOs	
Substance	SCO
Arsenic	23 ppm
Barium	500 ppm
Lead	800 ppm

Table 3:
Soil Sample Analytical Results
Taken From
Remedial Investigation Report
Dated January 2015
By
GEI Consultants Inc., PC

Table 1. Soil Sample Analytical Results
Phase II Subsurface Investigation
31-14 38th Avenue
Long Island City, New York

Table with columns: Sample ID, Sampling Date, Compound, NYDEC Part 375 Unrestricted Use Soil Cleanup Objectives, NYDEC Part 375 Restricted Use Remedial Objectives, and 16 columns of analytical results (mg/kg) for various soil samples (e.g., S-11021, S-11024, S-21021, S-21024, S-31021, S-31024, S-41021, S-41024, S-51021, S-51024, S-61021, S-61024, S-71021, S-71024, S-81021, S-81024).

Table 1. Soil Sample Analytical Results
Phase II Subsurface Investigation
31-14 38th Avenue
Long Island City, New York

Sample ID	Sampling Date	Analytical Method	Compound	NYDEC Per 175 Soil Cleanup Objectives		NYDEC Per 175 Residential Residential		S-1 (P-1)		S-1 (P-2)		S-1 (P-3)		S-1 (P-4)		S-1 (P-5)		S-1 (P-6)	
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1	12/29/2014	U	Asbestos	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	12/29/2014	U	Lead	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	12/29/2014	U	Cadmium	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	12/29/2014	U	Chromium	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	12/29/2014	U	Mercury	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	12/29/2014	U	Vanadium	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7	12/29/2014	U	Antimony	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8	12/29/2014	U	Barium	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9	12/29/2014	U	Bismuth	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
10	12/29/2014	U	Chromium	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
11	12/29/2014	U	Cobalt	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
12	12/29/2014	U	Copper	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
13	12/29/2014	U	Iron	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
14	12/29/2014	U	Manganese	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
15	12/29/2014	U	Nickel	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
16	12/29/2014	U	Selenium	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
17	12/29/2014	U	Silver	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
18	12/29/2014	U	Zinc	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
19	12/29/2014	U	Aluminum	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
20	12/29/2014	U	Calcium	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
21	12/29/2014	U	Magnesium	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
22	12/29/2014	U	Sulfur	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
23	12/29/2014	U	Phosphorus	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
24	12/29/2014	U	Fluoride	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
25	12/29/2014	U	Chloride	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
26	12/29/2014	U	Ammonia	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
27	12/29/2014	U	Hydrogen Sulfide	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
28	12/29/2014	U	Hydrogen Cyanide	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
29	12/29/2014	U	Hydrogen Chloride	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
30	12/29/2014	U	Hydrogen Fluoride	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
31	12/29/2014	U	Hydrogen Sulfide	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
32	12/29/2014	U	Hydrogen Cyanide	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
33	12/29/2014	U	Hydrogen Chloride	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
34	12/29/2014	U	Hydrogen Fluoride	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
35	12/29/2014	U	Hydrogen Sulfide	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
36	12/29/2014	U	Hydrogen Cyanide	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
37	12/29/2014	U	Hydrogen Chloride	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
38	12/29/2014	U	Hydrogen Fluoride	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
39	12/29/2014	U	Hydrogen Sulfide	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
40	12/29/2014	U	Hydrogen Cyanide	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
41	12/29/2014	U	Hydrogen Chloride	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
42	12/29/2014	U	Hydrogen Fluoride	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
43	12/29/2014	U	Hydrogen Sulfide	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
44	12/29/2014	U	Hydrogen Cyanide	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
45	12/29/2014	U	Hydrogen Chloride	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
46	12/29/2014	U	Hydrogen Fluoride	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
47	12/29/2014	U	Hydrogen Sulfide	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
48	12/29/2014	U	Hydrogen Cyanide	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
49	12/29/2014	U	Hydrogen Chloride	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
50	12/29/2014	U	Hydrogen Fluoride	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Table 4:
Groundwater Sample Analytical Results
Taken From
Remedial Investigation Report
Dated January 2015
By
GEI Consultants Inc., PC

**Table 2. Groundwater Sample Analytical Results
Phase II Subsurface Investigation
31-14 38th Avenue
Long Island City, New York**

Sample ID Sampling Date Client Matrix	NYSDEC TOGS Standards and Guidance Values - GA	Trip Blank 12/30/2014 Water		GW-1 12/30/2014 Water		GW-2 12/30/2014 Water		GW-3 12/30/2014 Water	
		Result ug/L	Q	Result ug/L	Q	Result ug/L	Q	Result ug/L	Q
Volatile Organics, 8260 List - Low Level									
Dilution Factor		1		1		5		1	
1,1,1,2-Tetrachloroethane	5	0.20	U	0.20	U	1	U	0.20	U
1,1,1-Trichloroethane	5	0.20	U	0.20	U	1	U	0.20	U
1,1,2,2-Tetrachloroethane	5	0.20	U	0.20	U	1	U	0.20	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	5	0.20	U	0.20	U	1	U	0.20	U
1,1,2-Trichloroethane	1	0.20	U	0.20	U	1	U	0.20	U
1,1-Dichloroethane	5	0.20	U	0.20	U	1	U	0.20	U
1,1-Dichloroethylene	5	0.20	U	0.20	U	1	U	0.20	U
1,1-Dichloropropylene	5	0.20	U	0.20	U	1	U	0.20	U
1,2,3-Trichlorobenzene	5	0.20	U	0.20	U	1	U	0.20	U
1,2,3-Trichloropropane	0.04	0.20	U	0.20	U	1	U	0.20	U
1,2,4,5-Tetramethylbenzene	~	0.20	U	0.20	U	1	U	0.20	U
1,2,4-Trichlorobenzene	5	0.20	U	0.20	U	1	U	0.20	U
1,2,4-Trimethylbenzene	5	0.20	U	0.20	U	1	U	0.20	U
1,2-Dibromo-3-chloropropane	0.04	0.20	U	0.20	U	1	U	0.20	U
1,2-Dibromoethane	5	0.20	U	0.20	U	1	U	0.20	U
1,2-Dichlorobenzene	3	0.20	U	0.20	U	1	U	0.20	U
1,2-Dichloroethane	0.6	0.20	U	0.20	U	1	U	0.20	U
1,2-Dichloropropane	1	0.20	U	0.20	U	1	U	0.20	U
1,3,5-Trimethylbenzene	5	0.20	U	0.20	U	1	U	0.20	U
1,3-Dichlorobenzene	3	0.20	U	0.20	U	1	U	0.20	U
1,3-Dichloropropane	5	0.20	U	0.20	U	1	U	0.20	U
1,4-Dichlorobenzene	3	0.20	U	0.20	U	1	U	0.20	U
2,2-Dichloropropane	5	0.20	U	0.20	U	1	U	0.20	U
2-Butanone	50	0.20	U	0.20	U	1	U	0.20	U
2-Chlorotoluene	5	0.20	U	0.20	U	1	U	0.20	U
2-Hexanone	50	0.20	U	0.20	U	3.20	D	0.20	U
4-Chlorotoluene	5	0.20	U	0.20	U	1	U	0.20	U
4-Methyl-2-pentanone	~	0.20	U	0.20	U	1	U	0.20	U
Acetone	50	1	U	1	U	5	U	1	U
Benzene	1	0.20	U	0.20	U	1	U	0.20	U
Bromobenzene	5	0.20	U	0.20	U	1	U	0.20	U
Bromochloromethane	5	0.20	U	0.20	U	1	U	0.20	U
Bromodichloromethane	50	0.20	U	0.20	U	1	U	0.20	U
Bromoform	50	0.20	U	0.20	U	1	U	0.20	U
Bromomethane	5	0.20	U	0.20	U	1	U	0.20	U
Carbon disulfide	~	0.20	U	0.20	U	1	U	0.20	U
Carbon tetrachloride	5	0.20	U	0.20	U	1	U	0.20	U
Chlorobenzene	5	0.20	U	0.20	U	1	U	0.20	U
Chloroethane	5	0.20	U	0.20	U	1	U	0.20	U
Chloroform	7	0.20	U	0.69	U	1	U	0.20	U
Chloromethane	5	0.20	U	0.20	U	1	U	0.20	U
cis-1,2-Dichloroethylene	5	0.20	U	0.20	U	1	U	0.20	U
cis-1,3-Dichloropropylene	0.4	0.20	U	0.20	U	1	U	0.20	U
Dibromochloromethane	50	0.20	U	0.20	U	1	U	0.20	U
Dibromomethane	~	0.20	U	0.20	U	1	U	0.20	U
Dichlorodifluoromethane	5	0.20	U	0.20	U	1	U	0.20	U
Ethyl Benzene	5	0.20	U	0.20	U	1	U	0.20	U
Hexachlorobutadiene	0.5	0.20	U	0.20	U	1	U	0.20	U
Isopropylbenzene	5	0.20	U	0.20	U	1	U	0.20	U
Methyl tert-butyl ether (MTBE)	10	0.20	U	0.20	U	1	U	0.20	U
Methylene chloride	5	1	U	1	U	5	U	1	U
Naphthalene	10	1	U	1	U	5	U	1	U
n-Butylbenzene	5	0.20	U	0.20	U	1	U	0.20	U
n-Propylbenzene	5	0.20	U	0.20	U	1	U	0.20	U
o-Xylene	5	0.20	U	0.20	U	1	U	0.20	U
p- & m- Xylenes	5	0.50	U	0.50	U	2.50	U	0.50	U
p-Diethylbenzene	~	0.20	U	0.20	U	1	U	0.20	U
p-Ethyltoluene	~	0.20	U	0.20	U	1	U	0.20	U
p-Isopropyltoluene	5	0.20	U	0.20	U	1	U	0.20	U
sec-Butylbenzene	5	0.20	U	0.20	U	1	U	0.20	U
Styrene	5	0.20	U	0.20	U	1	U	0.20	U
tert-Butylbenzene	5	0.20	U	0.20	U	1	U	0.20	U
Tetrachloroethylene	5	0.20	U	0.41	J	1	U	0.46	J
Toluene	5	0.20	U	0.20	U	1	U	0.20	U
trans-1,2-Dichloroethylene	5	0.20	U	0.20	U	1	U	0.20	U
trans-1,3-Dichloropropylene	0.4	0.20	U	0.20	U	1	U	0.20	U
Trichloroethylene	5	0.20	U	1.30	U	1	U	1.80	U
Trichlorofluoromethane	5	0.20	U	0.20	U	1	U	0.20	U
Vinyl Chloride	2	0.20	U	0.20	U	1	U	0.20	U
Xylenes, Total	5	0.60	U	0.60	U	3	U	0.60	U

**Table 2. Groundwater Sample Analytical Results
Phase II Subsurface Investigation
31-14 38th Avenue
Long Island City, New York**

Sample ID Sampling Date Client Matrix	NYSDEC TOGS Standards and Guidance Values - GA	Trip Blank 12/30/2014 Water		GW-1 12/30/2014 Water		GW-2 12/30/2014 Water		GW-3 12/30/2014 Water	
		Result	Q	Result	Q	Result	Q	Result	Q
Compound	ug/L			ug/L		ug/L		ug/L	
Semi-Volatiles, 8270 Target List									
Dilution Factor				1		1		1	
1,2,4-Trichlorobenzene	5	NT		3.33	U	4.76	U	3.03	U
1,2-Dichlorobenzene	3	NT		3.33	U	4.76	U	3.03	U
1,3-Dichlorobenzene	3	NT		3.33	U	4.76	U	3.03	U
1,4-Dichlorobenzene	3	NT		3.33	U	4.76	U	3.03	U
2,4,5-Trichlorophenol	1	NT		3.33	U	4.76	U	3.03	U
2,4,6-Trichlorophenol	1	NT		3.33	U	4.76	U	3.03	U
2,4-Dichlorophenol	5	NT		3.33	U	4.76	U	3.03	U
2,4-Dimethylphenol	50	NT		3.33	U	4.76	U	3.03	U
2,4-Dinitrophenol	10	NT		3.33	U	4.76	U	3.03	U
2,4-Dinitrotoluene	5	NT		3.33	U	4.76	U	3.03	U
2,6-Dinitrotoluene	5	NT		3.33	U	4.76	U	3.03	U
2-Chloronaphthalene	10	NT		3.33	U	4.76	U	3.03	U
2-Chlorophenol	1	NT		3.33	U	4.76	U	3.03	U
2-Methylnaphthalene	~	NT		3.33	U	4.76	U	3.03	U
2-Methylphenol	1	NT		3.33	U	4.76	U	3.03	U
2-Nitroaniline	5	NT		3.33	U	4.76	U	3.03	U
2-Nitrophenol	1	NT		3.33	U	4.76	U	3.03	U
3- & 4-Methylphenols	~	NT		3.33	U	4.76	U	3.03	U
3,3'-Dichlorobenzidine	5	NT		3.33	U	4.76	U	3.03	U
3-Nitroaniline	5	NT		3.33	U	4.76	U	3.03	U
4,6-Dinitro-2-methylphenol	~	NT		3.33	U	4.76	U	3.03	U
4-Bromophenyl phenyl ether	~	NT		3.33	U	4.76	U	3.03	U
4-Chloro-3-methylphenol	1	NT		3.33	U	4.76	U	3.03	U
4-Chloroaniline	5	NT		3.33	U	4.76	U	3.03	U
4-Chlorophenyl phenyl ether	~	NT		3.33	U	4.76	U	3.03	U
4-Nitroaniline	5	NT		3.33	U	4.76	U	3.03	U
4-Nitrophenol	1	NT		3.33	U	4.76	U	3.03	U
Acenaphthene	20	NT		0.067	U	0.095	U	0.061	U
Acenaphthylene	~	NT		0.067	U	0.095	U	0.061	U
Aniline	5	NT		3.33	U	4.76	U	3.03	U
Anthracene	50	NT		0.067	U	0.095	U	0.061	U
Benzo(a)anthracene	0.002	NT		0.067	U	0.095	U	0.061	U
Benzo(a)pyrene	0.002	NT		0.067	U	0.095	U	0.061	U
Benzo(b)fluoranthene	0.002	NT		0.067	U	0.095	U	0.061	U
Benzo(g,h,i)perylene	~	NT		0.067	U	0.095	U	0.061	U
Benzo(k)fluoranthene	0.002	NT		0.067	U	0.095	U	0.061	U
Benzyl alcohol	~	NT		3.33	U	4.76	U	3.03	U
Benzyl butyl phthalate	50	NT		3.33	U	4.76	U	3.03	U
Bis(2-chloroethoxy)methane	5	NT		3.33	U	4.76	U	3.03	U
Bis(2-chloroethyl)ether	1	NT		3.33	U	4.76	U	3.03	U
Bis(2-chloroisopropyl)ether	5	NT		3.33	U	4.76	U	3.03	U
Bis(2-ethylhexyl)phthalate	5	NT		2.17		1.10		1.44	
Chrysene	0.002	NT		0.067	U	0.095	U	0.061	U
Dibenzo(a,h)anthracene	~	NT		0.067	U	0.095	U	0.061	U
Dibenzofuran	~	NT		3.33	U	4.76	U	3.03	U
Diethyl phthalate	50	NT		3.33	U	4.76	U	3.03	U
Dimethyl phthalate	50	NT		3.33	U	4.76	U	3.03	U
Di-n-butyl phthalate	50	NT		3.33	U	4.76	U	3.03	U
Di-n-octyl phthalate	50	NT		3.33	U	4.76	U	3.03	U
Fluoranthene	50	NT		0.067	U	0.095	U	0.061	U
Fluorene	50	NT		0.067	U	0.095	U	0.061	U
Hexachlorobenzene	0.04	NT		0.027	U	0.038	U	0.024	U
Hexachlorobutadiene	0.5	NT		0.67	U	0.95	U	0.61	U
Hexachlorocyclopentadiene	5	NT		3.33	U	4.76	U	3.03	U
Hexachloroethane	5	NT		0.67	U	0.95	U	0.61	U
Indeno(1,2,3-cd)pyrene	0.002	NT		0.067	U	0.095	U	0.061	U
Isophorone	50	NT		3.33	U	4.76	U	3.03	U
Naphthalene	10	NT		0.067	U	0.095	U	0.061	U
Nitrobenzene	0.4	NT		0.33	U	0.48	U	0.30	U
N-Nitrosodimethylamine	~	NT		0.67	U	0.95	U	0.61	U
N-nitroso-di-n-propylamine	~	NT		3.33	U	4.76	U	3.03	U
N-Nitrosodiphenylamine	50	NT		3.33	U	4.76	U	3.03	U
Pentachlorophenol	1	NT		0.33	U	0.48	U	0.30	U
Phenanthrene	50	NT		0.067	U	0.095	U	0.061	U
Phenol	1	NT		3.33	U	4.76	U	3.03	U
Pyrene	50	NT		0.067	U	0.095	U	0.061	U
Pyridine	50	NT		3.33	U	4.76	U	3.03	U

**Table 2. Groundwater Sample Analytical Results
Phase II Subsurface Investigation
31-14 38th Avenue
Long Island City, New York**

Sample ID	NYSDEC TOGS Standards and Guidance Values -	Trip Blank 12/30/2014 Water		GW-1 12/30/2014 Water		GW-2 12/30/2014 Water		GW-3 12/30/2014 Water	
Sampling Date	GA	Result	Q	Result	Q	Result	Q	Result	Q
Client Matrix	Compound								
	Pesticides, 8081 target list	ug/L		ug/L		ug/L		ug/L	
	Dilution Factor			1		1		1	
	4,4'-DDD	0.3	NT	0.0057	U	0.0062	U	0.0055	U
	4,4'-DDE	0.2	NT	0.0057	U	0.0062	U	0.0055	U
	4,4'-DDT	0.2	NT	0.0057	U	0.0062	U	0.0055	U
	Aldrin	~	NT	0.0057	U	0.0062	U	0.0055	U
	alpha-BHC	0.01	NT	0.0057	U	0.0062	U	0.0055	U
	alpha-Chlordane	~	NT	0.0057	U	0.0062	U	0.0055	U
	beta-BHC	0.04	NT	0.0057	U	0.0062	U	0.0055	U
	Chlordane, total	0.05	NT	0.057	U	0.062	U	0.055	U
	delta-BHC	0.04	NT	0.0057	U	0.0062	U	0.0055	U
	Dieldrin	0.004	NT	0.0029	U	0.0031	U	0.0028	U
	Endosulfan I	~	NT	0.0057	U	0.0062	U	0.0055	U
	Endosulfan II	~	NT	0.0057	U	0.0062	U	0.0055	U
	Endosulfan sulfate	~	NT	0.0057	U	0.0062	U	0.0055	U
	Endrin	~	NT	0.0057	U	0.0062	U	0.0055	U
	Endrin aldehyde	5	NT	0.014	U	0.015	U	0.014	U
	Endrin ketone	5	NT	0.014	U	0.015	U	0.014	U
	gamma-BHC (Lindane)	0.05	NT	0.0057	U	0.0062	U	0.0055	U
	gamma-Chlordane	~	NT	0.014	U	0.015	U	0.014	U
	Heptachlor	0.04	NT	0.0057	U	0.0062	U	0.0055	U
	Heptachlor epoxide	0.03	NT	0.0057	U	0.0062	U	0.0055	U
	Methoxychlor	35	NT	0.0057	U	0.0062	U	0.0055	U
	Toxaphene	0.06	NT	0.14	U	0.15	U	0.14	U
	Polychlorinated Biphenyls (PCB)	ug/L		ug/L		ug/L		ug/L	
	Dilution Factor			1		1		1	
	Aroclor 1016	~	NT	0.071	U	0.077	U	0.069	U
	Aroclor 1221	~	NT	0.071	U	0.077	U	0.069	U
	Aroclor 1232	~	NT	0.071	U	0.077	U	0.069	U
	Aroclor 1242	~	NT	0.071	U	0.077	U	0.069	U
	Aroclor 1248	~	NT	0.071	U	0.077	U	0.069	U
	Aroclor 1254	~	NT	0.071	U	0.077	U	0.069	U
	Aroclor 1260	~	NT	0.071	U	0.077	U	0.069	U
	Total PCBs	0.09	NT	0.071	U	0.077	U	0.069	U
	Metals, Dissolved - Target Analyte (TAL)	ug/L		ug/L		ug/L		ug/L	
	Dilution Factor			1		1		1	
	Aluminum	~	NT	10	U	10	U	10	U
	Antimony	3	NT	5	U	5	U	5	U
	Arsenic	25	NT	4	U	4	U	4	U
	Barium	1000	NT	60	U	34	U	112	U
	Beryllium	3	NT	1	U	1	U	1	U
	Cadmium	5	NT	3	U	3	U	3	U
	Calcium	~	NT	88,500	U	111,000	U	126,000	U
	Chromium	50	NT	5	U	5	U	5	U
	Cobalt	~	NT	5	U	5	U	5	U
	Copper	200	NT	3	U	3	U	3	U
	Iron	~	NT	20	U	20	U	20	U
	Lead	25	NT	3	U	3	U	3	U
	Magnesium	35000	NT	48,400	U	27,800	U	69,500	U
	Manganese	300	NT	143	U	71	U	393	U
	Nickel	100	NT	5	U	5	U	6	U
	Potassium	~	NT	5,420	U	3,050	U	7,370	U
	Selenium	10	NT	10	U	10	U	10	U
	Silver	50	NT	5	U	5	U	5	U
	Sodium	20000	NT	121,000	U	49,800	U	201,000	U
	Thallium	~	NT	5	U	5	U	5	U
	Vanadium	~	NT	10	U	10	U	10	U
	Zinc	2000	NT	10	U	10	U	10	U

**Table 2. Groundwater Sample Analytical Results
Phase II Subsurface Investigation
31-14 38th Avenue
Long Island City, New York**

Sample ID Sampling Date Client Matrix	NYSDEC TOGS Standards and Guidance Values - GA	Trip Blank 12/30/2014 Water		GW-1 12/30/2014 Water		GW-2 12/30/2014 Water		GW-3 12/30/2014 Water	
Compound		Result	Q	Result	Q	Result	Q	Result	Q
Metals, Target Analyte	ug/L			ug/L		ug/L		ug/L	
Dilution Factor				10		1		10	
Aluminum	~	NT		2,540		60,300		2,050	
Antimony	3	NT		5	U	5	U	5	U
Arsenic	25	NT		4	U	12		4	U
Barium	1000	NT		1,280		3,030		1,440	
Beryllium	3	NT		1	U	14		1	U
Cadmium	5	NT		3	U	8		3	U
Calcium	~	NT		1,380,000	D	767,000		1,370,000	D
Chromium	50	NT		11		37		7	
Cobalt	~	NT		185		176		211	
Copper	200	NT		3	U	203		3	U
Iron	~	NT		4,750		4,080		2,420	
Lead	25	NT		5		13		5	
Magnesium	35000	NT		197,000		195,000		198,000	
Manganese	300	NT		10,200		14,200		14,400	
Nickel	100	NT		129		200		200	
Potassium	~	NT		13,000		14,700		16,200	
Selenium	10	NT		10	U	10	U	12	
Silver	50	NT		5	U	5	U	5	U
Sodium	20000	NT		138,000		65,200		176,000	
Thallium	~	NT		5	U	5	U	5	U
Vanadium	~	NT		10	U	63		10	U
Zinc	2000	NT		73		528		39	
Mercury by 7473	ug/L			ug/L		ug/L		ug/L	
Dilution Factor				1		1		1	
Mercury	0.7	NT		0.20	U	0.20	U	0.20	U
Mercury by 7473, Dissolved	ug/L			ug/L		ug/L		ug/L	
Dilution Factor				1		1		1	
Mercury	0.7	NT		0.20	U	0.20	U	0.20	U

NOTES:

Any Regulatory Exceedences are color coded by Regulation

Q is the Qualifier Column with definitions as follows:

D=result is from an analysis that required a dilution

J=analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated

U=analyte not detected at or above the level indicated

~=this indicates that no regulatory limit has been established for this analyte

Table 5:
Soil Vapor Sample Analytical Results
Taken From
Remedial Investigation Report
Dated January 2015
By
GEI Consultants Inc., PC

**Table 3. Soil Vapor Sample Analytical Results
Phase II Subsurface Investigation
31-14 38th Avenue
Long Island City, New York**

Sample ID Sampling Date Matrix	NYSDOH Soil Vapor Intrusion Matrix 1 & 2 Action Levels	SV-1 12/30/2014 Soil Vapor		SV-2 12/30/2014 Soil Vapor		SV-3 12/30/2014 Soil Vapor	
		Result	Q	Result	Q	Result	Q
Volatile Organics, EPA TO15 Full List		ug/m3		ug/m3		ug/m3	
Dilution Factor		1		1		7.468	
1,1,1-Trichloroethane	100	0.55	U	0.55	U	4.10	U
1,1,2,2-Tetrachloroethane	NE	0.69	U	0.69	U	5.10	U
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	NE	0.77	U	0.77	U	5.70	U
1,1,2-Trichloroethane	NE	0.55	U	0.55	U	4.10	U
1,1-Dichloroethane	NE	0.40	U	0.40	U	3	U
1,1-Dichloroethylene	NE	0.40	U	0.40	U	3	U
1,2,4-Trichlorobenzene	NE	0.74	U	0.74	U	5.50	U
1,2,4-Trimethylbenzene	NE	5.60		14		4.80	D
1,2-Dibromoethane	NE	0.77	U	0.77	U	5.70	U
1,2-Dichlorobenzene	NE	0.60	U	0.60	U	4.50	U
1,2-Dichloroethane	NE	0.40	U	0.40	U	3	U
1,2-Dichloropropane	NE	0.46	U	0.46	U	3.50	U
1,2-Dichlorotetrafluoroethane	NE	0.70	U	0.70	U	5.20	U
1,3,5-Trimethylbenzene	NE	1.60		4.10		3.70	U
1,3-Butadiene	NE	0.43	U	4.70		3.20	U
1,3-Dichlorobenzene	NE	0.60	U	0.60	U	4.50	U
1,4-Dichlorobenzene	NE	0.60	U	0.60	U	4.50	U
1,4-Dioxane	NE	0.36	U	0.36	U	2.70	U
2-Butanone	NE	3.40		8.30		4.40	D
2-Hexanone	NE	0.82	U	0.82	U	6.10	U
4-Methyl-2-pentanone	NE	0.41	U	16		3.10	U
Acetone	NE	43		40		300	D
Benzene	NE	6.90		4.50		3.10	D
Benzyl chloride	NE	0.52	U	0.52	U	3.90	U
Bromodichloromethane	NE	0.62	U	0.62	U	4.60	U
Bromoform	NE	1	U	1	U	7.70	U
Bromomethane	NE	0.39	U	0.39	U	2.90	U
Carbon disulfide	NE	0.75		76		40	D
Carbon tetrachloride	5	0.31		0.16	U	1.20	U
Chlorobenzene	NE	0.46	U	0.46	U	3.40	U
Chloroethane	NE	0.26	U	0.26	U	2	U
Chloroform	NE	0.49		0.73		3.60	U
Chloromethane	NE	0.45		0.21	U	1.50	U
cis-1,2-Dichloroethylene	NE	3.10		0.40	U	3	U
cis-1,3-Dichloropropylene	NE	0.45	U	0.45	U	3.40	U
Cyclohexane	NE	7.30		3		15	D
Dibromochloromethane	NE	0.80	U	0.80	U	6	U
Dichlorodifluoromethane	NE	1.90		2		3.70	U
Ethyl acetate	NE	0.72	U	0.72	U	5.40	U
Ethyl Benzene	NE	2.30		12		6.50	D
Hexachlorobutadiene	NE	1.10	U	1.10	U	8	U
Isopropanol	NE	3.10		2.20		3.70	U
Methyl Methacrylate	NE	0.41	U	0.41	U	3.10	U
Methyl tert-butyl ether (MTBE)	NE	0.36	U	0.36	U	2.70	U
Methylene chloride	NE	80		3.60		25	D
n-Heptane	NE	6.90		6.10		4.60	D
n-Hexane	NE	22		7		3.90	D
o-Xylene	NE	3.40		18		6.20	D
p- & m- Xylenes	NE	8.60		45		20	D
p-Ethyltoluene	NE	3.70		13		3.70	D
Propylene	NE	0.17	U	0.17	U	1.30	U
Styrene	NE	0.43	U	0.43	U	3.20	U
Tetrachloroethylene	100	13		25		35	D
Tetrahydrofuran	NE	0.29	U	6.20		2.20	U
Toluene	NE	17		44		11	D
trans-1,2-Dichloroethylene	NE	0.40	U	0.40	U	3	U
trans-1,3-Dichloropropylene	NE	0.45	U	0.45	U	3.40	U
Trichloroethylene	5	1.70		0.91		3.20	D
Trichlorofluoromethane (Freon 11)	NE	1.70		1.90		4.20	U
Vinyl acetate	NE	0.35	U	0.35	U	2.60	U
Vinyl Chloride	NE	0.064	U	0.064	U	0.48	U

NOTES:

ug/m3 = micrograms per cubic meter

Q is the Qualifier Column with definitions as follows:
 D=result is from an analysis that required a dilution
 U=analyte not detected at or above the level indicated

Appendix A

Citizen Participation Plan

The NYC Office of Environmental Remediation and Fortress DK Group, LLC have established this Citizen Participation Plan because the opportunity for citizen participation is an important component of the NYC Voluntary Cleanup Program. This Citizen Participation Plan describes how information about the project will be disseminated to the Community during the remedial process. As part of its obligations under the NYC VCP, Fortress DK Group, LLC will maintain a repository for project documents and provide public notice at specified times throughout the remedial program. This Plan also takes into account potential environmental justice concerns in the community that surrounds the project Site. Under this Citizen Participation Plan, project documents and work plans are made available to the public in a timely manner. Public comment on work plans is strongly encouraged during public comment periods. Work plans are not approved by the NYC Office of Environmental Remediation (OER) until public comment periods have expired and all comments are formally reviewed. An explanation of cleanup plans in the form of a public meeting or informational session is available upon request to OER's project manager assigned to this Site, Dr. Zachariah Schreiber (212-788-3056), who can be contacted about these issues or any others questions, comments or concerns that arise during the remedial process at (212) 788-8841

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

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

Queens Library, Long Island City Branch

37-44 21st Street

Long Island City, NY 11101

718-752-3700.

