

929 – 933 ATLANTIC AVENUE
BROOKLYN, NEW YORK 11238

Remedial Action Work Plan

NYC VCP Number: 15CVCP055K
E-Designation Site Number: 15EH-N004K

Prepared for:

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REMEDIAL ACTION WORK PLAN

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LIST OF ACRONYMS

Acronym	Definition
AOC	Area of Concern
BOA	Brownfield Opportunity Area
CAMP	Community Air Monitoring Plan
COC	Certificate of Completion
CSOP	Contractors Site Operation Plan
ECs/ICs	Engineering and Institutional Controls
HASP	Health and Safety Plan
VCA	Voluntary Cleanup Agreement
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 DOH	New York State Department of Health
NYS DOT	New York State Department of Transportation
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, Steven Schneider, am a Professional Engineer licensed in the State of New York. I have primary direct responsibility for implementation of the remedial action for the Redevelopment Site located at 929 - 933 Atlantic Avenue, Brooklyn, NY, Site number 15CVCP055K.

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.

Name

NYS PE License Number

Signature

Date



EXECUTIVE SUMMARY

Elevation Holdings LLC has applied to enroll in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a 4,457 ft² Site located at 929 - 933 Atlantic Avenue in the Clinton Hill section of Brooklyn, 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 to applicable laws and regulations.

Site Location and Current Usage

The Site is located in the Clinton Hill section of Brooklyn, New York and is identified as Block 2018 and Lots 54, 55 & 56 on the New York City Tax Map. Figure 1 is a Site location map. Lot 56 (929 Atlantic Avenue) is improved with a one-story concrete block building with basement built in 1930. The building was formerly occupied by Sal Palais Auto Glass Inc and is now currently vacant. Based on information obtained from NYC DCP, lot 56 is approximately 1,797 square feet (sf).

The associated parking space - Lot 54 (933 Atlantic Avenue) and Lot 55 (931 Atlantic Avenue) is asphalt paved and secured with a chain-linked gated fence. Based on information obtained from the NYC DCP, the parking lot is 2,660 sf .

The Site has a combined area of 4,457 sf and is bounded by multi-family walkup buildings to the north, Atlantic Avenue to the south, Sunoco gasoline service station to the east, and an auto repair shop to the west (see Figure 2 – Site Map).

The general vicinity of the subject property is zoned as R7A with commercial overlay C2-4. R7A districts typically produce high lot coverage, seven- and eight-story apartment buildings, blending with existing buildings in many established neighborhoods.

Summary of Proposed Redevelopment Plan

The proposed use of the Site will consist of a new 8 story building with a full cellar. The Building will have one new residential elevator with travel to the communal roof top. The size of the lot (three lots combined) is 4,457 sf. The building will have 26 residential units. The 1st

& 2nd Floors will have 3 apartments per floor - 6 apartments total (two of the ground floor apartments will be duplex units with access to rear yard from cellar). The 3rd, 4th, 5th & 6th Floors will have 4 apartments per floor - 16 apartments total. The 7th & 8th Floors will have 2 apartments per floor - 4 apartments total (apartments will have roof terraces at set back height). The building is in an R7A / C2-4 area - residential FAR is 4 and parking is not required. The footprint of the new building will be 2,734 sf (smaller than 65% lot coverage required). The height of the new building will be 80' with a 10' setback at 60' facing a wide street. The total buildable square footage will be 21,585 sf of which 2,734 sf will be a full basement. The full basement will consist of a mechanical room, an elevator/elevator machine room, and resident's storage space. The proposed rear yard will be set back approximately 30 feet from the north property boundary and capped with at least two feet of clean soil and landscaped. The proposed use is consistent with existing zoning for the property.

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

Summary of Environmental Findings

1. Elevation of the Site is approximately 80 feet above mean sea level
2. Depth to groundwater is approximately 70 feet at the Site.
3. Groundwater flow is generally from east to west beneath the Site.
4. Depth to bedrock at the site could not be determined due to the limited subsurface investigation performed at the Site.
5. The stratigraphy of the site, from the surface down consists of historic fill to approximately 8 feet which is underlain by native brown, fine grained sandy clay.
6. Analytical results were compared to NYSDEC 6NYCRR Part 375-6.8 Unrestricted Use Soil Cleanup Objectives (SCOs) and Restricted Residential Use SCOs. The RI showed no VOCs and PCBs at a concentration above Unrestricted Use SCOs. Several SVOCs were detected within the historic fill and exceeded Unrestricted Use SCOs. Of these, benz(a)anthracene (maximum of 32,000 µg/Kg), benzo(a)pyrene (maximum of 27,600

µg/Kg), benzo(b)-fluoranthene (maximum of 18,300 µg/Kg), benzo(k)fluoranthene (maximum of 15,300 µg/Kg), chrysene (maximum of 25,300 µg/Kg), dibenzo(a)anthracene (1,810 µg/Kg) and Indeno (1,2,3-cd) pyrene (maximum 7,520 µg/Kg) exceeded Restricted Use Residential SCOs in one shallow and two deep soil sampling locations. The metals barium (690 mg/Kg), copper (max. 93.2 mg/Kg), lead (maximum of 707 mg/Kg), selenium (maximum of 4.69 mg/Kg), zinc (maximum of 306 mg/Kg) and mercury (maximum of 2.93 mg/Kg) were detected above the Unrestricted Residential Use SCOs within the soil samples collected from the urban fill layer. Of these, barium, lead and mercury exceeded Restricted Residential Use SCOs. Four pesticides including dieldrin (7.00 µg/Kg), 4,4-DDT (max. of 158 µg/Kg), 4,4-DDE (max. of 21.1 µg/Kg) and 4,4-DDD (max. of 7.14 µg/Kg) were detected above Unrestricted Use SCOs, but below Restricted Residential Use SCOs. Overall, soil results are consistent with historic fill material at sites throughout NYC.

7. Groundwater samples were compared to the New York State 6NYCRR Part 703.5 Class GA Groundwater Quality Standards (GQS). Groundwater sample results found no detectable concentrations of PCBs and pesticides. Several VOCs including chloroform (1.5µg/L), o-xylene (0.53 µg/L), p & m- xylene (0.53 µg/L), tetrachloroethylene (0.43 µg/L), toluene (0.36 µg/L) and trichloroethylene (0.87 µg/L) were detected in the groundwater sample below the GQS. All SVOCs were detected below their respective GQS. No metals were detected in the groundwater sample exceeding their respective GQS.
8. Soil vapor samples collected during the RI were compared to the compounds listed in New York State Department of Health (NYSDOH) Vapor Intrusion Matrices. Soil vapor sample results indicated petroleum related VOCs at a low concentration. The chlorinated VOCs - 1,1,1-trichloroethane (TCA) and tetrachloroethylene (PCE) were detected at a maximum concentration of 1.8 µg/m³ and 350 µg/m³ respectively exceeding the NYSDOH guidance values, while there was no detection for trichloroethylene (TCE) or carbon tetrachloride in any of the three soil vapor samples. Other compounds detected were at slightly elevated concentrations and includes acetone (maximum 2,200 µg/m³),

and dichlorofluoromethane (maximum of 430 $\mu\text{g}/\text{m}^3$). Petroleum-related VOCs (BTEX) were detected at a maximum concentration of 44 $\mu\text{g}/\text{m}^3$. PCE was detected in the monitoring level ranges established within the NYSDOH Final Guidance on Soil Vapor Intrusion.

Summary of the Remedy

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

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan.
2. Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
3. Establishment of Track 4 Site-Specific Soil Cleanup Objectives (SCOs).
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
5. Completion of a Waste Characterization Study prior to excavation activities. Waste characterization soil samples will be collected at a frequency specified by disposal facilities. A Waste Characterization Report documenting sample procedures, location, analytical results shall be submitted to NYCOER prior to the start of the remedial action.
6. Excavation and removal of soil/fill exceeding Track 4 Site-Specific SCOs. For development purposes, the proposed footprint of the Site will be excavated to a depth of approximately 12 feet for the new building's cellar level. Approximately 2,000 tons of soil will be removed. The remainder of the Site will be landscaped and capped with at least two feet of clean soil.

7. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID. Appropriate segregation of excavated media on-Site.
8. Management of excavated materials including temporarily stockpiling and segregating to prevent co-mingling of contaminated material and non-contaminated materials.
9. Removal of underground storage tanks (USTs) (if encountered) and closure of petroleum spills (if evidence of a spill/leak is encountered during Site excavation) in compliance with applicable local, State and Federal laws and regulations.
10. Transportation and off-Site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media on-Site.
11. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of SCOs.
12. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
13. Collection of one additional soil vapor sample after excavation for cellar. Evaluation of soil vapor results to determine need for sub-slab depressurization system (SSDS). Installation of a passive sub-slab depressurization system if needed.
14. Installation of a vapor barrier system below the concrete slab of the building as well as behind foundation walls of the proposed building. The vapor barrier will consist of Raven Industries' VaporBlock 20 Plus, which is a seven layer co-extruded barrier made from state-of-the-art polyethylene and EVOH resins.
15. Construction and maintenance of an engineered composite cover consisting of 6 inch thick concrete building slab to prevent human exposure to residual soil/fill remaining under the Site.
16. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
17. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.

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

COMMUNITY PROTECTION STATEMENT

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

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

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

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

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

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

Site Safety Coordinator. This project has a designated Site Safety Coordinator to implement the Health and Safety Plan. The Site Safety Coordinator maintains an emergency contact sheet and protocol for management of emergencies. The Site Safety Coordinator is Mr. David Oloke of Alpha-Hydro Environmental. Mr. Oloke can be reached at (631) 448-1862.

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 only to workers performing specific tasks including removing hazardous 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 (CAMP). Results will be regularly reported to the NYC OER. This cleanup plan also has a plan to address any unforeseen problems that might occur during the cleanup (called a 'Contingency Plan').

Odor, Dust and Noise Control. This cleanup plan includes actions for odor and dust control. These actions are designed to prevent off-Site odor and dust nuisances and include steps to be taken if nuisances are detected. Generally, dust is managed by application of physical covers and by water sprays. Odors are controlled by limiting the area of open excavations, physical covers, spray foams and by a series of other actions (called operational measures). The project is also required to comply with NYC noise control standards. If you observe problems in these areas, please contact the on-Site Project Manager, Mr. David Oloke at (631) 448-1862 or NYC Office of Environmental Remediation Project Manager, Eric Ilijevich at (212) 788-8841.

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 7:00AM to 6:00PM 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. Olawale Kenku (AHE) at (631) 448-1862, the NYC Office of Environmental Remediation Project Manager, Eric Ilijevich at (212) 788-8841, 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 repository online. Access to the document repository is available online at the Brooklyn Public Library - Walt Whitman Branch (93 Saint Edwards Street, Brooklyn, (718) 935-0244).

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

REMEDIAL ACTION WORK PLAN

1.0 SITE BACKGROUND

Elevation Holdings LLC has applied to enroll in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a property located at 929 - 933 Atlantic Avenue in the Clinton Hill section of Brooklyn, 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) and site-specific Construction Health and Safety Plan (CHASP) in a manner that will render the Site protective of public health and the environment consistent with the contemplated end use. This RAWP establishes remedial action objectives, provides remedial alternatives analysis that includes consideration of a permanent cleanup, and provides a description of the selected remedial action. The remedial action described in this document provides for the protection of public health and the environment, complies with applicable environmental standards, criteria and guidance and applicable laws and regulations.

1.1 Site Location and Current Usage

The Site is located in the Clinton Hill section of Brooklyn, New York and is identified as Block 2018 and Lots 54, 55 & 56 on the New York City Tax Map. Figure 1 is a Site location map. Lot 56 (929 Atlantic Avenue) is improved with a one-story concrete block building with basement built in 1930. The building was formerly occupied by Sal Palais Auto Glass Inc and is now currently vacant. Based on information obtained from NYC DCP, lot 56 is approximately 1,797 square feet (sf).

The associated parking space - Lot 54 (933 Atlantic Avenue) and Lot 55 (931 Atlantic Avenue) is asphalt paved and secured with a chain-linked gated fence. Based on information obtained from the NYC DCP, the parking lot is 2,660 sf .

The Site has a combined area of 4,457 sf and is bounded by multi-family walkup buildings to the north, Atlantic Avenue to the south, Sunoco gasoline service station to the east, and an auto repair shop to the west (see Figure 2 – Site Map).

The general vicinity of the subject property is zoned as R7A with commercial overlay C2-4. R7A districts typically produce high lot coverage, seven- and eight-story apartment buildings, blending with existing buildings in many established neighborhoods.

1.2 Proposed Redevelopment Plan

The proposed use of the Site will consist of a new 8 story building with a full cellar. The Building will have one new residential elevator with travel to the communal roof top. The size of the lot (three lots combined) is 4,457 sf. The building will have 26 residential units. The 1st & 2nd Floors will have 3 apartments per floor - 6 apartments total (*two of the ground floor apartments will be duplex units with access to rear yard from cellar*). The 3rd, 4th, 5th & 6th Floors will have 4 apartments per floor - 16 apartments total. The 7th & 8th Floors will have 2 apartments per floor - 4 apartments total (*apartments will have roof terraces at set back height*). The building is in an R7A / C2-4 area - residential FAR is 4 and parking is not required. The footprint of the new building will be 2,734 sf (smaller than 65% lot coverage required). The height of the new building will be 80' with a 10' setback at 60' facing a wide street. The total buildable square footage will be 21,585 sf of which 2,734 sf will be a full basement. The full basement will consist of a mechanical room, an elevator/elevator machine room, and resident's storage space. The proposed rear yard will be set back approximately 30 feet from the north property boundary and capped with at least two feet of clean soil and landscaped. The proposed use is consistent with existing zoning for the property. The proposed use is consistent with existing zoning for the property (see Fig. 3 – Layout of Proposed Site Development).

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

1.3 Description of Surrounding Property

The area surrounding the Site consists of a mix of residential and commercial properties. Fig. 4 shows the surrounding land usage of the adjacent properties listed below as well as properties located up to 500 feet away from the Site. No hospitals, daycare facilities or schools are located within a 250 ft radius of the Site. The following surrounding and/or adjacent properties were identified based on the OER's Searchable Property Environmental E-Database.

North: 500 Grand Avenue, adjacent property (Block 2018, Lot 7501) – Developed as multi-family walkup building.

South: Atlantic Avenue / 972 Atlantic Avenue, opposite side of the Site (Block 1124, Lot 35) – Developed as commercial and office buildings.

East: 506 Grand Avenue, adjacent property (Block 2018, Lot 46) – Developed as a gasoline service station (Sunoco).

West: 927 Atlantic Avenue, adjacent property (Block 2018, lot 57) – Currently utilized as a wheel alignment auto repair shop.

1.4 Remedial Investigation

A remedial investigation was performed and the results are documented in a companion document called “*Remedial Investigation Report, 929 - 933 Atlantic Avenue, Brooklyn, NY*”, dated October 2014 (RIR).

Summary of Past Uses of Site and Areas of Concern

A Phase I Environmental Site Assessment Report was prepared by Alpha-Hydro Environmental (AHE) on June 9, 2014. A copy of the Phase I have been sent to the OER. Based on the Sanborn Maps, it shows that the property consists of three lots (54, 55 & 56) and each was developed as a three-story store building dating back to 1887. In 1969, one of the three-story store buildings was converted for residential use and was later demolished by 1977. The Sanborn Map of 1980 - 1993 indicates that the only structure remaining on the subject property was identified on lot 56 which was operated as an auto glazing shop. The other two lots (54 & 55) were vacant and utilized as parking lot. The City Directory abstracts for the subject property indicates that 929 Atlantic Avenue (lot 56) was historically operated by Palais Glass Company from the year 1960 – 2013. 931 Atlantic Avenue (lot 55) was operated as a restaurant (Billichak Restaurant) during 1934 – 1940 and as a Tire Service center (Lous Tire Service) during 1949 – 1976. 933 Atlantic Avenue (lot 54) was a mixed use residential and commercial property from the year 1934 through 1960.

The AOCs identified for this Site include:

1. The Site was historically utilized as an auto glass repair shop and is located adjacent to a petroleum bulk storage facility (941 Atlantic Avenue).
2. Historic fill layer is present at the Site from grade to depths of at least 8 feet below grade.

Summary of the Work Performed under the Remedial Investigation

1. Conducted a Site inspection to identify AOCs and physical obstructions

2. Installed five soil probes across the entire project Site, and collected ten soil samples and one duplicate for chemical analysis from the soil borings to evaluate soil quality;
3. Installed one temporary groundwater well point at the southeast portion of the Site for chemical analysis to evaluate groundwater quality;
4. Installed three soil vapor probes on the subject property. Two sub-slab soil vapor probes were installed within the basement of the one story building and the third soil vapor probe within the asphalt paved parking lot for chemical analysis.

Summary of Environmental Findings

1. Elevation of the Site is approximately 80 feet above mean sea level
2. Depth to groundwater is approximately 70 feet at the Site.
3. Groundwater flow is generally from east to west beneath the Site.
4. Depth to bedrock at the site could not be determined due to the limited subsurface investigation performed at the Site.
5. The stratigraphy of the site, from the surface down consists of historic fill to approximately 8 feet which is underlain by native brown, fine grained sandy clay.
6. Analytical results were compared to NYSDEC 6NYCRR Part 375-6.8 Unrestricted Use Soil Cleanup Objectives (SCOs) and Restricted Residential Use SCOs. The RI showed no VOCs and PCBs at a concentration above Unrestricted Use SCOs. Several SVOCs were detected within the historic fill and exceeded Unrestricted Use SCOs. Of these, benz(a)anthracene (maximum of 32,000 µg/Kg), benzo(a)pyrene (maximum of 27,600 µg/Kg), benzo(b)-fluoranthene (maximum of 18,300 µg/Kg), benzo(k)fluoranthene (maximum of 15,300 µg/Kg), chrysene (maximum of 25,300 µg/Kg), dibenzo(a)anthracene (1,810 µg/Kg) and Indeno (1,2,3-cd) pyrene (maximum 7,520 µg/Kg) exceeded Restricted Use Residential SCOs in one shallow and two deep soil sampling locations. The metals barium (690 mg/Kg), copper (max. 93.2 mg/Kg), lead (maximum of 707 mg/Kg), selenium (maximum of 4.69 mg/Kg), zinc (maximum of 306 mg/Kg) and mercury (maximum of 2.93 mg/Kg) were detected above the Unrestricted Residential Use SCOs within the soil samples collected from the urban fill layer. Of

these, barium, lead and mercury exceeded Restricted Residential Use SCOs. Four pesticides including dieldrin (7.00 $\mu\text{g}/\text{Kg}$), 4,4-DDT (max. of 158 $\mu\text{g}/\text{Kg}$), 4,4-DDE (max. of 21.1 $\mu\text{g}/\text{Kg}$) and 4,4-DDD (max. of 7.14 $\mu\text{g}/\text{Kg}$) were detected above Unrestricted Use SCOs, but below Restricted Residential Use SCOs. Overall, soil results are consistent with historic fill material at sites throughout NYC.

7. Groundwater samples were compared to the New York State 6NYCRR Part 703.5 Class GA Groundwater Quality Standards (GQS). Groundwater sample results found no detectable concentrations of PCBs and pesticides. Several VOCs including chloroform (1.5 $\mu\text{g}/\text{L}$), o-xylene (0.53 $\mu\text{g}/\text{L}$), p & m- xylene (0.53 $\mu\text{g}/\text{L}$), tetrachloroethylene (0.43 $\mu\text{g}/\text{L}$), toluene (0.36 $\mu\text{g}/\text{L}$) and trichloroethylene (0.87 $\mu\text{g}/\text{L}$) were detected in the groundwater sample below the GQS. All SVOCs were detected below their respective GQS. No metals were detected in the groundwater sample exceeding their respective GQS.
8. Soil vapor samples collected during the RI were compared to the compounds listed in New York State Department of Health (NYSDOH) Vapor Intrusion Matrices. Soil vapor sample results indicated petroleum related VOCs at a low concentration. The chlorinated VOCs - 1,1,1-trichloroethane (TCA) and tetrachloroethylene (PCE) were detected at a maximum concentration of 1.8 $\mu\text{g}/\text{m}^3$ and 350 $\mu\text{g}/\text{m}^3$ respectively exceeding the NYSDOH guidance values, while there was no detection for trichloroethylene (TCE) or carbon tetrachloride in any of the three soil vapor samples. Other compounds detected were at slightly elevated concentrations and includes acetone (maximum 2,200 $\mu\text{g}/\text{m}^3$), and dichlorofluoromethane (maximum of 430 $\mu\text{g}/\text{m}^3$). Petroleum-related VOCs (BTEX) were detected at a maximum concentration of 44 $\mu\text{g}/\text{m}^3$. PCE were detected in the monitoring level ranges established within the NYSDOH Final Guidance on Soil Vapor Intrusion.

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

2.0 REMEDIAL ACTION OBJECTIVES

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

Soil

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

Soil Vapor

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

Groundwater

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

3.0 REMEDIAL ALTERNATIVES ANALYSIS

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

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

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

Alternative 1 involves:

- Selection of NYDEC 6NYCRR part 375 Table 6.8 Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs).
- Removal of all soil/fill exceeding Track 1 Unrestricted Use SCOs throughout the Site and confirmation that Track 1 Unrestricted Use SCOs have been achieved with post-excavation endpoint sampling. If soil/fill containing analytes at concentrations above Track 1 Unrestricted Use SCOs is still present at the base of the excavation after removal of all soil required for construction of the new building's cellar is complete, additional

excavation will be performed to ensure complete removal of soil that does not meet Track 1 Unrestricted Use SCO;

- No Engineering or Institutional Controls are required for a Track 1 Unrestricted Use cleanup, but a vapor barrier would be installed beneath the basement foundation and behind foundation sidewalls of the new building as a part of development to prevent any potential future exposures from off-Site soil vapor;
- Placement of a composite cover over the entire Site as part of new development.

Alternative 2 involves:

- Establishment of Track 4 Site-Specific SCOs.
- Removal of all soil/fill exceeding Track 4 Site-Specific SCOs and confirmation that Track 4 Site-Specific SCOs have been achieved with post-excavation endpoint sampling. Excavation for construction of the new building's cellar level would take the entire footprint of the building to a depth of approximately 12 feet below grade. If soil/fill containing analytes at concentrations above Track 4 Site-Specific SCOs is still present at the base of the excavation after removal of all soil required for construction of the new building's cellar is complete, additional excavation will be performed to ensure complete removal of soil that does not meet Track 4 Site-Specific SCOs;
- Placement of a final cover over the entire Site to prevent exposure to remaining soil/fill;
- Installation of a soil vapor barrier system beneath the building's cellar slab, and along foundation sidewalls to prevent any potential future exposures from off-Site soil vapor;
- Installation of a passive sub-slab depressurization system
- Establishment of use restrictions including prohibitions on the use of groundwater from the Site; prohibitions of sensitive Site uses, such as farming or vegetable gardening, to prevent future exposure pathways; and prohibition of a higher level of land use without OER approval;
- Establishment of an approved Site Management Plan (SMP) to ensure long-term management of these Engineering and Institutional Controls including the performance of periodic inspections and certification that the controls are performing as they were intended; and

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

3.1 Threshold Criteria

Protection of Public Health and the Environment

This criterion is an evaluation of the remedy's ability to protect public health and the environment, and an assessment of how risks posed through each existing or potential pathway of exposure are eliminated, reduced or controlled through removal, treatment, and implementation of 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.

Alternative 2 would achieve comparable protections of human health and the environment by excavating the historic fill at the Site and by ensuring that remaining soil/fill on-Site meets Track 4 Site-Specific SCOs, as well as by placement of Institutional and Engineering Controls, including a composite cover system and sub-slab depressurization system. The composite cover system would prevent direct contact with any remaining on-Site soil/fill. Implementing Institutional Controls including a Site Management Plan would ensure that the composite cover system remains intact and protective. Establishment of Track 4 Site-Specific SCOs would minimize the risk of contamination leaching into groundwater.