Hours of Operation:

Mon: 9-8; Tues 2-7; Wed., Thurs., Fri: 11-7; Sat: 10-5:30, Sun. 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.

Identify Issues of Public Concern. Fortress DK Group, Ltd will attempt to determine whether there are specific issues of concern to stakeholders proximate to the project site. If any such issues are identified, they will be listed herein together with the method(s) proposed to resolve them.

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 Fortress DK Group, Ltd, reviewed and approved by OER prior to distribution and mailed by Fortress DK Group, Ltd. 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 con-

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

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

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

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

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

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

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

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

Appendix B

Sustainability statement

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

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.

A vapor barrier will be provided over the entire site and on exterior cellar walls to prevent future migration of vapor from off-site.

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

The building roof will be used for storm water retention in accordance with NYC Dept. of Environmental Protection regulations. An estimate of the enhanced storm-water retention capability of the redevelopment project will be included in the RAR.

Paperless Brownfield Cleanup Program. Enrollee 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. Enrollee 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.

The project will include planting two (2) street trees on 38th Avenue, in front of the building, one on-site and one off-site. Species, caliper and final locations shall be as determined by the NYC Dept. of Parks and Recreation.

Noise Control. As required by applicable zoning, each dwelling unit will be have a minimum 35 dB(A) window wall sound attenuation and shall provide an alternate means of ventilation. While this regulation is aimed at keeping exterior noise out of the apartments, it also has the effect of reducing the amount of inside noise which could affect the neighborhood. Ventilation will be provided by thru-wall air conditioning units, providing heating, cooling and ventilation.

Bicycle Storage. Use of bicycles for transportation reduces air pollution, noise and congestion associated with auto use. Convenient on-premises bicycle storage encourages use both as a substitute for autos as well as for recreation. Per zoning requirements, the building will provide ground floor storage for nine (9) bicycles (one for every two apartments).

Appendix C

Soil/Materials Management Plan

1.1 Soil Screening Methods

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

1.2 Stockpile Methods

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

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

1.3 Characterization of Excavated Materials

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

1.4 Materials Excavation, Load-Out and Departure

The PE/QEP overseeing the remedial action will:

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

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

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

1.5 Off-Site Materials Transport

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

Outbound truck transport routes will be determined following the selection of disposal sites.. This routing takes into account the following factors: (a) limiting transport through residential areas and past sensitive sites; (b) use of mapped truck routes; (c) minimizing off-Site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport. To the extent possible, all trucks loaded with Site materials will travel from the Site using these truck routes. Trucks will not stop or idle in the neighborhood after leaving the project Site.

1.6 Materials Disposal Off-Site

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

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

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

Waste characterization will be performed for off-Site disposal in a manner required by the receiving facility and in conformance with its applicable permits. Waste characterization sam-

pling and analytical methods, sampling frequency, analytical results and QA/QC will be reported in the RAR. A manifest system for off-Site transportation of exported materials will be employed. Manifest information will be reported in the RAR. Hazardous wastes derived from on-Site will be stored, transported, and disposed of in compliance with applicable laws and regulations.

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

1.7 Materials Reuse On-Site

Soil and fill that are derived from the property that meets the soil cleanup objectives established in this plan may be reused on-Site. No reuse of on-site soils is anticipated on this project.

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

1.8 Demarcation

After completion of hotspot removal and any other invasive remedial activities, and prior to backfilling, the top of the residual soil/fill will be defined by one of three methods: (1) placement of a demarcation layer. The demarcation layer will consist of geosynthetic construction fencing or equivalent material to be placed on the surface of residual soil/fill to provide an observable reference layer. A description or map of the approximate depth of the demarcation layer will be provided in the SMP; or (2) a land survey of the top elevation of residual soil/fill before the placement of cover soils, pavement and associated sub-soils, or other materials or structures or, (3) all materials beneath the approved cover will be considered impacted and subject to site management after the remedy is complete. Demarcation may be established by one or any combina-

tion of these three methods. As appropriate, a map showing the method of demarcation for the Site and all associated documentation will be presented in the RAR.

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

1.9 Import of Backfill Soil from Off-Site Sources

This Section presents the requirements for imported fill materials, if any, to be used below the cover layer and within the clean soil cover layer. All imported soils will meet OER-approved backfill and cover soil quality objectives for this Site. The backfill and cover soil quality objectives are listed in **Table 1**. No use of imported soil is anticipated on this project, except for temporary backfill of the cellar, required for safety purposes, following building demolition.

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

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

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

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

1.10 Source Screening and Testing

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

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

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

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

1.11 Fluids Management

All liquids to be removed from the Site, including dewatering fluids, will be handled, transported and disposed in accordance with applicable laws and regulations. Liquids discharged into the New York City sewer system will receive prior approval by New York City Department of Environmental Protection (NYC DEP). The NYC DEP regulates discharges to the New York City sewers under Title 15, Rules of the City of New York Chapter 19. Discharge to the New York City sewer system will require an authorization and sampling data demonstrating that the groundwater meets the City's discharge criteria. The dewatering fluid will be pretreated as nec-

essary to meet the NYC DEP discharge criteria. If discharge to the City sewer system is not appropriate, the dewatering fluids will be managed by transportation and disposal at an off-Site treatment facility.

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

1.12 Storm-water Pollution Prevention

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

1.13 Contingency Plan

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

cal testing will be performed for TAL metals, TCL volatiles and semi-volatiles, TCL pesticides and PCBs, as appropriate.

1.14 Odor, Dust and Nuisance Control

Odor Control

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

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

Dust Control

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

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

This dust control plan is capable of controlling emissions of dust. If nuisance dust emissions are identified, work will be halted and the source of dusts will be identified and corrected.

Work will not resume until all nuisance dust emissions have been abated. OER will be notified of all dust complaint events. Implementation of all dust controls, including halt of work, will be the responsibility of the PE/QEP's responsible for certifying the Remedial Action Report.

Other Nuisances

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

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

APPENDIX D**Construction Health and Safety Plan (CHASP)**

31-12 38th Avenue, Long Island City, NY
OER Project Number: 15EH-A267Q

Submitted to:
New York City Office of Environmental Remediation
253 Broadway, 14th Floor
New York, NY 10007

Fortress Dk Group, LLC
31-12 38th Avenue Long Island City, NY 11101
July 2015

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Appendices

Appendix 1	Hospital Route
Appendix 2	Cold Stress Guidelines
Appendix 3	Heat Stress Guidelines
Appendix 4	Safety Data Sheets (SDSs)
Appendix 5	Incident Reporting Form

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1. Background Information

1.1 General

Environmental Engineer Joseph Horowitz, P.E.
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CHASP Prepared by GEI Consultants Inc. P.C. 110 Walt Whitman Road, Suite 204, Huntington Station, New York 11746

Project Name 31-12 38th Avenue
Long Island City, New York

This Health and Safety Plan (HASP) outlines the potential hazards posed by construction activities at the 31-12 38th Avenue site located in Long Island City, New York. Reading of and adherence to the HASP is required of all onsite workers and all who will enter the site. Contractors and subcontractors for this project will be required to develop their own HASP for protection of their employees, but at a minimum must adhere to applicable requirements set forth in this HASP. Additionally, federal, state and local representatives, as well as Fortress Dk Group, LLC and GEI representatives may be required to sign and adhere to this HASP, depending on the nature of their presence onsite during construction.

The plan identifies measures to minimize accidents and injuries, which may result from project activities, emergencies, or during adverse weather conditions. Activities performed under this HASP will comply with applicable parts of OSHA Regulations, primarily 29 Code of Federal Regulations (CFR) Parts 1910 and 1926.

Included in **Appendix 1** is a route to the nearest medical facility to the site with directions. **Appendix 2** and **Appendix 3** detail the signs, symptoms, care and procedures to both cold and heat stress, respectively. **Appendix 4** contains the incident reporting form to be filled out in the event of an injury, accident or near-miss onsite. The incident report shall be prepared by the Site Safety Officer.

1.2 Definitions

As used herein, "Contractor" shall mean the firm or firms retained by Owner to perform construction or other work on-site. "CM" shall mean the senior on-site person employed by each

Contractor, typically the Field Superintendent. The “Site Safety Officer” shall be a qualified person designated by the Owner to supervise safety matters on site for all personnel.

1.3 Property Description

The Site is located in the Long Island City section of Queens, New York and is identified as Block 382 and Lot 17 on the New York City Tax Map. The Site is a roughly rectangular shaped lot consisting of 44 feet of street frontage on 38th Avenue and a depth of approximately 100 feet for a total of approximately 4,473-square feet. The Site is located on the south side of 38th Avenue between 31st Street and 32nd Street and is bounded by 38th Avenue to the north, residential property to the south, and commercial properties to the east and west. Currently, the Site contains a vacant 2-story residential and commercial building with a one-story garage on the southwest side of the property.

1.4 Site Activities

The proposed building consists of a cellar containing parking, elevator pit and utility rooms; first floor commercial space, including a terrace, and residential space on floors two through seven, providing a total of 18 apartments, including one duplex on the sixth floor. The building will encompass the entire lot footprint. Gross building areas are as follows:

<u>Building Use</u>	<u>Gross Area</u> <u>(SF)</u>
Commercial	2,358
Residential	15,631
TOTAL	17,989

The cellar will require excavation to a depth of approximately 14 feet below existing grade. Excavation volume is estimated at 2 025 cubic yards. The cellar will include vehicle ramp, elevator room; utility spaces and attended parking for nine (9) cars. The first (ground) floor will include bicycle storage, residential lobby and commercial space.

Cellar and ground floor will occupy the full depth of the lot; upper floors will be partially set back from the rear lot line.

Superstructure will consist of steel beams, supporting concrete floor slabs on corrugated metal deck. Substructure will be reinforced concrete walls, spread and continuous footings; the cellar

floor will be slab-on-grade with vapor barrier beneath. Exterior walls will be of metal studs with face brick.

Apartments will be heated and cooled by individual thru-wall A/C units, using electricity for cooling and natural gas for heating. Domestic hot water will be provided by individual electric hot water heaters in each apartment.

The water table is expected at approximately 21 to 22-feet below grade surface (bgs) and will therefore not be encountered during excavation. A vapor barrier and a composite cover system will be installed at the base of the building's foundation and along the foundation sidewalls. Site work will consist of:

- Building demolition
- Foundation excavation, loading and removal of site soils
- Site grading
- Vapor barrier installation
- Building construction

1.5 Hazard/Risk Analysis

1.5.1 Physical Hazards

Physical hazards associated with heavy equipment operations may be present during site activities. These activities would require the use of heavy equipment by subcontractors such as a backhoe or a drill rig, which is associated with, but not limited to, the following hazards:

- bodily injuries
- slipping, tripping or falling
- heavy lifting
- caught in-between injuries
- struck by injuries
- cold/heat stress
- noise

1.5.2 Fire and Explosion

Fire extinguishers are located on heavy equipment operating onsite and within any work vehicles onsite. All fires should be reported to 911 emergency services. The CM and the Site Safety Officer will determine if it is necessary to shut down site work for the day due to fire related issues.

1.5.3 Cold Stress

During the winter months, workers may be exposed to the hazards of working in cold environments. Potential hazards in cold environments include frostbite, trench foot or immersion foot, hypothermia as well as slippery surfaces, brittle equipment, and poor judgment. The procedures

to be followed regarding the avoidance of cold stress are provided in **Appendix 2 – Cold Stress Guidelines**.

1.5.4 Heat Stress

A heat stress prevention program will be implemented when ambient temperatures exceed 70°F. The procedures to be followed are provided in **Appendix 3 – Heat Stress Guidelines**.

1.5.5 Noise

Noise is a potential hazard associated with the operation of heavy equipment, power tools, pumps, generators, and other equipment associated with earthwork tasks. Site workers who will perform suspected or established high noise tasks and operations shall wear hearing protection. Other workers who do not need to be in proximity of the noise should distance themselves from the equipment generating the noise.

1.5.6 Hand and Power Tools

In order to complete the various tasks for the project, personnel will use hand and power tools. The use of hand and power tools can present a variety of hazards, including physical harm from being struck by flying objects, being cut or struck by the tool, fire, and electrocution. Work gloves, safety glasses, and hard hats will be worn by the operating personnel at all times when using hand and power tools. Ground Fault Circuit Interrupter (GFCI)-equipped circuits will be used for all power tools.

The Contractor is responsible for the safe condition of tools and equipment used by employees but the employees have the responsibility for properly using and maintaining tools.

Saw blades, knives, or other tools be directed away from aisle areas and other employees working in close proximity. Knives and scissors must be sharp. Dull tools can be more hazardous than sharp ones.

Appropriate personal protective equipment (PPE), e.g., safety goggles, gloves, etc., should be worn due to hazards that may be encountered while using portable power tools and hand tools. Floors must be kept as clean and dry as possible to prevent accidental slips with or around dangerous hand tools.

The Site Safety Officer shall determine the level of PPE appropriate for work in progress. See Section 8 for a description of the various levels of PPE.

Around flammable substances, sparks produced by iron and steel hand tools can be a potential ignition source. Where this hazard exists, spark-resistant tools made from brass, plastic, aluminum, or wood will provide for safety.

The following general precautions should be observed by power tool users:

- Never carry a tool by the cord or hose.
- Never yank the cord or the hose to disconnect it from the receptacle.
- Keep cords and hoses away from heat, oil, and sharp edges.
- Disconnect tools when not in use, before servicing, and when changing accessories such as blades, bits and cutters.
- All observers should be kept at a safe distance away from the work area.
- Secure work with clamps or a vise, freeing both hands to operate the tool.
- Avoid accidental starting. The worker should not hold a finger on the switch button while carrying a plugged-in tool.
- Tools should be maintained with care. They should be kept sharp and clean for the best performance. Follow instructions in the user's manual for lubricating and changing accessories.
- Be sure to keep good footing and maintain good balance.
- The proper apparel should be worn. Loose clothing, ties, or jewelry can become caught in moving parts.
- All portable electric tools that are damaged shall be removed from use and tagged "Do Not Use."

Staff and subcontractors should follow all associated OSHA standards (29 CFR 1926), the most updated of which can be found at <http://www.osha.gov>. OSHA standards supersede any guidelines stated within this CHASP.

1.5.7 Slips, Trips, and Falls

Working in and around the site will pose slip, trip and fall hazards due to slippery surfaces. Excavation at the sites will cause uneven footing in the trenches and around the spoil piles. Employees will wear proper footwear (i.e. steel toe/shank boots) and will employ good work practice and housekeeping procedures to minimize the potential for slips, trips, and falls.

1.5.8 Manual Lifting

Manual lifting of objects and equipment may be required. Failure to follow proper lifting technique can result in back injuries and strains. Site workers should use power equipment to lift heavy loads whenever possible and should evaluate loads before trying to lift them (i.e., they should be able to easily tip the load and then return it to its original position). Carrying heavy loads with a buddy and proper lifting techniques include:

- 1) make sure footing is solid
- 2) make back straight with no curving or slouching
- 3) center body over feet
- 4) grasp the object firmly and as close to your body as possible
- 5) lift with legs

- 6) turn with your feet, don't twist

1.5.9 Projectile Objects, Debris and Overhead Dangers

Overhead dangers, including but not limited to falling debris and equipment, can occur while heavy machinery is in operation or work is taking place overhead. Staff will be instructed to maintain a minimum distance from large overhead operations. Staff must also maintain proper communication with heavy equipment operators and their handlers, especially if work necessitates their presence beyond the minimum safe distance. Additionally, employees should be cognizant of low-hanging overhead power lines, as these can snag on vehicles entering and exiting the site. Vehicles that are large enough to damage overhead power lines require spotters when entering and exiting the site. Proper PPE will be worn at all times during these types of activities including steel-toed or equivalent boots, safety vests and hard hats.

1.5.10 Heavy Equipment Operation

Heavy equipment may be present onsite. Staff should be cautious when working near or operating heavy equipment, and maintain a safe distance from the equipment. Personnel should maintain eye contact with the vehicle spotter or operator before traversing any paths that may cross that of the machinery. Safety vests are to be worn when working near operating heavy equipment.

1.5.11 Confined Spaces

If any work in confined spaces is required, it will be performed in accordance with 29 CFR 1910.146 (effective April 15, 1993), as applicable. Copies of the standards will be kept on file in the Contractor's main office, if work in confined spaces will be performed. Confined space work will not be performed without first notifying and receiving approval from the , if applicable.

1.5.12 Illumination

Illumination requirements identified by OSHA are directed to work efforts inside buildings and/or during non-daylight hours. OSHA illumination requirements will be followed when work is taking place inside the buildings. All exterior site activities at the site will occur during daylight hours. However, if yard areas are used after dark they will be equipped with illumination that meets or exceeds requirements specified in 29 CFR 1926.56, Illumination.

1.5.13 Lockout/Tagout

Site personnel will assume that all electrical equipment at surface and overhead locations is energized, until the equipment has been designated as de-energized by a representative from the utility company. If the equipment cannot be de-energized, work will stop and the CM and appropriate contacts will be consulted. The CM will notify the client prior to working adjacent to

this equipment, and will verify that the equipment is energized or de-energized in the vicinity of the work being conducted.

All power lines which have been indicated to be de-energized must be locked out, such that the lines cannot be energized when personnel are working near them. The lines shall not be unlocked and re-energized until the CM notifies the client that they have completed work in the area and that all personnel are clear of the area. Client representatives will thoroughly familiarize personnel with site-specific lockout/tagout procedures during the site orientation, if applicable.

If power lines cannot be de-energized, the CM will consult with utility safety personnel to determine the safe working distance from the energized line. Work tasks will only commence after determination that a safe working distance can be maintained and all personnel working in the area have been informed of the limitation.

1.5.14 Fall Hazards

Fall hazards exist onsite in several areas. Workers must follow all safeguards for fall protection as defined in OSHA 29 CFR 1926, Subpart M-Fall Protection. In general, workers should use the following guidelines:

- Use at least one of the following whenever employees are exposed to a fall of 6 feet or more above a lower level:
 - Guardrail Systems
 - Safety Net Systems
 - Personal Fall Arrest Systems
- Cover or guard floor holes as soon as they are created during new construction.
- For existing structures, survey the site before working and continually audit as work continues. Guard or cover any openings or holes immediately.
- Construct all floor hole covers so they will effectively support two times the weight of employees, equipment, and materials that may be imposed on the cover at any one time. Floor hole covers are to be secured so they are not moved off of the hole and labeled so workers are aware what is under the cover.
- In general, it is better to use fall *prevention* systems, such as guardrails, than fall *protection* systems, such as safety nets or fall arrest devices, because they provide more positive safety means.
- Construct all scaffolds according to the manufacturer's instructions and 29 CFR 1926.451.
- Install guardrail systems along all open sides and ends of platforms.
- Use at least one of the following for scaffolds more than 10 feet above a lower level:
 - Guardrail Systems
 - Personal Fall Arrest Systems

- Provide safe access to scaffold platforms [*For additional information, see Scaffold Access*].
- Do not climb cross-bracing as a means of access.
- Guard all protruding ends of steel rebar with rebar caps or wooden troughs, *or*
- Bend rebar so exposed ends are no longer upright.
- When employees are working at any height above exposed rebar, fall protection/ prevention is the first line of defense against impalement.

1.5.15 Ladder Safety

Portable ladders must be safely positioned each time they are used. Staff and subcontractors should follow all associated OSHA standards (CFR 1926.1053), the most updated of which can be found at <http://www.osha.gov>. OSHA standards supersede any guidelines stated within this CHASP.

1.5.16 Scaffolding Safety

Scaffolding presents significant fall hazards and various types of scaffolds may be present onsite. Staff and subcontractors should follow all associated OSHA standards (CFR 1926 Subpart L - Scaffolds), the most updated of which can be found at <http://www.osha.gov>.

1.5.17 Welding

The intense light associated with welding operations can cause serious and sometimes permanent eye damage if operators do not wear proper eye protection. Additionally, sparks from the welding process present a risk to the employee conducting welding and nearby employees. Any flammable or combustible materials that may be exposed to sparks or other heat sources must be protected or relocated to prevent fire hazards. Fire extinguishers will be located in areas where welding or hot work will be taking place. Staff must wear helmets that comply with ANSI Z49.1, with filter lenses that comply with ANSI Z87.1. Boots must comply with ASTM F2412 and ASTM F2413 for fire resistance. Welding operators must also wear flame-resistant welder's gloves.

Several chemicals may be used in the process of welding. Staff must be aware of the variety of chemicals used, and must possess appropriate welding training to perform welding activities. Additionally, compressed gas cylinders used in welding must be stored, placed and transported according to OSHA standards. Staff and subcontractors should follow all associated OSHA standards (CFR 1926), the most updated of which can be found at <http://www.osha.gov>.

1.5.18 Asbestos-Containing Material

Although the site does not contain asbestos-containing materials (ACM), workers should be aware of the risks associated with asbestos exposure. Chronic exposure to asbestos may cause asbestosis and mesothelioma. The primary route of exposure for asbestos is inhalation during the disturbance and/or removal of asbestos from pipe insulation and cement pipes.

Asbestos is strictly regulated under OSHA 29 CFR 1910.1001/1926.1101. Employees that may be potentially exposed to ACM must participate in a medical surveillance program, have specific training in the hazards and controls of exposure to asbestos and wear respirators with high efficiency particulate (HEPA) filters. All work must be conducted in demarcated regulated areas to minimize the amount of people within the exposure area. Employers must conduct air sampling and provide signs and labels regarding the presence of asbestos. Staff and subcontractors should follow all associated OSHA standards (CFR 1926), the most updated of which can be found at <http://www.osha.gov>.

The potential hazards for this project are listed in the following Site Hazard Analysis and Activity Hazards sections.

SITE HAZARDS	
Potential Hazard	Control Measures
Construction Safety	<ul style="list-style-type: none"> ▪ Identify yourself and your work location to heavy equipment operators, so they may incorporate you into their operations. Coordinate hand signals with operators. ▪ Stay Alert! Pay attention to equipment backup alarms and swing radii. ▪ Wear a high visibility vest when working near equipment or motor vehicle traffic. ▪ Position yourself in a safe location when filling out logs and talking with the contractor. ▪ Notify the contractor immediately if any problems arise. ▪ Do not stand or sit under suspended loads or near any pressurized equipment lines. ▪ Do not use cellular telephones near operating equipment. ▪ Follow general traffic safety guidelines
Scaffolding Safety and Power Tools	<ul style="list-style-type: none"> ▪ Follow OSHA Construction Safety Requirements 29 CFR 1926 Subpart L - Scaffolds. ▪ Do not use impact tools (i.e. chisels, hammers) with mushroomed heads. ▪ Do not use wooden-handled tools if the handle is damaged, splintered, loose or cracked. ▪ Inspect, maintain and replace tools as needed. ▪ Do not use wrenches if jaws are sprung. ▪ Tools should be directed away from aisles, other employees and trafficked areas. ▪ Wear appropriate PPE when using tools. ▪ Floors must be kept clean and as dry as possible to prevent slips, trips and falls around tools. ▪ Never carry a tool by the cord or hose. ▪ Never yank the cord or the hose to disconnect it from the receptacle. ▪ Keep cords and hoses away from heat, oil, and sharp edges. ▪ Disconnect tools when not in use, before servicing, and when changing accessories such as blades, bits and cutters. ▪ All observers should be kept at a safe distance away from the work area. ▪ Secure work with clamps or a vise, freeing both hands to operate the tool. ▪ Avoid accidental starting. The worker should not hold a finger on the switch button while carrying a plugged-in tool. ▪ Tools should be maintained with care. They should be kept sharp and clean for the best performance. Follow instructions in the user's manual for lubricating and changing accessories. ▪ Be sure to keep good footing and maintain good balance. ▪ The proper apparel should be worn. Loose clothing, ties, or jewelry can become caught in moving parts. ▪ All portable electric tools that are damaged shall be removed from use and tagged "Do Not Use." ▪ Keep all tools in good condition with regular maintenance. ▪ Use the right tool for the job. ▪ Examine each tool for damage before use. ▪ Operate according to the manufacturer's instructions. ▪ Provide and use the proper protective equipment.

Heavy Equipment Operation	<ul style="list-style-type: none"> ▪ Maintain awareness of location of equipment. ▪ Subcontractor use of a spotter for equipment operation. ▪ Safety vest is to be worn around all operating equipment. ▪ Maintain eye contact with the operator. ▪ Stay out of the swing radii of the apparatus.
Slips, Trips, Falls	<ul style="list-style-type: none"> ▪ Keep trafficked areas clear of debris and tools. Keep work areas and traffic areas dry.
Lock Out/Tag Out	<ul style="list-style-type: none"> ▪ Maintain contact with utility to determine if energized lines or equipment has been de-energized ▪ Follow OSHA Lock Out/Tag Out requirements in 29 CFR 1910.147.
Welding	<ul style="list-style-type: none"> ▪ Wear appropriate PPE (welding helmet, apron, fire-resistant gloves and boots, leggings) as needed. ▪ Follow OSHA Construction Safety Requirements 29 CFR 1926 Subpart J – Welding and Cutting.
Fire	<ul style="list-style-type: none"> ▪ Keep fire extinguishers in working order by inspecting on a regular basis. ▪ Keep the appropriately rated and sized fire extinguishers on site as specified by 29 CFR 1926.150. ▪ Keep flammable materials away from ignition sources. ▪ Follow OSHA Construction Safety Requirements 29 CFR 1926 Subpart F – Fire Protection and Prevention and NFPA standards. ▪ Wear appropriate PPE when working around flammable materials.
Ladder Safety	<ul style="list-style-type: none"> ▪ Follow safety guidelines for safe ladder use. ▪ Follow OSHA Construction Safety Requirements 29 CFR 1926.1053.
Fall Hazards	<ul style="list-style-type: none"> ▪ Use appropriate fall protection at heights of 6 feet or greater. ▪ Avoid working in areas with a drop off of more than 2 feet. ▪ Erect appropriate barriers and guard rails. ▪ Wear appropriate fall protection PPE. ▪ Mark fall hazards so they are visible to employees. ▪ Follow OSHA Construction Safety Requirements 29 CFR 1926 Subpart M – Fall Protection.
Physical Injury	<ul style="list-style-type: none"> ▪ Wear work boots in good condition with non-slip soles. ▪ Maintain good visibility of the work area. ▪ Avoid walking on uneven or debris ridden ground surfaces. ▪ Use proper lifting techniques. Ask fellow worker for help.
Noise	<ul style="list-style-type: none"> ▪ Wear hearing protection when near loud noises. ▪ Wear hearing protection whenever you need to raise your voice above normal conversational speech due to a loud noise source; this much noise indicates the need for protection.
Vehicular Traffic	<ul style="list-style-type: none"> ▪ Wear traffic safety vest at all times. ▪ Use cones, flags, barricades, and caution tape to define work area. ▪ Use a "spotter" to locate oncoming vehicles. ▪ Use vehicle to block work area. ▪ Engage police detail if needed.
Utilities	<ul style="list-style-type: none"> ▪ Check that contractor has cleared underground utilities before any intrusive activities, and that contractor has coordinate with utility locating services, property owner(s) or utility companies. ▪ Utilities are to be considered live or active until documented otherwise. ▪ For overhead utilities within 50 feet, have contractor determine with the utility company the appropriate safe distance. Minimum distance for clearance is based on voltage of the line. ▪ An observer will be established when operating drilling rigs near overhead utilities.

ACTIVITY HAZARDS		
Activity	Potential Hazards	Protective Equipment
Entering Construction Site	Heavy equipment, dust, noise.	Hardhat, reflective safety vest, steel-toed, steel-shank boots, safety glasses, protective leather work gloves, and earplugs. Follow general traffic safety guidelines. Employ dust suppression controls (i.e. watering) to keep dust levels down to prevent inhalation of excavated materials.
General Construction (Foundation Work, Earthwork, Soil Vapor Barrier System Installation)	Heavy equipment, dust, noise. Contact with excavated soils.	Hardhat, reflective safety vest, steel-toed, steel-shank boots, safety glasses, protective leather work gloves, and earplugs. Follow general traffic safety guidelines. Employ dust suppression controls (i.e. watering) to keep dust levels down to prevent inhalation of excavated materials.
Personal Protective Equipment (PPE) is the <i>initial level of protection</i> based on the activity hazards and Site conditions which have been identified.		

1.6 Evaluation of Potential Chemical Hazards

The characteristics of potential compounds at the Site are discussed below for information purposes. Adherence to the safety and health guidelines in this HASP should reduce the potential for exposure to the compounds discussed below. Table 1-1 presents chemical data regarding potential exposure and monitoring for the chemical types listed below.

Potential exposure to contaminants at the Site included encounters with groundwater, soil and soil vapor.

1.6.1 Volatile Organic Compounds (VOCs)

No VOCs or PCBs were detected in any of the soil and groundwater samples collected during the remedial investigation (RI).

Soil vapor samples collected during the RI showed low to moderate levels of petroleum related and chlorinated VOCs in all soil vapor samples. Total concentrations of petroleum-related VOCs (BTEX) ranged from 38.2 µg/m³ to 123.5 µg/m³. Chlorinated VOCs including tetrachloroethene (PCE) (max of 35 µg/m³) and trichloroethene (TCE) (max of 3.20µg/m³) were detected in all soil vapor samples. Carbon tetrachloride was detected in one of the three soil vapor samples with a concentration of 0.31 µg/m³ and 1,1,1-trichloroethane (TCA) was not detected in any of the samples. None of the detected concentrations of PCE, TCE and carbon tetrachloride

were above the monitoring level ranges established within the State DOH soil vapor guidance matrix level ranges established within the NYSDOH Final Guidance on Soil Vapor Intrusion.

VOCs may cause contact dermatitis. Direct contact can be irritating to the skin and produce itching, burning, swelling and redness. Direct contact or exposure to vapors may be irritating to the eyes. Conjunctivitis may result from prolonged exposure. High levels of exposure to SVOCs, though not anticipated during work activities conducted during this project, may increase the risk of cancer including lung, kidney and skin cancer. Poisoning may occur by ingestion of large doses, inhalation or skin absorption.

The major route of entry for the work activities to be conducted at this site is through direct contact. Exposure is most likely when handling soil samples. Inhalation may occur when the soil is disturbed causing respirable and nuisance dust particles to become airborne. Details for monitoring procedures can be found in Section 2.

1.6.2 Semi-volatile organic compounds

No SVOC exceedances were detected in any of the groundwater samples collected during the remedial investigation (RI). SVOC exceedances of the SCOs detected in the soil samples were limited to polycyclic aromatic hydrocarbons (PAHs) in one shallow sample. The PAHs included benzo(a)anthracene, which exceeded both the Unrestricted and Restricted Residential Use SCOs, and ben-zo(k)fluoranthene and chrysene which only exceeded the Unrestricted Use SCOs. The detection of benzo(a)anthracene (1.18 mg/Kg) was marginal and only slightly above the Restricted Residential Use SCO of 1 mg/Kg.

1.6.3 Metals

Metals exceedances of the Unrestricted Use Site Cleanup Objectives (UUSCOs) were identified in five soil samples which were predominantly identified in the shallow (0 to 2 foot) interval. The exceedances of the Unrestricted Use SCOs were all relatively low and included lead, nickel, selenium, mercury and zinc. Exceedances of the Restricted Residential Use SCOs were limited to the shallow (0 to 2 foot) interval at one location. The exceedances of the Restricted Use SCOs included arsenic, barium, copper and lead. The concentrations of arsenic (16.4 mg/Kg) and barium (433 mg/Kg) in the sample only slightly exceeding the respective Restricted Residential Use SCOs of 16 mg/Kg and 400 mg/Kg. The concentrations of copper (375 mg/Kg) and lead (648 mg/Kg) were also relatively low, remaining within the same order of magnitude as the respective Restricted Residential Use SCOs of 270 mg/Kg and 400 mg/Kg.

Metals exceedances of the Ambient Water Quality Standards (AWQS) in the unfiltered samples were identified in each of the three samples. The compounds exceeding the AWQS included barium, magnesium, manganese, nickel and sodium in each of the three samples, as well as beryllium, cadmium and copper in GW-2 and selenium in GW-3. The number of exceedances in the filtered samples was significantly less than those in the unfiltered samples. The exceedances

in the filtered samples included only magnesium (GW-1 and GW-3), manganese in GW-3, and sodium in all three samples. The magnesium and sodium concentrations above the GQS reached the maximum values of 69,500 ug/L and 201,000 ug/L in GW-3. The GQS for magnesium and sodium are 35,000 ug/L and 20,000 ug/L, respectively. The concentration of manganese in GW-3 (393 ug/L) was only slightly above the GQS of 300 ug/L. The analysis of unfiltered samples can be affected by sediment entrained within the sample; as such, the filtered samples are generally considered to be more representative of groundwater quality.

Exposure to high concentrations of copper through inhalation can cause irritation of the eyes, nose, pharynx, nasal septum. Ingestion may cause a metallic taste. Skin irritation may result from direct contact with skin. Damage to the liver and kidneys may occur.

Exposure to high concentrations of selenium may cause eye, skin, nose and throat irritation, headache, chills, fever, bronchitis, a metallic taste in the mouth, garlic breath, gastrointestinal disturbance, dermatitis, and eye and skin burns.

The primary route of exposure is through inhalation of dust particles when soil is disturbed and becomes airborne.

1.6.4 Asbestos-Containing Materials

As asbestos-containing materials (ACM) have not been identified onsite, they are not currently monitored for at the site. However, in the course of earthwork, staff should be cognizant of potential ACM and report any suspected ACM to the CM Contractor and the CHSO, who will then determine the appropriate course of action.

1.6.5 Polychlorinated Biphenyls

As polychlorinated biphenyls (PCBs) have not been identified onsite, they are not considered a potential concern at this site.

1.7 Biological Hazards

During the course of the project, there is a potential for workers to come into contact with biological hazards such as animals, insects and plants. Workers will be instructed in hazard recognition, health hazards, and control measures during site-specific training.

1.7.1 Animals

During the conduct of site operations, wild animals such as stray dogs or cats, raccoons, and mice may be encountered. Workers will use discretion and avoid all contact with wild animals. If these animals present a problem, efforts will be made to remove these animals from the site by contacting a licensed animal control technician.

1.7.2 Insects

Insects, including bees, wasps, hornets, and spiders, may be present at the site making the chance of a bite possible. Some individuals may have a severe allergic reaction to an insect bite or sting that can result in a life threatening condition. Any individuals who have been bitten or stung by an insect should notify the SSO. The following is a list of preventive measures:

- Apply insect repellent prior to performing any field work and as often as needed throughout the work shift.
- Wear proper protective clothing (work boots, socks and light colored pants).
- Field personnel who may have insect allergies should have bee sting allergy medication onsite and should provide this information to the SSO prior to commencing work.

1.7.2.1 Tick-Borne Illnesses

Lyme disease is caused by infection from a deer tick that carries a spirochete. During the painless tick bite, the spirochete may be transmitted into the bloodstream that could lead to the worker contracting Lyme disease.

Lyme disease may cause a variety of medical conditions including arthritis, which can be treated successfully if the symptoms are recognized early and medical attention is received. Treatment with antibodies has been successful in preventing more serious symptoms from developing. Early signs may include a flu-like illness, an expanding skin rash, and joint pain. If left untreated, Lyme disease can cause serious nerve or heart problems, as well as a disabling type of arthritis.

Symptoms can include a stiff neck, chills, fever, sore throat, headache, fatigue and joint pain. This flu-like illness is out of season, commonly happening between May and October when ticks are most active. A large expanding skin rash may develop around the area of the bite. More than one rash may occur. The rash may feel hot to the touch and may be painful. Rashes vary in size, shape, and color, but often look like a red ring with a clear center. The outer edges expand in size. It's easy to miss the rash and the connection between the rash and a tick bite. The rash develops from three days to as long as a month after the tick bite. Almost one third of those with Lyme disease never get the rash.

Joint or muscle pain may be an early sign of Lyme disease. These aches and pains may be easy to confuse with the pain that comes with other types of arthritis. However, unlike many other types of arthritis, this pain seems to move or travel from joint to joint.

Lyme disease can affect the nervous system. Symptoms include stiff neck, severe headache, and fatigue usually linked to meningitis. Symptoms may also include pain and drooping of the muscles on the face, called Bell's Palsy. Lyme disease may also mimic symptoms of multiple sclerosis or other types of paralysis.

The disease can also cause serious, but reversible heart problems, such as irregular heartbeat. Finally, Lyme disease can result in a disabling, chronic type of arthritis that most often affects the knees. Treatment is more difficult and less successful in later stages. Often, the effects of Lyme disease may be confused with other medical problems.

It is recommended that personnel check themselves when in areas that could harbor deer ticks, wear light color clothing and visually check themselves and their buddy when coming from wooded or vegetated areas. If a tick is found biting an individual, the PM should be contacted immediately. The tick can be removed by pulling gently at the head with tweezers. The affected area should then be disinfected with an antiseptic wipe. The employee will be offered the option for medical treatment by a physician, which typically involves prophylactic antibiotics. If personnel feel sick or have signs similar to those above, they should notify the PM immediately.

The deer tick can also cause **Babesiosis**, an infection of the parasite *Babesia Microti*. Symptoms of Babesiosis may not be evident, but may also include fever, fatigue and hemolytic anemia lasting from several days to several months. Babesiosis is most commonly diagnosed in the elderly or in individuals whose immune systems are compromised.

Ehrlichiosis is a tick-borne disease which can be caused by either of two different organisms. Human monocytic ehrlichiosis (HME) is caused by *Ehrlichia chaffeensis*, which is transmitted by the lone star tick (*Amblyomma americanum*). Human granulocytic anaplasmosis (HGA), previously known as human granulocytic ehrlichiosis (HGE), is caused by *Anaplasma phagocytophilia*, which is transmitted by the deer tick (*Ixodes scapularis*).

In New York State, most cases of ehrlichiosis have been reported on Long Island and in the Hudson Valley. Ehrlichiosis is transmitted by the bite of infected ticks, including the deer tick and the lone star tick. The symptoms of HME and HGE are the same and usually include fever, muscle aches, weakness and headache. Patients may also experience confusion, nausea, vomiting and joint pain. Unlike Lyme disease or Rocky Mountain spotted fever, a rash is not common. Infection usually produces mild to moderately severe illness, with high fever and headache, but may occasionally be life-threatening or even fatal. Symptoms appear one to three weeks after the bite of an infected tick. However, not every exposure results in infection.

Rocky Mountain spotted fever (RMSF) is a tick-borne disease caused by a rickettsia (a microbe that differs somewhat from bacteria and virus). Fewer than 50 cases are reported annually in New York State. In the eastern United States, children are infected most frequently, while in the western United States, disease incidence is highest among adult males. Disease incidence is directly related to exposure to tick-infested habitats or to infested pets. Most of the cases in New York State have occurred on Long Island. RMSF is characterized by a sudden onset of moderate to high fever (which can last for two or three weeks), severe headache, fatigue, deep muscle pain, chills and rash. The rash begins on the legs or arms, may include the soles of the feet or palms of the hands, and may spread rapidly to the trunk or rest of the body. Symptoms usually appear within two weeks of the bite of an infected tick.

*(Information on Ehrlichiosis, Babesiosis, and Rocky Mountain Spotted Fever was derived from the New York State Department of Health).

1.7.2.2 Wasps and Bees

Wasps (hornets and yellow-jackets) and bees (honeybees and bumblebees) are common insects that may pose a potential hazard to the field team if work is performed during spring, summer or fall. Bees normally build their nests in the soil. However, they use other natural holes such as abandoned rodent nests or tree hollows. Wasps make a football-shaped, paper-like nest either below or above the ground. Yellow-jackets tend to build their nests in the ground but hornets tend to build their nests in trees and shrubbery. Bees are generally more mild-mannered than wasps and are less likely to sting. Bees can only sting once while wasps are capable of stinging multiple times because of a barbless stinger. Wasps sting when they feel threatened. By remaining calm and not annoying wasps by swatting, you lessen the chance of being stung.

Wasps and bees inject a venomous fluid under the skin when they sting. The venom causes a painful swelling that may last for several days. If the stinger is still present, carefully remove it with tweezers. Some people may develop an allergic reaction (i.e. anaphylactic shock) to a wasp or bee sting. If such a reaction develops, seek medical attention at once. Employees should inform the SSO if they are allergic to bees or wasps, and inform the SSO if an epi-pen is required treatment and the location of the pen.

1.7.3 Plants

The potential for contact with poisonous plants exists when performing field work in undeveloped and wooded areas. Poison ivy, sumac, and oak may be present onsite. Poison ivy can be found as vines on tree trunks or as upright bushes. Poison ivy consists of three leaflets with notched edges. Two leaflets form a pair on opposite sides of the stalk, and the third leaflet stands by itself at the tip. Poison ivy is red in the early spring and turns shiny green later in the spring. Poison sumac can be present in the form of a flat-topped shrub or tree. It has fern-like leaves, which are velvety dark green on top and pale underneath. The branches of immature trees have a velvety "down." Poison sumac has white, "hairy" berry clusters. Poison oak can be present as a sparingly branched shrub. Poison oak is similar to poison ivy in that it has the same leaflet configuration; however, the leaves have slightly deeper notches. Prophylactic application of Tecnu may prevent the occurrence of exposure symptoms. Post exposure over the counter products are available and should be identified at the local pharmacist. Susceptible individuals should be identified to their respective supervisor.

Contact with poison ivy, sumac, or oak may lead to a skin rash, characterized by reddened, itchy, blistering skin which needs first aid treatment. If a field worker believes they have contacted one of these plants, immediately wash skin thoroughly with soap and water, taking care not to touch your face or other body parts.

1.8 Sun Exposure

Employees are encouraged to liberally apply sunscreen, with a minimum sun protection factor (SPF) of 15, when working outdoors to avoid sunburn and potential skin cancer, which is associated with excessive sun exposure to unprotected skin. Additionally, employees should wear safety glasses that offer protection from UVA/UVB rays.

1.9 Personal Safety

Field activities have the potential to take site workers into areas which may pose a risk to personal safety. The following website (source) has been researched to identify potential crime activity in the area of the project:

http://www.nyc.gov/html/nypd/html/crime_prevention/crime_statistics.shtml

Type of Crime	Subject Property and Vicinity	New York City Total*
Murder	3	333
Rape	18	1,352
Robbery	180	16,539
Felony Assault	215	20,207
Burglary	292	16,765
Grand Larceny	575	43,862

*New York City Total includes values from the 114st Precinct

2014 crime statistics from this website report that the 114st Precinct, which is closest to the subject property, is shown above in comparison to the current New York City total.

To protect yourself, take the following precautions:

- If deemed necessary, use the buddy system (teams of a minimum of two persons present);
- Let the Site Safety Officer (SSO) know when you begin work in these areas and when you leave;
- Call in regularly;
- Pay attention to what is going on around you; and
- If you arrive in an area and it does not look safe to get out of your vehicle, lock the doors and drive off quickly, but safely.

Site workers must not knowingly enter into a situation where there is the potential for physical and violent behaviors to occur. If site workers encounter hostile individuals or a confrontation develops in the work area, suspend work activities, immediately leave the area of concern, and contact local 911 for assistance. Notify the SSO and CHSO of any incidents once you are out of potential danger.

In the event of an emergency, prompt communications with local emergency responders is essential. At least one charged and otherwise functioning cell phone to facilitate emergency communications will be on site.

2. Community Air Monitoring Plan

Fortress Dk Group, LLC will implement a Community Air Monitoring Plan (CAMP) in compliance with the **Remedial Action Work Plan (RAWP)**. The Owner will retain a qualified environmental consultant to perform this work. The Environmental Consultant shall provide the following equipment to implement the CAMP, as necessary:

- Photoionization Meter (PID)
- Dust Meter
- Sound Level Meter by the CHSO, type to be appropriate to the activities performed

All monitoring equipment will be calibrated and maintained in accordance with manufacturer's requirements. All calibrations will be recorded in the project notes daily or on a daily calibration form.

3. Project Personnel/Responsibilities and Lines of Authority

Personnel		
Construction Manager (CM)	TBD	Office: Cell:
Site Safety Officer (SSO)	TBD	Office: Cell:

Each firm or entity performing on-site work will designate a **Field Representative**

Lines of Authority will be as follows:

Onsite – Each Contractor will have responsibility for safety of its employees during the work performed at the site. Each Field Representative (FR) will have a cell phone available to contact the appropriate local authorities, in the event of an emergency. The FR will be available for communication with the SSO and Contractor and with the client representative. The FR and/or SSO may change due to the nature of work being conducted onsite.

3.1 Construction Manager (CM)

Responsibilities of the CM include the following:

- Verifies implementation of the CHASP
- Conducts periodic inspections and documents these in the field book
- Participates in incident investigations
- Verifies the HASP has all of the required approvals before any site work is conducted
- Verifies that the client and/or client's engineer is informed of project changes, which require modifications of the CHASP
- Has overall responsibility for project health and safety
- Acts as the primary point of contact with the client for site related activities and coordination with non-project related site operations
- Overseeing of performance of project tasks as outlined in the scope of work
- Plans field work using appropriate safe procedures and equipment

3.2 Site Safety Officer (SSO)

The SSO is a qualified health and safety professional with experience in construction activities. Responsibilities of the SSO include the following:

- Verifies and documents current OSHA Construction training compliance for all construction trades
- Verifies that subcontractors acknowledge and sign the project's CHASP

- Serves as the primary contact to review health and safety matters that may arise
- Approves revised or new safety protocols for field operations
- Coordinates revisions of this CHASP with field personnel
- Coordinates upgrading or downgrading of PPE with the site manager
- Leads the investigation of all accidents/incidents
- Provide the necessary training of subcontractor trade field crews in accordance with OSHA regulations and provides proof of training prior to subcontractor trade personnel entering the site
- Verifies that the CHASP is implemented and that all health and safety activities identified in the HASP are conducted and/or implemented
- Verifies that field work is scheduled with adequate personnel and equipment resources to complete the job safely and enforces site health and safety rules
- Verifies that adequate communications between trade crews and emergency response personnel is maintained during emergency situations
- Verifies that field site personnel are adequately trained and qualified to work at the site and that proper PPE is utilized
- Reports all accidents/incidents to the CM
- Stops work if necessary
- Identifies operational changes which require modifications to the CHASP and ensures that the procedure modifications are implemented and documented through changes to the CHASP.
- Determines the level of PPE to be used as well as upgrades or downgrades of PPE based on site conditions and/or real-time monitoring results.

3.3 Field Representative (FR)

Each entity performing work on site shall designate a Field Representative who shall be responsible for carrying out work assigned to that entity. Responsibilities of the FR include:

- Conducts routine safety inspection of the work area
- Documenting occurrences of unsafe activity and what actions were taken to rectify the situation
- Reports any unsafe or potentially hazardous conditions to the SSO and CM
- Maintains familiarity of the information, instructions, and emergency response actions contained in the CHASP
- Complies with rules, regulations and procedures set forth in the CHASP
- Prevents admittance to work site by unauthorized personnel
- Inspects all tools and equipment, including PPE, prior to use and documents inspection on the daily safety meeting form or in the appropriate field book
- Verifies that monitoring instruments are calibrated
- Stops work if necessary.

4. Subcontractors

The Contractor may subcontract with various companies to conduct various work onsite on an as-needed basis. Contact information for these subcontractors will be available when such work is being conducted.

The Contractor requires its subcontractors to work in a responsible and safe manner. Subcontractors for this project may be required to develop their own CHASP for protection of their employees and must adhere to applicable requirements set forth in this CHASP.

5. Emergency Contact List

EMERGENCY INFORMATION

<u>Important Phone Numbers</u>		<u>Directions to:</u>
		Mount Sinai Hospital Queens 25-10 30th Avenue Astoria, NY 11102
Police	911	Head northwest on 38 th Avenue for 157 feet. Turn right at the first cross street onto 31 st Street and go 1.1 miles. Turn left onto 30 th Avenue and go 0.2 miles. The hospital will be on the left.
Fire Department	911	
Ambulance	911	
City MD Astoria 31-11 Steinway Street Astoria, NY 11103	(718)-475-2345	
Local Hospital: Mount Sinai Hospital Queens	(718) 932-1000	Refer to Hospital Route Map in Appendix 1 .
Project Manager	Yuk Lam	Office: 718-767-2833 Cell: 917-659-8195
Contractor	To be determined	Office:
Site Safety Officer (SSO)	Yuk Lam ⁵	Office: 718-767-2833 Cell: 917-659-8195
NYC Office of Environmental Remediation Project Manager	Dr. Zachariah Schreiber	Office: 212-788-3056

⁵ Pending award of contract and assignment of a Contractor employee, Mr. Lam will assume these duties.

6. Training Program

6.1 Hazard Communication

In accordance with 29 CFR 1926, site workers shall, at the time of job assignment, have received hazard communication training. All hazardous materials used on the site will be properly labeled, stored, and handled. SDSs will be available to onsite staff.

6.2 Onsite Safety Briefings

Onsite personnel will be given health and safety briefings by the SSO to assist personnel in safely conducting work activities. The briefings will include information on new operations to be conducted, changes in work practices or changes in the site's conditions, as well as periodic reinforcement of previously discussed topics. The briefings will also provide a forum to facilitate conformance with safety requirements and to identify performance deficiencies related to safety during daily activities or as a result of safety inspections. These safety briefing will be documented on a daily safety briefing form or other appropriate media.

7. Medical Support

In case of minor injuries, onsite care shall be administered with the Site first aid kit. For serious injuries, call 911 and request emergency medical assistance. Seriously injured persons should not be moved, unless they are in immediate danger.

Section 5 and **Appendix 1** contain detailed emergency information, including directions to the nearest hospital, and a list of emergency services and their telephone numbers. Field personnel will carry a cellular telephone.

8. Personal Protective Equipment

PPE required for each level of protection is as follows.

Safety Equipment	Level A	Level B	Level C	Level D
Hard hats with splash shields or safety glasses			•	•
Steel-toe boots with overboots as appropriate for work being performed and materials handled			•	•
Protective Leather Work Gloves or Chemical-resistant gloves as needed			•	•
Reflective Vest			•	•
Half- or full-face respirators with HEPA cartridges as approved by the CHSO as needed			•	
Long Pants	•	•	•	•
Welding Helmet				•
Welding Gloves, apron, leggings (as needed)				•
Flame-resistant boots for welding				•

PPE can include hardhats, safety glasses or face shields, steel toe/steel shank boots, hearing protection, nitrile gloves, and leather gloves as necessary.

OSHA Requirements for PPE

PPE must meet the following OSHA standards:

Type of Protection	Regulation	Source
Eye and Face	29 CFR 1910.133	ANSI Z87.1 1968
Respiratory	29 CFR 1910.134	ANSI Z88.1 1980
Head	29 CFR 1910.135	ANSI Z89.1 1969
Foot	29 CFR 1910.136	ANSI Z41.1 1999 or ASTM F-2412-2005, and ASTM F-2413-2005

CFR = Code of Federal Regulations

ANSI = American National Standards Institute

ASTM = American Society For Testing and Materials

Any onsite personnel who have the potential to don a respirator must have a valid fit test certification and documentation of medical clearance. The CHSO will maintain such information on file for onsite personnel. The CM will obtain such information from the subcontractor's site su-

pervisor prior to the initiation of any such work. Both the respirator and cartridges specified for use in Level C protection must be fit-tested prior to use in accordance with OSHA regulations (29 CFR 1910.134). Air purifying respirators cannot be worn under the following conditions:

- Oxygen deficiency;
- IDLH concentrations; and
- If contaminant levels exceed designated use concentrations.

For most work conducted at the site, Level D PPE will include long pants, hard hats, safety glasses with side shields, and steel toe safety boots with steel shanks. The CHSO will determine if site works deems an upgrade in PPE. The use of respirators is not anticipated.

Use of Level A or Level B PPE is not anticipated. If conditions indicating the need for Level A or Level B PPE are encountered, personnel will leave the work zone and this CHASP will be revised with oversight of the CHSO, personnel will not re-enter the work zone until conditions allow.

9. Supplemental Contingency Plan Procedures

9.1 Fire

In the event of a fire, all personnel will evacuate the area. The CM or SSO will contact the local fire department and report the fire. Notification of evacuation will be made to the client, the CM and others as appropriate. Each FR or appropriate staff member will account for subcontractor personnel and report their status to the CM.

9.2 Severe Weather

The contingency plan for severe weather includes reviewing the expected weather to determine if severe weather is in the forecast. Severe weather includes high winds over 30 mph, heavy rains or snow squalls, thunderstorms, hurricanes, and lightning storms. If severe weather is approaching, the decision to evacuate staff and subcontractor personnel from the site is the responsibility of the FR. Notification of evacuation will be made to the Project Manager, the Construction Project Manager and the CHSO. The FR will account for onsite staff and report their status to the CM. If safe, work can resume 30 minutes after the last flash of lightening or clap of thunder.

9.3 Spills or Material Release

If a hazardous waste spill or material release occurs, the SSO or their representative, if safe, will immediately assess the magnitude and potential seriousness of the spill or release based on the following:

- SDS, if applicable, for the material spilled or released
- Source of the release or spillage of hazardous material
- An estimate of the quantity released and the rate at which it is being released
- The direction in which the spill or air release is moving
- Personnel who may be or may have been in contact with the material, or air release, and possible injury or sickness as a result
- Potential for fire and/or explosion resulting from the situation
- Estimates of area under influence of release

If the spill or release is determined to be within the onsite emergency response capabilities, the SSO will ensure implementation of the necessary remedial action. If the release is beyond the capabilities of the site personnel, all personnel will be evacuated from the immediate area and the local fire department will be contacted. The SSO will notify the CM and the CHSO.

9.4 Alcohol and Drug Abuse Prevention

Alcohol and drugs will not be allowed on the work site. Project personnel under the influence of alcohol or drugs will not be allowed to enter the site.

10. Decontamination Procedures

10.1 Personnel Decontamination Station

As needed, a personnel decontamination station where workers can drop equipment and remove PPE will be set up as needed by the Contractor. The PPE area will be equipped with basins for water and detergent, and trash bag(s) or cans for containing disposable PPE and discarded materials. Once personnel have decontaminated at this station and taken off their PPE, they will proceed to a portable sink where they will wash themselves wherever they have potentially been exposed to any contaminants (e.g., hands, face, etc.).

Contaminated PPE (gloves, suits, etc.) will be decontaminated and stored for reuse or placed in plastic bags (or other appropriate container) and disposed of in an approved facility.

Decontamination wastewater and used cleaning fluids will be collected and disposed of in accordance with all applicable state and federal regulations.

10.2 Decontamination Equipment Requirements

If heavily contaminated soils are encountered during intrusive work, the following equipment, as needed, will be in sufficient supply to implement decontamination procedures for equipment.