For both Alternatives, potential exposure to contaminated soils during construction would be minimized by implementing a Construction Health and Safety Plan (CHASP), an approved Soil/Materials Management Plan and Community Air Monitoring Plan (CAMP). Potential contact with contaminated groundwater would be prevented as its use is prohibited by city laws and regulations. Potential future migration of off-Site soil vapors into the new building would be prevented by installing a vapor barrier system below the new building's cellar slab and continuing the vapor barrier around foundation walls and also the installation of a sub-slab

depressurization system to maintain negative pressure beneath the entire area of the building slab addressed by this RAP

3.2. Balancing Criteria

Compliance with Standards, Criteria and Guidance (SCGs)

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

Alternative 1 would achieve compliance with the remedial goals, chemical-specific SCGs and RAOs for soil through removal of soil to achieve Track 1 Unrestricted Use SCOs and Groundwater Protection Standards. Compliance with SCGs for soil vapor would also be achieved by installing a passive SSDS and a vapor barrier system below the new building's cellar slab and continuing the vapor barrier around foundation walls, as part of development.

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 installing a sub-slab depressurization system and a vapor barrier system below the new buildings' cellar slabs and continuing the vapor barrier around foundation walls. A Site Management Plan would ensure that these controls remained protective for the long term.

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 1 and 2 have similar short-term effectiveness during their respective implementations, as each requires excavation of historic fill material. Both alternatives would result in short-term dust generation impacts associated with excavation, handling, load out of materials, and truck traffic. Short term impacts would be higher for Alternative 1 because excavation of greater amounts of historical fill material would be required in areas beyond footprint of new building to achieve Track 1 SCOs. However, focused attention to means and methods during the remedial action, including community air monitoring and appropriate truck routing, would minimize or negate the overall impact of these activities.

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

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

Long-term effectiveness and permanence

This evaluation criterion addresses the results of a remedial action in terms of its permanence and quantity/nature of waste or residual contamination remaining at the Site after response objectives have been met, such as permanence of the remedial alternative, magnitude of remaining contamination, adequacy of controls including the adequacy and suitability of 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 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; establishing Institutional Controls to ensure long-term management including use restrictions, a Site Management Plan and maintaining continued registration as an E-designation property to memorialize these controls for the long term. The SMP would ensure long-term effectiveness of all ECs and ICs by requiring periodic inspection and certification that these controls and restrictions continue to be in place and are functioning as they were intended assuring that protections designed into the remedy will provide a continued high level of protection in perpetuity.

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

Reduction of toxicity, mobility, or volume of contaminated material

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

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

Alternative 2 would remove most of the historic fill at the Site and thus would permanently eliminate the toxicity, mobility, and volume of contaminants, and any remaining on-Site soil beneath the new buildings would meet Track 4 Site-Specific SCOs. Alternative 1 would eliminate a greater total mass of contaminants on-Site if historic fill is encountered at a depth greater than that required for construction of the new building's cellar.

Implementability

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

The proposed remedial action is both feasible and implementable. 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.

The costs associated with Alternative 1 would be higher if historic fill is encountered below the excavation depth required for construction of the new building's cellar and for removal of fill material from areas beyond building footprint. The additional costs would include excavation and off-Site disposal of additional historic fill and import of clean fill to backfill the over-excavated areas. However, if additional soil/fill with analytes above Track 1 Unrestricted Use

SCOs remains after excavation for the new building, long-term costs for Alternative 2 may be higher than Alternative 1 based on implementation of a Site Management Plan as part of Alternative 2.

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

Community Acceptance

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

Based on the overall goals of the remedial program and initial permitting associated with the proposed site development, no adverse community opinion is anticipated for either alternative. This RAWP will be subject to a public review under the NYC VCP and will provide the opportunity for detailed public input on the remedial alternatives and the selected remedy. This public comment will be considered by OER prior to approval of this plan. The Citizen Participation Plan for the project is provided in Attachment B.

Land use

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

The proposed redevelopment of the Site is compatible with its current zoning and is consistent with recent development patterns. 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 residential and commercial use. 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. Both alternatives are equally protective of natural resources and cultural resources.

Sustainability of the Remedial Action

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

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

4.0 REMEDIAL ACTION

4.1 Summary of Preferred Remedial Action

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

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan.
2. Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
3. Establishment of Track 4 Site-Specific Soil Cleanup Objectives (SCOs).
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
5. Completion of a Waste Characterization Study prior to excavation activities. Waste characterization soil samples will be collected at a frequency specified by disposal facilities. A Waste Characterization Report documenting sample procedures, location, analytical results shall be submitted to NYCOER prior to the start of the remedial action.
6. Excavation and removal of soil/fill exceeding Track 4 Site-Specific SCOs. For development purposes, the proposed footprint of the Site will be excavated to a depth of approximately 12 feet for the new building's cellar level. The remainder of the Site will be capped with at least two feet of clean soil and landscaped. Approximately 2,000 tons of soil will be removed.
7. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID. Appropriate segregation of excavated media on-Site.

8. Management of excavated materials including temporarily stockpiling and segregating to prevent co-mingling of contaminated material and non-contaminated materials.
9. Removal of underground storage tanks (USTs) (if encountered) and closure of petroleum spills (if evidence of a spill/leak is encountered during Site excavation) in compliance with applicable local, State and Federal laws and regulations.
10. Transportation and off-Site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media on-Site.
11. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of SCOs.
12. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
13. Collection of one additional soil vapor sample after excavation for cellar. Evaluation of soil vapor results to determine need for sub-slab depressurization system (SSDS). Installation of a passive sub-slab depressurization system if needed.
14. Installation of a vapor barrier system below the concrete slab of the building as well as behind foundation walls of the proposed building. The vapor barrier will consist of Raven Industries' VaporBlock 20 Plus, which is a seven layer co-extruded barrier made from state-of-the-art polyethylene and EVOH resins.
15. Construction and maintenance of an engineered composite cover consisting of 6 inch thick concrete building slab to prevent human exposure to residual soil/fill remaining under the Site.
16. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
17. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
18. Submission of a Remedial Action Report (RAR) that describes the remedial activities certifies that the remedial requirements have been achieved, defines the Site boundaries, and describes all Engineering and Institutional Controls to be implemented at the Site,

and lists any changes from this RAWP.

19. Submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.
20. The property will continue to be registered with an E-Designation by the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls in this RAWP and a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

4.2 Soil Cleanup Objectives and Soil/Fill Management

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

<u>Contaminant</u>	<u>Track 4 SCOs</u>
Total SVOCs	250 ppm
Lead	1000 ppm
Mercury	1.5 ppm
Barium	750 ppm

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 Attachment D. The location of planned excavations is shown in Figure 5.

No over-excavation beyond the development cut is anticipated.

Discrete contaminant sources (such as hotspots) identified during the remedial action will be identified by GPR or survey. 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 approximately 2,000 tons.

Disposal location(s) will be reported promptly to the OER Project Manager prior to the start of the remedial action.

End-Point Sampling

Removal actions under this plan will be performed in conjunction with remedial end-point sampling. Confirmation end-point sampling and testing will be performed following materials removal and completed proper to Site development activities. To evaluate attainment of Track 4 Site-Specific SCOs, five confirmation end-point samples will be collected and analyzed for the trigger compounds and elements established on the Track 4 Site-Specific SCOs list. The approximate collection location of the confirmation end-point soil samples is shown on Figure 6.

In addition, if hotspots are encountered, hotspot removal end-point sampling frequency will consist of the following:

1. For excavations less than 20 feet in total perimeter, at least one bottom sample and one sidewall sample biased in the direction of surface runoff.
2. For excavations 20 to 300 feet in perimeter:
 - For surface removals, one sample from the top of each sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area.
 - For subsurface removals, one sample from each sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area.
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 sample locations and depth will be biased towards the areas and depths of highest contamination identified during previous sampling episodes unless field indicators such as field instrument measurements or visual contamination identified during the remedial action indicate that other locations and depths may be more heavily contaminated. In all cases, post-remediation samples should be biased toward locations and depths of the highest expected contamination.

New York State ELAP certified labs will be used for all end-point sample analyses. Labs for end-point sample analyses will be reported in the RAR. The RAR will provide a tabular and map summary of all end-point sample results and will include all data including non-detects and applicable standards and/or guidance values. End-point samples will be analyzed for trigger analytes (those for which SCO exceedence are identified) 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 required regulatory reporting (i.e. spills hotline) will be performed.

Quality Assurance/Quality Control

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

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

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

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

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

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

Import and Reuse of Soils

Import of soils onto the property and reuse of soils already on-Site will be performed in conformance with the Soil/Materials Management Plan in Attachment D. The estimated quantity of soil to be imported into the Site for backfill and cover soil is 0 tons. The estimated quantity of onsite soil/fill expected to be reused/relocated on Site is 0 tons.

4.3 Engineering Controls

The excavation required for the proposed Site development will achieve Track 4 Site Specific SCOs. Engineering Controls will be employed in the remedial action to address residual contamination remaining at the site. The Site has three primary Engineering Control Systems that could be implemented: These are:

- Composite cover system
- Vapor barrier system
- Passive sub-slab depressurization system

Composite Cover System

Exposure to residual soil/fill will be prevented by an engineered, composite cover system to be built on the Site. This composite cover system will consist of 6 inch thick concrete beneath the building's footprint

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

Vapor Barrier

Migration of potential soil vapor from offsite will be mitigated with a combination of building slab and vapor barrier. The vapor barrier will consist of Raven Industries' VaporBlock 20 Plus, which is a seven layer co-extruded barrier made from state-of-the-art polyethylene and EVOH resins. The vapor barrier will be installed prior to pouring the building's concrete slab. The vapor barrier will extend throughout the area occupied by the footprint of the new building and up the foundation sidewalls in accordance with manufacturer specifications. The specifications for installation will be provided to the construction management company and the foundation contractor or installer of the liner. The specifications state that all vapor barrier seam, penetrations, and repairs will be sealed either by the tape method or weld method, according to the manufacturer's recommendations and instructions.

The project's Professional Engineer licensed by the State of New York will have primary direct responsibility for overseeing the implementation of the vapor barrier. A typical vapor barrier membrane detail is provided in Figure 7. Product specification sheets are provided in Attachment F.

Passive Sub-Slab Depressurization System

A passive sub-slab depressurization (SSD) system has been recommended for the site by the OER due to elevated levels of PCE detected in soil vapors at the Site. As agreed by the OER and AHE, the SSD system will be installed if endpoint soil samples and a soil vapor sample collected after soil excavation exceed the SCOs. The SSD system is intended to mitigate the migration of soil vapors beneath the Site. The SSD system design plan, including engineering drawings, equipment specifications and location of system components will be provided in the Stipulation Letter.

The Remedial Action Report will include photographs (maximum of two photos per page) of the installation process, PE/RA certified letter (on company letterhead) from primary contractor responsible for installation oversight and field inspections, and a copy of the manufacturers certificate of warranty.

4.4 Institutional Controls

Institutional Controls (IC) have been incorporated in this remedial action to manage residual soil/fill and other media and render the Site protective of public health and the environment. Institutional Controls are listed below. Long-term employment of EC/ICs will be established in a site-specific Site Management Plan (SMP) that will be included in the RAR.

Institutional Controls for this remedial action are:

- The property will continue to be registered with an E-Designation at 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 annually and will comply with RCNY §43-1407(1)(3).

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

4.5 Site Management Plan

Site Management is the last phase of remediation and begins with the approval of the Remedial Action Report and issuance of the Notice of Completion (NOC) for the Remedial Action. The Site Management Plan (SMP) describes appropriate methods and procedures to ensure implementation of all ECs and ICs that are required by this RAWP. The Site Management Plan is submitted as part of the RAR but will be written in a manner that allows its use as an independent document. Site Management continues until terminated in writing by OER. The property owner is responsible to ensure that all Site Management responsibilities defined in this RAWP 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 Voluntary 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 on a periodic basis to be established in the SMP and will be subject to review and modification by OER. The Site Management Plan will be based on a calendar year and certification reports will be due for submission to OER by July 30 of the year following the reporting period.

4.6 Qualitative Human Health Exposure Assessment

Investigations reported in the Remedial Investigation Report (RIR) are sufficient to complete a Qualitative Human Health Exposure Assessment (QHHEA).

The objective of the qualitative exposure assessment is to identify potential receptors 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 EA was prepared in accordance with Appendix 3B and Section 3.3 (b) 8 of the NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation.

Known and Potential Sources

Based on the results of the Remedial Investigation Report the contaminants of concern found are:

Soil

- Metals, including barium, lead and mercury exceeded Unrestricted Residential Use SCOs;
- SVOCs (PAH compounds) including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene and indeno(1,2,3-cd)pyrene exceeding the Unrestricted/Restricted Residential Use SCOs; and
- Pesticides, including 4,4'-DDE, 4,4'-DDD, 4,4'-DDT, and dieldrin were identified exceeding the Unrestricted Residential Use SCOs

Groundwater

- VOCs, SVOCs and metals were all below Groundwater Quality Standards.

Soil Vapor

- Chlorinated VOCs detected above NYS DOH monitoring thresholds included PCE.
- Petroleum related VOCs were detected at moderate concentrations.

Nature, Extent, Fate and Transport of Contaminants

SVOCs, metals, and pesticides are present in the historic fill materials at shallow and/or deep depths. Seven SVOCs, four metals (lead, selenium, zinc and mercury) and three pesticides were detected in the shallow soil samples above SCOs. No SVOCs, metals or pesticides detected in soil were reported at a concentration within the groundwater samples that would indicate that contamination is migrating into groundwater or migrating off-Site. No chlorinated compounds were detected above their respective standards in soil and groundwater. Four chlorinated compounds (PCE, chloroform, 1,1,1 – trichloroethane and methylene chloride) were detected in soil vapor on-Site at elevated levels.

Potential Routes of Exposure

The five elements of an exposure pathway are: (1) a contaminant source; (2) contaminant release and transport mechanisms; (3) a point of exposure; (4) a route of exposure; and (5) a receptor population. An exposure pathway is considered complete when all five elements of an exposure pathway are documented. A potential exposure pathway exists when any one or more of the five elements comprising an exposure pathway cannot be documented. An exposure pathway may be eliminated from further evaluation when any one of the five elements comprising an exposure pathway has not existed in the past, does not exist in the present, and will never exist in the future. Three potential primary routes exist by which chemicals can enter the body:

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

Potential Points of Exposure

Current Conditions: The Site is currently paved mostly with asphalt which limits exposure to the historic fill material beneath the Site. The Site is served by public water supply and groundwater use for potable supply is prohibited, groundwater is not used at the Site and there is no potential for exposure. There is potential for soil vapor to migrate unto the site from adjacent properties.

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

Proposed Future Conditions: Under future remediated conditions, all soils in excess of Track 4 Site-Specific SCOs will be removed. The Site will be fully capped, limiting potential direct exposure to soil and groundwater remaining in place, and a vapor barrier system will prevent exposure to potential off-Site soil vapors. The Site is served by a public water supply, and groundwater is not used at the Site for potable supply. There are no plausible off-Site pathways for ingestion, inhalation, or dermal exposure to contaminants derived from the Site under future conditions.

Receptor Populations

On-Site Receptors - The Site currently consists of a one story building with a basement foundation and an associated parking lot which is secured by a gated chain-linked fence. 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 residents and visitors.

Off-Site Receptors - Potential off-Site receptors within a 0.25-mile radius of the Site include: adult and child residents, and 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 0.25 mile) - existing and future
5. Schools (up to 0.25 mile) - existing and future

Overall Human Health Exposure Assessment

Potentially complete on-site exposure pathways appear to be present only during the current unremediated and construction phases. After the remedial action is complete, there will be no remaining exposure pathways to identified contaminants. The SSDS and a vapor barrier system will prevent potential vapor intrusion. The composite cover system and use restrictions will prevent contact with residual soil or groundwater and continued protection after the remedial action will be achieved by the implementation of site management including periodic inspection and certification of the performance of remedial controls. Potential post-construction use of groundwater is not considered an option because groundwater in this area of New York City is not used as a potable water source. There are no surface waters in close proximity to the Site that could be impacted or threatened.

Based upon this analysis, complete on-Site exposure pathways appear to be present only during the current unremediated phase and the remedial action phase. Under current conditions, on-Site exposure pathways exist for site personnel. During remedial construction, on-Site and off-Site exposures to contaminated dust from historic fill material will be addressed through dust controls, and through the implementation of the Community Air Monitoring Program, the Soil/Materials Management Plan, and a Construction Health and Safety Plan. After the remedial action is complete, there will be no remaining exposure pathways to on-Site soil/fill, as all soil above Site-Specific SCOs will have been removed and a vapor barrier system will have been installed as part of development.

5.0 REMEDIAL ACTION MANAGEMENT

5.1 Project Organization and Oversight

Principal personnel who will participate in the remedial action include Olawale Kenku, Project Manager-AHE and David Oloke, Field Operations Officer-AHE. The Professional Engineer (P.E) for this project is Boris Levin (P.E), - Levin Engineering PLLC.

5.2 Site Security

Site access will be controlled by a chain link or wooden construction fence, which will surround the property.

5.3 Work Hours

The hours for operation of remedial construction will be from 7:00AM to 6:00PM. These hours conform to the New York City Department of Buildings construction code requirements.

5.4 Construction Health and Safety Plan

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

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

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

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

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

5.5 Community Air Monitoring Plan

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

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

VOC Monitoring, Response Levels, and Actions

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

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

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

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring

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

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

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

5.6 Agency Approvals

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

5.7 Site Preparation

Pre-Construction Meeting

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

Mobilization

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

Utility Marker Layouts, Easement Layouts

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

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

Dewatering

Groundwater is present at approximately 70 feet below grade and dewatering is not expected. In the event that dewatering of groundwater during construction will be necessary, the water will be disposed into the New York City combined sanitary/storm sewer system. A permit to discharge will be obtained from the New York City Department of Environmental Protection (NYCDEP). As part of the permit to discharge, the location of discharge will be based on the Site-Specific requirements of the DEP. The need for pretreatment will be determined by DEP's requirements

for the discharge permit. If pretreatment is required by the DEP, it will be performed in accordance with the requirements of the DEP.

Equipment and Material Staging

Equipment and materials will be stored and staged in a manner that complies with applicable laws and regulations. Staging locations will be reported to OER prior to the start of the remedial action.

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, haybales; 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 on-Site 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 is shown on Figure 8.

5.9 Demobilization

Demobilization will include:

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

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

5.10 Reporting and Record Keeping

Daily Reports

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

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

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

Record Keeping and Photo-Documentation

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

5.11 Complaint Management

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

5.12 Deviations from the Remedial Action Work Plan

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

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

6.0 REMEDIAL ACTION REPORT

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

- Information required by this RAWP;
- As-built drawings for all constructed remedial elements, required certifications, manifests and other written and photographic documentation of remedial work performed under this remedy;
- Site Management Plan;
- 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;
- Account of the source area locations and characteristics of all contaminated material removed from the Site including a map showing source areas;
- Account of the disposal destination of all contaminated material removed from the Site. Documentation associated with disposal of all material will include transportation and disposal records, and letters approving receipt of the material.
- Account of the origin and required chemical quality testing for material imported onto the Site.
- Continue registration of the property with an E-Designation by the NYC Department of Buildings.
- Reports and supporting material will be submitted in digital form.

Remedial Action Report Certification

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

I, _____, 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 number.

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 1 month remediation period is anticipated.

Schedule Milestone	Weeks from Remedial Action Start	Duration (weeks)
OER Approval of RAWP	0	-
Fact Sheet 2 announcing start of remedy	0	-
Mobilization	1	1
Remedial Excavation	1	3
Demobilization	4	1
Submit Remedial Action Report	8	-

TABLE 1

TABLE 1
Soil Cleanup Objectives

Contaminant	CAS Number	Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water	Unrestricted Use
		Residential	Restricted-Residential	Commercial	Industrial			
METALS								
Arsenic	7440-38 -2	16f	16f	16f	16f	13f	16f	13 ^c
Barium	7440-39 -3	350f	400	400	10,000 d	433	820	350 ^c
Beryllium	7440-41 -7	14	72	590	2,700	10	47	7.2
Cadmium	7440-43 -9	2.5f	4.3	9.3	60	4	7.5	2.5 ^c
Chromium, hexavalent ^h	18540-29-9	22	110	400	800	1e	19	1 ^b
Chromium, trivalent ^h	16065-83-1	36	180	1,500	6,800	41	NS	30 ^c
Copper	7440-50 -8	270	270	270	10,000 d	50	1,720	50
Total Cyanide ^h		27	27	27	10,000 d	NS	40	27
Lead	7439-92 -1	400	400	1,000	3,900	63f	450	63 ^c
Manganese	7439-96 -5	2,000f	2,000f	10,000 d	10,000 d	1600f	2,000f	1600 ^c
Total Mercury		0.81j	0.81j	2.8j	5.7j	0.18f	0.73	0.18 ^c
Nickel	7440-02 -0	140	310	310	10,000 d	30	130	30
Selenium	7782-49 -2	36	180	1,500	6,800	3.9f	4f	3.9 ^c
Silver	7440-22 -4	36	180	1,500	6,800	2	8.3	2
Zinc	7440-66 -6	2200	10,000 d	10,000 d	10,000 d	109f	2,480	109 ^c
PESTICIDES / PCBs								
2,4,5-TP Acid (Silvex)	93-72-1	58	100a	500b	1,000c	NS	3.8	3.8
4,4'-DDE	72-55-9	1.8	8.9	62	120	0.0033 e	17	0.0033 ^b
4,4'-DDT	50-29-3	1.7	7.9	47	94	0.0033 e	136	0.0033 ^b
4,4'-DDD	72-54-8	2.6	13	92	180	0.0033 e	14	0.0033 ^b
Aldrin	309-00-2	0.019	0.097	0.68	1.4	0.14	0.19	0.005 ^c
alpha-BHC	319-84-6	0.097	0.48	3.4	6.8	0.04g	0.02	0.02
beta-BHC	319-85-7	0.072	0.36	3	14	0.6	0.09	0.036
Chlordane (alpha)	5103-71 -9	0.91	4.2	24	47	1.3	2.9	0.094
delta-BHC	319-86-8	100a	100a	500b	1,000c	0.04g	0.25	0.04
Dibenzofuran	132-64-9	14	59	350	1,000c	NS	210	7
Dieldrin	60-57-1	0.039	0.2	1.4	2.8	0.006	0.1	0.005 ^c
Endosulfan I	959-98-8	4.8i	24i	200i	920i	NS	102	2.4
Endosulfan II	33213-65-9	4.8i	24i	200i	920i	NS	102	2.4
Endosulfan sulfate	1031-07 -8	4.8i	24i	200i	920i	NS	1,000c	2.4
Endrin	72-20-8	2.2	11	89	410	0.014	0.06	0.014
Heptachlor	76-44-8	0.42	2.1	15	29	0.14	0.38	0.042
Lindane	58-89-9	0.28	1.3	9.2	23	6	0.1	0.1
Polychlorinated biphenyls	1336-36 -3	1	1	1	25	1	3.2	0.1
SEMI-VOLATILES								
Acenaphthene	83-32-9	100a	100a	500b	1,000c	20	98	20
Acenaphthylene	208-96-8	100a	100a	500b	1,000c	NS	107	100 ^a
Anthracene	120-12-7	100a	100a	500b	1,000c	NS	1,000c	100 ^a
Benzo(a)anthracene	56-55-3	1f	1f	5.6	11	NS	1f	1 ^c
Benzo(a)pyrene	50-32-8	1f	1f	1f	1.1	2.6	22	1 ^c
Benzo(b) fluoranthene	205-99-2	1f	1f	5.6	11	NS	1.7	1 ^c
Benzo(g,h,i) perylene	191-24-2	100a	100a	500b	1,000c	NS	1,000c	100
Benzo(k) fluoranthene	207-08-9	1	3.9	56	110	NS	1.7	0.8 ^c
Chrysene	218-01-9	1f	3.9	56	110	NS	1f	1 ^c
Dibenz(a,h) anthracene	53-70-3	0.33e	0.33e	0.56	1.1	NS	1,000c	0.33 ^b
Fluoranthene	206-44-0	100a	100a	500b	1,000c	NS	1,000c	100 ^a
Fluorene	86-73-7	100a	100a	500b	1,000c	30	386	30
Indeno(1,2,3-cd) pyrene	193-39-5	0.5f	0.5f	5.6	11	NS	8.2	0.5 ^c
m-Cresol	108-39-4	100a	100a	500b	1,000c	NS	0.33e	0.33 ^b
Naphthalene	91-20-3	100a	100a	500b	1,000c	NS	12	12
o-Cresol	95-48-7	100a	100a	500b	1,000c	NS	0.33e	0.33 ^b
p-Cresol	106-44-5	34	100a	500b	1,000c	NS	0.33e	0.33 ^b
Pentachlorophenol	87-86-5	2.4	6.7	6.7	55	0.8e	0.8e	0.8 ^b
Phenanthrene	85-01-8	100a	100a	500b	1,000c	NS	1,000c	100
Phenol	108-95-2	100a	100a	500b	1,000c	30	0.33e	0.33 ^b
Pyrene	129-00-0	100a	100a	500b	1,000c	NS	1,000c	100

TABLE 1
Soil Cleanup Objectives

Contaminant	CAS Number	Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water	Unrestricted Use
		Residential	Restricted-Residential	Commercial	Industrial			
VOLATILES								
1,1,1-Trichloroethane	71-55-6	100a	100a	500b	1,000c	NS	0.68	0.68
1,1-Dichloroethane	75-34-3	19	26	240	480	NS	0.27	0.27
1,1-Dichloroethene	75-35-4	100a	100a	500b	1,000c	NS	0.33	0.33
1,2-Dichlorobenzene	95-50-1	100a	100a	500b	1,000c	NS	1.1	1.1
1,2-Dichloroethane	107-06-2	2.3	3.1	30	60	10	0.02f	0.02 ^c
cis-1,2-Dichloroethene	156-59-2	59	100a	500b	1,000c	NS	0.25	0.25
trans-1,2-Dichloroethene	156-60-5	100a	100a	500b	1,000c	NS	0.19	0.19
1,3-Dichlorobenzene	541-73-1	17	49	280	560	NS	2.4	2.4
1,4-Dichlorobenzene	106-46-7	9.8	13	130	250	20	1.8	1.8
1,4-Dioxane	123-91-1	9.8	13	130	250	0.1e	0.1e	0.1 ^b
Acetone	67-64-1	100a	100b	500b	1,000c	2.2	0.05	0.05
Benzene	71-43-2	2.9	4.8	44	89	70	0.06	0.06
Butylbenzene	104-51-8	100a	100a	500b	1,000c	NS	12	12
Carbon tetrachloride	56-23-5	1.4	2.4	22	44	NS	0.76	0.76
Chlorobenzene	108-90-7	100a	100a	500b	1,000c	40	1.1	1.1
Chloroform	67-66-3	10	49	350	700	12	0.37	0.37
Ethylbenzene	100-41-4	30	41	390	780	NS	1	1
Hexachlorobenzene	118-74-1	0.33e	1.2	6	12	NS	3.2	0.33 ^b
Methyl ethyl ketone	78-93-3	100a	100a	500b	1,000c	100a	0.12	0.12
Methyl tert-butyl ether	1634-04 -4	62	100a	500b	1,000c	NS	0.93	0.93
Methylene chloride	75-09-2	51	100a	500b	1,000c	12	0.05	0.05
n-Propylbenzene	103-65-1	100a	100a	500b	1,000c	NS	3.9	3.9
sec-Butylbenzene	135-98-8	100a	100a	500b	1,000c	NS	11	11
tert-Butylbenzene	98-06-6	100a	100a	500b	1,000c	NS	5.9	5.9
Tetrachloroethene	127-18-4	5.5	19	150	300	2	1.3	1.3
Toluene	108-88-3	100a	100a	500b	1,000c	36	0.7	0.7
Trichloroethene	79-01-6	10	21	200	400	2	0.47	0.47
1,2,4-Trimethylbenzene	95-63-6	47	52	190	380	NS	3.6	3.6
1,3,5-Trimethylbenzene	108-67-8	47	52	190	380	NS	8.4	8.4
Vinyl chloride	75-01-4	0.21	0.9	13	27	NS	0.02	0.02
Xylene (mixed)	1330-20 -7	100a	100a	500b	1,000c	0.26	1.6	0.26

All soil cleanup objectives (SCOs) are in parts per million (ppm). NS=Not specified. See Technical Support Document (TSD). Footnotes

a The SCOs for residential, restricted-residential and ecological resources use were capped at a maximum value of 100 ppm. See TSD section 9.3.

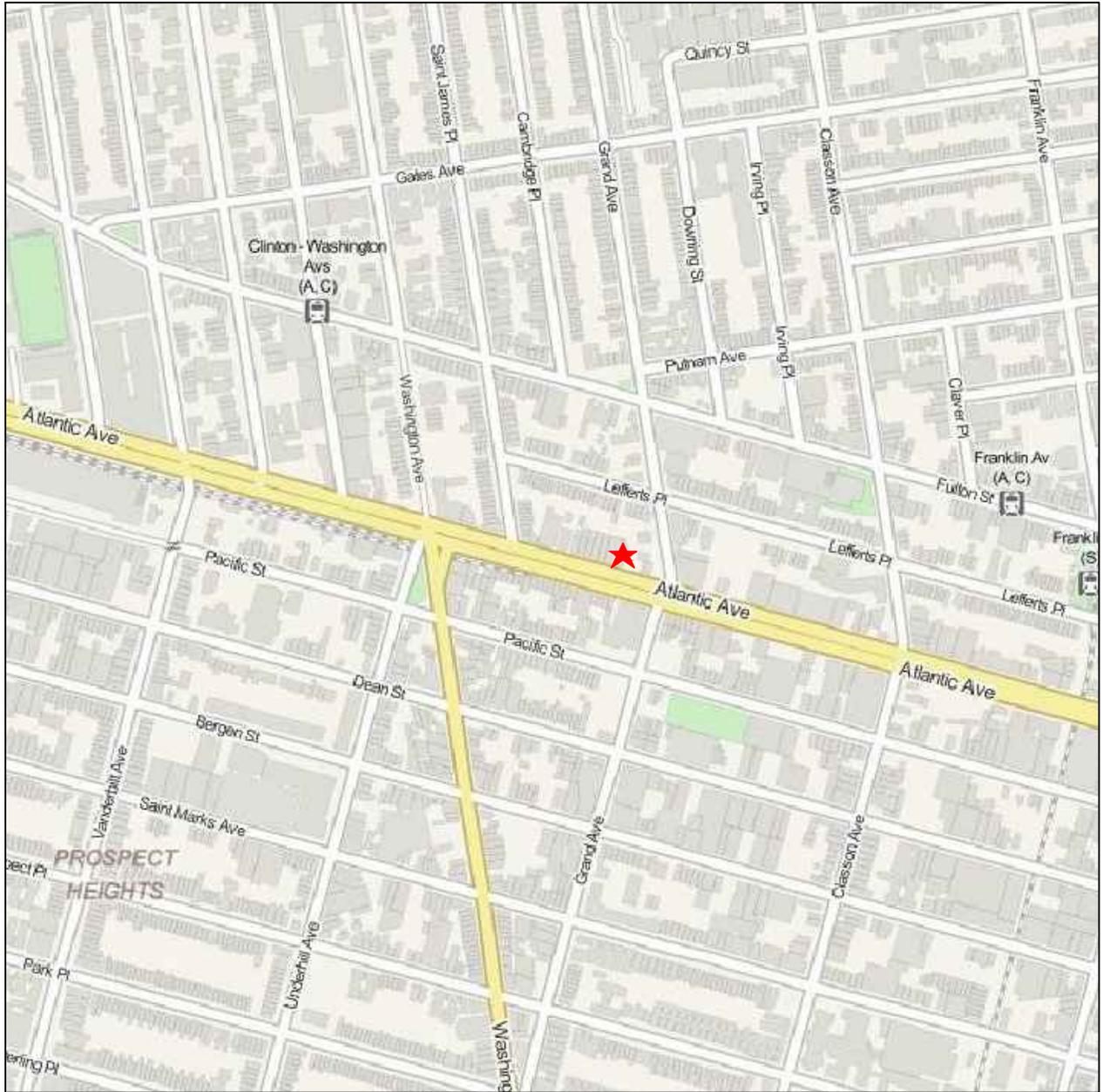
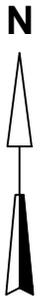
b The SCOs for commercial use were capped at a maximum value of 500 ppm. See TSD section 9.3.

c The SCOs for industrial use and the protection of groundwater were capped at a maximum value of 1000 ppm. See TSD section 9.3.

d The SCOs for metals were capped at a maximum value of 10,000 ppm. See TSD section 9.3.

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

FIGURE 1
SITE LOCATION MAP



★ - SITE LOCATION



ALPHA-HYDRO
ENVIRONMENTAL SERVICES

A PARADIGM OF EXCELLENCE

1503 Wave Avenue, Medford NY 11763

FIGURE 1 SITE LOCATION MAP

DATE: 11/21/14

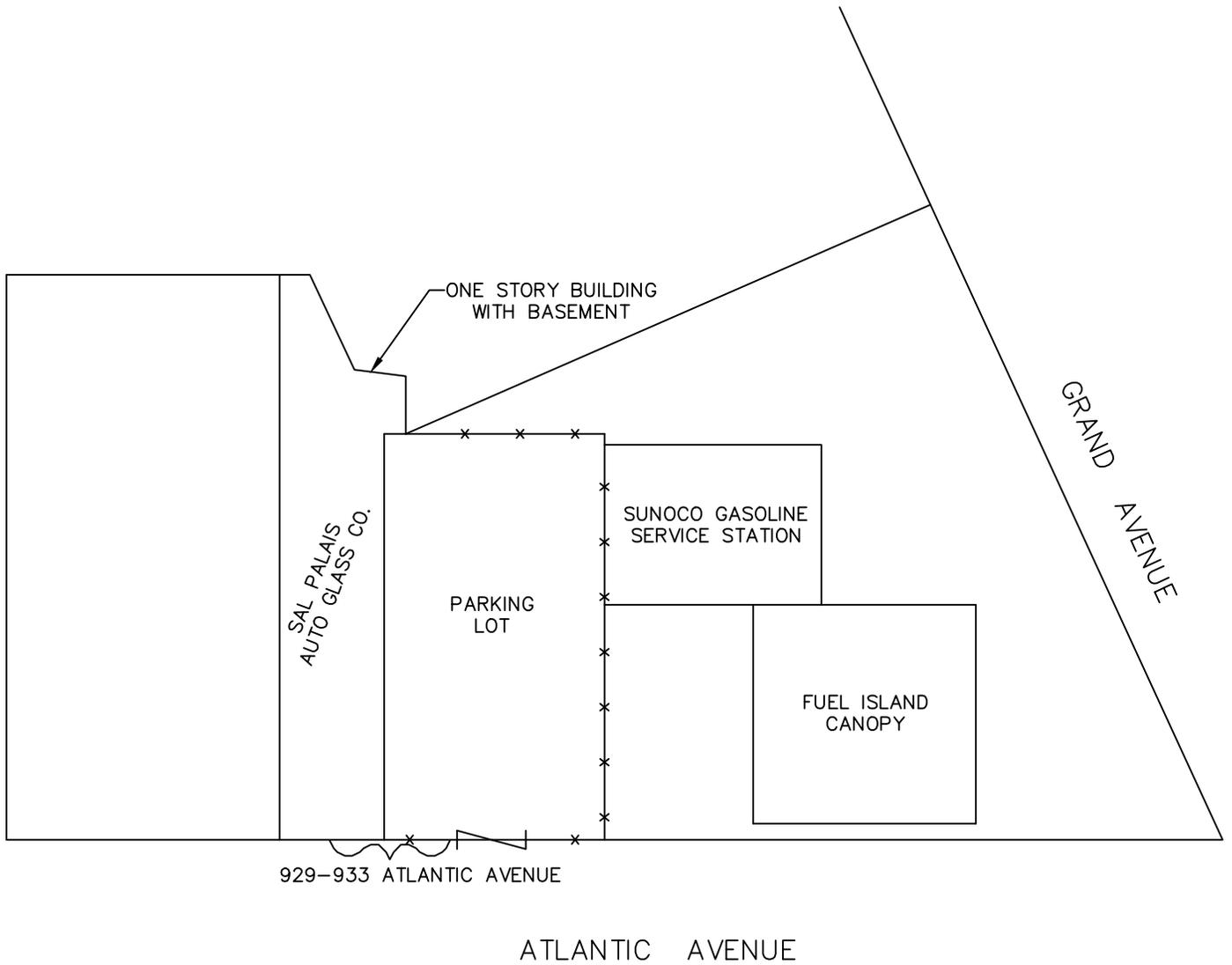
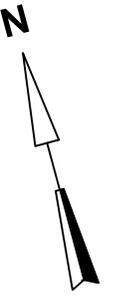
GEOLOGIST: D.O.

DRAWN BY: J.F.

929-933 ATLANTIC AVENUE
BROOKLYN, NY 11238

FILE NO: AH-141350

FIGURE 2
SITE PLAN



ALPHA-HYDRO
ENVIRONMENTAL SERVICES

A PARADIGM OF EXCELLENCE

1503 Wave Avenue, Medford NY 11763

FIGURE 2
SITE PLAN

DATE: 11/21/14

GEOLOGIST: D.O.

DRAWN BY: J.F.

929-933 ATLANTIC AVENUE
BROOKLYN, NY 11238

FILE NO: AH-141350

FIGURE 3
LAYOUT OF PROPOSED SITE
DEVELOPMENT

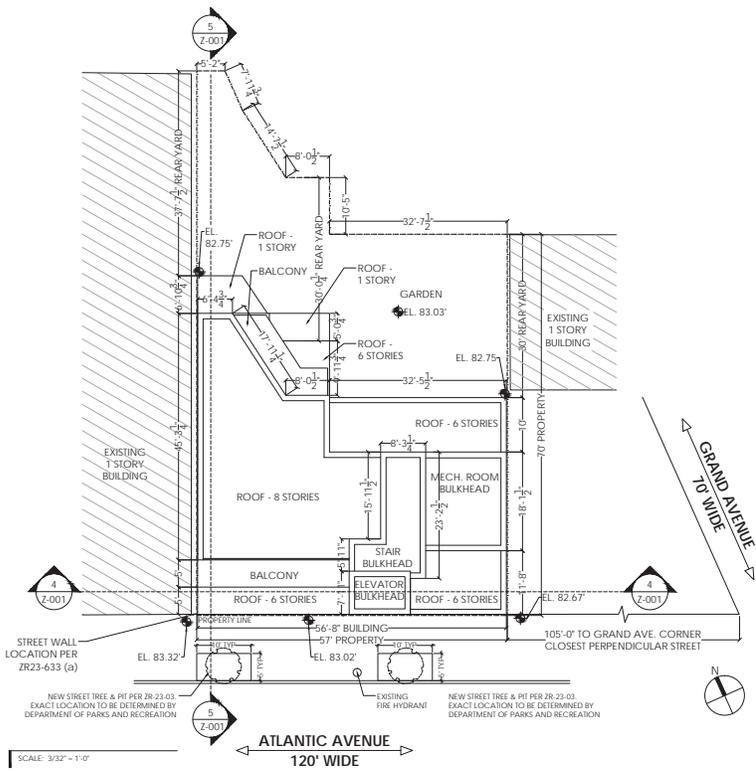


Fig 3. Layout of Site Development

FIGURE 4
SURROUNDING LAND USAGE



★ - SITE LOCATION

- 1 & 2 Family Residential
- Multi-family Residential
- Mixed Use
- Open space & outdoor recreation
- Commercial
- Institutions
- Industrial
- Parking
- Transportation / Utilities
- Vacant Lots



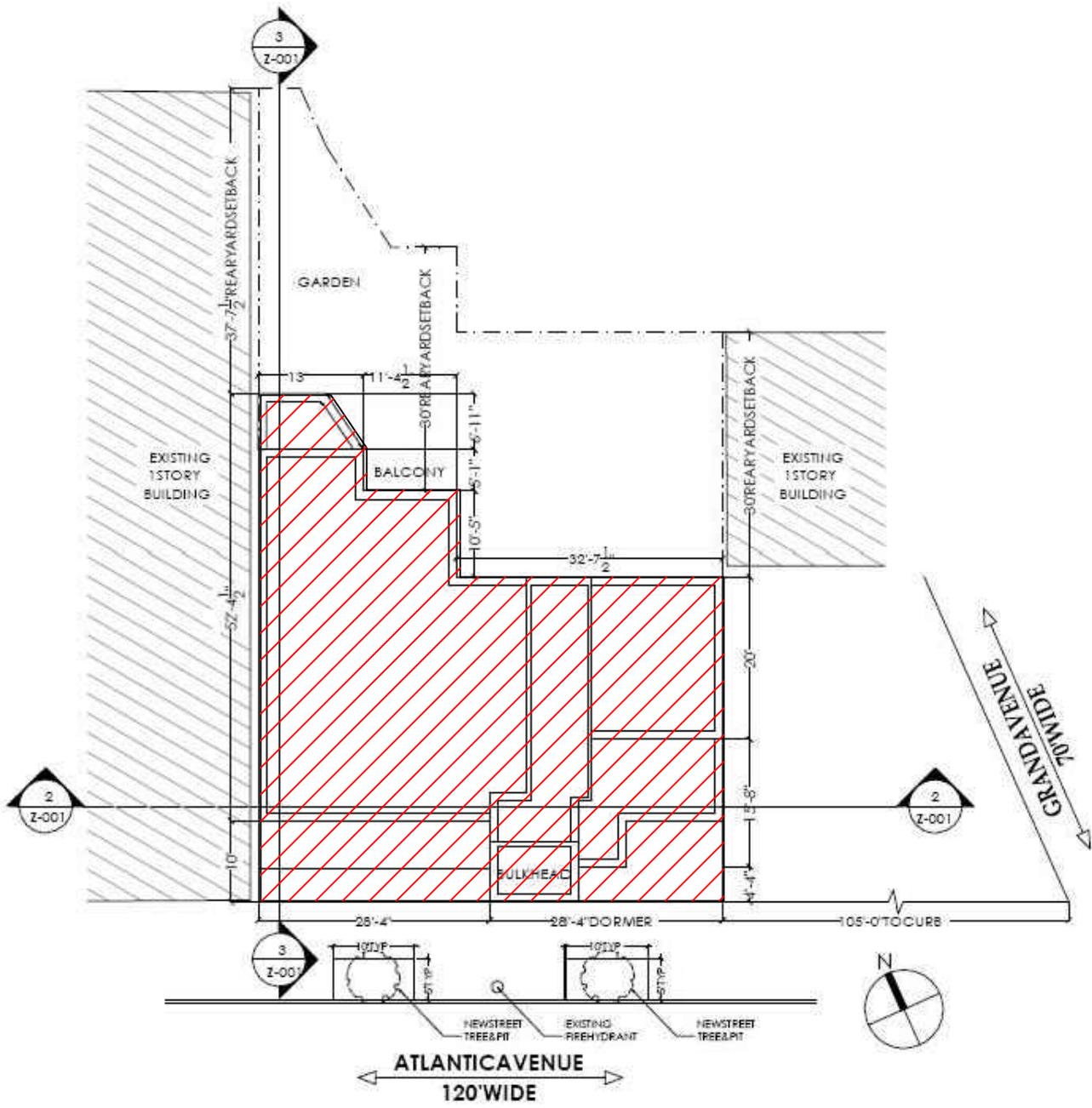
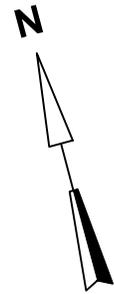
ALPHA-HYDRO
ENVIRONMENTAL SERVICES
A PARADIGM OF EXCELLENCE

1503 Wave Avenue, Medford NY 11763

FIGURE 4 SURROUNDING LAND USE MAP

DATE: 11/21/14	929-933 ATLANTIC AVENUE
GEOLOGIST: D.O.	BROOKLYN, NY 11238
DRAWN BY: J.F.	FILE NO: AH-141350

FIGURE 5
EXCAVATION PLAN



LEGEND

 AREA OF EXCAVATION TO 12 FEET



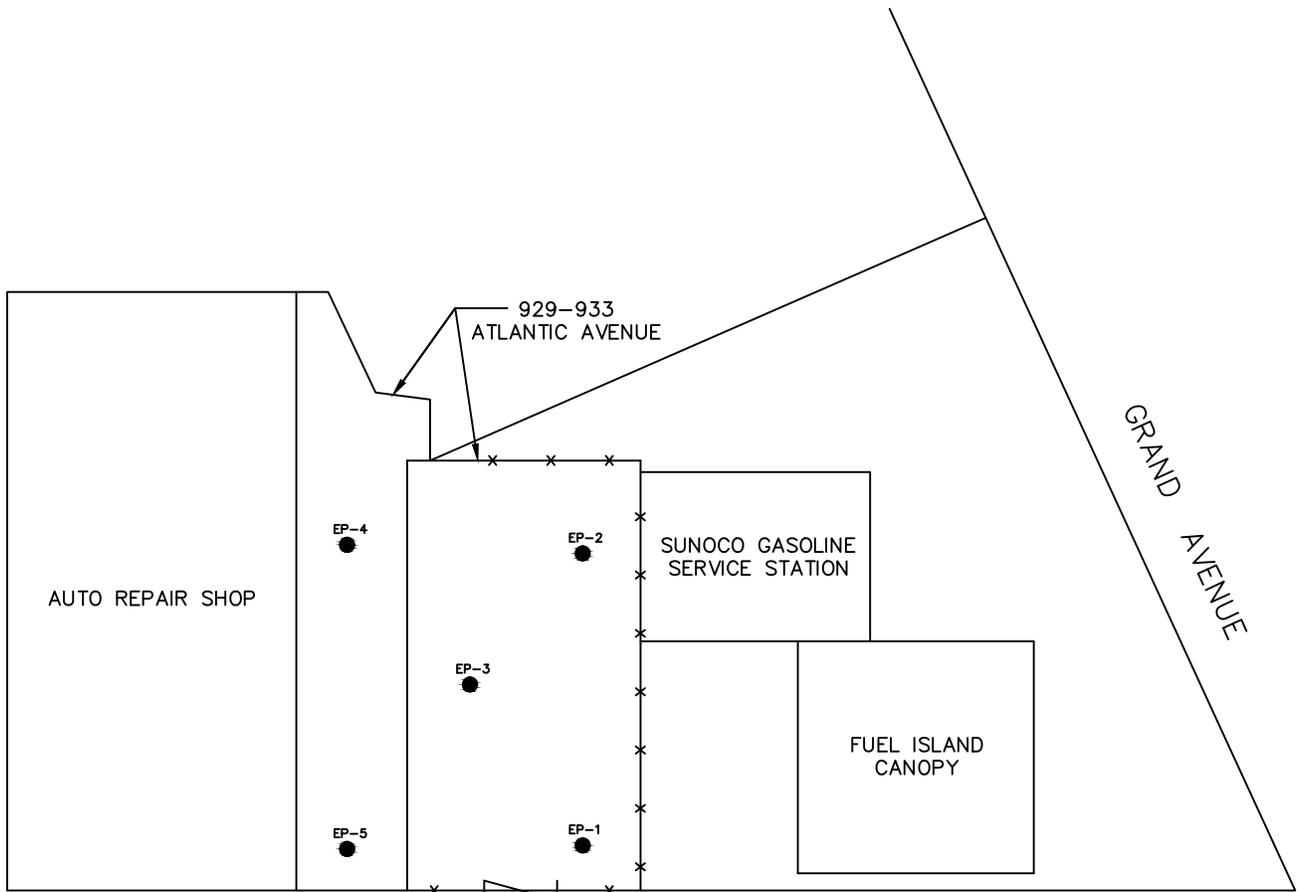
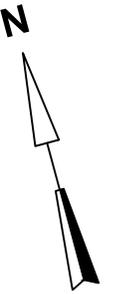
ALPHA-HYDRO
ENVIRONMENTAL SERVICES
A PARADIGM OF EXCELLENCE