- Buckets
- Alconox™ detergent concentrate
- Hand pump sprayers
- Long handle soft bristle brushes
- Large sponges
- Cleaning wipes for respirators
- Bench or stool(s)
- Methanol
- Liquid detergent and paper towels
- Plastic trash bags

11. Construction Health and Safety Plan Sign-Off

All personnel conducting site activities must read this Construction Health and Safety Plan, be familiar with its requirements, and agree to its implementation.

All other personnel onsite for regulatory, observational and other activities not directly associated with site activities must read this Health and Safety Plan for hazard communication purposes.

Once the Construction Health and Safety Plan has been read, complete this sign-off sheet, and return it to the Project Manager.

Site Name:

31-12 38th Avenue

Activity:

- Building demolition
- Foundation excavation, loading and removal of site soils
- Site grading
- Vapor barrier installation
- Building construction

I have received and read the Health and Safety Plan, been briefed on it, and agree to its implementation.

Printed Name	Signature	Date	Company

Printed Name	Signature	Date	Company

**APPENDIX 1
To CHASP**

Route to Nearest Hospital

**APPENDIX 2
To CHASP**

COLD STRESS GUIDELINES

Cold Stress Guidelines

	Symptoms	What to do
▪ Mild Hypothermia	<ul style="list-style-type: none"> ▪ Body Temp 98-90°F ▪ Shivering ▪ Lack of coordination, stumbling, fumbling hands ▪ Slurred speech ▪ Memory loss ▪ Pale, cold skin 	<ul style="list-style-type: none"> ▪ Move to warm area ▪ Stay active ▪ Remove wet clothes and replace with dry clothes or blankets ▪ Cover the head ▪ Drink warm (not hot) sugary drink
▪ Moderate Hypothermia	<ul style="list-style-type: none"> ▪ Body temp 90-86°F ▪ Shivering stops ▪ Unable to walk or stand ▪ Confused irrational 	<ul style="list-style-type: none"> ▪ All of the above, plus: ▪ Call 911 ▪ Cover all extremities completely ▪ Place very warm objects, such as hot packs on the victim's head, neck, chest and groin
▪ Severe Hypothermia	<ul style="list-style-type: none"> ▪ Body temp 86-78°F ▪ Severe muscle stiffness ▪ Very sleepy or unconscious ▪ Ice cold skin ▪ Death 	<ul style="list-style-type: none"> ▪ Call 911 ▪ Treat victim very gently ▪ Do not attempt to re-warm
▪ Frostbite	<ul style="list-style-type: none"> ▪ Cold, tingling, stinging or aching feeling in the frostbitten area, followed by numbness ▪ Skin color turns red, then purple, then white or very pale skin ▪ Cold to the touch ▪ Blisters in severe cases 	<ul style="list-style-type: none"> ▪ Call 911 ▪ Do not rub the area ▪ Wrap in soft cloth ▪ If help is delayed, immerse in warm, not hot, water
▪ Trench Foot	<ul style="list-style-type: none"> ▪ Tingling, itching or burning sensation ▪ Blisters 	<ul style="list-style-type: none"> ▪ Soak feet in warm water, then wrap with dry cloth bandages ▪ Drink a warm sugary drink

**APPENDIX 3
To CHASP**

HEAT STRESS GUIDELINES

HEAT STRESS GUIDELINES

Form	Signs & Symptoms	Care	Prevention³
Heat Rash	Tiny red vesicles in affected skin area. If the area is extensive, sweating can be impaired.	Apply mild lotions and cleanse the affected area.	Cool resting and sleeping areas to permit skin to dry between heat exposures
Heat Cramps	Spasm, muscular pain (cramps) in stomach area and extremities (arms and legs).	Provide replacement fluids with minerals (salt) such as Gatorade.	Adequate salt intake with meals ¹ ACCLIMATIZATION ²
Heat Exhaustion	Profuse sweating, cool (clammy) moist skin, dizziness, confusion, pale skin color, faint, rapid shallow breathing, headache, weakness, muscle cramps.	Remove from heat, sit or lie down, rest, replace lost water with electrolyte replacement fluids (water, Gatorade) take frequent sips of liquids in amounts greater than required to satisfy thirst.	ACCLIMATIZATION ² Adequate salt intake with meals 1 only during early part of heat season. Ample water intake, frequently during the day
Heat Stroke	HOT Dry Skin. Sweating has stopped. Mental confusion, dizziness, nausea, severe headache, collapse, delirium, coma.	HEAT STROKE IS A MEDICAL EMERGENCY - Remove from heat. - COOL THE BODY AS RAPIDLY AS POSSIBLE by immersing in cold (or cool) water, or splash with water and fan. Call for Emergency Assistance. Observe for signs of shock.	ACCLIMATIZATION ² Initially moderate workload in heat (8 to 14 days). Monitor worker's activities.

Footnotes:

- 1) American diets are normally high in salt, sufficient to aid acclimatization. However, during the early part of the heat season, (May, June), one extra shake of salt during one to two meals per day may help, so long as this is permitted by your physician. Check with your personal physician.
- 2) ACCLIMATIZATION - The process of adapting to heat is indicated by worker's ability to perform hot jobs less fluid loss, lower concentrations of salt loss in sweat, and a reduced core (body) temperature and heart rate.
- 3) Method to Achieve Acclimatization - Moderate work or exercise in hot temperatures during early part of heat season. Adequate salt (mineral) and water intake. Gradually increasing work time in hot temperatures. Avoid alcohol. Normally takes 8 to 14 days to achieve acclimatization. Lost rapidly, if removed from strenuous work (or exercise) in hot temperature for more than approximately five days.

**APPENDIX 4
To CHASP**

**SAFETY DATA SHEETS (SDSs)
For
ALCONOX® (Decontaminant)**

MATERIAL SAFETY DATA SHEET

ALCONOX®

Prepared to U.S. OSHA, CMA, ANSI, Canadian WHMIS, Australian WorkSafe, Japanese Industrial Standard JIS Z 7250:2000, and European Union REACH Regulations



SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: **ALCONOX®**
CHEMICAL FAMILY NAME: Detergent.
PRODUCT USE: Critical-cleaning detergent for laboratory, healthcare and industrial applications
U.N. NUMBER: Not Applicable
U.N. DANGEROUS GOODS CLASS: Non-Regulated Material
SUPPLIER/MANUFACTURER'S NAME: Alconox, Inc.
ADDRESS: 30 Glenn St., Suite 309, White Plains, NY 10603. USA
EMERGENCY PHONE: **TOLL-FREE in USA/Canada** 800-255-3924
International calls 813-248-0585
BUSINESS PHONE: 914-948-4040
DATE OF PREPARATION: May 2011
DATE OF LAST REVISION: February 2008

SECTION 2 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: This product is a white granular powder with little or no odor. Exposure can be irritating to eyes, respiratory system and skin. It is a non-flammable solid. The Environmental effects of this product have not been investigated.

US DOT SYMBOLS

CANADA (WHMIS) SYMBOLS

EUROPEAN and (GHS) Hazard Symbols

Non-Regulated



Signal Word: **Warning!**

EU LABELING AND CLASSIFICATION:

Classification of the substance or mixture according to Regulation (EC) No1272/2008 Annex 1
EC# 205-633-8 This substance is not classified in the Annex I of Directive 67/548/EEC
EC# 268-356-1 This substance is not classified in the Annex I of Directive 67/548/EEC
EC# 231-838-7 This substance is not classified in the Annex I of Directive 67/548/EEC
EC# 231-767-1 This substance is not classified in the Annex I of Directive 67/548/EEC
EC# 207-638-8 Index# 011-005-00-2
EC# 205-788-1 This substance is not classified in the Annex I of Directive 67/548/EEC

GHS Hazard Classification(s):

Eye Irritant Category 2A

Hazard Statement(s):

H319: Causes serious eye irritation

Precautionary Statement(s):

P260: Do not breath dust/fume/gas/mist/vapors/spray
 P264: Wash hands thoroughly after handling
 P271: Use only in well ventilated area.
 P280: Wear protective gloves/protective clothing/eye protection/face protection/

Hazard Symbol(s):

[Xi] Irritant

MATERIAL SAFETY DATA SHEET

ALCONOX®

Risk Phrases:

R20: Harmful by inhalation
 R36/37/38: Irritating to eyes, respiratory system and skin

Safety Phrases:

S8: Keep container dry
 S22: Do not breath dust
 S24/25: Avoid contact with skin and eyes

HEALTH HAZARDS OR RISKS FROM EXPOSURE:

ACUTE: Exposure to this product may cause irritation of the eyes, respiratory system and skin. Ingestion may cause gastrointestinal irritation including pain, vomiting or diarrhea.

CHRONIC: This product contains an ingredient which may be corrosive.

TARGET ORGANS: ACUTE: Eye, respiratory System, Skin CHRONIC: None Known

SECTION 3 - COMPOSITION and INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENTS:	CAS #	EINECS #	ICSC #	WT %	HAZARD CLASSIFICATION; RISK PHRASES
Sodium Bicarbonate	144-55-8	205-633-8	1044	33 - 43%	HAZARD CLASSIFICATION: None RISK PHRASES: None
Sodium (C10 - C16) Alkylbenzene Sulfonate	68081-81-2	268-356-1	Not Listed	10 - 20%	HAZARD CLASSIFICATION: None RISK PHRASES: None
Sodium Tripolyphosphate	7758-29-4	231-838-7	1469	5 - 15%	HAZARD CLASSIFICATION: None RISK PHRASES: None
Tetrasodium Pyrophosphate	7722-88-5	231-767-1	1140	5 - 15%	HAZARD CLASSIFICATION: None RISK PHRASES: None
Sodium Carbonate	497-19-8	207-638-8	1135	1 - 10%	HAZARD CLASSIFICATION: [X1] Irritant RISK PHRASES: R36
Sodium Alcohol Sulfate	151-21-3	205-788-1	0502	1 - 5%	HAZARD CLASSIFICATION: None RISK PHRASES: None
Balance of other ingredients are non-hazardous or less than 1% in concentration (or 0.1% for carcinogens, reproductive toxins, or respiratory sensitizers).					

NOTE: ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-2004 format. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR, EU Directives and the Japanese Industrial Standard JIS Z 7250: 2000.

SECTION 4 - FIRST-AID MEASURES

Contaminated individuals of chemical exposure must be taken for medical attention if any adverse effect occurs. Rescuers should be taken for medical attention, if necessary. Take copy of label and MSDS to health professional with contaminated individual.

EYE CONTACT: If product enters the eyes, open eyes while under gentle running water for at least 15 minutes. Seek medical attention if irritation persists.

SKIN CONTACT: Wash skin thoroughly after handling. Seek medical attention if irritation develops and persists. Remove contaminated clothing. Launder before re-use.

INHALATION: If breathing becomes difficult, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Seek medical attention if breathing difficulty continues.

INGESTION: If product is swallowed, call physician or poison control center for most current information. If professional advice is not available, do not induce vomiting. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or who cannot swallow. Seek medical advice. Take a copy of the label and/or MSDS with the victim to the health professional.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing skin, or eye problems may be aggravated by prolonged contact.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and reduce over-exposure.

MATERIAL SAFETY DATA SHEET

ALCONOX®

SECTION 5 - FIRE-FIGHTING MEASURES

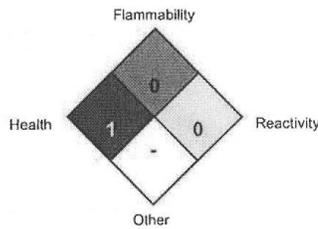
FLASH POINT:
AUTOIGNITION TEMPERATURE:
FLAMMABLE LIMITS (in air by volume, %):
FIRE EXTINGUISHING MATERIALS:

Not Flammable
 Not Applicable
 Lower (LEL): NA Upper (UEL): NA
 As appropriate for surrounding fire. Carbon dioxide, foam, dry chemical, halon, or water spray.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Explosion Sensitivity to Mechanical Impact:
Explosion Sensitivity to Static Discharge:
SPECIAL FIRE-FIGHTING PROCEDURES:

This product is non-flammable and has no known explosion hazards.
 Not Sensitive.
 Not Sensitive
 Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Isolate materials not yet involved in the fire and protect personnel. Move containers from fire area if this can be done without risk; otherwise, cool with carefully applied water spray. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.

NFPA RATING SYSTEM



HMS RATING SYSTEM

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM			
HEALTH HAZARD (BLUE)	1		
FLAMMABILITY HAZARD (RED)	0		
PHYSICAL HAZARD (YELLOW)	0		
PROTECTIVE EQUIPMENT			
EYES	RESPIRATORY	HANDS	BODY
	See Sect 8		See Sect 8
For Routine Industrial Use and Handling Applications			

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

SECTION 6 - ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Personnel should be trained for spill response operations.
SPILLS: Contain spill if safe to do so. Prevent entry into drains, sewers, and other waterways. Sweep, shovel or vacuum spilled material and place in an appropriate container for re-use or disposal. Avoid dust generation if possible. Dispose of in accordance with applicable Federal, State, and local procedures (see Section 13, Disposal Considerations).

SECTION 7 - HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash thoroughly after handling this product. Do not eat, drink, smoke, or apply cosmetics while handling this product. Avoid breathing dusts generated by this product. Use in a well-ventilated location. Remove contaminated clothing immediately.

STORAGE AND HANDLING PRACTICES: Containers of this product must be properly labeled. Store containers in a cool, dry location. Keep container tightly closed when not in use. Store away from strong acids or oxidizers.

MATERIAL SAFETY DATA SHEET

ALCONOX®

SECTION 8 - EXPOSURE CONTROLS - PERSONAL PROTECTION

EXPOSURE LIMITS/GUIDELINES:

Chemical Name	CAS#	ACGIH TWA	OSHA TWA	SWA
Sodium Bicarbonate	144-55-8	10 mg/m ³ Total Dust	15 mg/m ³ Total Dust	10 mg/m ³ Total Dust
Sodium (C10 – C16) Alkylbenzene Sulfonate	68081-81-2	10 mg/m ³ Total Dust	15 mg/m ³ Total Dust	10 mg/m ³ Total Dust
Sodium Tripolyphosphate	7758-29-4	10 mg/m ³ Total Dust	15 mg/m ³ Total Dust	10 mg/m ³ Total Dust
Tetrasodium Pyrophosphate	7722-88-5	5 mg/m ³	5 mg/m ³	5 mg/m ³
Sodium Carbonate	497-19-8	10 mg/m ³ Total Dust	15 mg/m ³ Total Dust	10 mg/m ³ Total Dust
Sodium Alcohol Sulfate	151-21-3	10 mg/m ³ Total Dust	15 mg/m ³ Total Dust	10 mg/m ³ Total Dust

Currently, International exposure limits are not established for the components of this product. Please check with competent authority in each country for the most recent limits in place.

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation to ensure exposure levels are maintained below the limits provided below. Use local exhaust ventilation to control airborne dust. Ensure eyewash/safety shower stations are available near areas where this product is used.

The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132) or equivalent standard of Canada, or standards of EU member states (including EN 149 for respiratory PPE, and EN 166 for face/eye protection), and those of Japan. Please reference applicable regulations and standards for relevant details.

RESPIRATORY PROTECTION: Based on test data, exposure limits should not be exceeded under normal use conditions when using Alconox Detergent. Maintain airborne contaminant concentrations below guidelines listed above, if applicable. If necessary, use only respiratory protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), equivalent U.S. State standards, Canadian CSA Standard Z94.4-93, the European Standard EN149, or EU member states.

EYE PROTECTION: Safety glasses. If necessary, refer to U.S. OSHA 29 CFR 1910.133 or appropriate Canadian Standards.

HAND PROTECTION: Use chemical resistant gloves to prevent skin contact. If necessary, refer to U.S. OSHA 29 CFR 1910.138 or appropriate Standards of Canada.

BODY PROTECTION: Use body protection appropriate to prevent contact (e.g. lab coat, overalls). If necessary, refer to appropriate Standards of Canada, or appropriate Standards of the EU, Australian Standards, or relevant Japanese Standards.

SECTION 9 - PHYSICAL and CHEMICAL PROPERTIES

PHYSICAL STATE:	Solid
APPEARANCE & ODOR:	White granular powder with little or no odor.
ODOR THRESHOLD (PPM):	Not Available
VAPOR PRESSURE (mmHg):	Not Applicable
VAPOR DENSITY (AIR=1):	Not Applicable.
BY WEIGHT:	Not Available
EVAPORATION RATE (nBuAc = 1):	Not Applicable.
BOILING POINT (C°):	Not Applicable.
FREEZING POINT (C°):	Not Applicable.
pH:	9.5 (1% aqueous solution)
SPECIFIC GRAVITY 20°C: (WATER =1)	0.85 – 1.1
SOLUBILITY IN WATER (%)	>10% w/w
COEFFICIENT OF WATER/OIL DIST.:	Not Available
VOC:	None
CHEMICAL FAMILY:	Detergent

MATERIAL SAFETY DATA SHEET

ALCONOX®

SECTION 10 - STABILITY and REACTIVITY

STABILITY: Product is stable

DECOMPOSITION PRODUCTS: When heated to decomposition this product produces Oxides of carbon (COx)

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Strong acids and strong oxidizing agents.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Contact with incompatible materials and dust generation.

SECTION 11 - TOXICOLOGICAL INFORMATION

TOXICITY DATA: Toxicity data is available for mixture:

CAS# 497-19-8 LD50 Oral (Rat)	4090 mg/kg
CAS# 497-19-8 LD50 Oral (Mouse)	6600 mg/kg
CAS# 497-19-8 LC50 Inhalation (Rat)	2300 mg/m ³ 2H
CAS# 497-19-8 LC50 Inhalation (Mouse)	1200 mg/m ³ 2H
CAS# 7758-29-4 LD50 Oral (Rat)	3120 mg/kg
CAS# 7758-29-4 LD50 Oral (Mouse)	3100 mg/kg
CAS# 7722-88-5 LD50 Oral (Rat)	4000 mg/kg

SUSPECTED CANCER AGENT: None of the ingredients are found on the following lists: FEDERAL OSHA Z LIST, NTP, CAL/OSHA, IARC and therefore is not considered to be, nor suspected to be a cancer-causing agent by these agencies.

IRRITANCY OF PRODUCT: Contact with this product can be irritating to, exposed skin, eyes and respiratory system.

SENSITIZATION OF PRODUCT: This product is not considered a sensitizer.

REPRODUCTIVE TOXICITY INFORMATION: No information concerning the effects of this product and its components on the human reproductive system.

SECTION 12 - ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

ENVIRONMENTAL STABILITY: No Data available at this time.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: No evidence is currently available on this product's effects on plants or animals.

EFFECT OF CHEMICAL ON AQUATIC LIFE: No evidence is currently available on this product's effects on aquatic life.

SECTION 13 - DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate Federal, State, and local regulations, those of Canada, Australia, EU Member States and Japan.

SECTION 14 - TRANSPORTATION INFORMATION

US DOT, IATA, IMO, ADR:

THIS PRODUCT IS NOT HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME: Non-Regulated Material

HAZARD CLASS NUMBER and DESCRIPTION: Not Applicable

UN IDENTIFICATION NUMBER: Not Applicable

PACKING GROUP: Not Applicable.

DOT LABEL(S) REQUIRED: Not Applicable

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2004): Not Applicable

MARINE POLLUTANT: None of the ingredients are classified by the DOT as a Marine Pollutant (as defined by 49 CFR 172.101, Appendix B)

U.S. DEPARTMENT OF TRANSPORTATION (DOT) SHIPPING REGULATIONS:

This product is not classified as dangerous goods, per U.S. DOT regulations, under 49 CFR 172.101.

TRANSPORT CANADA, TRANSPORTATION OF DANGEROUS GOODS REGULATIONS:

This product is not classified as Dangerous Goods, per regulations of Transport Canada.

INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA):

This product is not classified as Dangerous Goods, by rules of IATA:

INTERNATIONAL MARITIME ORGANIZATION (IMO) DESIGNATION:

This product is not classified as Dangerous Goods by the International Maritime Organization.

EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD (ADR):

MATERIAL SAFETY DATA SHEET

ALCONOX®

This product is not classified by the United Nations Economic Commission for Europe to be dangerous goods.

SECTION 15 - REGULATORY INFORMATION

UNITED STATES REGULATIONS

SARA REPORTING REQUIREMENTS: This product is not subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act., as follows: None

TSCA: All components in this product are listed on the US Toxic Substances Control Act (TSCA) inventory of chemicals.

SARA 311/312:

Acute Health: Yes Chronic Health: No Fire: No Reactivity: No

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for this product. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lb (4,540 kg) may apply, per 40 CFR 370.20.

U.S. CERCLA REPORTABLE QUANTITY (RQ): None

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): None of the ingredients are on the California Proposition 65 lists.

CANADIAN REGULATIONS:

CANADIAN DSL/NDSL INVENTORY STATUS: All of the components of this product are on the DSL Inventory

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS: No component of this product is on the CEPA First Priorities Substance Lists.

CANADIAN WHMIS CLASSIFICATION and SYMBOLS: This product is categorized as a Controlled Product, Hazard Class D2B as per the Controlled Product Regulations

EUROPEAN ECONOMIC COMMUNITY INFORMATION:

EU LABELING AND CLASSIFICATION:

Classification of the mixture according to Regulation (EC) No1272/2008. See section 2 for details.

AUSTRALIAN INFORMATION FOR PRODUCT:

AUSTRALIAN INVENTORY OF CHEMICAL SUBSTANCES (AICS) STATUS: All components of this product are listed on the AICS.
STANDARD FOR THE UNIFORM SCHEDULING OF DRUGS AND POISONS: Not applicable.

JAPANESE INFORMATION FOR PRODUCT:

JAPANESE MINISTER OF INTERNATIONAL TRADE AND INDUSTRY (MITI) STATUS: The components of this product are not listed as Class I Specified Chemical Substances, Class II Specified Chemical Substances, or Designated Chemical Substances by the Japanese MITI.

INTERNATIONAL CHEMICAL INVENTORIES:

Listing of the components on individual country Chemical Inventories is as follows:

Asia-Pac:	Listed
Australian Inventory of Chemical Substances (AICS):	Listed
Korean Existing Chemicals List (ECL):	Listed
Japanese Existing National Inventory of Chemical Substances (ENCS):	Listed
Philippines Inventory of Chemicals and Chemical Substances (PICCS):	Listed
Swiss Giftlist List of Toxic Substances:	Listed
U.S. TSCA:	Listed

SECTION 16 - OTHER INFORMATION

PREPARED BY: Paul Eigbrett Global Safety Management, 10006 Cross Creek Blvd. Suite 440, Tampa, FL 33647

MATERIAL SAFETY DATA SHEET**ALCONOX®**

Disclaimer: To the best of Alconox, Inc. knowledge, the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness is not guaranteed and no warranties of any type either express or implied are provided. The information contained herein relates only to this specific product.

ANNEX:**IDENTIFIED USES OF ALCONOX® AND DIRECTIONS FOR USE**

Used to clean: Healthcare instruments, laboratory ware, vacuum equipment, tissue culture ware, personal protective equipment, sampling apparatus, catheters, tubing, pipes, radioactive contaminated articles, optical parts, electronic components, pharmaceutical apparatus, cosmetics manufacturing equipment, metal castings, forgings and stampings, industrial parts, tanks and reactors. Authorized by USDA for use in federally inspected meat and poultry plants. Passes inhibitory residue test for water analysis. FDA certified.

Used to remove: Soil, grit, grime, buffing compound, slime, grease, oils, blood, tissue, salts, deposits, particulates, solvents, chemicals, radioisotopes, radioactive contaminations, silicon oils, mold release agents.

Surfaces cleaned: Corrosion inhibited formulation recommended for glass, metal, stainless steel, porcelain, ceramic, plastic, rubber and fiberglass. Can be used on soft metals such as copper, aluminum, zinc and magnesium if rinsed promptly. Corrosion testing may be advisable.

Cleaning method: Soak, brush, sponge, cloth, ultrasonic, flow through clean-in-place. Will foam—not for spray or machine use.

Directions: Make a fresh 1% solution (2 1/2 Tbsp. per gal., 1 1/4 oz. per gal. or 10 grams per liter) in cold, warm, or hot water. If available use warm water. Use cold water for blood stains. For difficult soils, raise water temperature and use more detergent. Clean by soak, circulate, wipe, or ultrasonic method. Not for spray machines, will foam. For nonabrasive scouring, make paste. Use 2% solution to soak frozen stopcocks. To remove silver tarnish, soak in 1% solution in aluminum container. RINSE THOROUGHLY—preferably with running water. For critical cleaning, do final or all rinsing in distilled, deionized, or purified water. For food contact surfaces, rinse with potable water. Used on a wide range of glass, ceramic, plastic, and metal surfaces. Corrosion testing may be advisable.

**APPENDIX 5
To CHASP**

Incident Report Form

OSHA's Form 301 Injury and Illness Incident Report

This *Injury and Illness Incident Report* is one of the first forms you must fill out when a recordable work-related injury or illness has occurred. Together with the *Log of Work-Related Injuries and Illnesses* and the accompanying *Summary*, these forms help the employer and OSHA develop a picture of the extent and severity of work-related incidents.

Within 7 calendar days after you receive information that a recordable work-related injury or illness has occurred, you must fill out this form or an equivalent. Some state workers' compensation, insurance, or other reports may be acceptable substitutes. To be considered an equivalent form, any substitute must contain all the information asked for on this form.

According to Public Law 91-596 and 29 CFR 1904, OSHA's recordkeeping rule, you must keep this form on file for 5 years following the year to which it pertains.

If you need additional copies of this form, you may photocopy and use as many as you need.

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.



Form approved OSHA no. 1210(117)A

Information about the employee

1) Full name _____

2) Street _____

City _____ State _____ ZIP _____

3) Date of birth _____ / _____ / _____

4) Date hired _____ / _____ / _____

5) Male Female

Information about the physician or other health care professional

6) Name of physician or other health care professional _____

7) If treatment was given away from the workplace, where was it given?
Facility _____

Street _____

City _____ State _____ ZIP _____

8) Was employee treated in an emergency room?

Yes No

9) Was employee hospitalized overnight as an in-patient?

Yes No

Completed by _____

Title _____

Phone (_____) _____ Date _____ / _____ / _____

Information about the case

10) Case number from the Log _____ (Transfer the case number from the Log after you read the case.)

11) Date of injury or illness _____ / _____ / _____

12) Time employee began work _____ AM / PM

13) Time of event _____ AM / PM Check if time cannot be determined

14) What was the employee doing just before the incident occurred? Describe the activity, as well as the tools, equipment, or material the employee was using. *Examples:* "Climbing a ladder while carrying roofing material"; "spraying chlorine from hand sprayer"; "daily computer key-study."

15) What happened? Tell us how the injury occurred. *Examples:* "When ladder slipped on wet floor, worker fell 20 feet"; "Worker was sprayed with chlorine when gasket broke during replacement"; "Worker developed forearm in wrist over time."

16) What was the injury or illness? Tell us the part of the body that was affected and how it was affected; be more specific than "hurt," "pain," or "sore." *Examples:* "strained back"; "chemical burn, hand"; "carpal tunnel syndrome."

17) What object or substance directly harmed the employee? *Examples:* "concrete floor"; "chlorine"; "radial arm saw." *If this question does not apply to the incident, leave it blank.*

18) If the employee died, when did death occur? Date of death _____ / _____ / _____

Public reporting burden for this collection of information is estimated to average 29 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Persons are not required to respond to the collection of information unless it displays a current valid OMB control number. If you have any comments about this estimate or any other aspect of this data collection, including suggestions for reducing the burden, send them to Washington, DC 20503. Do not send the completed forms to this office.

APPENDIX E**PROPOSED DEVELOPMENT PLANS⁶**

Architectural Drawings

Prepared by:

Lam Engineer, P.C.
48-91 187th Street
Fresh Meadows, NY 11365
Tel. 718-767-2883
Cell: 917-659-8195
Fax: 866-338-2060

Drawing No.	Title
T-001.00	Title/Cover Page
Z-001.00	Zoning Calculations and Plot Plan
A-001.00	Proposed Cellar Plan
A-001.00	Proposed First Floor Plan
A-003.00	Proposed Second Floor Plan
A-004.00	Proposed Third & Fourth Floor Plan
A-005.00	Proposed Fifth Floor Plan
A-006.00	Proposed Sixth Floor Plan
A-007.00	Proposed Roof Floor Plan
A-008.00	Proposed Roof Bulkhead Plan
A-009.00	Proposed Elevations
A-010.00	Proposed Elevation
A-011.00	Proposed Elevation
A-012.00	Proposed Longitudinal Section
A-013.00	Proposed Transverse Section

6. Drawings are presented in a separate PDF.

APPENDIX F

**VAPOR BARRIER
Manufacturer's Catalog Cuts**

VaporBlock Plus 20

Raven Industries
Engineered Films Division
P.O Box 5107
Sioux Falls, SD 57117

VAPORBLOCK® PLUS™ VBP20

Under-Slab Vapor / Gas Barrier



Product Description

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

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

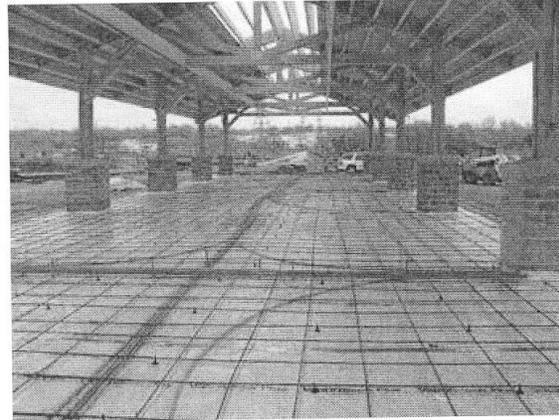
Product Use

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

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

Size & Packaging

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



Under-Slab Vapor/Gas Retarder

Product	Part #
VaporBlock Plus 20	VBP20

APPLICATIONS

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

VaporBlock® Plus™
UNDERSLAB VAPOR RETARDER / GAS BARRIER

VAPORBLOCK® PLUS™ VBP20

Under-Slab Vapor / Gas Barrier

PROPERTIES	TEST METHOD	VAPORBLOCK PLUS 20	
		IMPERIAL	METRIC
APPEARANCE		White/Gold	
THICKNESS, NOMINAL		20 mil	0.51 mm
WEIGHT		102 lbs/MSF	498 g/m ²
CLASSIFICATION	ASTM E 1745	CLASS A, B & C	
TENSILE STRENGTH LBF/IN (N/CM) AVERAGE MD & TD (NEW MATERIAL)	ASTM E 154 Section 9 (D-882)	58 lbf	102 N
IMPACT RESISTANCE	ASTM D 1709	2600 g	
MAXIMUM USE TEMPERATURE		180° F	82° C
MINIMUM USE TEMPERATURE		-70° F	-57° C
PERMEANCE (NEW MATERIAL)	ASTM E 154 Section 7 ASTM E 96 Procedure B	0.0098 Perms grains/(ft ² ·hr·in·Hg)	0.0064 Perms g/(24hr·m ² ·mm Hg)
(AFTER CONDITIONING) PERMS (SAME MEASUREMENT AS ABOVE PERMEANCE)	ASTM E 154 Section 8, E96 Section 11, E96 Section 12, E96 Section 13, E96	0.0079 0.0079 0.0097 0.0113	0.0052 0.0052 0.0064 0.0074
WVTR	ASTM E 96 Procedure B	0.0040 grains/hr·ft ²	0.0028 gm/hr·m ²
RADON DIFFUSION COEFFICIENT	K124/02/95	< 1.1 x 10 ⁻¹³ m ² /s	
METHANE PERMEANCE	ASTM D 1434	< 1.7 x 10 ⁻¹⁰ m ² /d·atm 0.32 GTR (Gas Transmission Rate) ml/m ² ·D·ATM	

VaporBlock® Plus™ Placement

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



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

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



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

Toll Free: 800-635-3456
Email: efdsales@ravenind.com
www.ravenefd.com
1/11 EFD 1125

Scan QR Code to download current technical data sheets via the Raven website.

MIXED USED CONDO

31-12 38th Ave, Long Island City, NY 11101

Drawing Schedule

ARCHITECTURAL

T-001.00 TITLE / COVER PAGE
 Z-001.00 ZONING CALCULATION AND PLOT PLAN
 Z-002.00 FLOOR AREA CALCULATION AND DIAGRAM
 Z-003.00 HEIGHT AND SETBACK DIAGRAM, TREE PLANTING DETAIL
 Z-004.00 GENERAL NOTES, SPECIAL INSPECTIONS

EN-001.00 ENERGY ANALYSIS
 EN-002.00 ENERGY TABULAR ANALYSIS

A-001.00 PROPOSED CELLAR PLAN
 A-002.00 PROPOSED FIRST FLOOR PLAN
 A-003.00 PROPOSED SECOND FLOOR PLAN
 A-004.00 PROPOSED THIRD FLOOR PLAN
 A-005.00 PROPOSED FOURTH FLOOR PLAN
 A-006.00 PROPOSED FIFTH FLOOR PLAN
 A-007.00 PROPOSED SIXTH FLOOR PLAN
 A-008.00 PROPOSED SEVENTH FLOOR PLAN
 A-009.00 PROPOSED BULKHEAD PLAN
 A-010.00 PROPOSED ROOF PLAN
 A-011.00 PROPOSED ELEVATIONS
 A-012.00 PROPOSED ELEVATION
 A-013.00 PROPOSED ELEVATION
 A-014.00 PROPOSED LONGITUDINAL SECTION
 A-015.00 PROPOSED TRANSVERSE SECTION
 A-016.00 PARTITION TYPES & DETAILS,
 A-017.00 KITCHEN AND BATHROOM ENLARGE PLANS & ELEVATIONS
 A-018.00 STAIR DETAILS
 A-019.00 DETAILS, DOOR & WINDOW SCHEDULES & TYPES

E-001.00 REFLECTED CEILING PLANS - CELLAR & FIRST FLOOR PLAN
 E-002.00 REFLECTED CEILING PLANS - SECOND & THIRD FLOOR PLAN
 E-003.00 REFLECTED CEILING PLANS - FOURTH & FIFTH FLOOR PLAN
 E-004.00 REFLECTED CEILING PLANS - SIXTH & SEVENTH FLOOR PLAN
 E-005.00 REFLECTED CEILING PLANS - BULKHEAD & ROOF FLOOR PLAN

STRUCTURAL

S-001.00 STRUCTURAL NOTES
 S-002.00 LOAD TABLES, COLUMN SCHEDULE, FOOTING SCHEDULE
 S-003.00 FOUNDATION AND 1ST FLOOR FRAMING PLAN
 S-004.00 2ND AND 3RD FLOOR FRAMING PLAN
 S-005.00 4TH AND 5TH FLOOR FRAMING PLAN
 S-006.00 6TH AND 7TH FLOOR FRAMING PLAN
 S-007.00 BULKHEAD AND ROOF FRAMING PLAN
 S-008.00 STEEL DETAILS I
 S-009.00 STEEL DETAILS II

FO-001.00 FOUNDATION DETAILS

SOE-001.00 UNDERPINNING & SHORING PLAN, SHORING DETAILS
 SOE-002.00 UNDERPINNING DETAILS

MECHANICAL

M-101.00 HVAC COVER SHEET
 M-201.00 CELLAR HVAC INSTALLATION PLAN
 M-202.00 FIRST FLOOR HVAC INSTALLATION PLAN
 M-203.00 SECOND FLOOR HVAC INSTALLATION PLAN
 M-204.00 THIRD FLOOR HVAC INSTALLATION PLAN
 M-205.00 FOURTH FLOOR HVAC INSTALLATION PLAN
 M-206.00 FIFTH FLOOR HVAC INSTALLATION PLAN
 M-207.00 SIXTH FLOOR HVAC INSTALLATION PLAN
 M-208.00 SEVENTH FLOOR HVAC INSTALLATION PLAN
 M-209.00 BULKHEAD AND ROOF LEVEL HVAC INSTALLATION PART PLAN
 M-301.00 HVAC SCHEDULES AND NOTES
 M-401.00 HVAC DETAILS (SHEET 1 OF 2)
 M-402.00 HVAC DETAILS (SHEET 2 OF 2)
 M-501.00 HVAC SPECIFICATIONS (SHEET 1 OF 2)
 M-502.00 HVAC SPECIFICATIONS (SHEET 2 OF 2)

PLUMBING

P-101.00 PLUMBING COVER SHEET
 P-201.00 CELLAR PLUMBING INSTALLATION PLAN
 P-202.00 FIRST FLOOR PLUMBING INSTALLATION PLAN
 P-203.00 SECOND FLOOR PLUMBING INSTALLATION PLAN
 P-204.00 THIRD FLOOR PLUMBING INSTALLATION PLAN
 P-205.00 FOURTH FLOOR PLUMBING INSTALLATION PLAN
 P-206.00 FIFTH FLOOR PLUMBING INSTALLATION PLAN
 P-207.00 SIXTH FLOOR PLUMBING INSTALLATION PLAN
 P-208.00 SEVENTH FLOOR AND BULKHEAD PLUMBING INSTALLATION PLAN
 P-301.00 DOMESTIC WATER RISER DIAGRAM
 P-302.00 SANITARY RISER DIAGRAM
 P-303.00 GAS RISER DIAGRAM
 P-304.00 STORM RISER DIAGRAM
 P-401.00 PLUMBING DETAILS (SHEET 1 OF 1)
 P-501.00 PLUMBING SPECIFICATIONS (SHEET 1 OF 1)

SPRINKLER

SP-101.00 SPRINKLER SYMBOLS, ABBREVIATION, NOTES, SCHEDULE AND RISER DIAGRAM
 SP-201.00 CELLAR LEVEL SPRINKLER INSTALLATION PLAN
 SP-202.00 FIRST FLOOR SPRINKLER INSTALLATION PLAN
 SP-203.00 SECOND FLOOR SPRINKLER INSTALLATION PLAN
 SP-204.00 THIRD FLOOR SPRINKLER INSTALLATION PLAN
 SP-205.00 FOURTH FLOOR SPRINKLER INSTALLATION PLAN
 SP-206.00 FIFTH FLOOR SPRINKLER INSTALLATION PLAN
 SP-207.00 SIXTH FLOOR SPRINKLER INSTALLATION PLAN
 SP-208.00 SEVENTH FLOOR SPRINKLER INSTALLATION PLAN
 SP-301.00 SPRINKLER DETAILS (SHEET 1 OF 1)
 SP-401.00 SPRINKLER SPECIFICATIONS (SHEET 1 OF 1)



ARCHITECT
 LAM ENGINEER, P.C.
 48-91 187TH STREET,
 FRESH MEADOWS, NY 11365
 TEL: 718-767-2883
 FAX: 866-338-2060

House No 31-12
 Street Name 38 AVENUE
 Borough QUEENS
 Block 382
 Lot 17
 Bin 4597137
 ZONE R6A/M1-2
 MAP 9B

PROJECT
 31-12 38 AVENUE,
 LONG ISLAND CITY, NY 11101

TITLE
 COVER PAGE
 DRAWING SCHEDULE

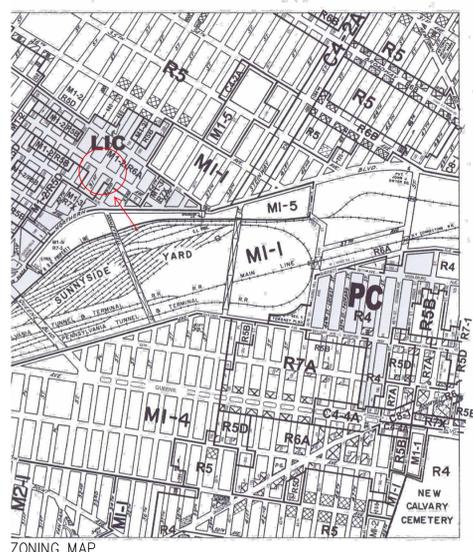
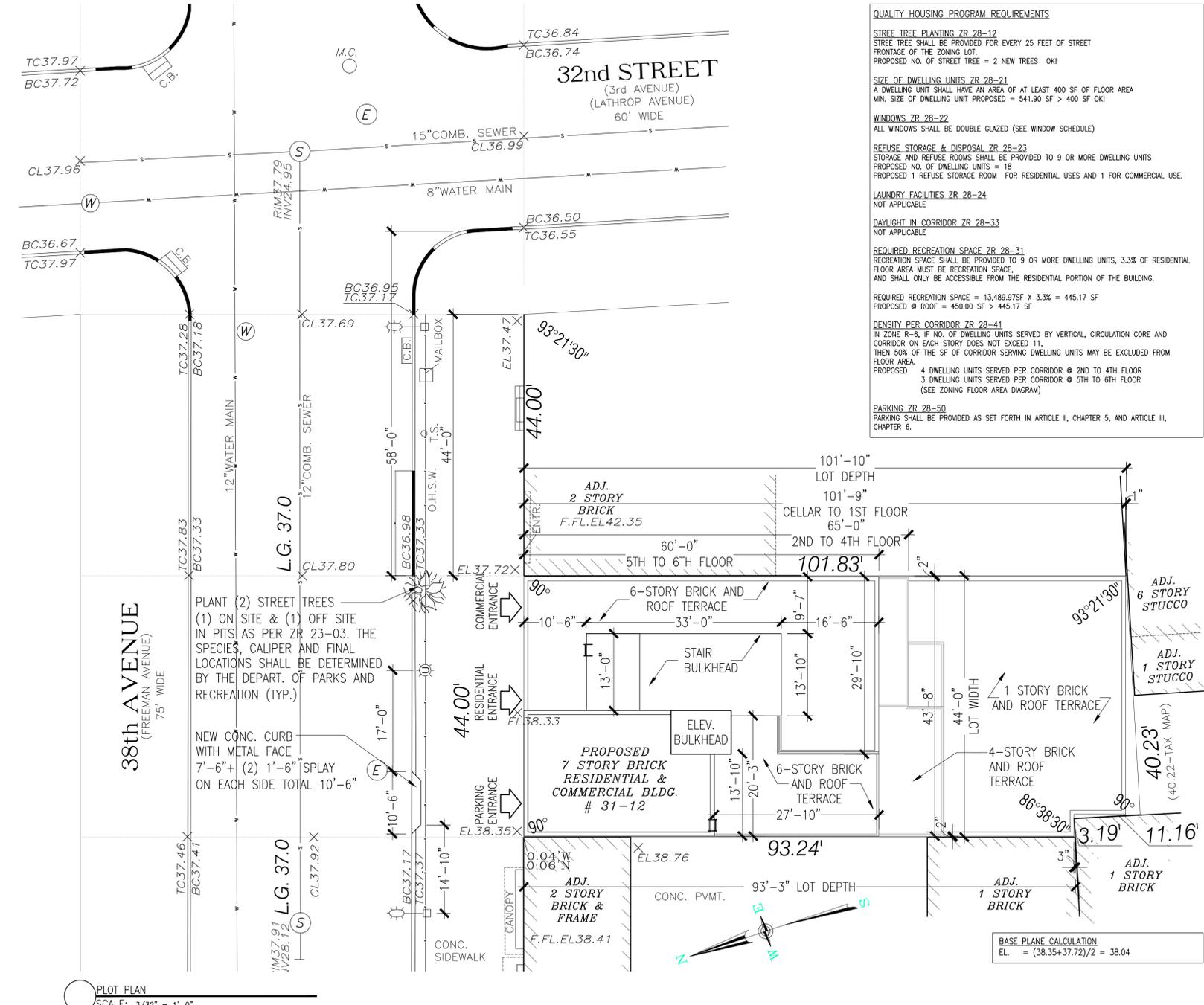
NAME (PLEASE PRINT)
 YUK LAM
 (P.E./R.A.) SEAL & SIGNATURE DATE

DOB STICKER

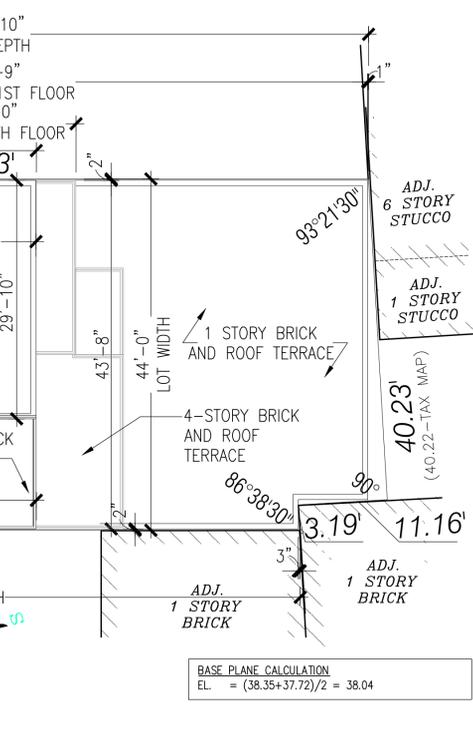
DRAWING NO.
 T-001.00

DATE: 09/15/15
 PROJECT NO: 48217
 DRAWING BY: JL/EC
 CHK BY: YL
 SHEET 01 OF 31

ZONING CALCULATION		
PROPOSED USE: RESIDENTIAL (R6A/M1-2)		
SCOPE OF WORK PROPOSED NEW 6 STORY WITH CELLAR, MIXED USED RESIDENTIAL/ COMMERCIAL BUILDING. TOTAL OF 18 DWELLING UNITS WITH ACCESSORY OFF-STREET PARKING, ACCESSORY STORAGE FOR 9 BICYCLES AND 1 COMMERCIAL SPACE. OBTAIN A NEW CERTIFICATE OF OCCUPANCY.		
BLOCK	382	
LOT	17	
ZONE	R6A / M1-2	
MAP#	9B	
USE GROUP	2, 10A	
OCCUPANCY CLASSIFICATION	R-2 RESIDENTIAL: APARTMENT HOUSES B BUSINESS: PRODUCTION STUDIO H-A ONE HOUR PROTECTED, NON-COMBUSTIBLE	
CONSTRUCTION CLASSIFICATION	2	
FIRE INDEX	2	
ADDRESS	31-12 38 AVENUE, QUEENS, NY 4,498.07 SF (IRREGULAR SHAPE)	
MAX. COMMERCIAL F.A.R.	4,498.07 X 1.0 = 4,498.07 SF	ZR 43-12
MAX. RESIDENTIAL F.A.R.	4,498.07 X 3.0 = 13,494.21 SF	ZR 23-145
MAX. ALLOWABLE FLOOR AREA	17,992.28 SF	
INSIDE LIC (LONG ISLAND CITY) SPECIAL PURPOSE DISTRICT, DK (DUTCH KILL) SUBDISTRICT		ZR 117-61
SPECIAL BULK; USE AND PARKING REGULATIONS OF ARTICLE XII, CHAPTER 3 OF THE SPECIAL DISTRICT SHALL APPLY.		ZR 123-64(a)
MAXIMUM LOT COVERAGE	LOT COVERAGE PROVISIONS SHALL NOT COMPLY TO MIXED-USED BUILDINGS	ZR 117-631(G)
FLOOR AREA RATIO & LOT COVERAGE MODIFICATIONS (COMMERCIAL PORTION)	MAXIMUM FLOOR AREA RATIO FOR CERTAIN COMMERCIAL AND MANUFACTURING USES. IN M1-2 DESIGNATED DISTRICT, THE MAXIMUM FLOOR AREA RATIO SHALL BE INCREASED TO 4.0 WHEN PAIRED WITH AN R6A DISTRICT. PROVIDED THAT ADDITIONAL FLOOR AREA IS LIMITED TO THE FOLLOWING USES: PHOTOGRAPHIC OR MOTION PICTURE PRODUCTION STUDIO AND RADIO OR TELEVISION STUDIO LISTED IN USED GROUP 10A. MAXIMUM PERMITTED FLOOR AREA = 4,498.07 X 4.0 = 17,992.28 SF	ZR 12-10
FLOOR AREA DEFINITIONS THE FLOOR AREA OF A BUILDING SHALL NOT INCLUDE	(12) EXTERIOR WALL THICKNESS, UP TO EIGHT INCHES; (13) WHERE SUCH WALL THICKNESS IS PART OF AN EXTERIOR WALL CONSTRUCTED AFTER APRIL 30, 2012, EQUAL TO THE NUMBER OF INCHES BY WHICH THE WALL'S TOTAL THICKNESS EXCEEDS EIGHT INCHES, PROVIDED THAT ABOVE-GRADE EXTERIOR WALLS OF THE BUILDING ENVELOPE ARE MORE ENERGY EFFICIENT THAN REQUIRED BY THE NEW YORK CITY ENERGY CONSERVATION CODE (NYCECC) AS DETERMINED BY THE FOLLOWING: (1) THE AREA-WEIGHTED AVERAGE U-FACTOR OF AN OPAQUE ABOVE-GRADE WALL ASSEMBLY SHALL BE NO GREATER THAN 80 PERCENT OF THE AREA-WEIGHTED AVERAGE U-FACTOR DETERMINED BY USING THE PRESCRIBED REQUIREMENTS OF THE NYCECC; AND (2) THE AREA-WEIGHTED AVERAGE U-FACTOR OF ALL ABOVE GRADE EXTERIOR WALL ASSEMBLIES, INCLUDING VERTICAL FENESTRATION, SHALL BE NO MORE THAN 90 PERCENT OF THE AREA-WEIGHTED AVERAGE U-FACTOR DETERMINED BY USING THE PRESCRIBED REQUIREMENTS OF THE NYCECC. FOR THE PURPOSES OF CALCULATING THE AREA-WEIGHTED AVERAGE U-FACTOR, THE AMOUNT OF FENESTRATION SHALL EQUAL THE AMOUNT EQUAL TO THE MAXIMUM FENESTRATION AREA REFERENCED IN THE NYCECC FOR THE CALCULATION OF THE BASELINE ENERGY CODE REQUIREMENT, WHICHEVER IS LESS.	
FLOOR AREA CALCULATION (SEE SHT. Z-002 FOR FLOOR AREA DIAGRAM)		
FLOOR	BUILDING GROSS FLOOR AREA	ZONING F.A. NET RESIDENTIAL # OF D.U.
CELLAR	4,410.90 SF	0 SF
ROOF	0 SF	0 SF
1ST	3,573.21 SF	2,406.76 SF
2ND	2,838.55 SF	2,838.55 SF
3RD	2,838.55 SF	2,838.55 SF
4TH	2,838.55 SF	2,838.55 SF
5TH	2,620.02 SF	2,620.02 SF
6TH	2,620.02 SF	2,620.02 SF
7TH	668.97 SF	668.97 SF
TOTAL	22,408.77 SF	2,406.76 SF
TOTAL COMMERCIAL ZONING FLOOR AREA: 2,406.76 SF < 4,498.07 SF OK!		
TOTAL RESIDENTIAL ZONING NET FLOOR AREA: 13,494.21 SF		
TOTAL ZONING NET FLOOR AREA: 15,897.22 SF < 17,992.28 SF OK!		
DENSITY REGULATIONS	680	ZR 23-22
FACTOR FOR DWELLING UNITS	3 X 4,498.07 = 13,494.21/680 = 19.84	
MAXIMUM DWELLING UNITS	20 D.U.	
PROPOSED DWELLING UNITS	18 D.U. OK!	
YARD REGULATIONS		
FRONT YARD AND SIDE YARD	NO FRONT YARDS AND SIDE YARDS ARE REQUIRED IN SPECIAL MIXED USE DISTRICTS. HOWEVER, IF ANY OPEN AREA EXTENDING ALONG A SIDE LOT LINE IS PROVIDED AT ANY LEVEL, SUCH OPEN AREA SHALL HAVE A MINIMUM WIDTH OF EIGHT FEET.	ZR 123-651 ZR 123-652
DUTCH HILL STREET WALL LOCATION	THE STREET WALL OF ANY RESIDENTIAL OR MIXED-USE BUILDING SHALL BE LOCATED NO CLOSER TO, NOR FURTHER FROM, THE STREET LINE THAN THE STREET WALL OF AN ADJACENT EXISTING BUILDING. FOR ALL ZONING LOTS, THE STREET WALL OF A BUILDING NEED NOT BE LOCATED FURTHER FROM THE STREET LINE THAN 15 FEET.	ZR 117-632
HEIGHT AND SETBACK REGULATIONS		
BASE PLANE EL. CALCULATION	EL. = (38.35+37.72)/2 = 38.04	
MIN. BASE HEIGHT PERMITTED	40.00'	
MAX. BASE HEIGHT PERMITTED	60.00'	ZR 123-662 (b)
PROPOSED BASE HEIGHT	60.00' OK!	
MAX. BUILDING HEIGHT PERMITTED	70.00'	
PROPOSED BUILDING HEIGHT	70.00' OK!	
REQUIRED SETBACK ABOVE MAX. BASE HEIGHT	10' 10'-6" OK!	
DORMERS	MAXIMUM 60% OF STREET WALL WIDTH AND REDUCED BY 1% FOR EVERY FOOT ABOVE MAXIMUM BASE HEIGHT.	ZR 123-662
PROPOSED STREET WALL WIDTH	43.67'	
MAXIMUM BASE WIDTH OF DORMER	43.67' x 60% = 26.20'	
PROPOSED BASE WIDTH	21.60' < 26.20' OK!	
HEIGHT ABOVE MAXIMUM BASE HEIGHT	10'-0" = 10' THEN MAX. PERMITTED WIDTH OF DORMERS TO BE REDUCED BY 10% TO 50% OF STREET WALL WIDTH.	
MAXIMUM WIDTH OF TOP OF DORMER	43.67' x 50% = 21.84'	
PROPOSED WIDTH OF TOP OF DORMER	21.60' < 21.84' OK!	
PARKING REQUIREMENT		
REQUIRED OFF STREET PARKING SPACE	50% OF THE TOTAL DWELLING UNITS (QUALITY HOUSING)	ZR 123-72
NO. OF DWELLING UNITS	18 D.U.	ZR 25-23
NO. OF PARKING SPACE REQUIRED	50% x 18 = 9 PARKING SPACES	
PROPOSED NO. OF SPACE	9 ATTENDED PARKING SPACES OK!	
BICYCLE PARKING REQUIREMENT		
COMMERCIAL USES TO COMPLY WITH C8-2 REGULATION OF ARTICLE III, CHAPTER 5	1 SPACE PER 12 PERSON	ZR 117-64
PROPOSED FLOOR AREA FOR U.G. 10A	27 PERSONS MAXIMUM (PER BC 1004.1.2) 27/12 = 2.25 = 3 PARKING SPACES	
REQUIRED NUMBER OF PARKING SPACES	3 LESS THAN 25 PARKING SPACE, SO WAIVED AS PER 36-231	
REQUIRED BICYCLE PARKING SPACE (RESIDENTIAL)	1 SPACE PER 2 DWELLING UNIT FOR USE GROUP 2	ZR 25-811
NO. OF DWELLING UNITS	18 D.U.	
NO. OF BICYCLE PARKING SPACE REQUIRED	18/2 = 9 BICYCLE SPACES	
PROPOSED NO. OF SPACE	9 BICYCLE SPACES OK!	
REQUIRED ACCESSORY OFF-STREET LOADING BERTH	COMMERCIAL USES IN U.G. 10A NOT REQUIRED TO PROVIDE LOADING BERTH FOR FIRST 8,000 SF. PROPOSED FLOOR AREA FOR U.G. 10A IS 2,722.79 OK!	ZR 36-62
ENVIRONMENTAL CONDITIONS	IN SPECIAL MIXED USE DISTRICTS, ALL NEW DWELLING UNIT SHALL BE PROVIDED WITH A MINIMUM 35dB(A) OF WINDOW WALL ATTENUATION TO MAINTAIN AN INTERIOR NOISE LEVEL OF 45dB(A) OR LESS, WITH WINDOW CLOSED, AND SHALL PROVIDE AN ALTERNATE MEANS IF VENTILATION	ZR 123-32
STREET TREE PLANTING REQUIREMENT		
STREET FRONTAGE	REQUIRED ONE TREE PER 25'-0" OF STREET FRONTAGE OF ZONING LOT	ZR 26-41
REQUIRED NUMBER OF TREES	= 44'/25' = 1.76 = 2 TREES	
PROPOSED STREET TREES	PROPOSED 2 TREE (1 ON SITE & 1 OFF SITE) SUCH TREE SHALL BE OF AT LEAST 3 INCH CALIPER AT TIME OF PLANTING AND BE PLACED AT APPROXIMATELY EQUAL INTERVALS. ALL STREET TREES SHALL BE PLANTED, MAINTAINED AND REPLACED WHEN NECESSARY WITH THE APPROVAL OF AND IN ACCORDANCE WITH THE STANDARDS OF DOT AND THE DPR.	