1503 Wave Avenue, Medford NY 11763

FIGURE 5
EXCAVATION PLAN

DATE: 11/21/14	929-933 ATLANTIC AVENUE BROOKLYN, NY 11238
GEOLOGIST: D.O.	
DRAWN BY: J.F.	FILE NO: AH-141350

FIGURE 6
ENDPOINT SAMPLING PLAN



LEGEND

EP-1
● - ENDPOINT SAMPLE LOCATION

ATLANTIC AVENUE



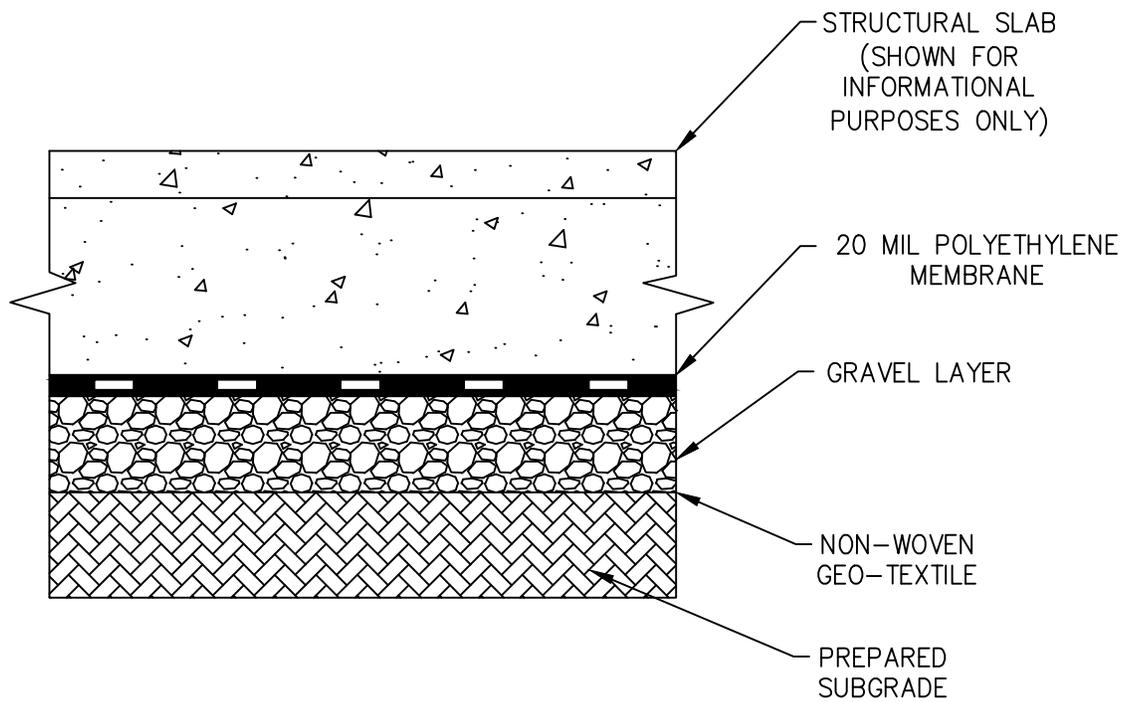
ALPHA-HYDRO
ENVIRONMENTAL SERVICES
A PARADIGM OF EXCELLENCE

1503 Wave Avenue, Medford NY 11763

FIGURE 6
ENDPOINT SAMPLE LOCATION MAP

DATE: 11/21/14	929-933 ATLANTIC AVENUE BROOKLYN, NY 11238
GEOLOGIST: D.O.	
DRAWN BY: J.F.	FILE NO: AH-141350

FIGURE 7
VAPOR BARRIER PLAN



TYPICAL VAPOR BARRIER
CROSS SECTION DETAIL

N.T.S.



ALPHA-HYDRO
ENVIRONMENTAL SERVICES

A PARADIGM OF EXCELLENCE

1503 Wave Avenue, Medford NY 11763

FIGURE 7
VAPOR BARRIER PLAN

DATE: 11/21/14

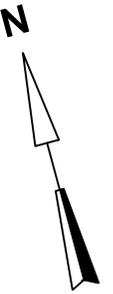
GEOLOGIST: D.O.

DRAWN BY: J.F.

929-933 ATLANTIC AVENUE
BROOKLYN, NY 11238

FILE NO: AH-141350

FIGURE 8
TRUCK ROUTE MAP



ALPHA-HYDRO
ENVIRONMENTAL SERVICES
 A PARADIGM OF EXCELLENCE

1503 Wave Avenue, Medford NY 11763

FIGURE 8
 TRUCKING ROUTE

DATE: 11/21/14	929-933 ATLANTIC AVENUE BROOKLYN, NY 11238
GEOLOGIST: D.O.	
DRAWN BY: J.F.	FILE NO: AH-141350

ATTACHMENT A
PROPOSED DEVELOPMENT PLANS

929 ATLANTIC AVENUE

BROOKLYN, NY 11238

DRAWING LIST

GENERAL

T-001.00 PROJECT RENDERING, DRAWING LIST
G-110.00 BUILDING CODE ANALYSIS

ZONING

Z-001.00 ZONING ANALYSIS: PLOT PLAN/FEMA MAP/DIAGRAMMATIC SECTIONS
Z-002.00 FLOOR AREA CALCULATIONS: DEDUCTION DIAGRAMS
Z-003.00 ZONING ANALYSIS: DEDUCTION DIAGRAMS

ENERGY CODE

EN-001.00 ENERGY CODE ENVELOPE COMPLIANCE
EN-100.00 ENERGY ANALYSIS I
EN-101.00 ENERGY ANALYSIS II

ARCHITECTURAL

A-001.00 ABBREVIATIONS & SYMBOLS
A-002.00 GENERAL NOTES & ADA DETAILS
A-003.00 KITCHEN CLEARANCE DETAILS
A-004.00 BATHROOM & ELEVATOR CLEARANCE DETAILS
A-010.00 EGRESS PLANS
A-011.00 EGRESS PLANS
A-012.00 EXIT SUMMARY & OCCUPANT LOAD CALCULATIONS

A-101.00 CONSTRUCTION PLAN - CELLAR, FIRST FLOOR PLAN
A-102.00 CONSTRUCTION PLAN - SECOND FLOOR PLAN, THIRD FLOOR PLAN
A-103.00 CONSTRUCTION PLAN - FOURTH FLOOR PLAN, FIFTH FLOOR
A-104.00 CONSTRUCTION PLAN - SIXTH FLOOR PLAN, SEVEN FLOOR PLAN
A-105.00 CONSTRUCTION PLAN - EIGHT FLOOR PLAN, ROOF PLAN
A-106.00 CONSTRUCTION PLAN - BULKHEAD PLAN

A-150.00 REFLECTED CEILING PLAN - CELLAR
A-151.00 REFLECTED CEILING PLAN - FIRST FLOOR
A-152.00 REFLECTED CEILING PLAN - SECOND FLOOR
A-153.00 REFLECTED CEILING PLAN - THIRD FLOOR
A-154.00 REFLECTED CEILING PLAN - FOURTH FLOOR
A-155.00 REFLECTED CEILING PLAN - FIFTH FLOOR
A-156.00 REFLECTED CEILING PLAN - SIXTH FLOOR
A-157.00 REFLECTED CEILING PLAN - SEVENTH FLOOR
A-158.00 REFLECTED CEILING PLAN - EIGHTH FLOOR
A-159.00 REFLECTED CEILING PLAN - ROOF

A-201.00 EXTERIOR ELEVATIONS - SOUTH & NORTH
A-210.00 WINDOW SCHEDULE

A-501.00 BUILDING SECTION 1 & 2
A-502.00 BUILDING SECTION 3

A-610.00 REFUSE ROOM & COMPACTOR ROOM DETAILS

MECHANICAL

M-001.00 NOTES, LEGEND, DETAILS
M-002.00 CELLAR AND FIRST FLOOR PLANS
M-003.00 SECOND AND THIRD FLOOR PLANS
M-004.00 FOURTH AND FIFTH FLOOR PLANS
M-005.00 SIXTH AND SEVENTH FLOOR PLANS
M-006.00 EIGHTH FLOOR, ROOF, AND BULKHEAD PLANS
M-007.00 SCHEDULES
M-008.00 EXHAUST SYSTEM, RISER DIAGRAMS

PLUMBING

P-001.00 NOTES
P-002.00 CELLAR AND FIRST FLOOR PLAN
P-003.00 SECOND AND THIRD FLOOR PLAN
P-004.00 FOURTH AND FIFTH FLOOR PLAN
P-005.00 SIXTH AND SEVENTH FLOOR PLAN
P-006.00 EIGHTH, ROOF, AND BULKHEAD FLOOR PLAN
P-007.00 STORM WATER RISER DIAGRAM
P-008.00 SANITARY SYSTEM RISER DIAGRAM
P-009.00 COLD AND HOT WATER SYSTEM RISER
P-010.00 GAS RISER DIAGRAM

SPRINKLER

SP-001.00 NOTES, LEGEND, DETAILS,
SPRINKLER SYSTEM RISER DIAGRAM
SP-002.00 SPRINKLER PLAN, CELLAR, FIRST, SECOND, THIRD, FOURTH, FIFTH AND SIXTH FLOOR PLAN
SP-003.00 SPRINKLER PLAN, SEVENTH, EIGHTH AND ROOF FLOOR PLAN
SP-004.00 FLOW/RISER DIAGRAM, SITE PLAN AND DETAILS, PUMP ROOM SCHEMATIC PLAN
SP-005.00 HYDRAULIC CALCULATION, CALCULATION ZONE 1
SP-006.00 HYDRAULIC CALCULATION, CALCULATION ZONE 2

FIRE ALARM - TO BE FILED UNDER SEPARATE APPLICATION

STRUCTURAL

S-000.00 GENERAL NOTES
FO-100.00 CELLAR/FOUNDATION PLAN AND DETAILS
FO-101.00 FOUNDATION SECTION AND DETAILS
S-100.00 GROUND - SECOND FLOOR REINFORCEMENT PLAN
S-101.00 THIRD - FOURTH FLOOR REINFORCEMENT PLAN
S-102.00 FIFTH - SIXTH FLOOR REINFORCEMENT PLAN
S-103.00 SEVENTH - EIGHTH FLOOR REINFORCEMENT PLAN
S-104.00 ROOF AND BULKHEAD REINFORCEMENT PLAN
S-200.00 COLUMN SCHEDULE
S-201.00 SHEAR WALL DETAILS
S-300.00 TYPICAL DETAILS
S-301.00 TYPICAL DETAILS
S-302.00 TYPICAL DETAILS
S-303.00 SECTION AND DETAILS

NOT FOR CONSTRUCTION

PROJECT:

929 ATLANTIC AVE
BROOKLYN, NEW YORK 11238

ROART

304 MALCOLM X BLVD
BROOKLYN, NEW YORK 11233
718 428 5654
ROART.COM



308 MALCOLM X BLVD,
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FAX: 718.412.1979

ARCHITECT OF RECORD

feingold & gregory - architects
118 West 83rd Street - New York, N.Y. - 10024
Tel: (212) 595-6886 - Fax: (212) 781-8992



ARCHITECT ASSUMES NO
RESPONSIBILITY FOR ANY
WORK MODIFICATIONS
FROM APPROVED PLANS
THE CONTRACTOR MUST
OBTAIN WRITTEN APPROVAL
FOR ANY CHANGES FROM
THE ARCHITECT BEFORE
COMMENCING SUCH WORK.

STRUCTURAL ENGINEER



ENGINEERING GROUP ASSOCIATES, P.C.
19 WEST 21ST STREET, SUITE 1201
NEW YORK, NY 10010

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FAX: 212.979.9281

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28 DOOLEY STREET, 2ND FLOOR
BROOKLYN, NY 11235
TEL (718) 332-2266; FAX (718) 332-2274
BLEVIN@LEVIN-ENGINEERING.COM

SITE PLAN



PROJECT No: 1405 BA_929

DOB REVIEW	04/02/15
DOB REVIEW	02/05/15
DRAWING	REV. # DATE



PAUL GREGORY, R.A.

TITLE:

COVER PAGE & DRAWING LIST

DATE: 04/02/2015

SCALE: AS NOTED

SHEET: T-001.00

BUILDING CODE INFORMATION

BUILDING CODE INFORMATION	BC SECTION	PERMITTED/REQUIRED	PROPOSED	
OCCUPANCY GROUP		R-2	R-2	COMPLIES
NUMBER OF STORIES		8 ABOVE GRADE	8 ABOVE GRADE	COMPLIES
FLOOR AREA ALLOWABLE		17,784 SF MAX	17,094.46 SF	COMPLIES
AREA/HEIGHT LIMITATIONS - (R-2)	TABLE 4-1			
PROPOSED CONSTRUCTION CLASS		CLASS I-B	CLASS I-B	COMPLIES
CONSTRUCTION CLASS ELEMENTS:	TABLE 3-4			
REAR EXTERIOR WALL, BEARING		2-HR REQUIRED	2-HR PROVIDED	COMPLIES
SIDE EXTERIOR WALLS, BEARING		2-HR REQUIRED	2-HR PROVIDED	COMPLIES
FRONT EXTERIOR WALL		2-HR REQUIRED	2-HR PROVIDED	COMPLIES
INTERIOR BEARING WALLS & PARTITIONS		2-HR REQUIRED	2-HR PROVIDED	COMPLIES
ENCLOSURE OF VERTICAL EXITS, EXIT PASSAGeways, HOISTWAYS & SHAFTS COLUMNS, GIRDERS, & TRUSSES SUPPORTING MORE THAN ONE FLOOR		2-HR REQUIRED	2-HR PROVIDED	COMPLIES
STRUCTURAL MEMBERS SUPPORTING A WALL		2-HR REQUIRED	2-HR PROVIDED	COMPLIES
FLOOR CONSTRUCTION INCLUDING BEAMS		1½-HR REQUIRED	1½-HR PROVIDED	COMPLIES
ROOF CONSTRUCTION		1-HR REQUIRED	1-HR PROVIDED	COMPLIES

THIS PROJECT DOES NOT INCLUDE MODULAR CONSTRUCTION

SPECIAL INSPECTIONS & AND PROGRESS INSPECTIONS - TR1	
IDENTIFICATION OF REQUIREMENT	
Y	N
	Code/Section
<input type="checkbox"/>	FLOOD ZONE COMPLIANCE BC G105
<input type="checkbox"/>	FIRE ALARM TEST BC 907. BC 1704.13
<input type="checkbox"/>	PHOTOLUMINESCENT EXIT PATH MARKINGS TR7 BC 1026.11
<input type="checkbox"/>	EMERGENCY POWER SYSTEMS(GENERATORS) BC 1704.13, BC 2702
<input type="checkbox"/>	STRUCTURAL STEEL - WELDING BC 1704.3.1
<input type="checkbox"/>	STRUCTURAL STEEL - ERECTION & BOLTING BC 1704.3.2 BC 1704.3.3
<input type="checkbox"/>	STRUCTURAL COLD - FORMED STEEL BC 1704.3.4
<input type="checkbox"/>	CONCRETE - CAST-IN-PLACE BC 1704.4
<input type="checkbox"/>	CONCRETE - PRECAST BC 1704.4
<input type="checkbox"/>	CONCRETE - PRESTRESSED BC 1704.4
<input type="checkbox"/>	MASONRY BC 1704.5
<input type="checkbox"/>	WOOD - OFF-SITE FABRICATION OF STRUCTURAL ELEMENTS BC 1704.6
<input type="checkbox"/>	WOOD - INSTALLATION OF HIGH-LOAD DIAPHRAGMS BC 1704.6.1
<input type="checkbox"/>	WOOD - INSTALLATION OF METAL-PLATE-CONNECTED TRUSSES BC 1704.6.3
<input type="checkbox"/>	WOOD - INSTALLATION OF PREFABRICATED JOISTS BC 1704.6.4
<input type="checkbox"/>	SOILS - SITE PREPARATION BC 1704.7.1
<input type="checkbox"/>	SOILS - FILL PLACEMENT & IN-PLACE DENSITY BC 1704.7.2 BC 1704.7.3
<input type="checkbox"/>	SOILS - INVESTIGATIONS (BORINGS/TEST PILLS) TR4 BC 1704.7.4
<input type="checkbox"/>	PILE FOUNDATIONS & DRILLED PIER INSTALLATION TR5 BC 1704.8
<input type="checkbox"/>	PIER FOUNDATIONS BC 1704.9
<input type="checkbox"/>	UNDERPINNING BC 1704.9.1
<input type="checkbox"/>	WALL PANELS, CURTAIN WALLS, AND VENNERS BC 1704.10
<input type="checkbox"/>	SPRAYED FIRE-RESISTANT MATERIALS BC 1704.11
<input type="checkbox"/>	EXTERIOR INSULATION FINISH SYSTEMS(EIFS) BC 1704.12
<input type="checkbox"/>	ALTERNATIVE MATERIALS - OTCR BUILDINGS BULLETIN # BC 1704.13
<input type="checkbox"/>	SMOKE CONTROL SYSTEMS BC 1704.14
<input type="checkbox"/>	MECHANICAL SYSTEMS BC 1704.15
<input type="checkbox"/>	FUEL-OIL STORAGE AND FUEL-OIL PIPING SYSTEMS BC 1704.16
<input type="checkbox"/>	HIGH-PRESSURE STEAM PIPING (WELDING) BC 1704.17
<input type="checkbox"/>	FUEL-GAS PIPING (WELDING) BC 1704.18
<input type="checkbox"/>	STRUCTURAL SAFETY - STRUCTURAL STABILITY BC 1704.19
<input type="checkbox"/>	MECHANICAL DEMOLITION BC 1704.19, BC 3306.6
<input type="checkbox"/>	EXCAVATION - SHEETING, SHORING AND BRACING BC 1704.19, BC 3304.4.1
<input type="checkbox"/>	SOIL PERCOLATION TEST - DRYWELL BC 1704.20.1
<input type="checkbox"/>	RAISING AND MOVING OF A BUILDING BC 1704.19, BC 3304.27
<input type="checkbox"/>	SOIL PERCOLATION TEST - SEPTIC BC 1704.20.1
<input type="checkbox"/>	SITE STORM DRAINAGE DISPOSAL AND DETENTION SYSTEM INSTALLATION BC 1704.20
<input type="checkbox"/>	SEPTIC SYSTEM INSTALLATION BC 1704.20
<input type="checkbox"/>	SPRINKLER SYSTEMS BC 1704.21
<input type="checkbox"/>	STANDPIPE SYSTEMS BC 1704.22
<input type="checkbox"/>	HEATING SYSTEMS BC 1704.23
<input type="checkbox"/>	CHIMNEYS BC 1704.24
<input type="checkbox"/>	FIRESTOP, DRAFTSTOP AND FIREBLOCK SYSTEMS BC 1704.25
<input type="checkbox"/>	ALUMINUM WELDING BC 1704.26
<input type="checkbox"/>	SEISMIC ISOLATION SYSTEMS BC 1707.8
<input type="checkbox"/>	CONCRETE TEST CYLINDERS TR2 BC 1905.6
<input type="checkbox"/>	CONCRETE DESIGN MIX TR3 BC 1905.3
<input type="checkbox"/>	PRELIMINARY 28-116.2.1 BC 109.2
<input type="checkbox"/>	FOOTING AND FOUNDATION BC 109.3.1
<input type="checkbox"/>	LOWEST FLOOR ELEVATION (ATTACH FEMA FORM) BC 109.3.2
<input type="checkbox"/>	FRAME INSPECTION BC 109.3.3
<input type="checkbox"/>	ENERGY CODE COMPLIANCE INSPECTIONS TR8 BC 109.3.5
<input type="checkbox"/>	FIRE-RESISTANCE RATED CONSTRUCTION BC 109.3.4
<input type="checkbox"/>	PUBLIC ASSEMBLY EMERGENCY LIGHTING 28-116.2.2
<input type="checkbox"/>	FINAL 28-116.2.4.2, BC 109.5
CIRECTIVE14 OF 1975, AND 1 RCNY 101-10	

ENERGY CODE PROGRESS INSPECTIONS - TR8	
IDENTIFICATION OF REQUIREMENT	
Y	N
	Code/Section
<input type="checkbox"/>	PROGRESS INSPECTIONS
<input type="checkbox"/>	PROTECTION OF FOUNDATION INSULATION IA11, IA1
<input type="checkbox"/>	INSULATION PLACEMENT AND R VALUES IA12, IA2
<input type="checkbox"/>	FENESTRATION THERMAL VALUES AND RATINGS IA13, IA3
<input type="checkbox"/>	FENESTRATION RATINGS FOR AIR LEAKAGE IA14, IA4
<input type="checkbox"/>	FENESTRATION AREAS IA15, IA5
<input type="checkbox"/>	AIR SEALING AND INSULATION - VISUAL IA16, IA6
<input type="checkbox"/>	AIR SEALING AND INSULATION - TESTING IA17
<input type="checkbox"/>	PROJECTION FACTORS IA7
<input type="checkbox"/>	LOADING DECK WEATHER SEALS IA8
<input type="checkbox"/>	VESTIBULES IA9
<input type="checkbox"/>	FIREPLACES IB1, IB1
<input type="checkbox"/>	DAMPERS INTEGRAL TO BUILDING ENVELOPE IB2, IB2
<input type="checkbox"/>	HVAC AND SERVICE WATER HEATING EQUIPMENT IB3, IB3
<input type="checkbox"/>	HVAC AND SERVICE WATER HEATING SYSTEM CONTROLS IB4, IB4
<input type="checkbox"/>	DUCT PLENUM AND PIPING INSULATION AND SEALING IB5, IB5
<input type="checkbox"/>	DUCT LEAKAGE TESTING IB6, IB6
<input type="checkbox"/>	ELECTRICAL METERING IC1, IC1
<input type="checkbox"/>	LIGHTING IN DWELLING UNITS IC2, IC2
<input type="checkbox"/>	INTERIOR LIGHTING POWER IC3
<input type="checkbox"/>	EXTERIOR LIGHTING POWER IC4
<input type="checkbox"/>	LIGHTING CONTROLS IC5
<input type="checkbox"/>	EXIT SIGNS IC6
<input type="checkbox"/>	TANDEM WIRING IC7
<input type="checkbox"/>	ELECTRICAL MOTORS IC8
<input type="checkbox"/>	MAINTENANCE INFORMATION ID1, ID1
<input type="checkbox"/>	PERMANENT CERTIFICATE ID2

PROJECT:

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ARCHITECT ASSUMES NO
RESPONSIBILITY FOR ANY
WORK INDICATED BY
FROM APPROVED PLANS
THE CONTRACTOR MUST
OBTAIN WRITTEN APPROVAL
FOR ANY CHANGES FROM
THE ARCHITECT BEFORE
COMMENCING SUCH WORK.