QUALITY HOUSING PROGRAM REQUIREMENTS	
STREET TREE PLANTING ZR 28-12	STREET TREE SHALL BE PROVIDED FOR EVERY 25 FEET OF STREET FRONTAGE OF THE ZONING LOT. PROPOSED NO. OF STREET TREE = 2 NEW TREES OK!
SIZE OF DWELLING UNITS ZR 28-21	A DWELLING UNIT SHALL HAVE AN AREA OF AT LEAST 400 SF OF FLOOR AREA. MIN. SIZE OF DWELLING UNIT PROPOSED = 541.90 SF > 400 SF OK!
WINDOWS ZR 28-22	ALL WINDOWS SHALL BE DOUBLE GLAZED (SEE WINDOW SCHEDULE)
REFUSE STORAGE & DISPOSAL ZR 28-23	STORAGE AND REFUSE ROOMS SHALL BE PROVIDED TO 9 OR MORE DWELLING UNITS PROPOSED NO. OF DWELLING UNITS = 18 PROPOSED 1 REFUSE STORAGE ROOM FOR RESIDENTIAL USES AND 1 FOR COMMERCIAL USE.
LAUNDRY FACILITIES ZR 28-24	NOT APPLICABLE
DAYLIGHT IN CORRIDOR ZR 28-33	NOT APPLICABLE
REQUIRED RECREATION SPACE ZR 28-31	RECREATION SPACE SHALL BE PROVIDED TO 9 OR MORE DWELLING UNITS, 3.3% OF RESIDENTIAL FLOOR AREA MUST BE RECREATION SPACE, AND SHALL ONLY BE ACCESSIBLE FROM THE RESIDENTIAL PORTION OF THE BUILDING. REQUIRED RECREATION SPACE = 13,489.97SF X 3.3% = 445.17 SF PROPOSED @ ROOF = 450.00 SF > 445.17 SF
DENSITY PER CORRIDOR ZR 28-41	IN ZONE R-6, IF NO. OF DWELLING UNITS SERVED BY VERTICAL CIRCULATION CORE AND CORRIDOR ON EACH STORY DOES NOT EXCEED 11, THEN 50% OF THE SF OF CORRIDOR SERVING DWELLING UNITS MAY BE EXCLUDED FROM FLOOR AREA. PROPOSED @ 4 DWELLING UNITS SERVED PER CORRIDOR @ 2ND TO 4TH FLOOR 3 DWELLING UNITS SERVED PER CORRIDOR @ 5TH TO 6TH FLOOR (SEE ZONING FLOOR AREA DIAGRAM)
PARKING ZR 28-50	PARKING SHALL BE PROVIDED AS SET FORTH IN ARTICLE II, CHAPTER 5, AND ARTICLE III, CHAPTER 6.



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Street Name 38 AVENUE

Borough QUEENS

Block 382

Lot 17

Bin 4597137

ZONE R6A/M1-2

MAP 9B

PROJECT

31-12 38 AVENUE,
LONG ISLAND CITY, NY 11101

TITLE

ZONING CALCULATION,
PLOT PLAN

NAME (PLEASE PRINT)

YUK LAM

(P.E./R.A.) SEAL & SIGNATURE _____ DATE _____

DOB STICKER

DRAWING NO.

Z-001.00

DATE: 09/15/15

PROJECT NO: 48217

DRAWING BY: JL/EC

CHK BY: YL

SHEET 02 OF 31

GENERAL NOTES:

- HARDWIRED CARBON MONOXIDE DETECTORS SHALL COMPLY WITH NFPA 72 AND INSTALLED IN ACCORDANCE WITH NFPA 72. IT SHALL BE PROVIDED IN EVERY UNIT WITHIN FIFTEEN FEET OF THE PRIMARY ENTRANCE OF EACH BEDROOM.
- ALL HOOP EXIT DOOR EQUIPPED WITH PANIC HARDWARE WITH PUSH-TYPE MECHANISMS.
- ALL SPACES WITHOUT NATURAL VENTILATION WILL BE MECHANICALLY EXHAUSTED.
- ALL HANDICAPPED REQUIRED EXIT DOORS ARE LEVER-OPERATED MECHANISMS, EQUIPPED WITH PANIC HARDWARE.
- THE DESIGN, DETAILS AND NOTES INCLUDED HEREIN ARE IN COMPLIANCE WITH LOCAL LAW 17/95 (EARTHQUAKE NOTE).
- THREE FEET OF CLEARANCE IS REQUIRED AROUND DOT EQUIPMENT PURSUANT TO SECTION 2-05 OF DOT'S RULES, AND THAT SIGNALS, LIGHTS AND SIGNS MUST BE VISIBLE AND UNOBSTRUCTED.
- EXITS, EXIT DISCHARGES AND PUBLIC CORRIDORS SHALL BE ILLUMINATED AT ALL TIMES. EXIT ACCESS COMPONENTS SHALL BE ILLUMINATED AT ALL TIMES DURING OCCUPANCY.
- A VENTILATION SYSTEMS SUPPLYING ANY PART OF A MEANS OF EGRESS SHALL NOT BE INTERCONNECTED WITH ANY OTHER VENTILATION.
- FIXTURE UNIT COUNTS COMPLY WITH TABLE 403.1 REFERENCE STANDARD APPROVED.
- EXIT OR DIRECTIONAL SIGNS SHALL BE CONNECTED TO AN EMERGENCY POWER SOURCE.
- VENTILATION SYSTEMS SUPPLYING RESIDENTIAL CORRIDORS ARE SEPARATED FROM OTHER SPACES.
- NO GAS SERVICE CONNECTIONS OR GAS METERS OR GAS REGULATORS CAN BE LOCATED WITHIN 10' FROM THE TERMINATION OF A STAIR AT THE CELLAR.

GENERAL NOTES:

- GAS METER MUST BE AT LEAST 3' FROM A BOILER OR OTHER SOURCE OF IGNITION. GAS METER MUST NOT BE LOCATED IN A BOILER ROOM, IN STAIR HALLS OR IN A PUBLIC STAIR.
- EMERGENCY POWER FOR THE ELEVATOR WILL BE FILED UNDER ELECTRICAL APPLICATION.
- ALL SMOKE DETECTORS TO BE INTERCONNECTED IN SUCH A MANNER THAT THE ACTIVATION OF ONE WILL ACTIVATE ALL THE DETECTORS IN THE DWELLING UNIT.
- ALL VENTS, AIR INTAKE & EXHAUST TO BE PROVIDED W/CLASS 1 MOTORIZED, LEAKAGE RATED FIRE DAMPER W/A LEAKAGE RATE OF 4 CFM/SF AT 1.0 INCH WATER GAUGE WHEN TESTED IN ACCORDANCE W/AMCA 5000 & EQUIPPED W/SHUTOFF DAMPER CONTROL TO SHUT OFF WHEN NOT IN USE.
- GENERAL CONTRACTOR SHALL PROVIDE THE BUILDING OWNER THE OPERATING AND MAINTENANCE MANUAL FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE, EXCEPT EQUIPMENT NOT FURNISHED AS PART OF THE PROJECT.

MDL 84 CONSTRUCTION STANDARD FOR THE CONTROL OF NOISE

CONSTRUCTION STANDARDS FOR THE CONTROL OF NOISE ON OR BEFORE JANUARY FIRST, NINETEEN HUNDRED SIXTY-NINE. THE DEPARTMENT SHALL FORMULATE, ADOPT, PROMULGATE AND THEREAFTER FROM TIME TO TIME AMEND STANDARDS OF SOUND RETARDATION FOR THE WALLS, PARTITIONS AND FLOORS AND CEILING BETWEEN APARTMENTS AND BETWEEN APARTMENTS AND PUBLIC SPACES SITUATED THEREIN BASED ON THE DIRECT MEASUREMENT OF SOUND TRANSMISSION LOSS DETERMINED IN DECIBELS FOR VARIOUS FREQUENCIES OR IN ACCORDANCE WITH THE ASTM SOUND TRANSMISSION CLASS SYSTEM OR IN ACCORDANCE WITH SUCH OTHER RECOGNIZED METHOD OR SYSTEM FOR MEASURING REDUCTION OF SOUND TRANSMISSION AS THE DEPARTMENT MAY DETERMINE TO BE APPROPRIATE. ANY CONSTRUCTION OF A MULTIPLE DWELLING COMMENCED AFTER JANUARY FIRST, NINETEEN HUNDRED SEVENTY SHALL COMPLY WITH THE STANDARDS PROMULGATED PURSUANT TO THIS SECTION IN EFFECT AT THE TIME OF COMMENCEMENT OF SUCH CONSTRUCTION.

ELEVATOR NOTE:

- EXACT ELEVATOR SIZE AND PIT DESIGN REFER TO ELEVATOR SHOP DRAWING PROVIDED BY ELEVATOR MANUFACTURER AND APPROVED BY ARCHITECT.
- GENERAL CONTRACTOR SHOULD REVIEW ELEVATOR SHOP DRAWING BEFORE CONCRETE POURING.

ARCHITECT

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Borough	QUEENS
Block	382
Lot	17
Bin	4597137
ZONE	R6A/M1-2
MAP	9B

PROJECT

31-12 38 AVENUE,
LONG ISLAND CITY, NY 11101

TITLE

PROPOSED CELLAR PLAN

NAME (PLEASE PRINT)

YUK LAM

(P.E./R.A.) SEAL & SIGNATURE

DATE

DOB STICKER

DRAWING NO.

A-001.00

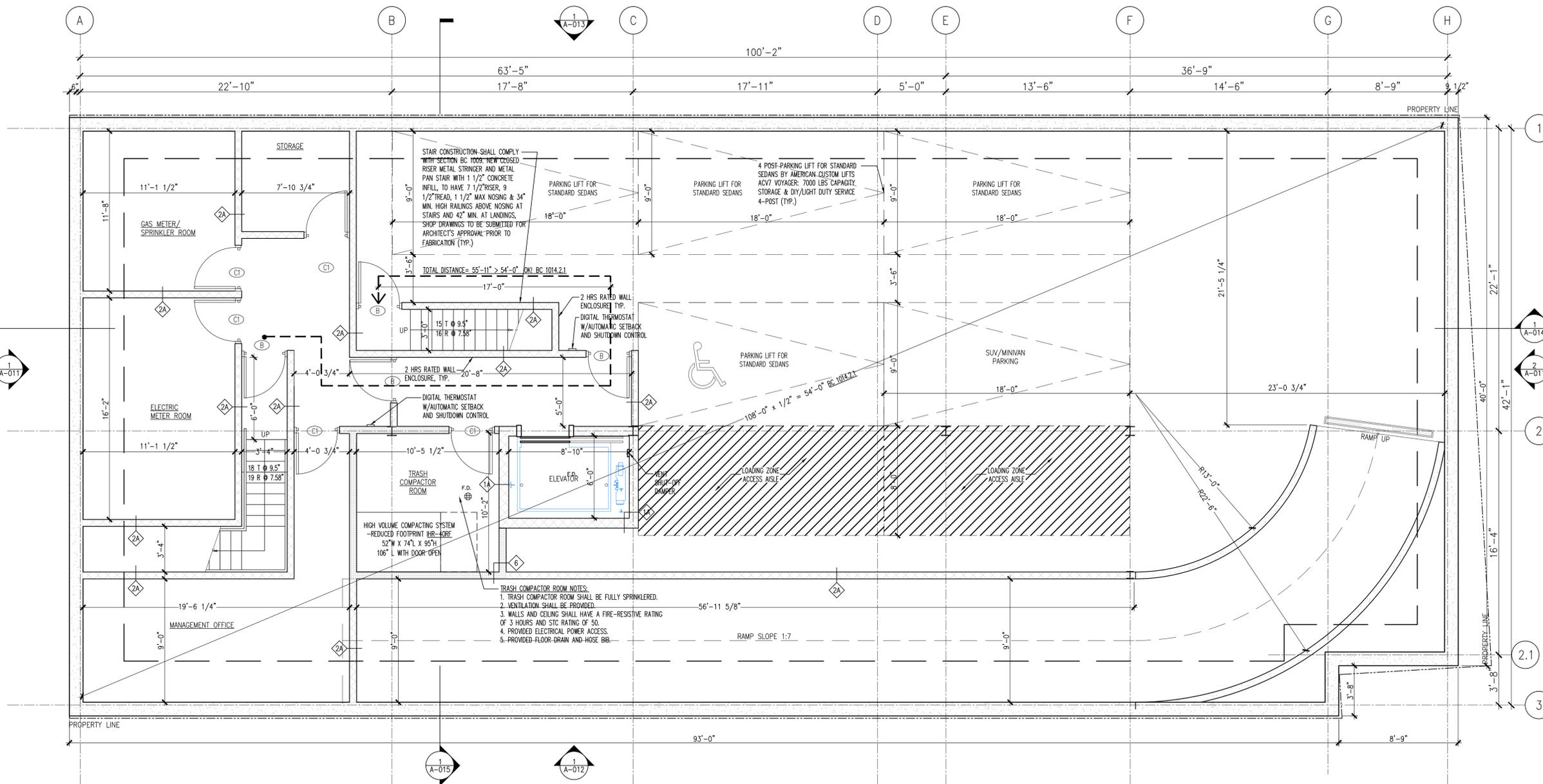
DATE: 09/15/15

PROJECT NO: 48217

DRAWING BY: JL/EC

CHK BY: YL

SHEET 08 OF 31



1 PROPOSED CELLAR PLAN
SCALE: 1/4"=1'-0"

1ST FLOOR

GROSS AREA: 3,549.24 SF
ZONING AREA: 2,946.11 SF

EXTERIOR WALL NOTES:
1. ALL EXTERIOR WALL TO BE CONSTRUCTED IN ACCORDANCE WITH SEC. BC 704, & TABLE 602.
2. ALL EXTERIOR FIRE WALLS TO BE OF NON-COMBUSTIBLE MATERIAL AND RATED AS PER SEC. BC 705.

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PROJECT
31-12 38 AVENUE,
LONG ISLAND CITY, NY 11101

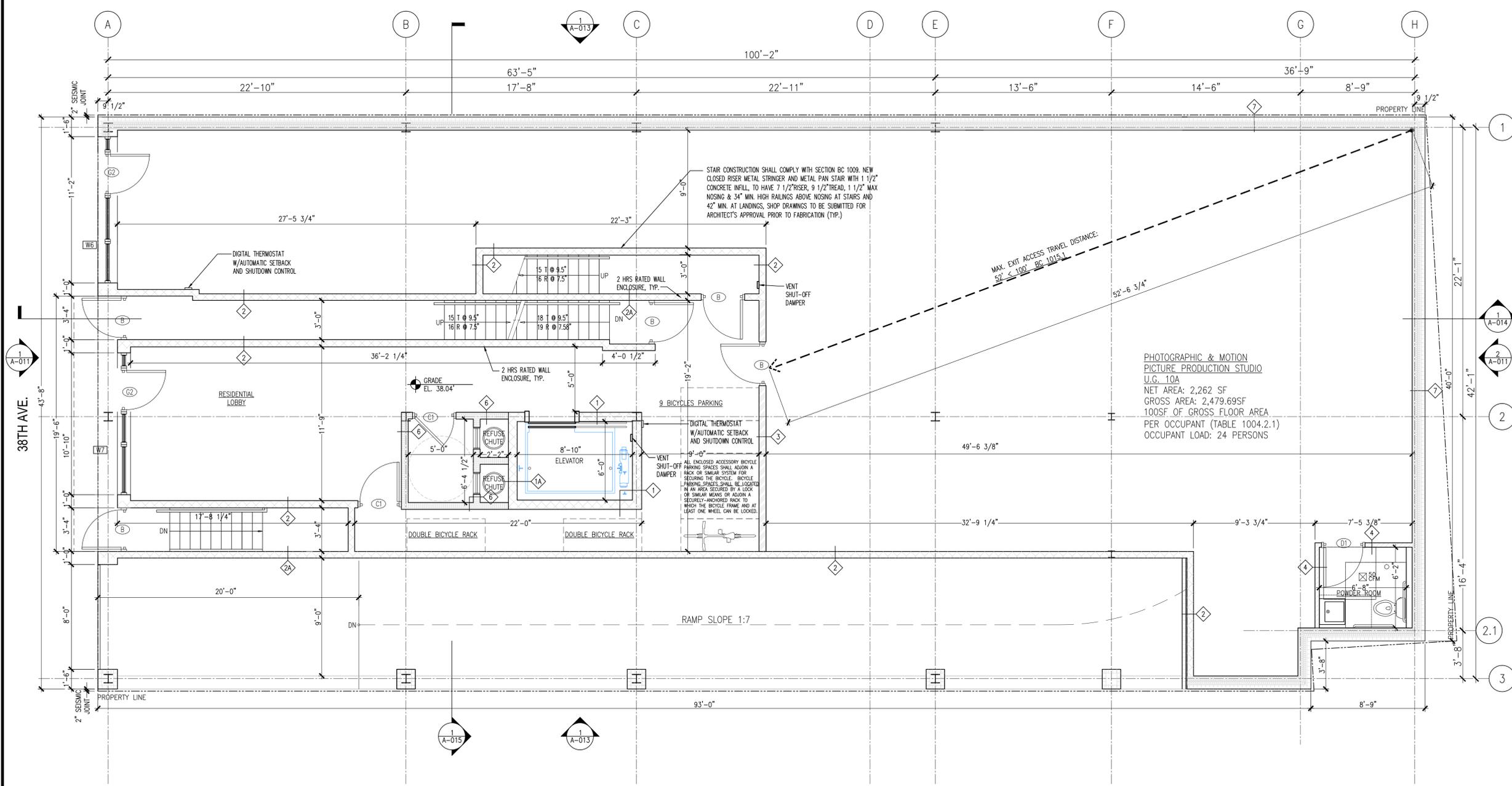
TITLE
PROPOSED
FIRST FLOOR PLAN

NAME (PLEASE PRINT)
YUK LAM
(P.E./R.A.) SEAL & SIGNATURE DATE

DOB STICKER

DRAWING NO.
A-002.00

DATE: 09/15/15	SHEET 08 OF 31
PROJECT NO: 48217	
DRAWING BY: JL/EC	
CHK BY: YL	



1 PROPOSED FIRST FLOOR PLAN
SCALE: 1/4"=1'-0"

2ND FLOOR

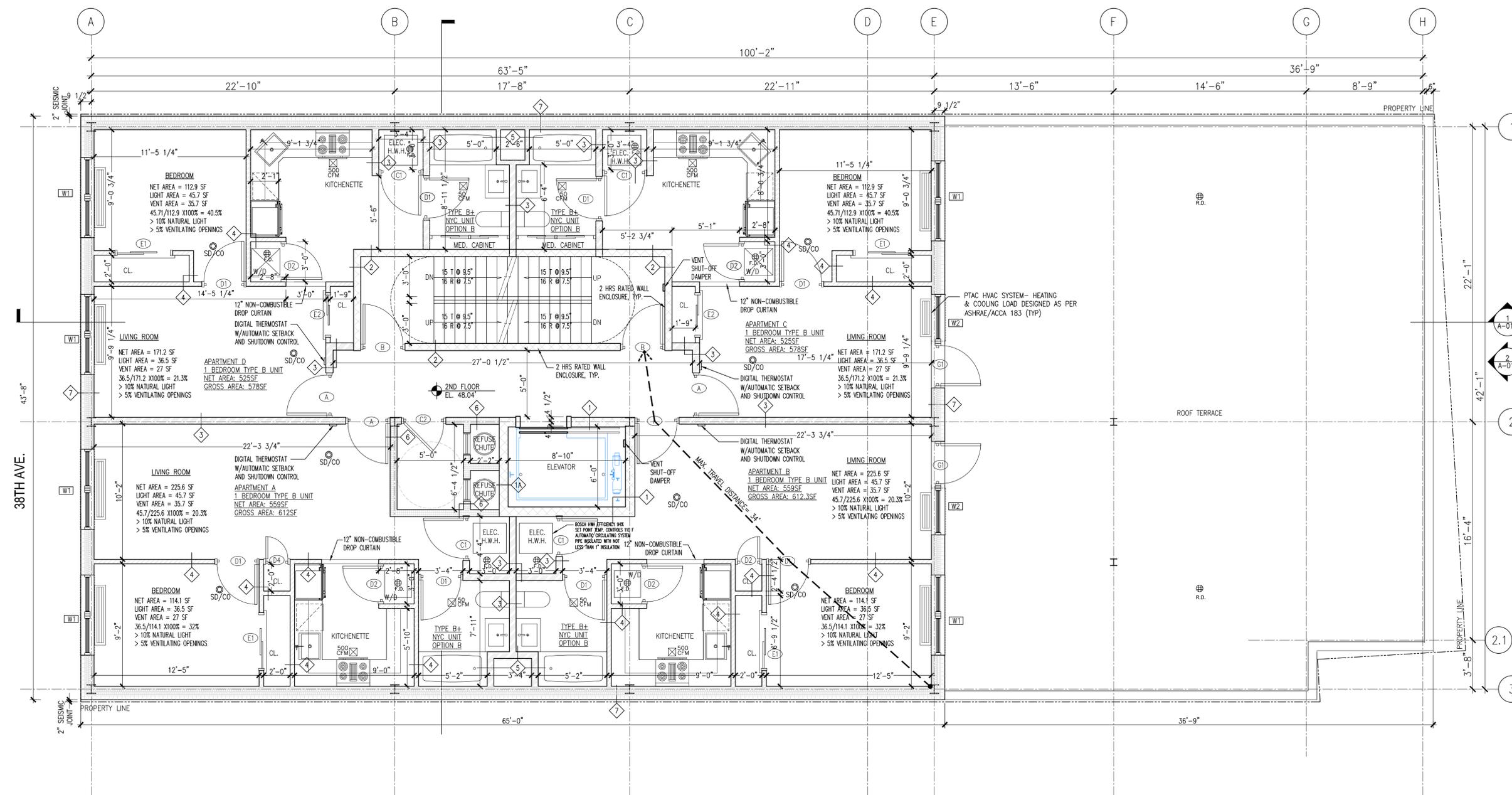
GROSS AREA: 2,803.54 SF
ZONING AREA: 2,638.06 SF

OCCUPANCY LOAD CALCULATIONS FOR EGRESS
TOTAL FLOOR AREA WITH DWELLING UNITS = 2,537.60 SF
200 SF OF FLOOR AREA PER OCCUPANT (TABLE 1004.2.1)

2,537.60/200 = 12.69 = 13 OCCUPANTS
DESIGN OCCUPANCY LOAD = 13 OCC AS PER 1004.1

TABLE 1005.1
STAIR: 13 OCC x 0.3 IN/OCC = 3.9 INCHES
PROPOSED STAIR: 36 INCHES WIDE
OTHER: 13 OCC x 0.2 IN/OCC = 2.6 INCHES
PROPOSED DOOR: 36 INCHES WIDE
PROPOSED CORRIDOR: 60 INCHES WIDE

EXTERIOR WALL NOTES:
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Borough QUEENS
Block 382
Lot 17
Bin 4597137
ZONE R6A/M1-2
MAP 9B

PROJECT
**31-12 38 AVENUE,
LONG ISLAND CITY, NY 11101**

TITLE
**PROPOSED
SECOND FLOOR PLAN**

NAME (PLEASE PRINT)
YUK LAM

(P.E./R.A.) SEAL & SIGNATURE _____ DATE _____
DOB STICKER _____

DRAWING NO.
A-003.00

DATE: 09/15/15
PROJECT NO: 48217
DRAWING BY: JL/EC
CHK BY: YL
SHEET 10 OF 31

PROPOSED
SECOND FLOOR PLAN
SCALE: 1/4"=1'-0"

BALCONY REGULATIONS (ZR 23-132)

- MAY PROJECT INTO ANY REQUIRED OPEN SPACE, PROVIDED THAT SUCH BALCONY:
1. SHALL BE LOCATED AT OR HIGHER THAN THE LEVEL OF THIRD STORY OR AT LEAST 20 FEET ABOVE THE CURB LEVEL
- PROPOSED BALCONIES @ 3RD TO 6TH FLOOR OK
 2. SHALL HAVE AN AGGREGATED LENGTH NOT EXCEEDING 50% OF THE LENGTH AT THAT LEVEL OF THE PLANE SURFACE FROM IT PROJECTS.

BALCONIES "C" & "D" @ 38TH AVE.
PLANE SURFACE: 43'-8"
50% X (43'-8") = 21'-10" AVAILABLE LENGTH FOR BALCONY
AGG. LENGTHS: 21'-10" OK

BALCONIES "A" & "B".
PLANE SURFACE: 43'-8"
50% X (43'-8") = 21'-10" AVAILABLE LENGTH FOR BALCONY
AGG. LENGTHS: 21'-10" OK

3RD & 4TH FLOOR

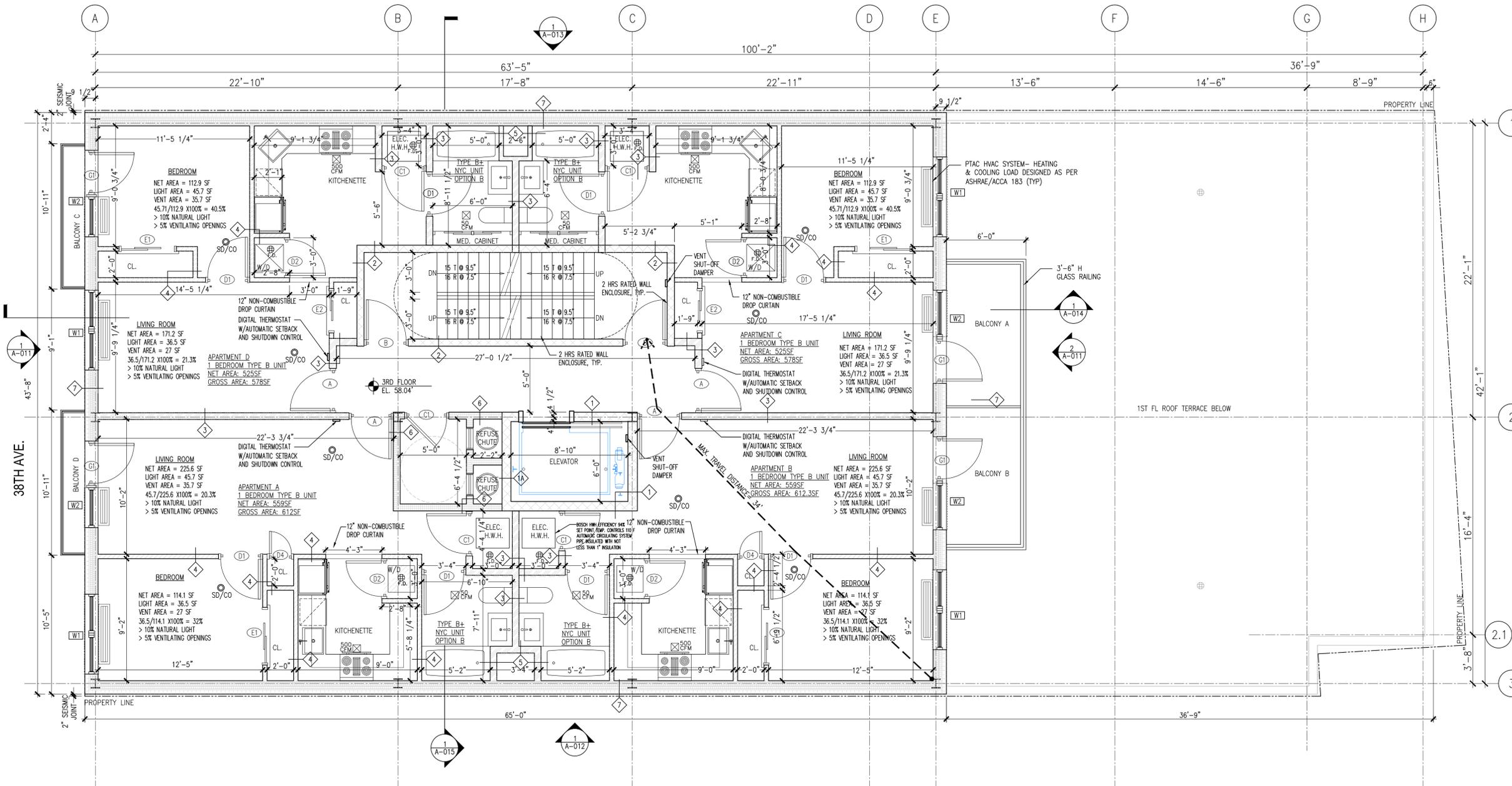
GROSS AREA: 2,803.54 SF
ZONING AREA: 2,638.06 SF

OCCUPANCY LOAD CALCULATIONS FOR EGRESS
TOTAL FLOOR AREA WITH DWELLING UNITS = 2,537.60 SF
200 SF OF FLOOR AREA PER OCCUPANT (TABLE 1004.2.1)

2,537.60/200 = 12.69 = 13 OCCUPANTS
DESIGN OCCUPANCY LOAD = 13 OCC AS PER 1004.1

TABLE 1005.1
STAR: 13 OCC x 0.3 IN/OCC = 3.9 INCHES
PROPOSED STAIR: 36 INCHES WIDE
OTHER: 13 OCC x 0.2 IN/OCC = 2.6 INCHES
PROPOSED DOOR: 36 INCHES WIDE
PROPOSED CORRIDOR: 60 INCHES WIDE

EXTERIOR WALL NOTES:
1. ALL EXTERIOR WALL TO BE CONSTRUCTED IN ACCORDANCE WITH SEC. BC 704, & TABLE 602.
2. ALL EXTERIOR FIRE WALLS TO BE OF NON-COMBUSTIBLE MATERIAL AND RATED AS PER SEC. BC 705.