STRUCTURAL ENGINEER



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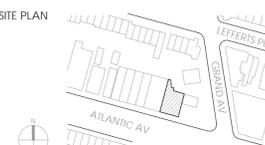
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SITE PLAN



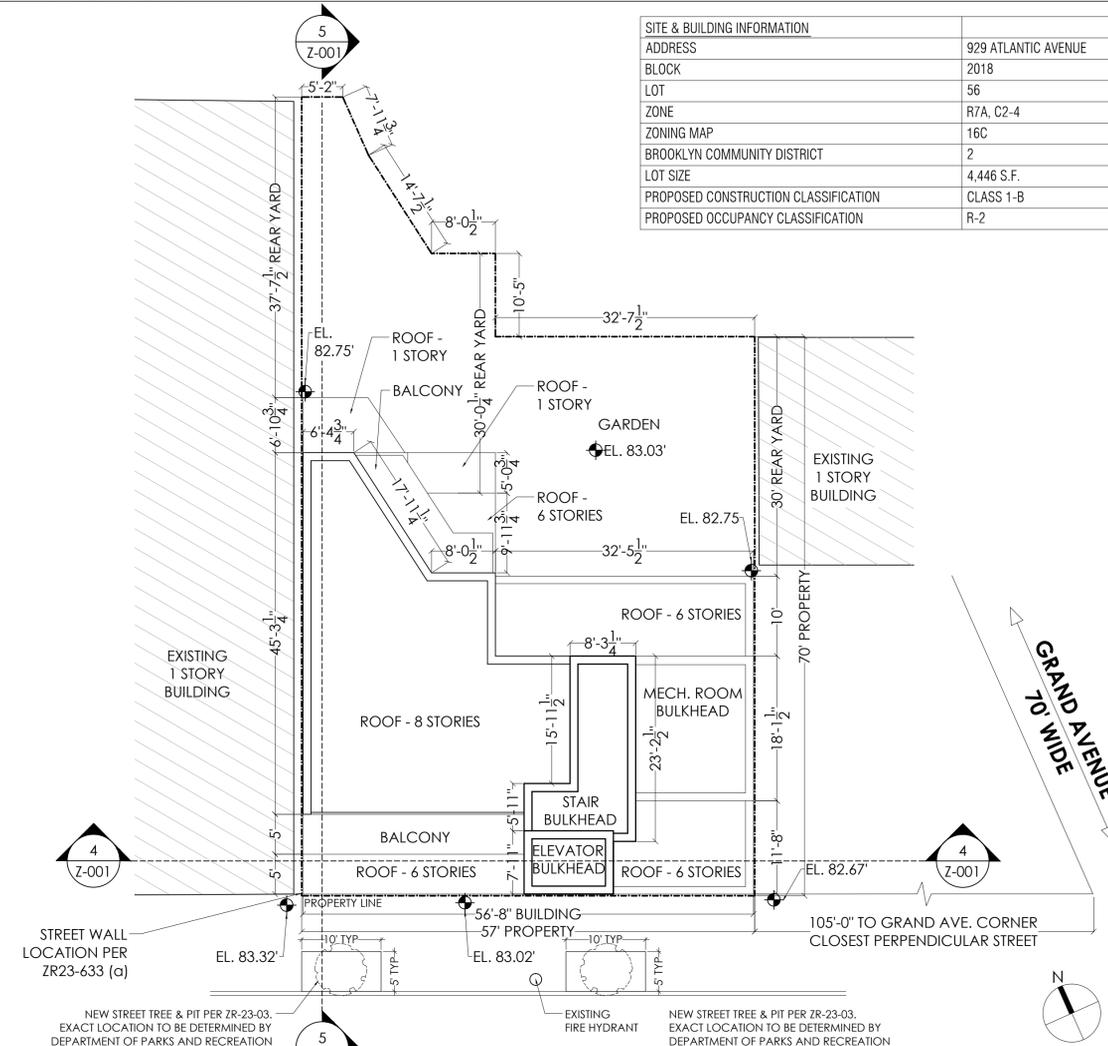
PROJECT No:	1405 BA_929
DOB REVIEW	04/02/15
DOB REVIEW	02/05/15
DRAWING	REV. # DATE



PAUL GREGORY, R.A.

TITLE: BUILDING CODE ANALYSIS
DATE: 04/02/2015
SCALE: AS NOTED
SHEET: G-110.00

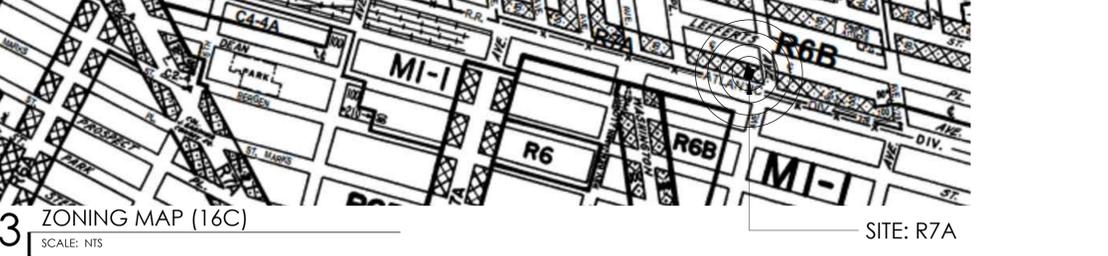
ZONING INFORMATION



1 SITE PLAN
SCALE: 3/32" = 1'-0"
ATLANTIC AVENUE 120' WIDE
DATUM /AVG. CURB ELEVATION CALCULATION:
(AS PER SURVEY DATED MAY 5, 2014)
83.32 + 83.02 + 82.67 = 249.01
249.01 / 3 = **83.00**



2 FEMA FLOOD MAP (3604970212F)
SCALE: NTS
SITE: NOT IN FEMA FLOOD ZONE



3 ZONING MAP (16C)
SCALE: NTS
SITE: R7A

SITE & BUILDING INFORMATION	
ADDRESS	929 ATLANTIC AVENUE
BLOCK	2018
LOT	56
ZONE	R7A, C2-4
ZONING MAP	16C
BROOKLYN COMMUNITY DISTRICT	2
LOT SIZE	4,446 S.F.
PROPOSED CONSTRUCTION CLASSIFICATION	CLASS 1-B
PROPOSED OCCUPANCY CLASSIFICATION	R-2

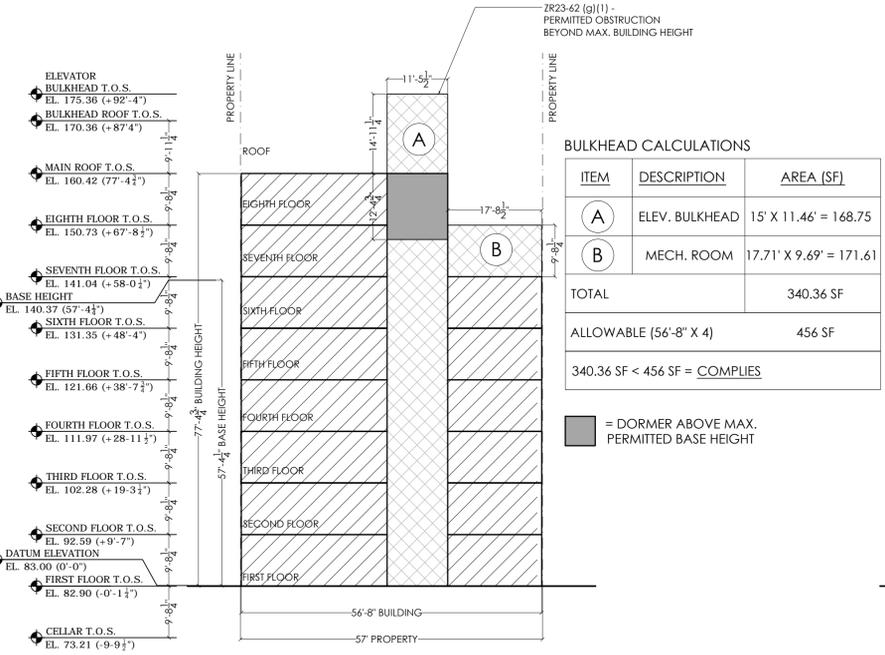
ZONING INFORMATION - R7A	ZR SECTION	PERMITTED/REQUIRED	PROPOSED	
USE GROUPS	22-00, 32-00	USE GROUP 2	USE GROUP 2	COMPLIES
RESIDENTIAL FLOOR AREA RATIO - INCLUSIONARY HOUSING DESIGNATED AREA	23-952	3.45 BASE FAR; 3.45 X 4,446 = 15,338.7 SF MAX. ALLOWABLE FLOOR AREA	15,083.31 SF < 15,338.7 SF	COMPLIES
BALCONIES	23-132	BALCONIES IN R7A; PROJECTING LESS THAN 7'	2 BALCONIES; PROJECTING 6' MAX.	COMPLIES
DENSITY: MAX. # OF DWELLING UNITS	23-32/15-111	680 17,784 / 680 = 26 UNITS MAXIMUM	19 UNITS	COMPLIES
MAXIMUM ALLOWABLE LOT COVERAGE	23-145	65% INTERIOR LOT: 4,446 SF X .65 = 2890 SF	2,772 SF; 62% < 65% (SEE LOT COVERAGE DIAGRAM, SHEET Z-002)	COMPLIES
REQUIRED FRONT YARD	23-45	NO FRONT YARD REQUIRED	NO FRONT YARD PROVIDED	COMPLIES
REQUIRED SIDE YARD	23-462	NO SIDE YARD REQUIRED	NO SIDE YARD PROVIDED	COMPLIES
REQUIRED REAR YARD	23-53/23-532	30' REAR YARD REQUIRED	30' REAR YARD PROVIDED	COMPLIES
REQUIRED REAR YARD SETBACK	23-663 (b)	10' REAR YARD SETBACK REQUIRED	10' REAR YARD SETBACK PROVIDED	COMPLIES
MAXIMUM ALLOWABLE HEIGHT	23-633	80'	77'-4"	COMPLIES
MINIMUM ALLOWABLE BASE HEIGHT	23-633	65'	57'-4"	COMPLIES
STREET WALL LOCATION	23-633 (a)	LOCATED NO CLOSER TO THE STREET LINE THAN THE CLOSEST STREET WALL OF AN EXTG. BLDG. TO SUCH STREET LINE	PROPOSED STREET WALL ALIGNS WITH ADJ. STREET WALL (SEE SITE PLAN)	COMPLIES
PERMITTED OBSTRUCTION - DORMER	23-621 (c)	50% WIDTH OF WALL OF HIGHEST STORY ENTIRELY BELOW THE MAX. BASE HEIGHT	56'-8" STREET WALL WIDTH; DORMER = 11'-5"; = 20%	COMPLIES
STREET WALL SETBACK ABOVE BASE HEIGHT	23-633 (b)	10' SETBACK REQUIRED MIN. (WIDE STREET)	10' SETBACK PROVIDED	COMPLIES
PLANTING AREAS	23-892 (a)	PERMANENT PLANTING REQUIRED BETWEEN STREET LINE AND BUILDING STREET WALL	PLANTING PROVIDED (SEE FIRST FLOOR PLAN, A-101)	COMPLIES
REQUIRED VEHICULAR PARKING SPACES	25-261	50% OF DWELLING UNITS MIN.; WAIVED IF LESS THAN 15 SPACES	0 PROVIDED	COMPLIES
REQUIRED BICYCLE PARKING SPACES	25-80	50% OF DWELLING UNITS MIN.: 19 UNITS X .50 = 10 SPACES REQUIRED	10 SPACES PROVIDED IN CELLAR	COMPLIES
STREET TREE PLANTING	26-41	1 TREE PLANTED AT EVERY 25' STREET FRONTAGE	2 TREES PROVIDED (SEE SITE PLAN, Z-001)	COMPLIES

ZONING INFORMATION - C2-4 OVERLAY	ZR SECTION	PERMITTED/REQUIRED	PROPOSED	
QUALITY HOUSING PROGRAM	34-011 (a)	BUILDING SHALL COMPLY WITH ARTICLE II, CHAPTER 8 (QUALITY HOUSING PROGRAM)	BUILDING COMPLIES WITH QUALITY HOUSING	COMPLIES
BULK REGULATIONS	34-11	BUILDING SHALL COMPLY WITH THE BULK REGULATIONS OF ARTICLE II, CHAPTER 3	BUILDING COMPLIES WITH BULK REGULATIONS	COMPLIES
MAXIMUM FLOOR AREA RATIO	34-221	MAX. FLOOR AREA RATIO SHALL BE PURSUANT TO THE PROVISIONS OF ART. II, CHAPTER 3	MAX. FLOOR AREA IS PURSUANT TO THE PROVISIONS OF ART. II, CHAPTER 3	COMPLIES
REQUIRED FRONT YARD	34-231	NO FRONT YARD REQUIRED	NO FRONT YARD PROVIDED	COMPLIES
REQUIRED SIDE YARD	34-232	NO SIDE YARD REQUIRED	NO SIDE YARD PROVIDED	COMPLIES
MODIFICATION OF HEIGHT AND SETBACK REGULATIONS	34-24	BUILDING SHALL COMPLY WITH THE HEIGHT AND SETBACK REGULATIONS OF ARTICLE II, CHAPTER 3	BUILDING COMPLIES WITH HEIGHT AND SETBACK REGULATIONS	COMPLIES
REQUIRED VEHICULAR PARKING SPACES	36-361	50% OF DWELLING UNITS MIN.; WAIVED IF LESS THAN 15 SPACES	0 PROVIDED	COMPLIES
REQUIRED BICYCLE PARKING SPACES	36-711	50% OF DWELLING UNITS MIN.: 19 UNITS X .50 = 10 SPACES REQUIRED	10 SPACES PROVIDED IN CELLAR	COMPLIES

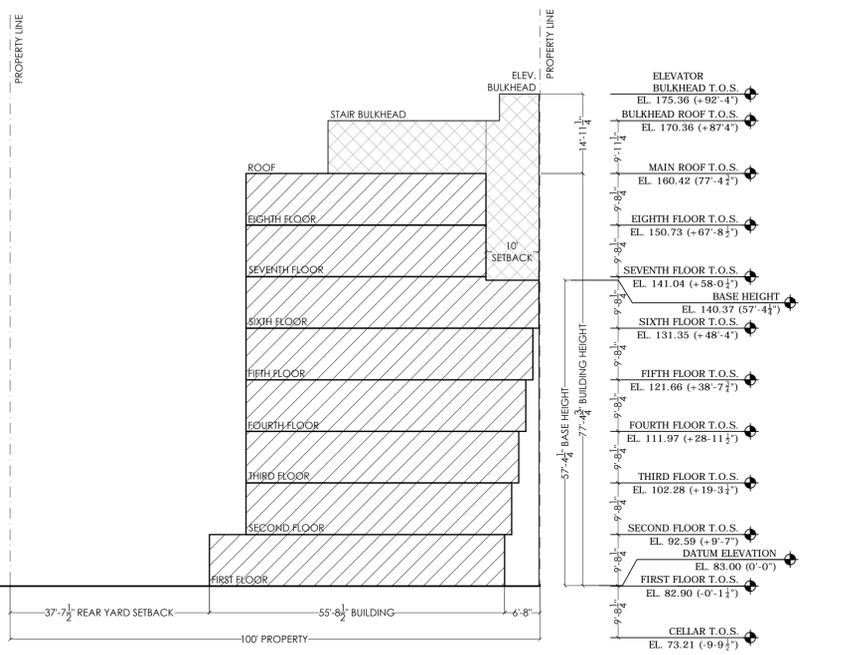
THE QUALITY HOUSING PROGRAM: CH. 8	ZR SECTION	PERMITTED/REQUIRED	PROPOSED	
SIZE OF DWELLING UNIT	28-21	400 SF MIN.	SMALLEST UNIT: 567 SF (UNIT 2A/3A)	COMPLIES
WINDOWS	28-22	DOUBLE GLAZED	ALL WINDOWS DOUBLE GLAZED	COMPLIES
REFUSE STORAGE AND DISPOSAL	28-23	2.9 CUBIC FEET PER DWELLING UNIT X 20 DWELLING UNITS = 58 CUBIC FEET REQUIRED	336 CUBIC FEET PROVIDED	COMPLIES
LAUNDRY FACILITIES	28-24	2 WASHER AND 1 DRYER UNITS PER 40 DWELLING UNITS	1 WASHER AND 1 DRYER IN EVERY UNIT	COMPLIES
REQUIRED RECREATION SPACE	28-31	3.3% RESIDENTIAL FLOOR AREA: 15,338.7 X .033 = 506.2 SF REQUIRED	708 SF RECREATION SPACE PROVIDED @ FIRST FLOOR GYM & GARDEN	COMPLIES
PLANTING AREAS	28-33	PERMANENT PLANTING REQUIRED BETWEEN STREET LINE AND BUILDING STREET WALL	PLANTING PROVIDED (SEE FIRST FLOOR PLAN, A-101)	COMPLIES
DENSITY BY CORRIDOR PER STORY	28-41	11 DWELLING UNITS MAX. SHARE 1 CORRIDOR PER STORY	3 DWELLING UNITS MAX SHARE 1 CORRIDOR PER STORY	COMPLIES

INCLUSIONARY HOUSING	ZR SECTION	PERMITTED/REQUIRED	PROPOSED	
INCLUSIONARY HOUSING	23-90	BUILDING LIES WITHIN AN INCLUSIONARY HOUSING DISTRICT - SEE APPENDIX F - BROOKLYN CD 2; INCLUSIONARY HOUSING AREA MAP 3	NO INCLUSIONARY DEVELOPMENT PROPOSED; NO BONUS FLOOR AREA TAKEN 3.45 BASE FAR TO BE USED.	

ZONING DIAGRAMS



4 DIAGRAMMATIC ZONING SECTION
SCALE: 1/16" = 1'-0"



5 DIAGRAMMATIC ZONING SECTION
SCALE: 1/16" = 1'-0"

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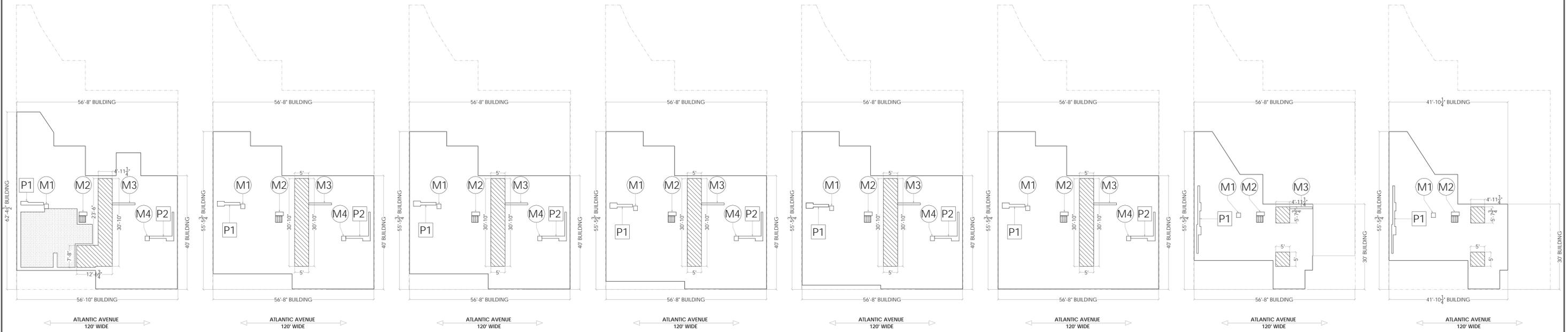
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PROJECT No: 1405 BA_929
DOB REVIEW: 04/02/15
DOB REVIEW: 02/05/15
DRAWING REV. # DATE

TITLE:
ZONING ANALYSIS & DIAGRAMS
DATE: 04/02/2015
SCALE: AS NOTED
SHEET: Z-001.00

REGISTERED ARCHITECT
PAUL GREGORY, R.A.
STATE OF NEW YORK
028717

F.A.R. DEDUCTION SUMMARY



1 1ST FLOOR PLAN SCALE: 1/16" = 1'-0"
 2 2ND FLOOR PLAN SCALE: 1/16" = 1'-0"
 3 3RD FLOOR PLAN SCALE: 1/16" = 1'-0"
 4 4TH FLOOR PLAN SCALE: 1/16" = 1'-0"
 5 5TH FLOOR PLAN SCALE: 1/16" = 1'-0"
 6 6TH FLOOR PLAN SCALE: 1/16" = 1'-0"
 7 7TH FLOOR PLAN SCALE: 1/16" = 1'-0"
 8 8TH FLOOR PLAN SCALE: 1/16" = 1'-0"

1ST FLOOR DEDUCTION SUMMARY

ITEM	DESCRIPTION	AREA (SF)
M1	MECHANICAL VENT	2.37 SF
M2	MECHANICAL VENT	3.74 SF
M3	MECHANICAL VENT	5.03 SF
M4	MECHANICAL VENT	2.40 SF
P1	PLUMBING CHASE	8.24 SF
P2	PLUMBING CHASE	14.40 SF
GYM (100%)	500 SF MAX.	423.94 SF
Q.H. CORRIDOR DENSITY (50%)		106.20 SF
Q.H. CORRIDOR LIGHT (50%)		106.20 SF
Q.H. REFUSE CHUTE		12.0 SF
TOTAL DEDUCTIONS		684.52 SF

2ND FLOOR DEDUCTION SUMMARY

ITEM	DESCRIPTION	AREA (SF)
M1	MECHANICAL VENT	2.37 SF
M2	MECHANICAL VENT	3.74 SF
M3	MECHANICAL VENT	5.03 SF
M4	MECHANICAL VENT	2.40 SF
P1	PLUMBING CHASE	9.49 SF
P2	PLUMBING CHASE	14.40 SF
Q.H. CORRIDOR DENSITY (50%)		77.17 SF
Q.H. CORRIDOR LIGHT (50%)		77.17 SF
Q.H. REFUSE CHUTE		12.0 SF
TOTAL DEDUCTIONS		203.77 SF

3RD FLOOR DEDUCTION SUMMARY

ITEM	DESCRIPTION	AREA (SF)
M1	MECHANICAL VENT	2.37 SF
M2	MECHANICAL VENT	3.74 SF
M3	MECHANICAL VENT	5.03 SF
M4	MECHANICAL VENT	2.40 SF
P1	PLUMBING CHASE	9.60 SF
P2	PLUMBING CHASE	14.40 SF
Q.H. CORRIDOR DENSITY (50%)		77.17 SF
Q.H. CORRIDOR LIGHT (50%)		77.17 SF
Q.H. REFUSE CHUTE		12.0 SF
TOTAL DEDUCTIONS		203.88 SF

4TH FLOOR DEDUCTION SUMMARY

ITEM	DESCRIPTION	AREA (SF)
M1	MECHANICAL VENT	2.37 SF
M2	MECHANICAL VENT	3.74 SF
M3	MECHANICAL VENT	5.03 SF
M4	MECHANICAL VENT	2.40 SF
P1	PLUMBING CHASE	9.74 SF
P2	PLUMBING CHASE	14.40 SF
Q.H. CORRIDOR DENSITY (50%)		77.17 SF
Q.H. CORRIDOR LIGHT (50%)		77.17 SF
Q.H. REFUSE CHUTE		12.0 SF
TOTAL DEDUCTIONS		204.02 SF

5TH FLOOR DEDUCTION SUMMARY

ITEM	DESCRIPTION	AREA (SF)
M1	MECHANICAL VENT	2.37 SF
M2	MECHANICAL VENT	3.74 SF
M3	MECHANICAL VENT	5.03 SF
M4	MECHANICAL VENT	2.40 SF
P1	PLUMBING CHASE	9.74 SF
P2	PLUMBING CHASE	14.40 SF
Q.H. CORRIDOR DENSITY (50%)		77.17 SF
Q.H. CORRIDOR LIGHT (50%)		77.17 SF
Q.H. REFUSE CHUTE		12.0 SF
TOTAL DEDUCTIONS		204.02 SF

6TH FLOOR DEDUCTION SUMMARY

ITEM	DESCRIPTION	AREA (SF)
M1	MECHANICAL VENT	2.37 SF
M2	MECHANICAL VENT	3.74 SF
M3	MECHANICAL VENT	5.03 SF
M4	MECHANICAL VENT	2.40 SF
P1	PLUMBING CHASE	9.74 SF
P2	PLUMBING CHASE	14.40 SF
Q.H. CORRIDOR DENSITY (50%)		77.17 SF
Q.H. CORRIDOR LIGHT (50%)		77.17 SF
Q.H. REFUSE CHUTE		12.0 SF
TOTAL DEDUCTIONS		204.02 SF

7TH FLOOR DEDUCTION SUMMARY

ITEM	DESCRIPTION	AREA (SF)
M1	MECHANICAL VENT	2.37 SF
M2	MECHANICAL VENT	3.74 SF
M3	MECHANICAL VENT	5.03 SF
P1	PLUMBING CHASE	19.36 SF
Q.H. CORRIDOR DENSITY (50%)		26.40 SF
Q.H. CORRIDOR LIGHT (50%)		0 SF
Q.H. REFUSE CHUTE		12.0 SF
TOTAL DEDUCTIONS		68.9 SF

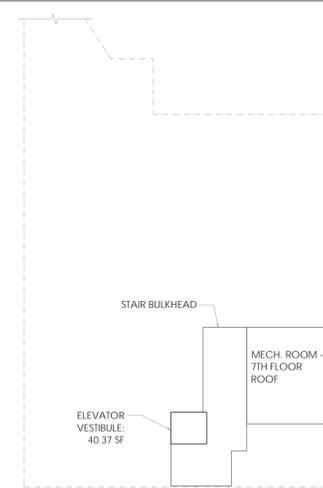
8TH FLOOR DEDUCTION SUMMARY

ITEM	DESCRIPTION	AREA (SF)
M1	MECHANICAL VENT	2.37 SF
M2	MECHANICAL VENT	3.74 SF
P1	PLUMBING CHASE	19.36 SF
Q.H. CORRIDOR DENSITY (50%)		26.40 SF
Q.H. CORRIDOR LIGHT (50%)		0 SF
Q.H. REFUSE CHUTE		12.0 SF
TOTAL DEDUCTIONS		63.87 SF

PROPOSED DEVELOPMENT

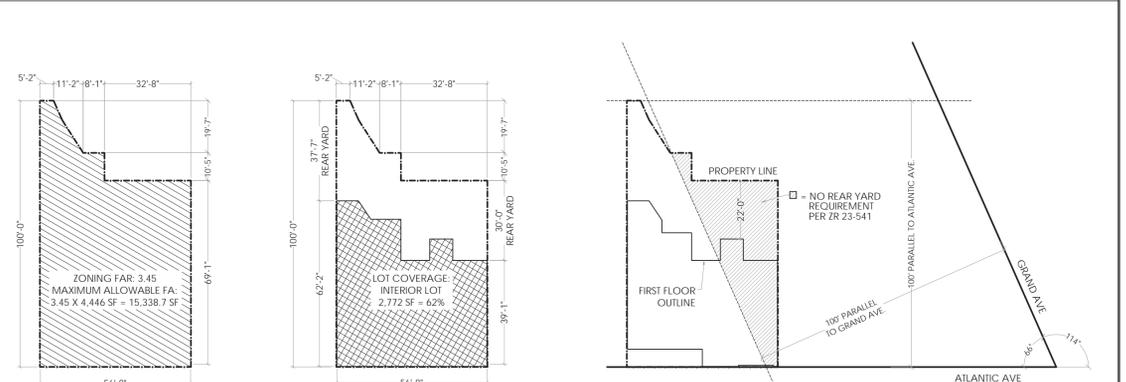
FLOOR AREA CALCULATIONS	GROSS FLOOR AREA	MECH./PLUMBING DEDUCTION	Q.H. CORRIDOR DENSITY DEDUCTION	REFUSE STORAGE	EXTERIOR WALL THICKNESS DED.	GYM DED. (100%) 500 SF MAX.	RESIDENTIAL ZONING FLOOR AREA	QUALITY HOUSING RECREATION SPACE	NUMBER OF DWELLING UNITS	1-BEDROOM UNITS	2-BEDROOM UNITS
CELLAR	2654.13 SF (N.I.C.)						0 SF				
FIRST FLOOR	2535.14 SF	36.18 SF	212.4 SF (100%)	12 SF	115.69 SF	423.94 SF	1,734.93 SF	708 SF GYM + GARDEN	2	2	
SECOND FLOOR	2425.39 SF	37.43 SF	154.34 SF (100%)	12 SF	111.07 SF		2,110.55 SF		3	3	
THIRD FLOOR	2425.39 SF	37.54 SF	154.34 SF (100%)	12 SF	111.73 SF		2,109.78 SF		3	3	
FOURTH FLOOR	2499.54 SF	37.68 SF	154.34 SF (100%)	12 SF	111.90 SF		2,183.62 SF		3	3	
FIFTH FLOOR	2536.60 SF	37.68 SF	154.34 SF (100%)	12 SF	112.07 SF		2,220.51 SF		3	3	
SIXTH FLOOR	2573.70 SF	37.68 SF	154.34 SF (100%)	12 SF	111.72 SF		2,257.96 SF		3	3	
SEVENTH FLOOR	1372.65 SF	26.40 SF	26.40 SF (50%)	12 SF	76.09 SF		1,227.66 SF		1		1
EIGHTH FLOOR	1372.65 SF	25.47 SF	26.40 SF (50%)	12 SF	70.59 SF		1,238.19 SF		1		1
ROOF	580.17 SF*						0 SF				
TOTALS:	18,321.23 SF	280.16 SF	1,036.9 SF	96.0 SF	820.86 SF	423.94 SF	15,083.31 SF	708 SF	19	16	3

* NOT INCLUDED IN RESIDENTIAL ZONING FLOOR AREA



9 ROOF PLAN SCALE: 1/16" = 1'-0"

ZONING DIAGRAMS



10 F.A.R. DIAGRAM SCALE: NTS

11 PROPOSED LOT COVERAGE SCALE: NTS

12 REAR YARD DIAGRAM SCALE: NTS

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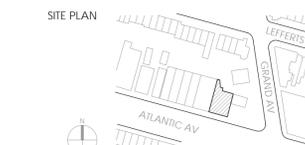
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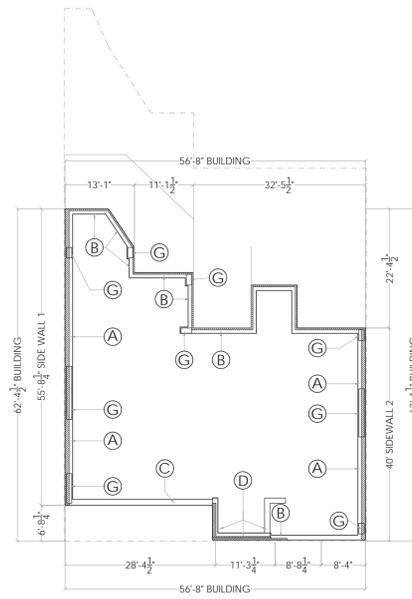


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REGISTERED ARCHITECT
 PAUL GREGORY, R.A.
 028717
 STATE OF NEW YORK

TITLE: ZONING FLOOR AREA DIAGRAMS
 DATE: 04/02/2015
 SCALE: AS NOTED
 SHEET: Z-002.00

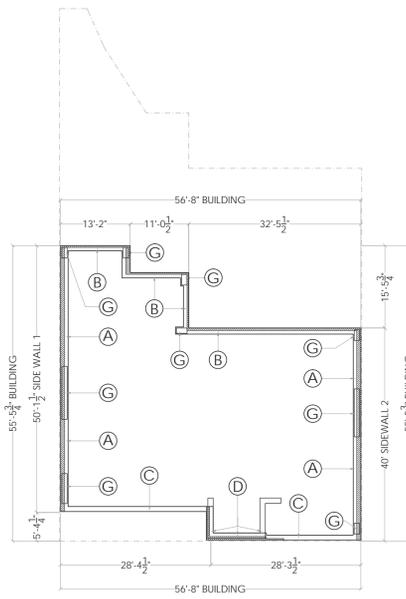
EXTERIOR WALL THICKNESS DEDUCTION CODE ANALYSIS



← ATLANTIC AVENUE
120' WIDE

— ACTUAL WALL THICKNESS
— DEDUCTION AS PER ZR 12-10

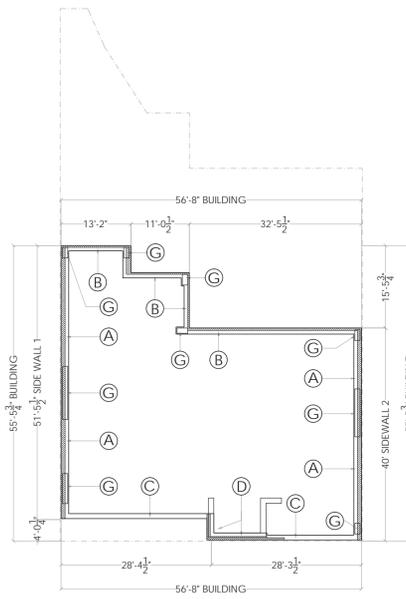
1 1ST FLOOR DIAGRAM
1/16" = 1' - 0"



← ATLANTIC AVENUE
120' WIDE

— ACTUAL WALL THICKNESS
— DEDUCTION AS PER ZR 12-10

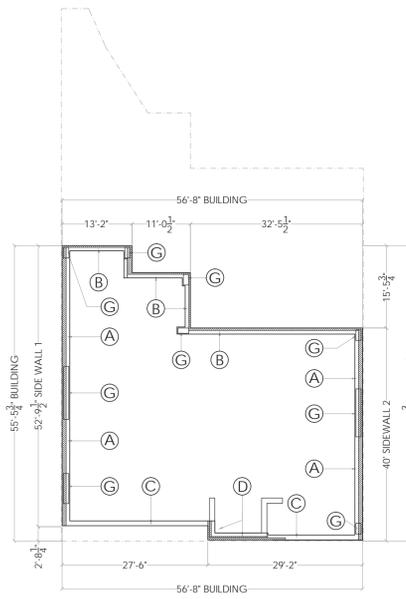
2 2ND FLOOR DIAGRAM
1/16" = 1' - 0"



← ATLANTIC AVENUE
120' WIDE

— ACTUAL WALL THICKNESS
— DEDUCTION AS PER ZR 12-10

3 3RD FLOOR DIAGRAM
1/16" = 1' - 0"



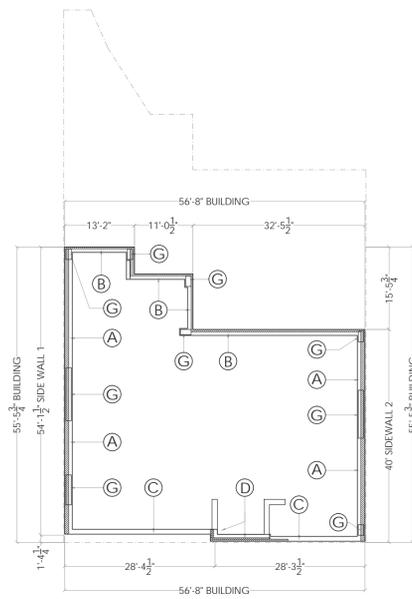
← ATLANTIC AVENUE
120' WIDE

— ACTUAL WALL THICKNESS
— DEDUCTION AS PER ZR 12-10

4 4TH FLOOR DIAGRAM
1/16" = 1' - 0"

WALLS LEGEND

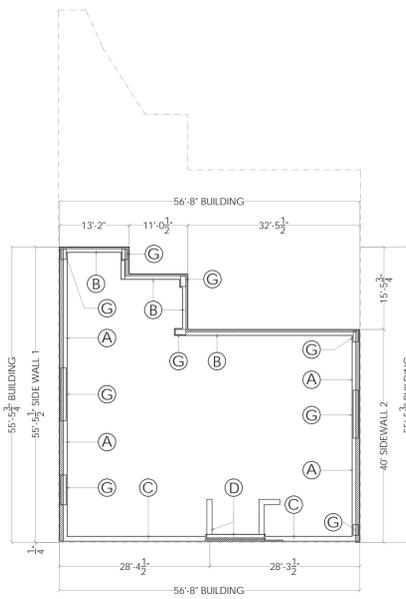
(A)	NEW CMU WALL TYPE	A	(B)	NEW MET. STUD WALL TYPE	B	(C)	NEW WALL TYPE	C
	U FACTOR	0.033		U FACTOR	0.030		U FACTOR	0.048
	ACTUAL WALL THICKNESS	17.25"		ACTUAL WALL THICKNESS	10.25"		ACTUAL WALL THICKNESS	11"
ZR 12-10	ALLOWABLE DEDUCTION	9.25"	ZR 12-10	ALLOWABLE DEDUCTION	2.25"	ZR 12-10	ALLOWABLE DEDUCTION	N/A
							NO DEDUCTION TAKEN	
(D)	NEW CONCRETE WALL TYPE	D	(E)	NEW CMU WALL TYPE	E	(F)	NEW FOUND. WALL TYPE	F
	U FACTOR	0.068		U FACTOR	0.064		U FACTOR	0.053
	ACTUAL WALL THICKNESS	15.5"		ACTUAL WALL THICKNESS	13.25"		ACTUAL WALL THICKNESS	16.25"
ZR 12-10	ALLOWABLE DEDUCTION	7.5"	ZR 12-10	ALLOWABLE DEDUCTION	5.25"	ZR 12-10	ALLOWABLE DEDUCTION	8.25"
							NO DEDUCTION TAKEN	
(G)	NEW CONCRETE WALL TYPE	G						
	U FACTOR	0.053						
	ACTUAL WALL THICKNESS	17.25"						
ZR 12-10	ALLOWABLE DEDUCTION	9.25"						



← ATLANTIC AVENUE
120' WIDE

— ACTUAL WALL THICKNESS
— DEDUCTION AS PER ZR 12-10

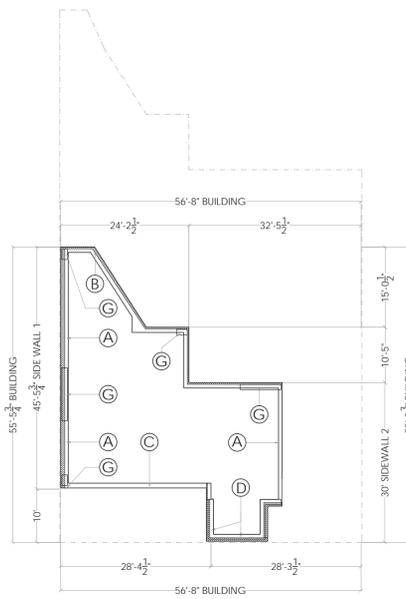
5 5TH FLOOR DIAGRAM
1/16" = 1' - 0"



← ATLANTIC AVENUE
120' WIDE

— ACTUAL WALL THICKNESS
— DEDUCTION AS PER ZR 12-10

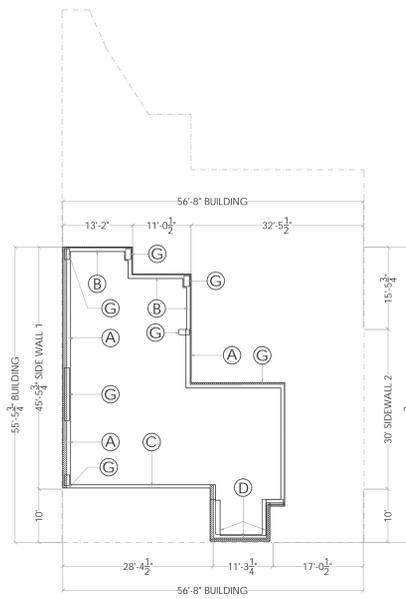
6 6TH FLOOR DIAGRAM
1/16" = 1' - 0"



← ATLANTIC AVENUE
120' WIDE

— ACTUAL WALL THICKNESS
— DEDUCTION AS PER ZR 12-10

7 7TH FLOOR DIAGRAM
1/16" = 1' - 0"



← ATLANTIC AVENUE
120' WIDE

— ACTUAL WALL THICKNESS
— DEDUCTION AS PER ZR 12-10

8 8TH FLOOR DIAGRAM
1/16" = 1' - 0"

PROJECT:

929 ATLANTIC AVE
BROOKLYN, NEW YORK 11238

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ARCHITECT OF RECORD

feingold & gregory - architects



ARCHITECT ASSUMES NO
RESPONSIBILITY FOR ANY
WORK INDICATED BY
THIS APPROVED PLANS
IF THE CONTRACTOR MUST
OBTAIN WRITTEN APPROVAL
FOR ANY CHANGES FROM
THE ARCHITECT BEFORE
COMMENCING SUCH WORK.

STRUCTURAL ENGINEER



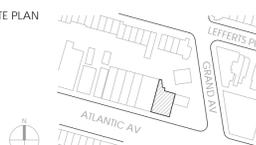
ENGINEERING GROUP ASSOCIATES, P.C.
19 WEST 21ST STREET, SUITE 1201
NEW YORK, NY 10010

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LEVIN

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SITE PLAN



PROJECT No: 1405 BA_929

DOB REVIEW 04/02/15
DOB REVIEW 02/05/15
DRAWING REV. # DATE



PAUL GREGORY, R.A.

TITLE: EXTERIOR WALL THICKNESS
DEDUCTION DIAGRAMS

DATE: 04/02/2015

SCALE: AS NOTED

SHEET: Z-003.00



2010 New York Energy Conservation Construction Code

Section 1: Project Information

Project Type: **New Construction**
 Project Title : 929 Atlantic
 Construction Site: 929 Atlantic Avenue, Brooklyn, NY 11238
 Owner/Agent: Elevation Holdings LLC, 308 Malcolm X Blvd, Brooklyn, NY 11233, 718.544.3784
 Designer/Contractor: Feingold & Gregory Architects, 118 West 53rd Street, New York, NY 10024, 212-995-6895

Section 2: General Information

Building Location (for weather data): Kings, New York
 Climate Zone: 4a
 Building Space Conditioning Type(s): Residential
 Vertical Glazing / Wall Area Pct.: 21%
 Activity Type(s): Multifamily
 Floor Area: 15083

Section 3: Requirements Checklist

Envelope PASSES: Design 5% better than code.

Climate-Specific Requirements:

Component Name/Description	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Proposed U-Factor	Budget U-Factor(s)
Roof A: Insulation Entirely Above Deck	2448	---	26.0	0.037	0.048
Ext. Side Wall 1 & 2 - Type A: Other Mass Wall, Heat capacity 1.0 (b)	4471	---	---	0.033	0.064
Ext. Front & Rear Wall - Type B: Other Steel Framed Wall (h)	8141	---	---	0.030	0.064
Window 1 - Front Wall: Metal Frame Curtain Wall/Storefront, Perf. Type: Other testing/cert. Product ID: NCTL-110-10282-2, SHGC 0.33 (c)	72	---	---	0.490	0.500
Window 2 - Front Wall: Metal Frame Curtain Wall/Storefront, Perf. Type: Other testing/cert. Product ID: NCTL-110-10282-2, SHGC 0.33 (c)	29	---	---	0.490	0.500
Window 3 - Front Wall: Metal Frame Curtain Wall/Storefront, Perf. Type: Other testing/cert. Product ID: NCTL-110-10282-2, SHGC 0.33 (c)	476	---	---	0.490	0.500
Window 4 - Front Wall: Metal Frame Curtain Wall/Storefront, Perf. Type: Other testing/cert. Product ID: NCTL-110-10282-2, SHGC 0.33 (c)	604	---	---	0.490	0.500
Window 5 - Front Wall: Metal Frame Curtain Wall/Storefront, Perf. Type: Other testing/cert. Product ID: NCTL-110-10282-2, SHGC 0.33 (c)	233	---	---	0.490	0.500
Window 6 - Front Wall: Metal Frame Curtain Wall/Storefront, Perf. Type: Other testing/cert. Product ID: NCTL-110-10282-2, SHGC 0.33 (c)	197	---	---	0.490	0.500
Window 7 - Front Wall: Metal Frame Curtain Wall/Storefront, Perf. Type: Other testing/cert. Product ID: NCTL-110-10282-2, SHGC 0.33 (c)	87	---	---	0.490	0.500
	464	---	---	0.490	0.500

Project Title: 929 Atlantic
 Data filename: C:\Dropbox\1405 BA_929 Atlantic Ave\03 Construction Documents\13 COM Check\929 Atlantic COM Check.cck
 Report date: 04/02/15
 Page 1 of 3

Window 8 - Front Wall: Metal Frame Curtain Wall/Storefront, Perf. Type: Other testing/cert. Product ID: NCTL-110-10282-2, SHGC 0.33 (c)	105	---	---	0.490	0.500
Window 9 - Front Wall: Metal Frame Curtain Wall/Storefront, Perf. Type: Other testing/cert. Product ID: NCTL-110-1282-2, SHGC 0.33 (c)	31	---	---	0.490	0.550
Window 10 - Rear Wall: Metal Frame with Thermal Break, Perf. Type: Other testing/cert. Product ID: NCTL-110-10282-2, SHGC 0.33 (c)	41	---	---	0.490	0.550
Window 11 - Rear Wall: Metal Frame with Thermal Break, Perf. Type: Other testing/cert. Product ID: NCTL-110-10282-2, SHGC 0.33 (c)	25	---	---	0.490	0.550
Window 12 - Rear Wall: Metal Frame with Thermal Break, Perf. Type: Other testing/cert. Product ID: NCTL-110-10282-2, SHGC 0.33 (c)	103	---	---	0.490	0.550
Window 13 - Rear Wall: Metal Frame with Thermal Break, Perf. Type: Other testing/cert. Product ID: NCTL-110-10282-2, SHGC 0.33 (c)	51	---	---	0.490	0.550
Window 14 - Rear Wall: Metal Frame with Thermal Break, Perf. Type: Other testing/cert. Product ID: NCTL-110-10282-2, SHGC 0.33 (c)	53	---	---	0.490	0.550
Window 15 - Rear Wall: Metal Frame with Thermal Break, Perf. Type: Other testing/cert. Product ID: NCTL-110-10282-2, SHGC 0.33 (c)	262	---	---	0.490	0.550
Window 16 - Side Wall 1: Metal Frame with Thermal Break, Perf. Type: Other testing/cert. Product ID: NCTL-110-10282-2, SHGC 0.33 (c)	179	---	---	0.490	0.550
Window 17 - Side Wall 1: Metal Frame with Thermal Break, Perf. Type: Other testing/cert. Product ID: NCTL-110-10282-2, SHGC 0.33 (c)	20	---	---	0.490	0.550
Window 18 - Side Wall 1: Metal Frame with Thermal Break, Perf. Type: Other testing/cert. Product ID: NCTL-110-10282-2, SHGC 0.33 (c)	121	---	---	0.490	0.550
Window 19 - Rear Wall: Metal Frame with Thermal Break, Perf. Type: Other testing/cert. Product ID: NCTL-110-10282-2, SHGC 0.33 (c)	67	---	---	0.490	0.550
Window 20 - Rear Wall: Metal Frame with Thermal Break, Perf. Type: Other testing/cert. Product ID: NCTL-110-10282-2, SHGC 0.33 (c)	136	---	---	0.490	0.550
Window 21 - Rear Wall: Metal Frame with Thermal Break, Perf. Type: Other testing/cert. Product ID: NCTL-110-10282-2, SHGC 0.33 (c)	337	---	---	0.490	0.550
Window 22 - Rear Wall: Metal Frame with Thermal Break, Perf. Type: Other testing/cert. Product ID: NCTL-110-10282-2, SHGC 0.33 (c)	91	---	---	0.490	0.550
Window 23 - Rear Wall: Metal Frame with Thermal Break, Perf. Type: Other testing/cert. Product ID: NCTL-110-10282-2, SHGC 0.33 (c)	58	---	---	0.490	0.550
Window 24 - Rear Wall: Metal Frame with Thermal Break, Perf. Type: Other testing/cert. Product ID: NCTL-110-10282-2, SHGC 0.33 (c)	243	---	---	0.490	0.550
Window 25 - Rear Wall: Metal Frame with Thermal Break, Perf. Type: Other testing/cert. Product ID: NCTL-110-10282-2, SHGC 0.33 (c)	51	---	---	0.800	0.850
Door 1 - Front Entry: Glass (> 50% glazing)/Metal Frame, Entrance Door, Perf. Type: Energy code default, Double Pane, Clear, SHGC 0.70	29	---	---	0.800	0.850
Door 2 - Rear Entry: Glass (> 50% glazing)/Metal Frame, Entrance Door, Perf. Type: Energy code default, Double Pane, Clear, SHGC 0.70	306	---	---	0.048	0.064
Ext. Front Wall - Type C: Other Mass Wall, Heat capacity 1.0 (b)	2149	---	---	0.068	0.064
Ext. Front, Side & Rear Wall- Type D: Other Mass Wall, Heat capacity 1.0 (b)	827	---	---	0.064	0.064
Ext. Front & Side Wall - Type E: Other Mass Wall, Heat capacity 1.0 (b)	1624	---	---	0.053	0.064
Ext. Front & Side Wall - Type F - Below Grade: Other Mass Wall, Heat capacity 1.0 (b)	2607	---	---	0.053	0.064
Ext. Front & Side Wall - Type G: Other Mass Wall, Heat capacity 1.0 (b)					

Project Title: 929 Atlantic
 Data filename: C:\Dropbox\1405 BA_929 Atlantic Ave\03 Construction Documents\13 COM Check\929 Atlantic COM Check.cck
 Report date: 04/02/15
 Page 2 of 3

Floor A - At Staggered Street Wall: Concrete Floor (over unconditioned space) 181 --- 19.5 0.044 0.074

- (a) Budget U-factors are used for software baseline calculations ONLY, and are not code requirements.
- (b) 'Other' components require supporting documentation for proposed U-factors.
- (c) Fenestrations product performance must be certified in accordance with NFRC and requires supporting documentation.