PROPOSED
THIRD FLOOR PLAN
SCALE: 1/4"=1'-0"

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House No	31-12
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Borough	QUEENS
Block	382
Lot	17
Bin	4597137
ZONE	R6A/M1-2
MAP	9B

PROJECT
**31-12 38 AVENUE,
LONG ISLAND CITY, NY 11101**

TITLE
**PROPOSED
THIRD
FLOOR PLAN**

NAME (PLEASE PRINT)
YUK LAM

(P.E./R.A.) SEAL & SIGNATURE DATE

DOB STICKER

DRAWING NO.
A-004.00

DATE: 09/15/15
PROJECT NO: 48217
DRAWING BY: JL/EC
CHK BY: YL

SHEET 11 OF 31

BALCONY REGULATIONS (ZR 23-132)

- MAY PROJECT INTO ANY REQUIRED OPEN SPACE, PROVIDED THAT SUCH BALCONY:
- SHALL BE LOCATED AT OR HIGHER THAN THE LEVEL OF THIRD STORY OR AT LEAST 20 FEET ABOVE THE CURB LEVEL.
- PROPOSED BALCONIES @ 3RD TO 6TH FLOOR OK
 - SHALL HAVE AN AGGREGATED LENGTH NOT EXCEEDING 50% OF THE LENGTH AT THAT LEVEL OF THE PLANE SURFACE FROM IT PROJECTS.

BALCONIES "C" & "D" @ 38TH AVE.
PLANE SURFACE: 43'-8"
50% X (43'-8") = 21'-10" AVAILABLE LENGTH FOR BALCONY
AGG. LENGTHS: 21'-10" OK

BALCONIES "A" & "B".
PLANE SURFACE: 43'-8"
50% X (43'-8") = 21'-10" AVAILABLE LENGTH FOR BALCONY
AGG. LENGTHS: 21'-10" OK

3RD & 4TH FLOOR

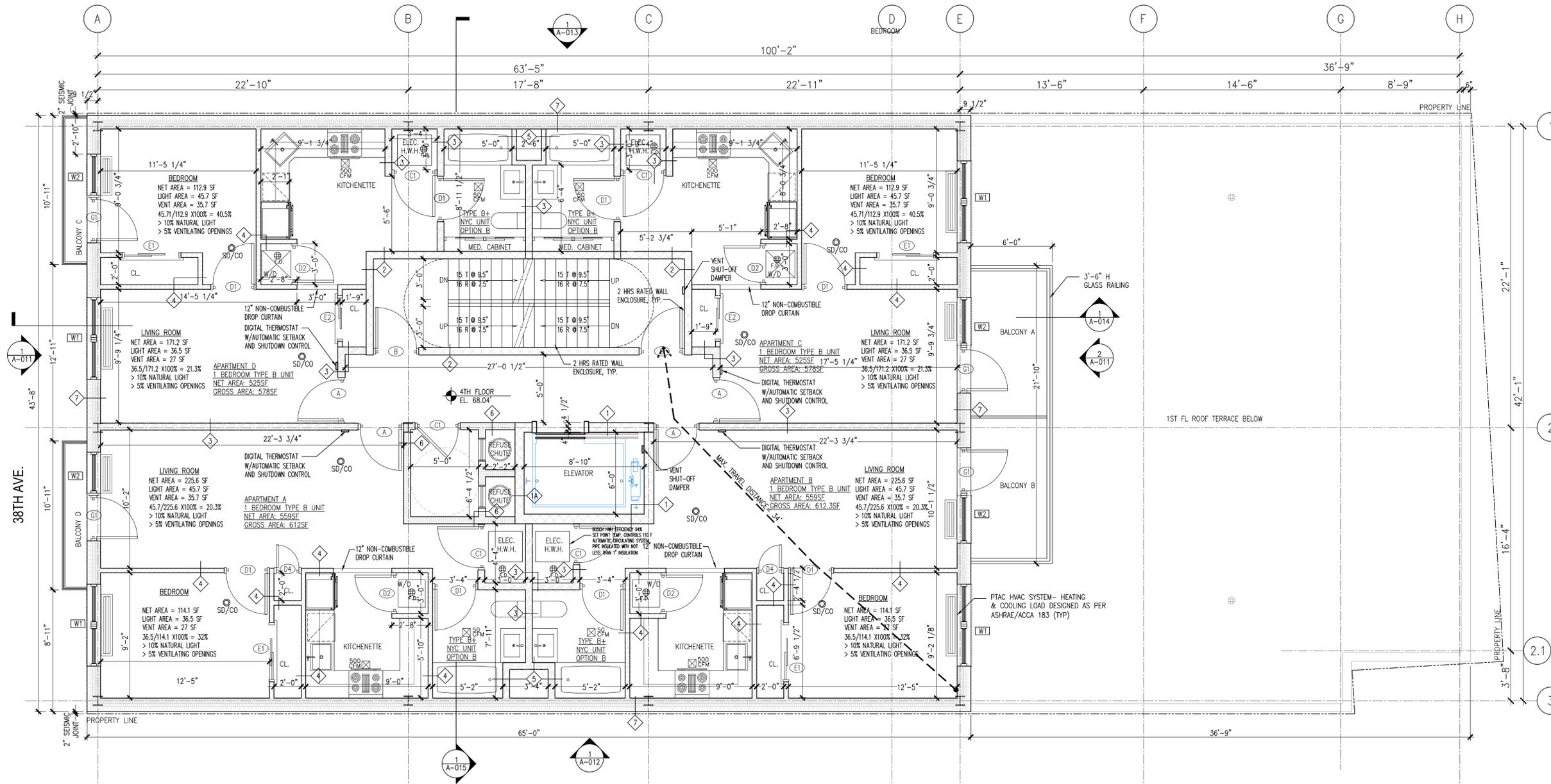
GROSS AREA: 2,803.54 SF
ZONING AREA: 2,638.06 SF

OCCUPANCY LOAD CALCULATIONS FOR EGRESS
TOTAL FLOOR AREA WITH IN DWELLING UNITS = 2,537.60 SF
200 SF OF FLOOR AREA PER OCCUPANT (TABLE 1004.2.1)

2,537.60/200 = 12.69 = 13 OCCUPANTS
DESIGN OCCUPANCY LOAD = 13 OCC AS PER 1004.1

TABLE 1005.1
STAIR: 13 OCC X 0.3 IN/OCC = 3.9 INCHES
PROPOSED STAIR: 36 INCHES WIDE
OTHER: 13 OCC X 0.2 IN/OCC = 2.6 INCHES
PROPOSED DOOR: 36 INCHES WIDE
PROPOSED CORRIDOR: 60 INCHES WIDE

EXTERIOR WALL NOTES:
1. ALL EXTERIOR WALL TO BE CONSTRUCTED IN ACCORDANCE WITH SEC. BC 704, & TABLE 602.
2. ALL EXTERIOR FIRE WALLS TO BE OF NON-COMBUSTIBLE MATERIAL AND RATED AS PER SEC. BC 705.



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Street Name 38 AVENUE
Borough QUEENS
Block 382
Lot 17
Bin 4597137
ZONE R6A/M1-2
MAP 9B

PROJECT
**31-12 38 AVENUE,
LONG ISLAND CITY, NY 11101**

TITLE
**PROPOSED
FOURTH
FLOOR PLAN**

NAME (PLEASE PRINT)
YUK LAM
(P.E./R.A.) SEAL & SIGNATURE DATE

DOB STICKER

DRAWING NO.
A-005.00

DATE: 09/15/15
PROJECT NO: 48217
DRAWING BY: JL/EC
CHK BY: YL
SHEET 12 OF 31

PROPOSED
FOURTH FLOOR PLAN
SCALE: 1/4"=1'-0"

BALCONY REGULATIONS (ZR 23-132)

- MAY PROJECT INTO ANY REQUIRED OPEN SPACE, PROVIDED THAT SUCH BALCONY:
- SHALL BE LOCATED AT OR HIGHER THAN THE LEVEL OF THIRD STORY OR AT LEAST 2 FEET ABOVE THE CURB LEVEL.
- PROPOSED BALCONY @ 3RD TO 6TH FLOOR OK
 - SHALL HAVE AN AGGREGATED LENGTH NOT EXCEEDING 50% OF THE LENGTH AT THAT LEVEL OF THE PLANE SURFACE FROM IT PROJECTS.

BALCONY "C" & "D" @ 38TH AVE:
PLANE SURFACE: 43'-8"
50% X (43'-8") = 21'-10" AVAILABLE LENGTH FOR BALCONY
AGG. LENGTHS: 21'-10" OK

BALCONIES "A" & "B":
PLANE SURFACE: 43'-8"
50% X (43'-8") = 21'-10" AVAILABLE LENGTH FOR BALCONY
AGG. LENGTHS: 21'-10" OK

5TH FLOOR

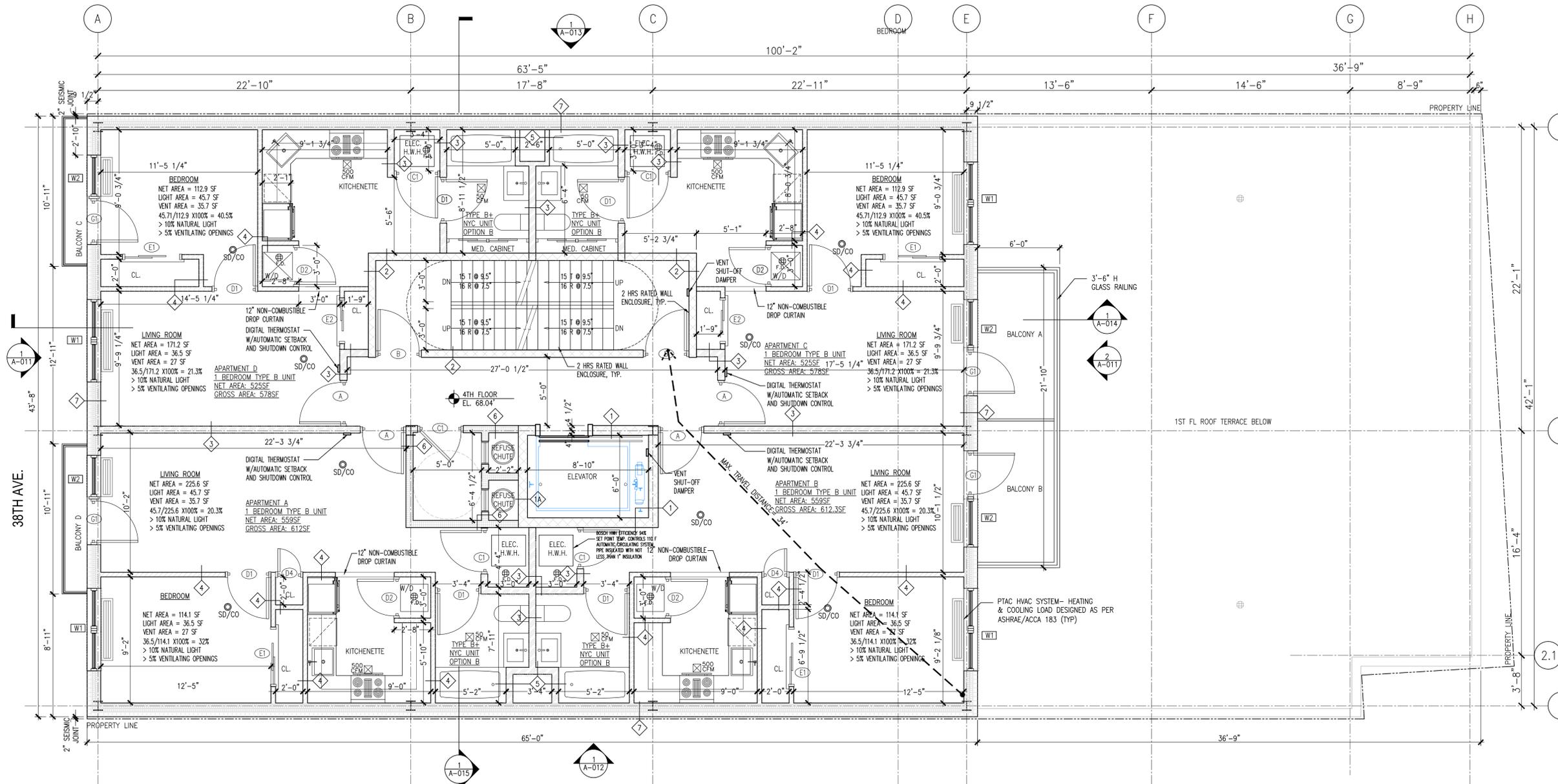
GROSS AREA: 2,591.89 SF
ZONING AREA: 2,428.20 SF

OCCUPANCY LOAD CALCULATIONS FOR EGRESS
TOTAL FLOOR AREA WITH DWELLING UNITS = 2,313.3 SF + 243.74 SF PENTHOUSE
= 2,557.04 SF
200 SF OF FLOOR AREA PER OCCUPANT (TABLE 1004.2.1)

2,557.04/200 = 12.78 = 13 OCCUPANTS
DESIGN OCCUPANCY LOAD = 13 OCC AS PER 1004.1

TABLE 1005.1
STAIR: 13 OCC x 0.3 IN/OCC = 3.9 INCHES
PROPOSED STAIR: 36 INCHES WIDE
OTHER: 13 OCC x 0.2 IN/OCC = 2.6 INCHES
PROPOSED DOOR: 36 INCHES WIDE
PROPOSED CORRIDOR: 57.25 INCHES WIDE MIN.

EXTERIOR WALL NOTES:
1. ALL EXTERIOR WALL TO BE CONSTRUCTED IN ACCORDANCE WITH SEC. BC 704, & TABLE 602.
2. ALL EXTERIOR FIRE WALLS TO BE OF NON-COMBUSTIBLE MATERIAL AND RATED AS PER SEC. BC 705.



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Street Name	38 AVENUE
Borough	QUEENS
Block	382
Lot	17
Bin	4597137
ZONE	R6A/M1-2
MAP	9B

PROJECT
**31-12 38 AVENUE,
LONG ISLAND CITY, NY 11101**

TITLE
**PROPOSED
FIFTH FLOOR PLAN**

NAME (PLEASE PRINT)
YUK LAM

(P.E./R.A.) SEAL & SIGNATURE DATE

DOB STICKER

DRAWING NO.
A-006.00

DATE: 09/15/15
PROJECT NO: 48217
DRAWING BY: JL/EC
CHK BY: YL
SHEET 13 OF 31

1 PROPOSED
FIFTH FLOOR PLAN
SCALE: 1/4"=1'-0"

BALCONY REGULATIONS (ZR 23-132)

- MAY PROJECT INTO ANY REQUIRED OPEN SPACE, PROVIDED THAT SUCH BALCONY:
- SHALL BE LOCATED AT OR HIGHER THAN THE LEVEL OF THIRD STORY OR AT LEAST 20 FEET ABOVE THE CURB LEVEL.
 - PROPOSED BALCONY @ 3RD TO 6TH FLOOR OK
 - SHALL HAVE AN AGGREGATED LENGTH NOT EXCEEDING 50% OF THE LENGTH AT THAT LEVEL OF THE PLANE SURFACE FROM IT PROJECTS.

BALCONY "C" & "D" @ 38TH AVE.
 PLANE SURFACE: 43'-8"
 50% X (43'-8") = 21'-10" AVAILABLE LENGTH FOR BALCONY
 AGG. LENGTHS: 21'-10" OK

BALCONY "E"
 PLANE SURFACE: 43'-8"
 50% X (43'-8") = 21'-10" AVAILABLE LENGTH FOR BALCONY
 AGG. LENGTHS: 21'-10" OK

6TH FLOOR

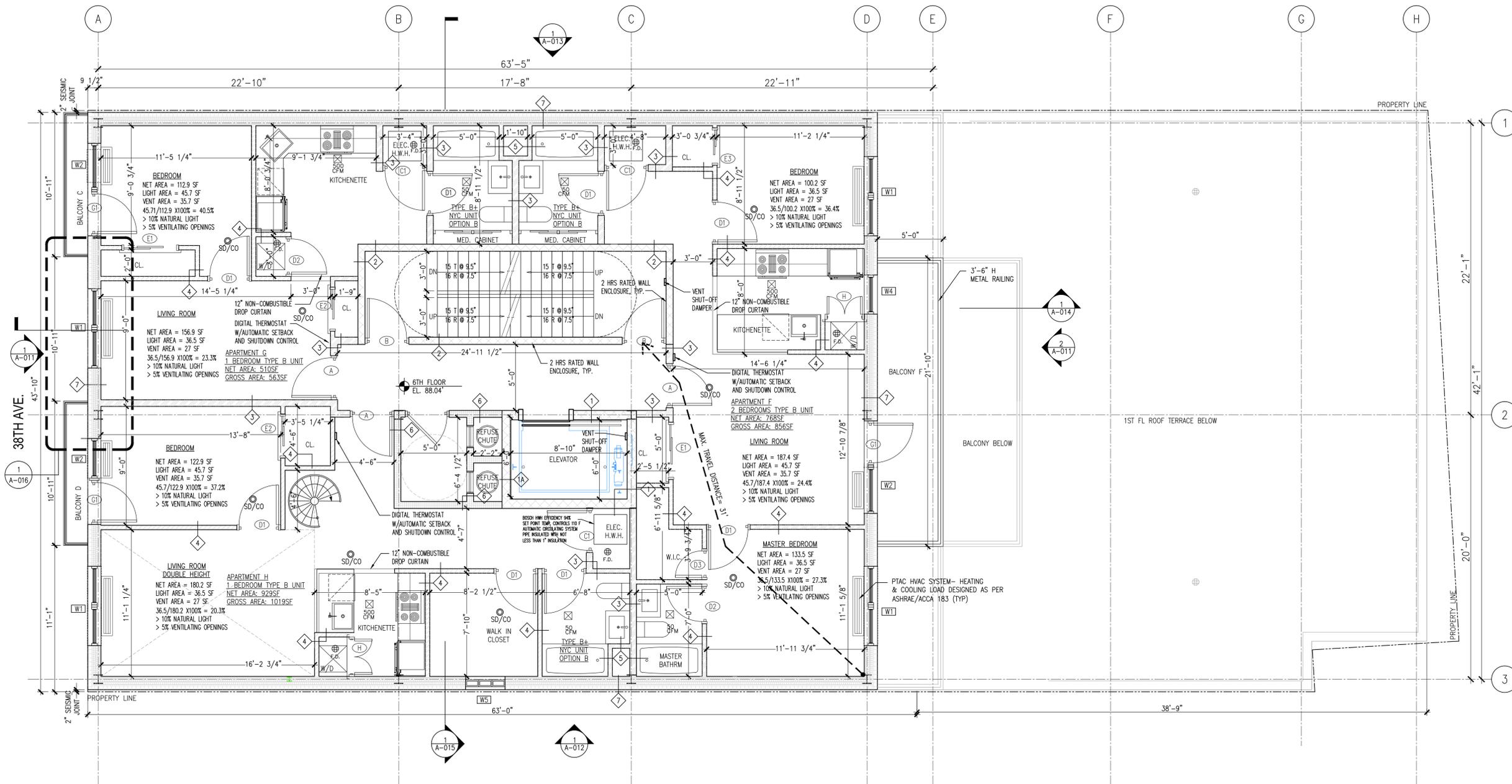
GROSS AREA: 2,591.89 SF
 ZONING AREA: 2,428.20 SF

OCCUPANCY LOAD CALCULATIONS FOR EGRESS
 TOTAL FLOOR AREA WITH DWELLING UNITS = 2,313.3 SF
 200 SF OF FLOOR AREA PER OCCUPANT (TABLE 1004.2.1)

2,313.3/200 = 11.57 = 12 OCCUPANTS
 DESIGN OCCUPANCY LOAD = 12 OCC AS PER 1004.1

TABLE 1005.1
 STAIR: 12 OCC x 0.3 IN/OCC = 3.6 INCHES
 PROPOSED STAIR: 36 INCHES WIDE
 OTHER: 12 OCC x 0.2 IN/OCC = 2.4 INCHES
 PROPOSED DOOR: 36 INCHES WIDE
 PROPOSED CORRIDOR: 57.25 INCHES WIDE MIN.

EXTERIOR WALL NOTES:
 1. ALL EXTERIOR WALL TO BE CONSTRUCTED IN ACCORDANCE WITH SEC. BC 704, & TABLE 602.
 2. ALL EXTERIOR FIRE WALLS TO BE OF NON-COMBUSTIBLE MATERIAL AND RATED AS PER SEC. BC 705.



ARCHITECT
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 FRESH MEADOWS, NY 11365

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Borough	QUEENS
Block	382
Lot	17
Bin	4597137
ZONE	R6A/M1-2
MAP	9B

PROJECT
 31-12 38 AVENUE,
 LONG ISLAND CITY, NY 11101

TITLE
 PROPOSED
 SIXTH FLOOR PLAN

NAME (PLEASE PRINT)
YUK LAM
 (P.E./R.A.) SEAL & SIGNATURE DATE

DOB STICKER

DRAWING NO.
A-007.00

DATE: 09/15/15
 PROJECT NO: 48217
 DRAWING BY: JL/EC
 CHK BY: YL
 SHEET 14 OF 31

PROPOSED
 SIXTH FLOOR PLAN
 SCALE: 1/4"=1'-0"

ARCHITECT
LAM ENGINEER, P.C.
 48-91 187TH STREET,
 FRESH MEADOWS, NY 11365
 TEL: 718-767-2883
 FAX: 866-338-2060

House No 31-12
 Street Name 38 AVENUE
 Borough QUEENS
 Block 382
 Lot 17
 Bin 4597137
 ZONE R6A/M1-2
 MAP 9B

PROJECT
 31-12 38 AVENUE,
 LONG ISLAND CITY, NY 11101

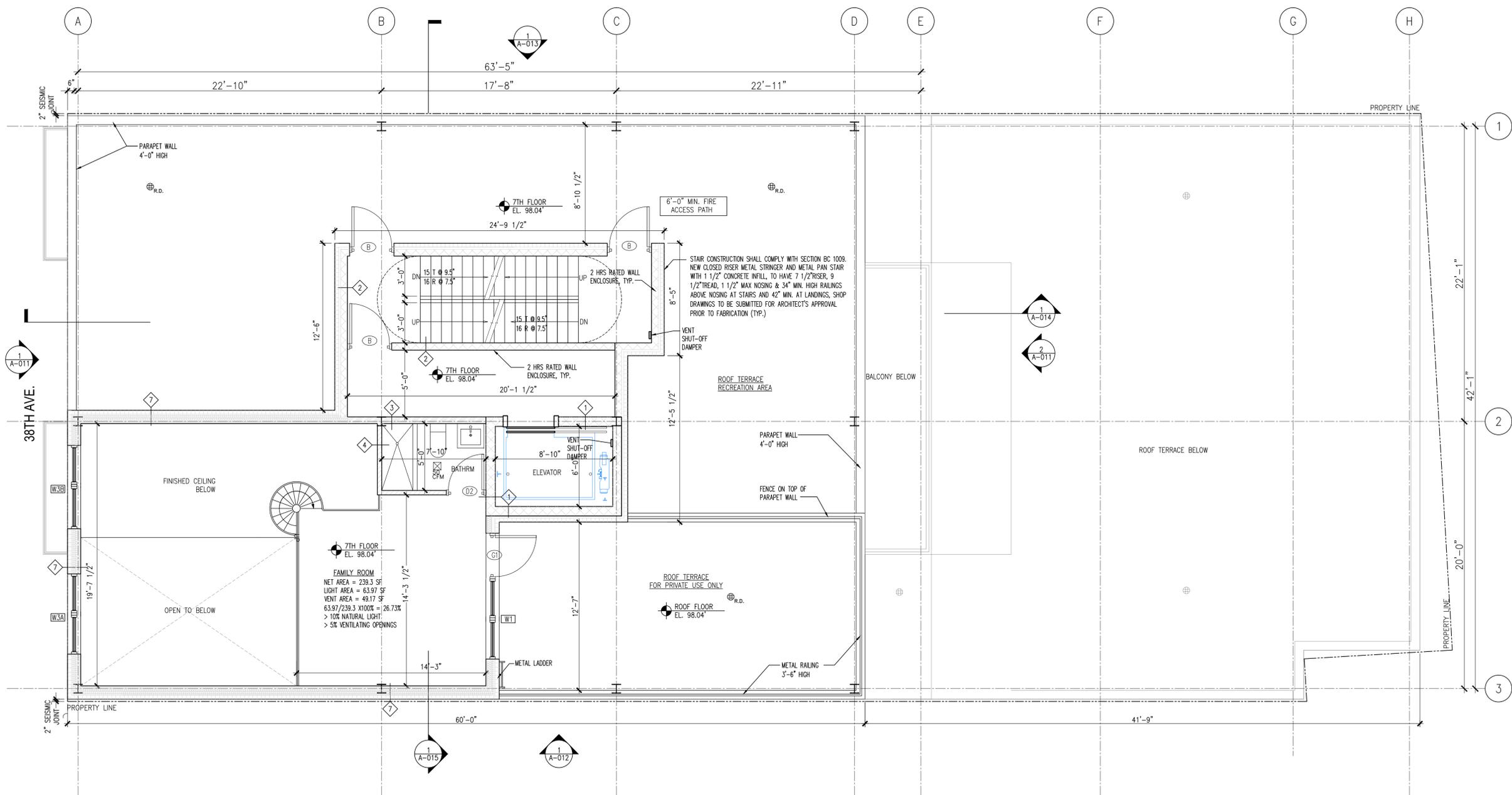
TITLE
 PROPOSED
 SEVENTH
 FLOOR PLAN

NAME (PLEASE PRINT)
YUK LAM
 (P.E./R.A.) SEAL & SIGNATURE DATE

DOB STICKER

DRAWING NO.
A-008.00

DATE: 09/15/15
 PROJECT NO: 48217
 DRAWING BY: JL/EC
 CHK BY: YL
 SHEET 15 OF 31



1 PROPOSED 7TH FLOOR PLAN
 SCALE: 1/4"=1'-0"

ARCHITECT
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House No 31-12
 Street Name 38 AVENUE
 Borough QUEENS
 Block 382
 Lot 17
 Bin 4597137
 ZONE R6A/M1-2
 MAP 9B

PROJECT
 31-12 38 AVENUE,
 LONG ISLAND CITY, NY 11101

TITLE
**PROPOSED
 BULKHEAD PLAN**

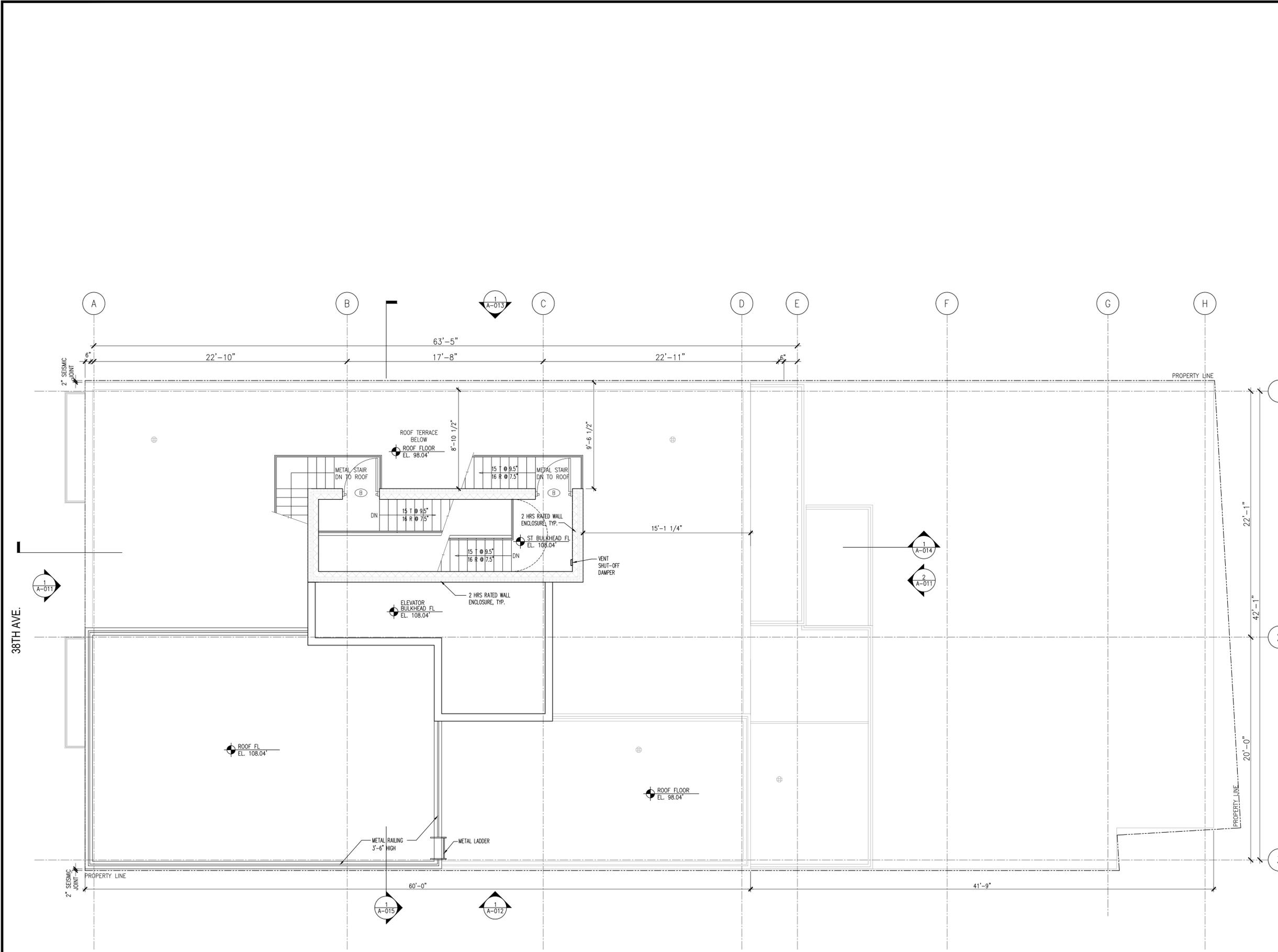
NAME (PLEASE PRINT)
YUK LAM

(P.E./R.A.) SEAL & SIGNATURE _____ DATE _____

DOB STICKER _____

DRAWING NO.
A-009.00

DATE: 09/15/15
 PROJECT NO: 48217
 DRAWING BY: JL/EC
 CHK BY: YL



1 PROPOSED BULKHEAD FLOOR PLAN
 SCALE: 1/4"=1'-0"

38TH AVE.