Air Leakage, Component Certification, and Vapor Retarder Requirements:

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

Section 4: Compliance Statement

Compliance Statement: The proposed envelope design represented in this document is consistent with the building plans, specifications and other calculations submitted with this permit application. The proposed envelope system has been designed to meet the 2010 New York Energy Conservation Construction Code requirements in COMcheck Version 3.9.4 and to comply with the mandatory requirements in the Requirements Checklist.

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

Name - Title Signature Date

Project Title: 929 Atlantic
 Data filename: C:\Dropbox\1405 BA_929 Atlantic Ave\03 Construction Documents\13 COM Check\929 Atlantic COM Check.cck
 Report date: 04/02/15
 Page 3 of 3

TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT THIS BUILDING COMPLIES WITH 2011 NYCECC

PROJECT:

929 ATLANTIC AVE
 BROOKLYN, NEW YORK 11238

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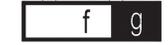


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STRUCTURAL ENGINEER



19 WEST 21ST STREET, SUITE 1201
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MECHANICAL ENGINEER

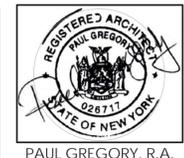


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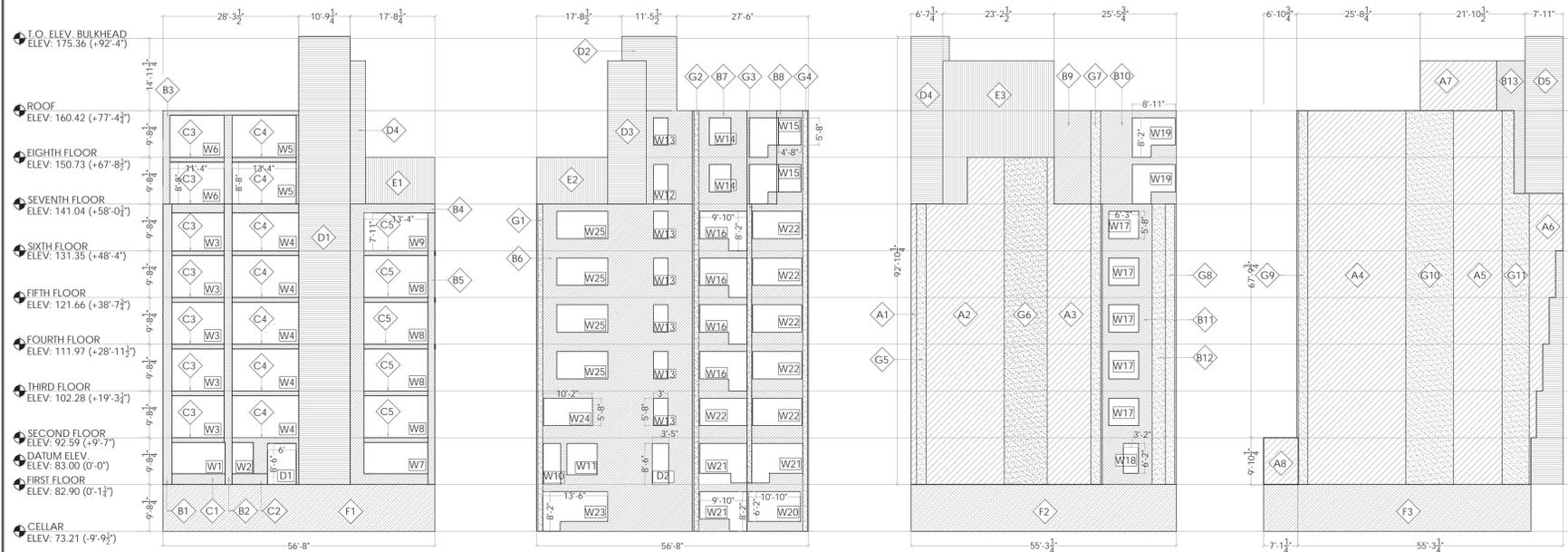
SITE PLAN



PROJECT No:	1405 BA_929
DOB REVIEW	04/02/15
DOB REVIEW	02/05/15
DRAWING	REV. # DATE



TITLE: ENERGY COMPLIANCE CERTIFICATES
 DATE: 04/02/2015
 SCALE: AS NOTED
 SHEET: EN-001.00



1 FRONT WALL DIAGRAM
SCALE: 1/16" = 1' 0"

2 REAR WALL DIAGRAM
SCALE: 1/16" = 1' 0"

3 SIDE WALL 1 DIAGRAM
SCALE: 1/16" = 1' 0"

4 SIDE WALL 2 DIAGRAM
SCALE: 1/16" = 1' 0"

FRONT WALL & FENESTRATION CALCS.

WALL TAG	WALL TYPE	AREA (SF)	TOTAL AREA (SF)
B1	B	106.5	590.5
B2	B	95.0	
B3	B	84.6	
B4	B	223.4	
B5	B	81.0	
C1	C	24.6	306.1
C2	C	16.2	
C3	C	83.4	
C4	C	116.7	
C5	C	65.2	
D1	D	999.7	1092.6
D4	D	92.9	
E1	E	170.4	170.4
TOTAL AREA (WA)		= 2159.6	
WIN. TAG	# OF UNITS	AREA (SF)	TOTAL AREA (SF)
W1	1	72.3	72.3
W2	1	28.7	28.7
W3	5	95.1	475.5
W4	5	120.7	603.5
W5	2	116.4	232.8
W6	2	98.5	197.0
W7	1	86.5	86.5
W8	4	116.0	464.0
W9	1	105.0	105.0
D1	1	51.0	51.0
TOTAL FENESTRATION TYPE W (Fw)		= 2265.3	
TOTAL FENESTRATION TYPE D (Fd)		= 51.0	
TOTAL FENESTRATION AREA (FA)		= 2316.3	
FRONT WALL AREA BELOW GRADE			
WALL TAG	WALL TYPE	AREA (SF)	TOTAL AREA (SF)
F1	F	549.0	549.0
TOTAL FRONT WALL AREA BELOW GRADE		= 549.0	

REAR WALL & FENESTRATION CALCS.

WALL TAG	WALL TYPE	AREA (SF)	TOTAL AREA (SF)
B6	B	1779.7	2369.1
B7	B	489.0	
B8	B	370.4	
D2	D	123.1	360.9
D3	D	237.8	
E2	E	143.5	143.5
G1	G	67.8	300.0
G2	G	87.2	
G3	G	57.8	
G4	G	87.2	
TOTAL AREA (WA)		= 3173.5	
WIN. TAG	# OF UNITS	AREA (SF)	TOTAL AREA (SF)
W10	1	31.2	31.2
W11	1	41.2	41.2
W12	1	24.6	24.6
W13	6	17.1	102.6
W14	2	25.6	51.2
W15	2	26.4	52.8
W19	2	60.7	121.4
W20	1	67.0	67.0
W21	2	67.8	135.6
W22	6	56.1	336.6
W23	1	91.1	91.1
W24	1	58.2	58.2
W25	4	60.7	242.8
D2	1	29.0	29.0
TOTAL FENESTRATION TYPE W (Fw)		= 1356.3	
TOTAL FENESTRATION TYPE D (Fd)		= 29.0	
TOTAL FENESTRATION AREA (FA)		= 1385.3	

SIDE WALL 1 & FENESTRATION CALCS.

WALL TAG	WALL TYPE	AREA (SF)	TOTAL AREA (SF)
A1	A	65.3	1626.2
A2	A	1018.4	
A3	A	542.5	
B9	B	148.3	918.05
B10	B	184.5	
B11	B	407.2	178.05
B12	B	178.05	
D4	D	235.8	235.8
E3	E	513.0	513.0
G5	G	116.3	997.9
G6	G	610.3	
G7	G	155.0	
G8	G	116.3	
TOTAL AREA (WA)		= 4291.0	
WIN. TAG	# OF UNITS	AREA (SF)	TOTAL AREA (SF)
W16	4	65.6	262.4
W17	5	35.7	178.5
W18	1	19.6	19.6
TOTAL FENESTRATION TYPE W (Fw)		= 460.5	
TOTAL FENESTRATION TYPE D (Fd)		= 0	
TOTAL FENESTRATION AREA (FA)		= 460.5	
FRONT WALL AREA BELOW GRADE			
WALL TAG	WALL TYPE	AREA (SF)	TOTAL AREA (SF)
F2	F	535.4	535.4
TOTAL FRONT WALL AREA BELOW GRADE		= 535.4	

SIDE WALL 2 & FENESTRATION CALCS.

WALL TAG	WALL TYPE	AREA (SF)	TOTAL AREA (SF)
A4	A	1576.8	2845.2
A5	A	788.7	
A6	A	221.8	
A7	A	165.2	
A8	A	92.7	
B13	B	100.7	
D5	D	459.7	459.7
G9	G	155.0	1309.1
G10	G	771.8	
G11	G	382.3	100.7
TOTAL AREA (WA)		= 4714.7	
TOTAL FENESTRATION TYPE W (Fw)		= 0	
TOTAL FENESTRATION TYPE D (Fd)		= 0	
TOTAL FENESTRATION AREA (FA)		= 0	
FRONT WALL AREA BELOW GRADE			
WALL TAG	WALL TYPE	AREA (SF)	TOTAL AREA (SF)
F3	F	539.8	539.8
TOTAL FRONT WALL AREA BELOW GRADE		= 539.8	

AREA CALCULATION SUMMARY - OPAQUE WALLS ABOVE GRADE

LOCATION	WALL TYPE A (SF)	WALL TYPE B (SF)	WALL TYPE C (SF)	WALL TYPE D (SF)	WALL TYPE E (SF)	WALL TYPE G (SF)	NOTES
	OPAQUE WALL						
FRONT WALL	-	590.5	306.1	1092.6	170.4	-	
SIDE WALL 1	1626.2	918.05	-	235.8	513.0	997.9	
SIDE WALL 2	2845.2	100.7	-	459.7	-	1309.1	
REAR WALL	-	2369.1	-	360.9	143.5	300.0	
TOTAL OPAQUE WALL NET AREA (OA)	4471.4	3978.4	306.1	2149.0	826.9	2607.0	
TOTAL FENESTRATION AREA (FA)	-	4162.1	-	-	-	-	
TOTAL OPAQUE WALL GROSS AREA (OA + FA)	4471.4	8140.5	306.1	2149.0	826.9	2607.0	COMCHECK INPUT VALUE

AREA CALCULATION SUMMARY - WALLS BELOW GRADE

LOCATION	WALL TYPE F	NOTES
	OPAQUE WALL	
FRONT WALL	549.0	
SIDE WALL 1	535.4	
SIDE WALL 2	539.8	
REAR WALL	-	
TOTAL BELOW GRADE WALL GROSS AREA	1624.2	COMCHECK INPUT VALUE

PROJECT:

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FROM APPROVED PLANS
THE CONTRACTOR MUST
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FOR ANY CHANGES FROM
THE ARCHITECT BEFORE
COMMENCING SUCH WORK

STRUCTURAL ENGINEER

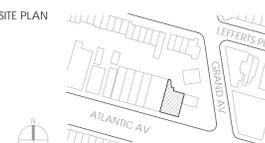


ENGINEERING GROUP ASSOCIATES, P.C.
19 WEST 21ST STREET, SUITE 1201
NEW YORK, NY 10010

MECHANICAL ENGINEER

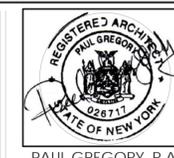
LEVIN
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28 DOOLEY STREET, 2ND FLOOR
BROOKLYN, NY 11235
TEL (718) 332-2266; FAX (718) 332-2274
BLEVIN@LEVIN-ENGINEERING.COM

SITE PLAN



PROJECT No: 1405 BA_929

DOB REVIEW 04/02/15
DOB REVIEW 02/05/15
DRAWING REV. # DATE



TITLE: WALL & FENESTRATION
AREA CALCULATIONS

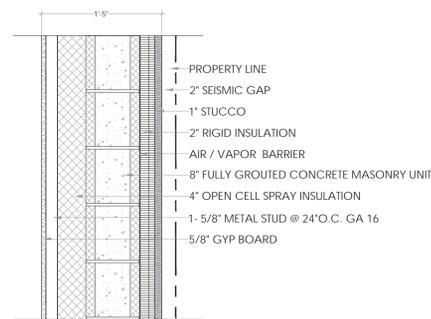
DATE: 04/02/2015

SCALE: AS NOTED

SHEET EN-100.00

ELEMENT	R-VALUE (F-ft2-hr/BTU)
OUTSIDE AIR	0.17
1" STUCCO	0.08
2" POLYSTYRENE INSULATION	13.0 (6.5/IN.)
8" CONCRETE MASONRY UNIT	1.11
4" OPEN CELL SPRAY INSULATION	14.8 (3.7/IN.)
5/8" GYP BOARD	0.56
INSIDE AIR	0.68
TOTAL	30.4

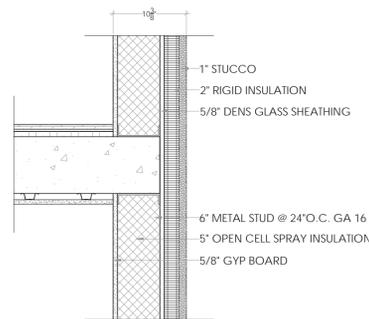
U FACTOR = **0.033**
 REQUIRED BY CODE = **0.09**
 = **PASSES**



1 SECTION DETAIL @WALL A
 SCALE: 1" = 1' 0"

ELEMENT	R-VALUE (F-ft2-hr/BTU)
OUTSIDE AIR	0.17
1" STUCCO	0.08
2" POLYSTYRENE INSULATION	13.0 (6.5/IN.)
5/8" DENS GLASS SHEATHING	0.67
5" OPEN CELL SPRAY INSULATION	18.5 (3.7/IN.)
5/8" GYP BOARD	0.56
INSIDE AIR	0.68
TOTAL	33.66

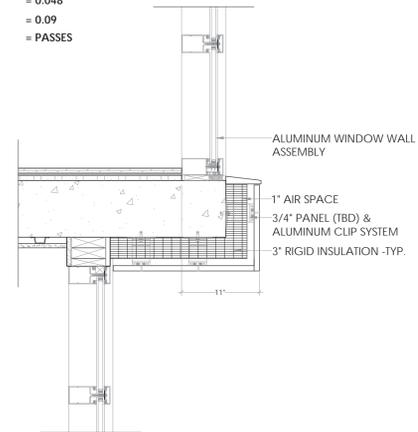
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 REQUIRED BY CODE = **0.064**
 = **PASSES**



2 SECTION DETAIL @WALL B
 SCALE: 1" = 1' 0"

ELEMENT	R-VALUE (F-ft2-hr/BTU)
6" POURED CONCRETE SLAB	0.42 (0.07/IN.)
3" POLYSTYRENE INSULATION	19.5 (6.5/IN.)
1" AIR SPACE	0.97
OUTSIDE AIR	0.17
TOTAL	21.06

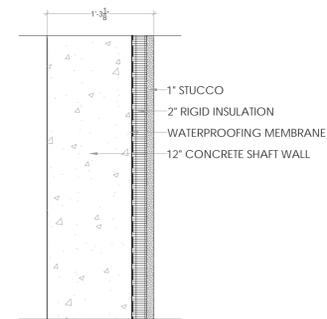
U FACTOR = **0.048**
 REQUIRED BY CODE = **0.09**
 = **PASSES**



3 SECTION DETAIL @WALL C
 SCALE: 1" = 1' 0"

ELEMENT	R-VALUE (F-ft2-hr/BTU)
OUTSIDE AIR	0.17
1" STUCCO	0.08
2" POLYSTYRENE INSULATION	13.0 (6.5/IN.)
12" POURED CONCRETE WALL	0.84 (0.07/IN.)
INSIDE AIR	0.68
TOTAL	14.77

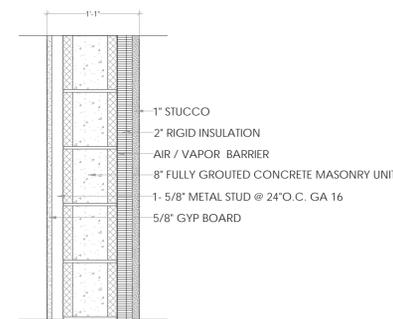
U FACTOR = **0.068**
 REQUIRED BY CODE = **0.09**
 = **PASSES**



4 SECTION DETAIL @WALL D
 SCALE: 1" = 1' 0"

ELEMENT	R-VALUE (F-ft2-hr/BTU)
OUTSIDE AIR	0.17
1" STUCCO	0.08
2" POLYSTYRENE INSULATION	13.0 (6.5/IN.)
8" CONCRETE MASONRY UNIT	1.11
5/8" GYP BOARD	0.56
INSIDE AIR	0.68
TOTAL	15.6

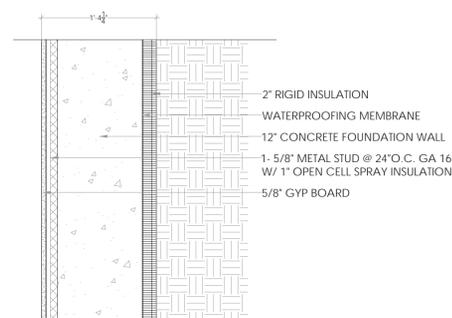
U FACTOR = **0.064**
 REQUIRED BY CODE = **0.09**
 = **PASSES**



5 SECTION DETAIL @WALL E
 SCALE: 1" = 1' 0"

ELEMENT	R-VALUE (F-ft2-hr/BTU)
OUTSIDE AIR	0.17
2" POLYSTYRENE INSULATION	13.0 (6.5/IN.)
12" POURED CONCRETE WALL	0.84 (0.07/IN.)
1" OPEN CELL SPRAY INSULATION	3.7 (3.7/IN.)
5/8" GYP BOARD	0.56
INSIDE AIR	0.68
TOTAL	18.95

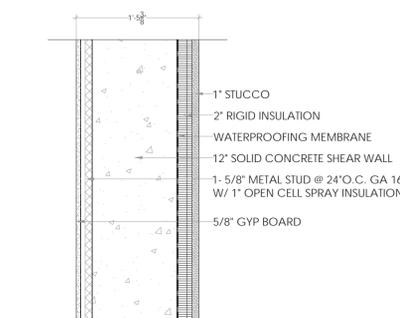
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 REQUIRED BY CODE = **0.064**
 = **PASSES**



6 SECTION DETAIL @WALL F
 SCALE: 1" = 1' 0"

ELEMENT	R-VALUE (F-ft2-hr/BTU)
OUTSIDE AIR	0.17
1" STUCCO	0.08
2" POLYSTYRENE INSULATION	13.0 (6.5/IN.)
12" POURED CONCRETE WALL	0.84 (0.07/IN.)
1" OPEN CELL SPRAY INSULATION	3.7 (3.7/IN.)
5/8" GYP BOARD	0.56
INSIDE AIR	0.68
TOTAL	19.03

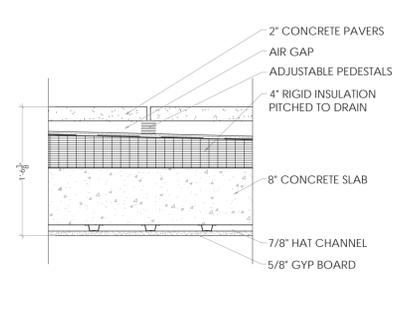
U FACTOR = **0.053**
 REQUIRED BY CODE = **0.064**
 = **PASSES**



7 SECTION DETAIL @WALL G
 SCALE: 1" = 1' 0"

ELEMENT	R-VALUE (F-ft2-hr/BTU)
OUTSIDE AIR	0.17
2" CONCRETE PAVERS	0.08
2" MIN. AIR GAP	0.97
4" POLYSTYRENE INSULATION	26 (6.5/IN.)
8" POURED CONCRETE SLAB	0.56 (0.07/IN.)
5/8" GYP BOARD	0.56
INSIDE AIR	0.68
TOTAL	29.02

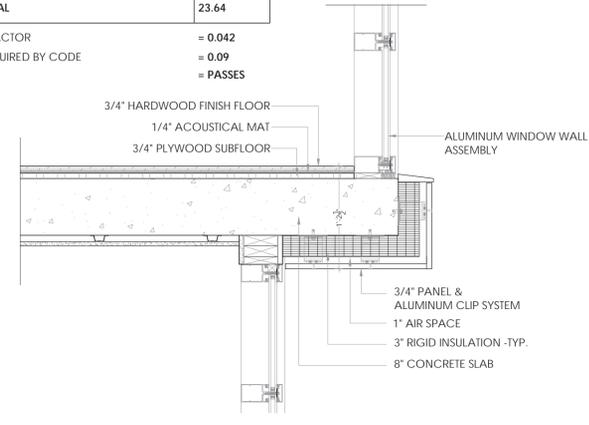
U FACTOR = **0.035**
 REQUIRED BY CODE = **0.048**
 = **PASSES**



8 SECTION DETAIL @ROOF A
 SCALE: 1" = 1' 0"

ELEMENT	R-VALUE (F-ft2-hr/BTU)
INSIDE AIR	0.68
3/4" HARDWOOD FINISH FLOOR	0.68
3/4" PLYWOOD SUBFLOOR	1.08
8" POURED CONCRETE SLAB	0.56 (0.07/IN.)
3" POLYSTYRENE INSULATION	19.5 (6.5/IN.)
1" AIR SPACE	0.97
OUTSIDE AIR	0.17
TOTAL	23.64