ARCHITECT
LAM ENGINEER, P.C.
 48-91 187TH STREET,
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PROJECT
 31-12 38 AVENUE,
 LONG ISLAND CITY, NY 11101

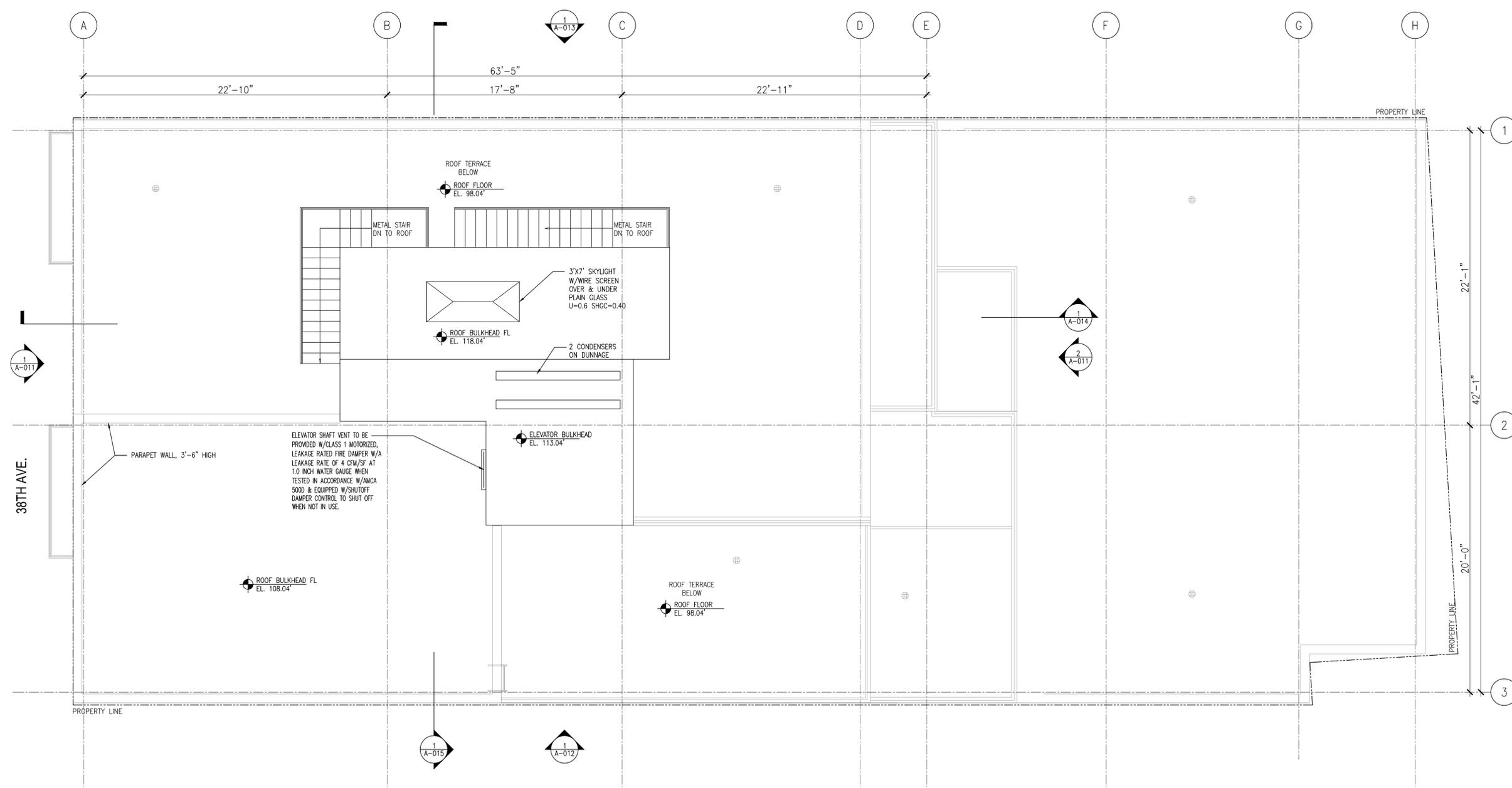
TITLE
 PROPOSED
 ROOF PLAN

NAME (PLEASE PRINT)
YUK LAM
 (P.E./R.A.) SEAL & SIGNATURE DATE

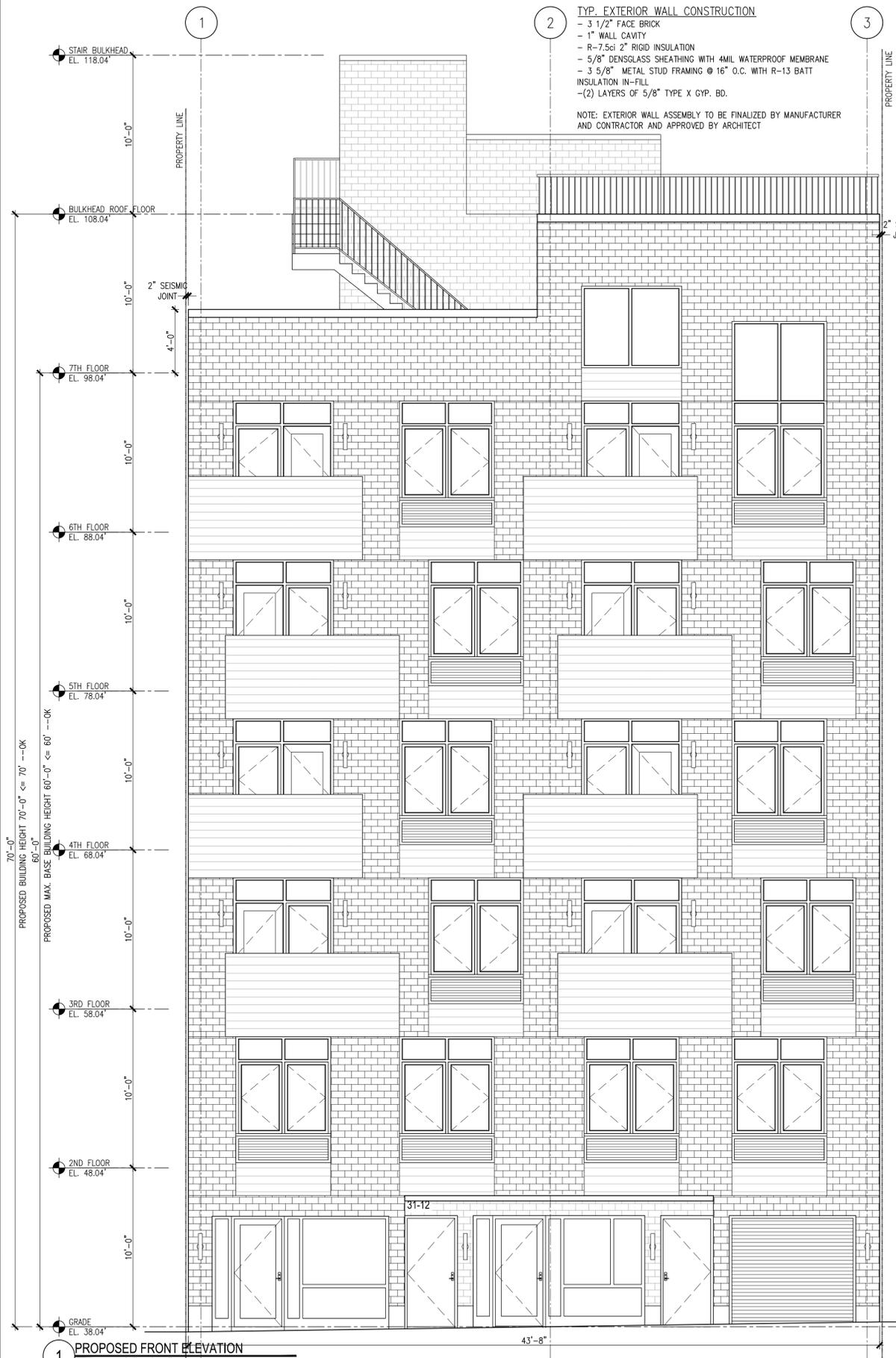
DOB STICKER

DRAWING NO.
A-010.00

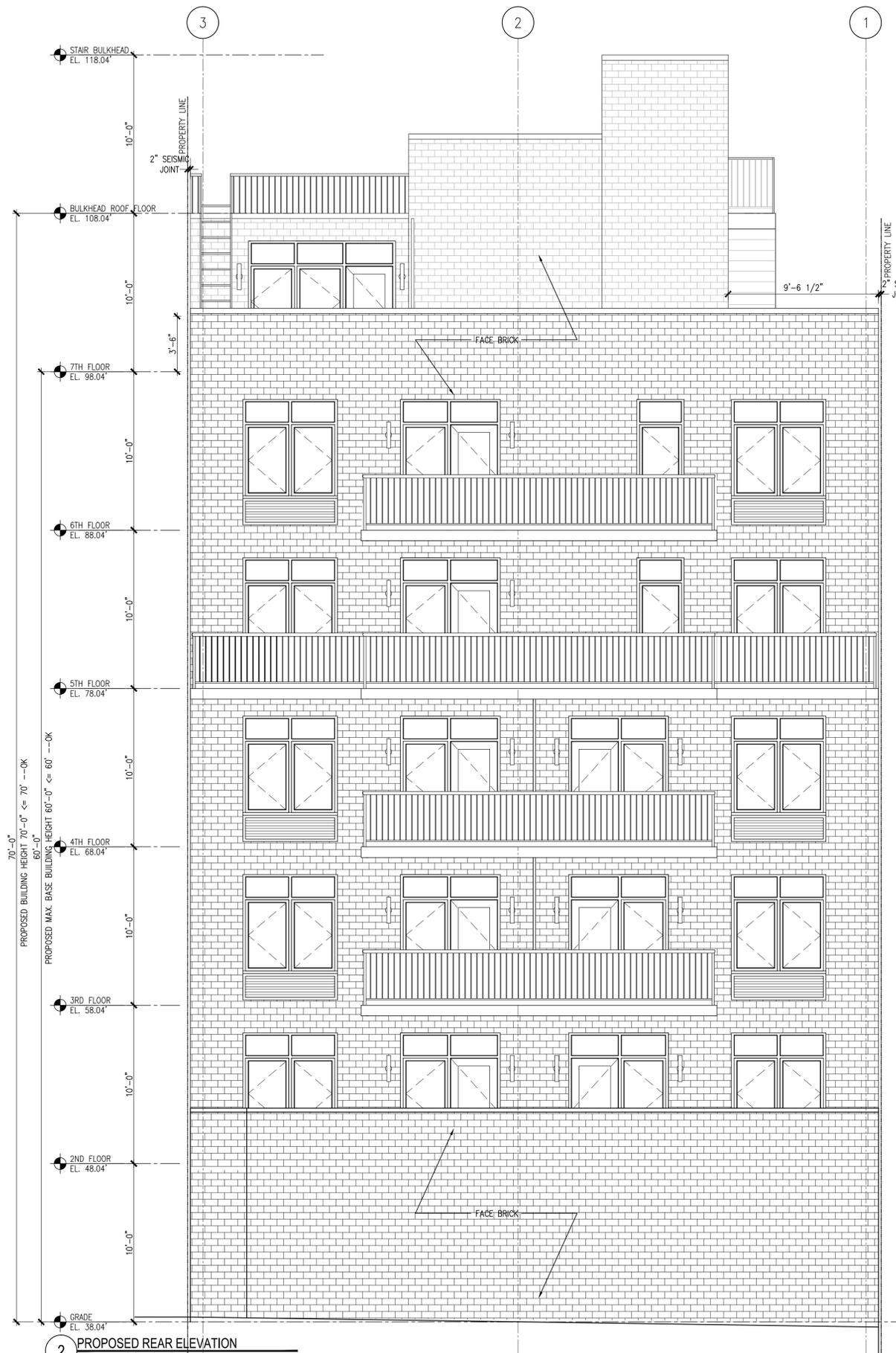
DATE: 09/15/15
 PROJECT NO: 48217 SHEET 17 OF 31
 DRAWING BY: JL/EC
 CHK BY: YL



1 PROPOSED ROOF FLOOR PLAN
 SCALE: 1/4"=1'-0"



TYP. EXTERIOR WALL CONSTRUCTION
 - 3 1/2" FACE BRICK
 - 1" WALL CAVITY
 - R-7.5(±) 2" RIGID INSULATION
 - 5/8" DENSGLASS SHEATHING WITH 4MIL WATERPROOF MEMBRANE
 - 3 5/8" METAL STUD FRAMING @ 16" O.C. WITH R-13 BATT INSULATION IN-FILL
 - (2) LAYERS OF 5/8" TYPE X GYP. BD.
 NOTE: EXTERIOR WALL ASSEMBLY TO BE FINALIZED BY MANUFACTURER AND CONTRACTOR AND APPROVED BY ARCHITECT



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 Lot 17
 Bin 4597137
 ZONE R6A/M1-2
 MAP 9B

PROJECT
 31-12 38 AVENUE,
 LONG ISLAND CITY, NY 11101

TITLE
 PROPOSED ELEVATIONS

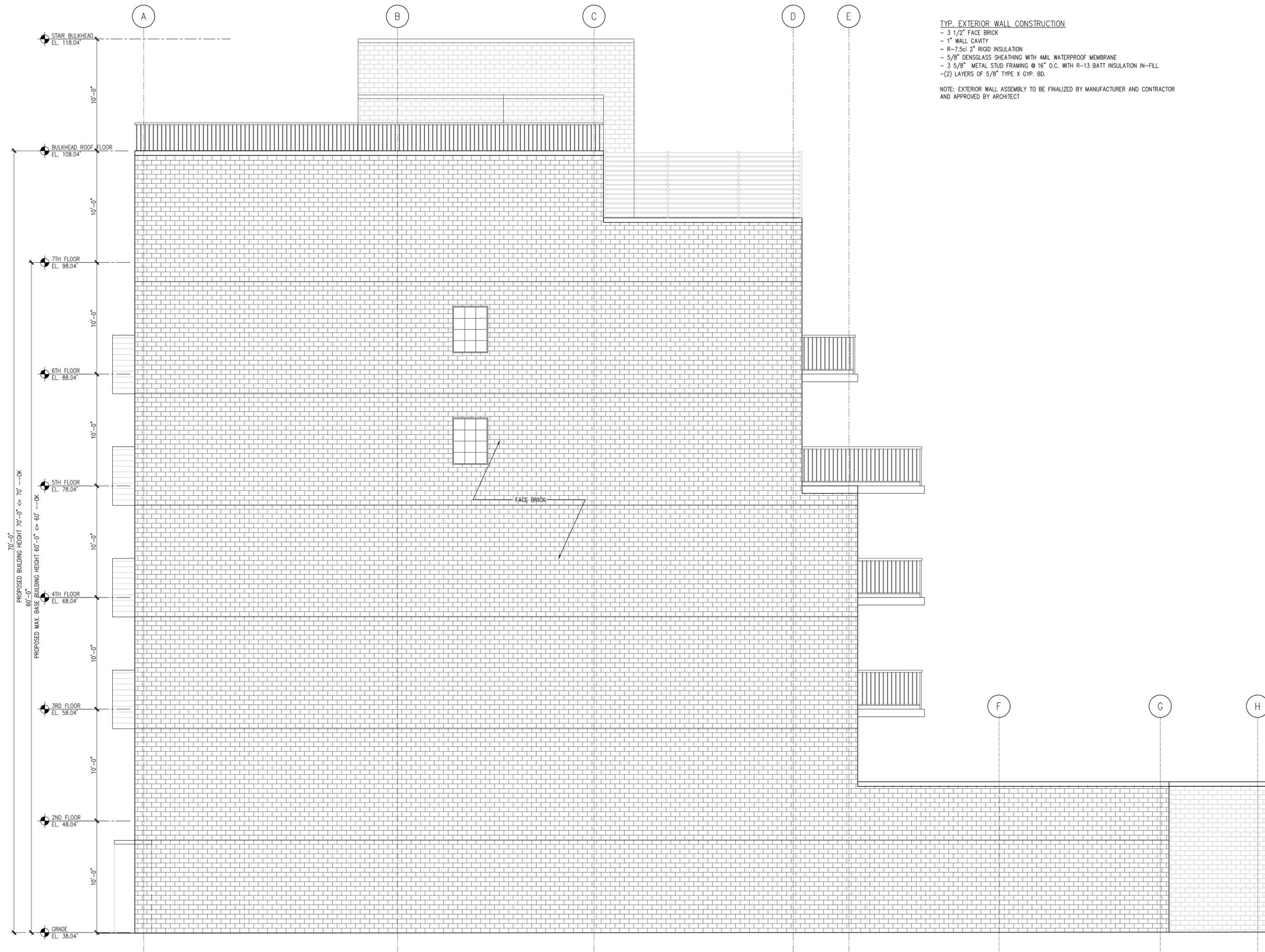
NAME (PLEASE PRINT)
YUK LAM
 (P.E./R.A.) SEAL & SIGNATURE DATE

DOB STICKER

DRAWING NO.
A-011.00

DATE: 09/15/15
PROJECT NO: 48217 **SHEET 18 OF 31**
DRAWING BY: JL/EC
CHK BY: YL

NOTES:
 1. PER NYCECC 402.4.3 FENESTRATION AIR LEAKAGE. THE AIR LEAKAGE OF 1101/1 AND SLIDING OR SWINGING DOOR ASSEMBLIES THAT ARE PART OF THE BUILDING ENVELOPE SHALL BE DETERMINED IN ACCORDANCE WITH AMCA/MDMA/CSA 101/15.2/1440 OR NFRC 400 BY AN ACCREDITED, INDEPENDENT LABORATORY, AND LABELED AND CERTIFIED BY THE MANUFACTURER AND SHALL NOT EXCEED 0.3 CFM PER SQUARE FOOT (1.5 L/S/M²) AND SWINGING DOORS NO MORE THAN 0.5 CFM PER SQUARE FOOT (2.6 L/S/M²)
 2. PER NYCECC 402.4.4 E OUTDOOR AIR INTAKES AND EXHAUST OPENINGS STAIR AND ELEVATOR SHAFT VENTS AND OTHER OUTDOOR AIR INTAKES AND EXHAUST OPENINGS INTEGRAL TO THE BUILDING ENVELOPE SHALL BE EQUIPPED WITH NO LESS THAN A CLASS 1 MOTORIZED, LEAKAGE-RATED DAMPER WITH A MAXIMUM LEAKAGE RATE OF CFM PER SQUARE FOOT (6.8 L/S/M²) AT 1.0 INCH WATER GAUGE (W.G.) (1250 PA) WHEN TESTED IN ACCORDANCE WITH AMCA 5000.
 3. PER NYCECC 402.4.6 LOADING DOCK WEATHERSEALS. CARGO DOORS AND LOADING DOCK DOORS SHALL BE EQUIPPED WITH WEATHERSEALS TO RESTRICT INFILTRATION WHEN VEHICLES ARE PARKED IN THE DOOR WAY.



TYP. EXTERIOR WALL CONSTRUCTION

- 3 1/2" FACE BRICK
- 1" WALL CAVITY
- R-7.5GI 2" RIGID INSULATION
- 5/8" DENSGLASS SHEATHING WITH 4MIL WATERPROOF MEMBRANE
- 3 5/8" METAL STUD FRAMING @ 16" O.C. WITH R-13 BATT INSULATION IN-FILL
- (2) LAYERS OF 5/8" TYPE X GYP. BD.

NOTE: EXTERIOR WALL ASSEMBLY TO BE FINALIZED BY MANUFACTURER AND CONTRACTOR AND APPROVED BY ARCHITECT

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House No	31-12
Street Name	38 AVENUE
Borough	QUEENS
Block	382
Lot	17
Bin	4597137
ZONE	R6A/M1-2
MAP	9B

PROJECT
 31-12 38 AVENUE,
 LONG ISLAND CITY, NY 11101

TITLE
 PROPOSED ELEVATION

NAME (PLEASE PRINT)
YUK LAM
 (P.E./R.A.) SEAL & SIGNATURE DATE

DOB STICKER

DRAWING NO.
A-012.00

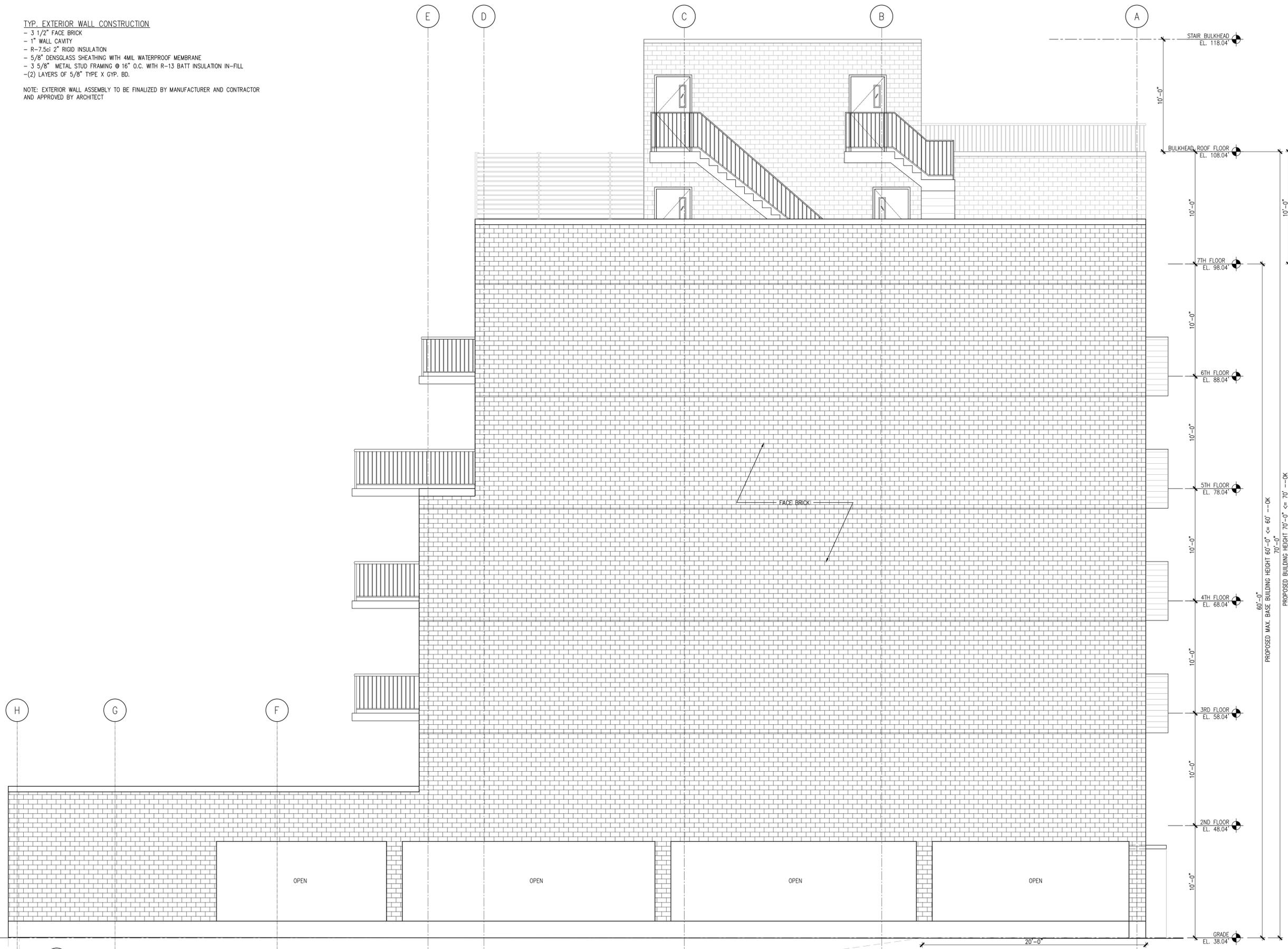
DATE: 09/15/15	SHEET 19 OF 31
PROJECT NO: 48217	
DRAWING BY: JL/EC	
CHK BY: YL	

1 PROPOSED WEST ELEVATION
 SCALE: 1/4"=1'-0"

TYP. EXTERIOR WALL CONSTRUCTION

- 3 1/2" FACE BRICK
- 1" WALL CAVITY
- R-7.5ci 2" RIGID INSULATION
- 5/8" DENSGLASS SHEATHING WITH 4MIL WATERPROOF MEMBRANE
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- (2) LAYERS OF 5/8" TYPE X GYP. BD.

NOTE: EXTERIOR WALL ASSEMBLY TO BE FINALIZED BY MANUFACTURER AND CONTRACTOR AND APPROVED BY ARCHITECT



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PROJECT
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DOB STICKER

DRAWING NO.
A-013.00

DATE: 09/15/15	SHEET 20 OF 31
PROJECT NO: 48217	
DRAWING BY: JL/EC	
CHK BY: YL	

1 PROPOSED EAST ELEVATION
 SCALE: 1/4"=1'-0"