U FACTOR = **0.042**
 REQUIRED BY CODE = **0.09**
 = **PASSES**



9 SECTION DETAIL @FLOOR A
 SCALE: 1" = 1' 0"

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STRUCTURAL ENGINEER



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 NEW YORK, NY 10011

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MECHANICAL ENGINEER

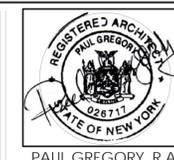


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SITE PLAN



PROJECT No:	1405 BA_929
DOB REVIEW	04/02/15
DOB REVIEW	02/05/15
DRAWING	REV. # DATE



TITLE: ENVELOPE ANALYSIS -
 WALL ASSEMBLY DETAILS
 DATE: 04/02/2015
 SCALE: AS NOTED
 SHEET **EN-101.00**

ABBREVIATIONS

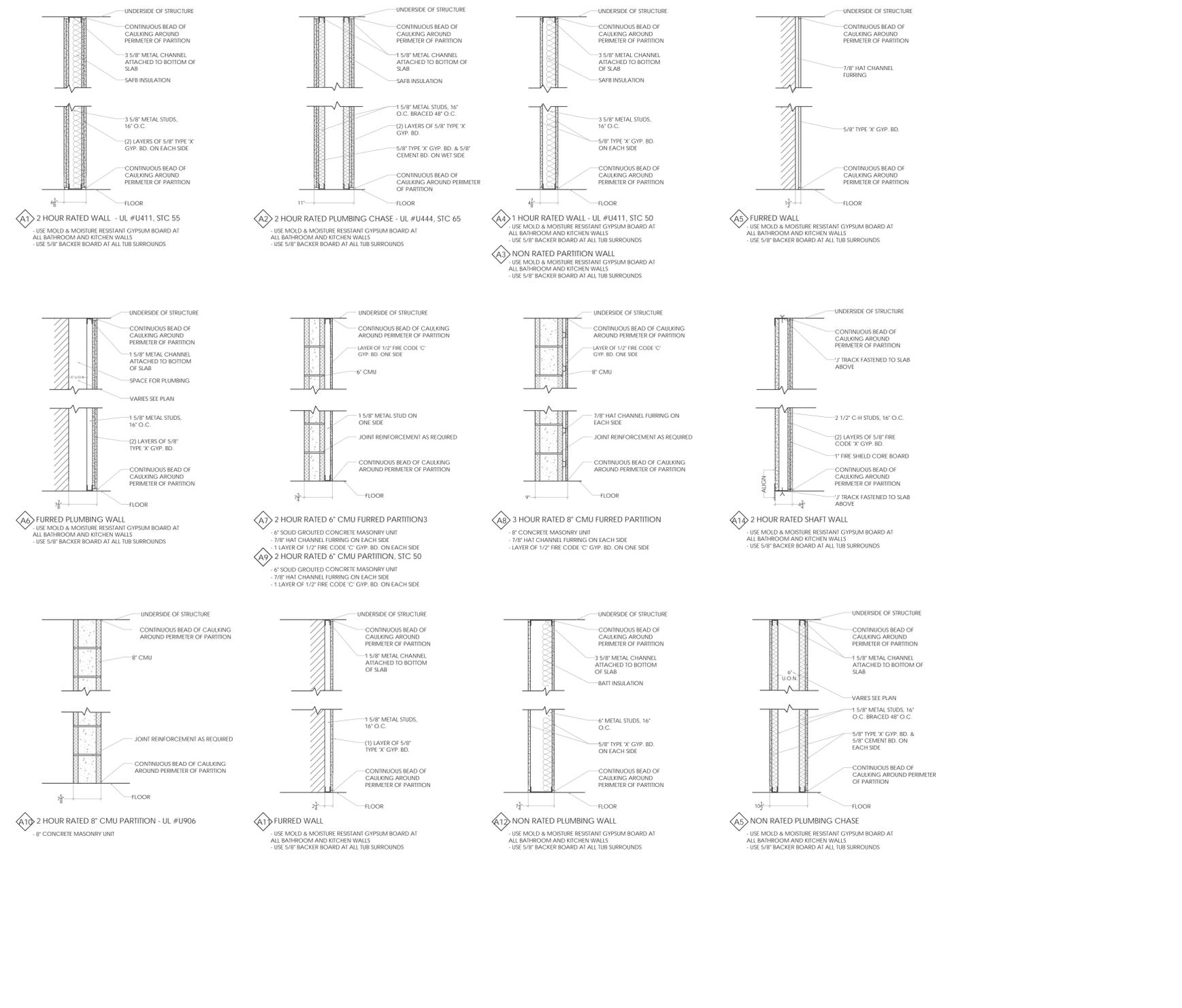
SYMBOLS USED AS ABBREVIATIONS :

∠ ANGLE	∅ AT	⊕ CENTERLINE	⊖ CHANNEL	⊘ DIAMETER	# NUMBER	⊥ PERPENDICULAR	° DEGREES	± PLUS OR MINUS
STANDARD ABBREVIATIONS :								
AC. AIR CONDITIONING	E.J. EXPANSION JOINT	M. METER	T/O TOP OF	U# APARTMENT UNIT TAG	XX DOOR TAG	X.XX DOOR TAG	T.O.S. ELEVATION TAG	SMOKE AND CARBON MONOXIDE DETECTOR
ACCESSIBLE ACQUOUS. ACT. AD. ADJ. A.F.F. A.F.L. A.H.U. AGG. ALT. AL. ALUM. ANOD. APPD. APPX. ARCH. AR. D. ASPH. A.S.T.M. AUTO. B.A.L.C. B/C. B.C.S. B.D. B.E.T. B.F. B.L. B.L.D.G. B.L.K. B.L.K.G. B.M. B.O.T. B.R.G. B.R.K. B.R.K.T. B.S. B.S.M.T. B.T.U. B.U.R.	AC. AIR CONDITIONING	M. METER	T/O TOP OF	ROOM NAME APARTMENT UNIT TAG - ELEVATION	X.XX PARTITION TYPE	X.XX PARTITION TYPE	PLAN DETAIL	EXIT SIGN / EMERGENCY LIGHTING
CAB. CABINET	E.L. ELEVATION	M.A.C.H. MACHINE	T.&B. TOP AND BOTTOM	R # APARTMENT UNIT TAG - AREA TAG	XX WINDOW TAG	X.XX WINDOW TAG	INTERIOR ELEVATION	EXHAUST FAN
CAT. CATALOG, CATEGORY	ELEC. ELECTRIC	M.A.I.N.T. MAINTENANCE	TACK BOARD TO BE DETERMINED					
C.B. CATCH BASIN	ELEV. ELEVATOR	M.A.R. MARBLE	TERRA COTTA, TERNE COATED					
CBD. CHALKBOARD	EMER. EMERGENCY	M.A.S. MASONRY	TOP OF CURB					
C.D. CEILING DIFFUSER	EMR. ELEV. MACHINE ROOM	M.A.T. MATERIAL	TRENCH DRAIN					
C.E.M. CEMENT	ENCL. ENCLOSURE (URE, ED)	M.A.X. MAXIMUM	TELEPHONE					
C.L. CENTER LINE	ENT. ENTRANCE	M.E.C.H. MECHANICAL	TEMPERED, TEMPERATURE					
C.L.D. CLOTHES DRYER	E.P. ELECTRICAL PANEL	M.E.D. MEDIUM	TERRAZZO					
C.L.G. CONTRA LIMIT LINE	E.P.D.M. ETHYLENE PROPYLENE DIENE MONOMER	M.E.M.B. MEMBRANE	TOP OF FRAME					
C.L.O.S. CLOSET	E.P.T. EPOXY PAINT	M.F.R. MANUFACTURER	TONGUE AND GROOVE					
C.L.W. CLOTHES WASHER	EQ. EQUIPMENT	M.H. MANHOLE	THREADED					
C.M. CEMENTIMER	E.O.P.M. EQUIPMENT	M.I.C.R.O. MICRO	THICKNESS					
C.M.T. CERAMIC MOSAIC TILE	E.T.R. EXISTING TO BE REMOVED	M.I.N. MINIMUM	THRESHOLD					
C.M.U. CONCRETE MASONRY UNIT	E.T.R.D. EXISTING TO BE RELOCATED	M.I.S.C. MISCELLANEOUS	THRU THROUGH					
C.O. CLEAN OUT	E.T.R.L. EXISTING TO BE RELOCATED	M.I.L.D. MILLING	T.O. TOILET					
C.O.L. COLUMN	E.W. EACH WAY	M.I.O. MASONRY OPENING	T.O.S. TOP OF SLAB					
C.O.N.C. CONCRETE	E.W.C. EXPOSED	M.O. MODULAR	T.O.S. TOP OF STEEL					
C.O.N.D. CONDENS(ATE,ER,ING,ATION)	EXCAV. EXCAVATE	M.O.D. MODULAR	T.O.S. TOP OF WALL					
C.O.N.N. CONNECTION	EXH. EXHAUST	M.O.U. MOUNTED	TYPICAL					
C.O.N.T. CONTINUOUS	EXTG. EXISTING	M.T.G. MOUNTING						
C.O.N.T.R. CONTRACTOR	EXT. EXTERIOR	M.L. MATERIAL						
C.O.N.V. CONVECTOR	F.A.F. FACTORY APPLIED FINISH	N.I.C. NOT IN CONTRACT						
C.O.O.R.D. COORDINATE	F.A.I. FRESH-AIR INTAKE	N.O. NO.						
C.O.R.R. CORRIDOR	F.B. FOILBACKED	N.O.M. NOMINAL						
C.R.S. CURSE	F.D. FLOOR DRAIN	N.R.C. NOISE REDUCTION COEFFICIENT						
C.P.T. CARPET	F.D.N. FOUNDATION	N.S. NOT TO SCALE						
C.R. CEILING REGISTER	F.E. FIRE EXTINGUISHER	N.F.P.A. NATIONAL FIRE PROTECTION AGENCY						
C.S. CEMENT SEALER	F.E.C. FINISHED FLOOR	O.A. OVERALL						
C.T. CERAMIC TILE	F.F. FIRE HYDRANT	O.C. ON CENTER						
C.T.S.K. COUNTERSUNK	F.H.E.C. FIRE HOSE & EXTINGUISHER CABINET	O.D. OUTSIDE DIAMETER						
C.U. CUBIC	F.H.C. FIRE HOSE CABINET	O.P.N.G. OPENING						
C.W. COLD WATER	F.H.C. FIRE HOSE CABINET	O.P.P. OPPOSITE						
C.W.R. CHILLED WATER RETURN	F.H.C. FIRE HOSE CABINET	O.Z. OUNCE						
	G. GAS	P. PAINT						
	G.A. GAUGE	P.A.S.S. ELEV. PASSENGER ELEVATOR						
	G.A.L.V. GALVANIZED	P.B. PULLBOX						
	G.B. GRAB BAR	P.C.C. PRECAST CONCRETE						
	G.B.L. GLAZED BLOCK	P.D. PRESSURE DROP						
	G.C. GENERAL CONTRACTOR	P.E.R. PERIMETER						
	G.E.N. GENERAL	P.E.R.F. PERFORATED						
	G.I. GALVANIZED IRON	P.G.B. PAINTED GYPSUM BOARD						
	G.L. GLASS	P.H. PHASE						
	G.W.B. GYPSUM WALL BOARD	P.I.L. PILASTER						
	G.W.T. GLAZED WALL TILE	P.L. PLATE						
	G.Y.P. GYPSUM	P.L.A.M. PLASTIC LAMINATE						
		P.L.A.S. PLASTER						
		P.L.M.B. PLUMBING						
		P.N.L. PANEL						
		P.R.E.F.A.B. PREFABRICATE						
		P.S.F. POUNDS PER SQUARE FOOT						
		P.S.I. POUNDS PER SQUARE INCH						
		P.T. POINT						
		P.T.D. PAINTED						
		P.W.C. POLYVINYL CHLORIDE						
		P.W.D. PLYWOOD						
		Q.T. QUARRY TILE						
		Q.T.Y. QUANTITY						
		R. RISER						
		R.A.D. RADIUS						
		R.B. RUBBER BASE						
		R.C.P. REINFORCED CONCRETE PIPE						
		R.D. ROOF DRAIN						
		R.E.F. REFERENCE						
		R.E.F.G. REFRIGERATOR						
		R.E.F.L. REFLECTED						
		R.E.G. REGISTER						
		R.E.I.N.F. REINFORCING						
		R.E.Q.D. REQUIRED						
		R.E.S.I.L. RESILIENT						
		R.E.T. RETURN						
		R.E.V. REVISION						
		R.H. RIGHT HAND						
		R.L.E. RELOCATED EXISTING						
		R.M. ROOM						
		R.N.D. ROUND						
		R.O. ROUGH OPENING						
		R.T.U. ROOFTOP UNIT						
		S&R SHELF AND ROD						
		S.A.N. SANITARY						
		S.C. SOLID CORE						
		S.C.H.E.D. SCHEDULE						
		S.E.C.T. SECTION						
		S.F. SQUARE FEET						
		S.G. SAFETY GLASS						
		S.H.T. SHEET						
		S.I.M. SIMILAR						
		S.O.G. SLAB ON GRADE						
		S.P. STARTING POINT						
		S.P.E.C. SPECIFICATION						
		S.Q. SQUARE						
		S.S. STAINLESS STEEL						
		S.T. STEEL						
		S.T.C. SOUND TRANSMISSION COEFFICIENT						
		S.T.D. STANDARD						
		S.T.O.R. STORAGE						
		S.T.R. STRUCTURAL						
		S.U.S.P. SUSPENDED						
		S.Y.M. SYMMETRICAL						
		S.Y.N. SYNTHETIC						
E.A. EACH	I.D. INSIDE DIAMETER	I.E. THAT IS						
E.C. END CAP	I.E. INSIDE DIAMETER	I.E. THAT IS						
E.F. EXHAUST FAN	I.N. INCH	I.N.C.A.N. INCANDESCENT						
E.H.D. ELECTRIC HAND DRYER	I.N.C.L. INCLUSIVE	I.N.S.U.L. INSULATION						
E.I.F.S. EXTERIOR INSULATION & FINISH SYSTEM	I.N.T. INTERIOR	I.N.T.E.R. INTERMEDIATE						
	I.N.V. INVERT	I.N.V. INVERT						
	J.B. JUNCTION BOX	J.C. JANITOR'S CLOSET						
	J.C. JANITOR'S CLOSET	J.T. JOINT						
	J.T. JOINT	L. LINEN						
	L. LINEN	L.A.B. LABORATORY						
	L.L. LIVE LOAD	L.A.M. LAMINATED						
	L.L.H. LONG LEG HORIZONTAL	L.A.V. LAVATORY						
	L.L.V. LONG LEG VERTICAL	L.B.S. POUNDS						
	L.M.F. LIGHT GAUGE METAL FRAMING	L.C.C. LEAD COATED COPPER						
	L.O.N.G. LONGITUDINAL	L.H. LEFT HAND						
	L.P. LOW POINT	L.I. LINEN						
	L.T.W.T. LIGHT WEIGHT	L.L. LIVE LOAD						
		L.L.H. LONG LEG HORIZONTAL						
		L.L.V. LONG LEG VERTICAL						
		L.M.F. LIGHT GAUGE METAL FRAMING						
		L.O.N.G. LONGITUDINAL						
		L.P. LOW POINT						
		L.T.W.T. LIGHT WEIGHT						

SYMBOL LEGEND



PARTITION TYPES



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SITE PLAN
ATLANTIC AV
LEVIN'S PL

PROJECT No: 1405 BA_929
DOB REVIEW: 04/02/15
DRAWING REV. # DATE

REGISTERED ARCHITECT
PAUL GREGORY, R.A.

TITLE: PLOT PLAN: SYMBOLS, ABBREV.
DATE: 04/02/2015
SCALE: AS NOTED
SHEET: A-001.00

CLEARANCE DETAIL - ELEVATOR

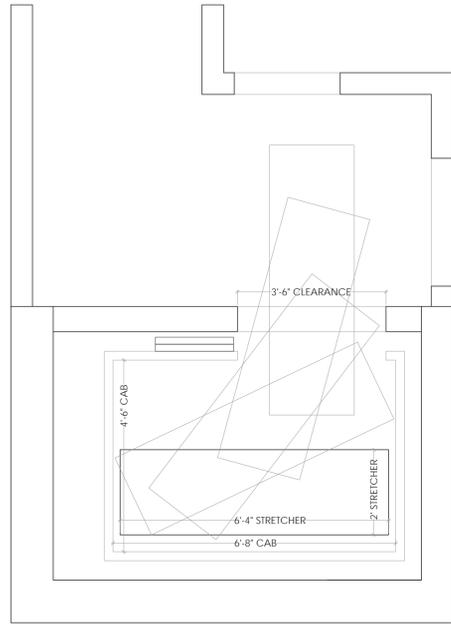
NOTES:

ELEVATOR CONSTRUCTION, DIMENSIONS AND CONTROL MECHANISM SHALL COMPLY WITH SECTION 407 OF THE ICC A117.1-2008 AND ASME A17.1.

ELEVATOR OPERATION SHALL BE AUTOMATIC.

IN ALL BUILDINGS 5 STORIES HIGH OR MORE, ELEVATOR CAB SIZE TO COMPLY WITH STRETCHER-SIZED ELEVATOR CAB DIMENSIONS AS PER SECTION BC 3002.4 SUCH ELEVATOR SHALL BE IDENTIFIED WITH THE INTERNATIONAL SYMBOL FOR EMERGENCY MEDICAL SERVICES/STAR OF LIFE.

ELEVATOR EMERGENCY OPERATIONS TO COMPLY WITH SECTION BC 3003.



1 R2 OCCUPANCY ELEVATOR CAB DIMENSIONS

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

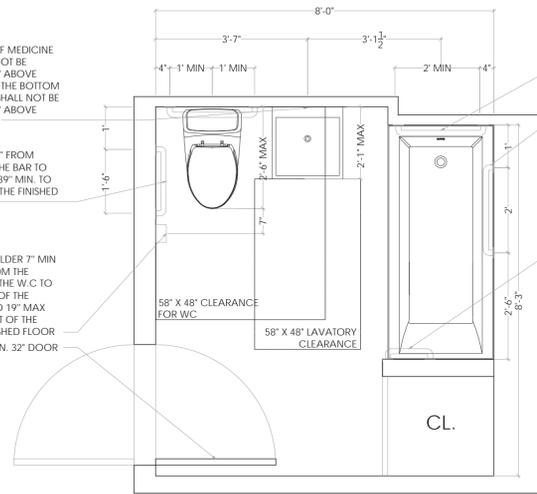
CLEARANCE DETAIL - BATHROOMS

BOTTOM SHELF OF MEDICINE CABINET SHALL NOT BE HIGHER THAN 44" ABOVE FINISHED FLOOR. THE BOTTOM OF THE MIRROR SHALL NOT BE HIGHER THAN 40" ABOVE FINISHED FLOOR.

18" GRAB BAR 30" FROM CENTERLINE OF THE BAR TO THE REAR WALL. 39" MIN. TO 41" MAX ABOVE THE FINISHED FLOOR.

TOILET PAPER HOLDER 7" MIN AND 9" MAX FROM THE OUTER EDGE OF THE W.C. TO THE CENTERLINE OF THE T.P.H. 14" MIN AND 19" MAX FROM THE OUTLET OF THE T.P.H. TO THE FINISHED FLOOR.

MIN. 32" DOOR



VERTICAL GRAB BAR

2 HORIZONTAL GRAB BARS

ALIGN GRAB BAR WITH FRONT EDGE OF BATHTUB

NOTE: GRAB BARS ARE NOT REQUIRED TO BE INSTALLED WHERE REINFORCEMENT FOR SUCH GRAB BARS IS INSTALLED AND LOCATED TO PERMIT FUTURE INSTALLATION OF SUCH GRAB BARS, OPERABLE PARTS SUCH AS LIGHTING CONTROLS, SWITCHES AND RECEPTACLE OUTLETS, AND ENVIRONMENTAL CONTROLS SHALL BE ACCESSIBLE.

NYBC - P102.3 EXCEPTION 2 - THE DOOR MAY SWING INTO CLEAR FLOOR SPACE FOR FIXTURES IF FUTURE REVERSAL OF THE DOOR SWING IS PROVIDED.

2 R2 OCCUPANCY APPENDIX P BATHROOM - TYPE 1

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

NOTE:

GRAB BARS ARE NOT REQUIRED TO BE INSTALLED WHERE REINFORCEMENT FOR SUCH GRAB BARS IS INSTALLED AND LOCATED TO PERMIT FUTURE INSTALLATION OF SUCH GRAB BARS, OPERABLE PARTS SUCH AS LIGHTING CONTROLS, SWITCHES AND RECEPTACLE OUTLETS, AND ENVIRONMENTAL CONTROLS SHALL BE ACCESSIBLE.

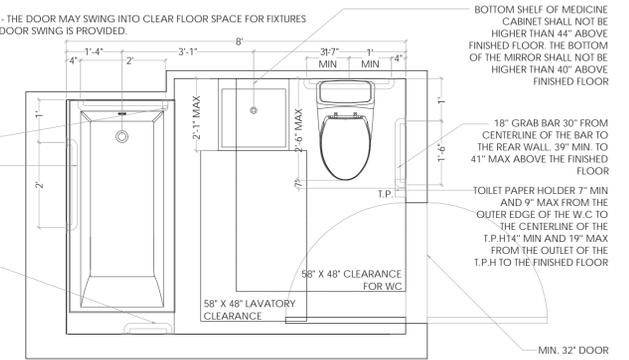
NYBC - P102.3 EXCEPTION 2 - THE DOOR MAY SWING INTO CLEAR FLOOR SPACE FOR FIXTURES IF FUTURE REVERSAL OF THE DOOR SWING IS PROVIDED.

VERTICAL GRAB BAR

2 HORIZONTAL GRAB BARS

ALIGN GRAB BAR WITH FRONT EDGE OF BATHTUB

MIN. 32" DOOR



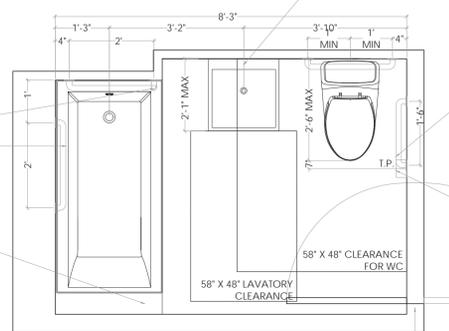
3 R2 OCCUPANCY APPENDIX P BATHROOM - TYPE 2

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

NOTE:

GRAB BARS ARE NOT REQUIRED TO BE INSTALLED WHERE REINFORCEMENT FOR SUCH GRAB BARS IS INSTALLED AND LOCATED TO PERMIT FUTURE INSTALLATION OF SUCH GRAB BARS, OPERABLE PARTS SUCH AS LIGHTING CONTROLS, SWITCHES AND RECEPTACLE OUTLETS, AND ENVIRONMENTAL CONTROLS SHALL BE ACCESSIBLE.

NYBC - P102.3 EXCEPTION 2 - THE DOOR MAY SWING INTO CLEAR FLOOR SPACE FOR FIXTURES IF FUTURE REVERSAL OF THE DOOR SWING IS PROVIDED.



BOTTOM SHELF OF MEDICINE CABINET SHALL NOT BE HIGHER THAN 44" ABOVE FINISHED FLOOR. THE BOTTOM OF THE MIRROR SHALL NOT BE HIGHER THAN 40" ABOVE FINISHED FLOOR.

18" GRAB BAR 30" FROM CENTERLINE OF THE BAR TO THE REAR WALL. 39" MIN. TO 41" MAX ABOVE THE FINISHED FLOOR.

TOILET PAPER HOLDER 7" MIN AND 9" MAX FROM THE OUTER EDGE OF THE W.C. TO THE CENTERLINE OF THE T.P.H. 14" MIN AND 19" MAX FROM THE OUTLET OF THE T.P.H. TO THE FINISHED FLOOR.

MIN. 32" DOOR

NOTE: GRAB BARS ARE NOT REQUIRED TO BE INSTALLED WHERE REINFORCEMENT FOR SUCH GRAB BARS IS INSTALLED AND LOCATED TO PERMIT FUTURE INSTALLATION OF SUCH GRAB BARS, OPERABLE PARTS SUCH AS LIGHTING CONTROLS, SWITCHES AND RECEPTACLE OUTLETS, AND ENVIRONMENTAL CONTROLS SHALL BE ACCESSIBLE.

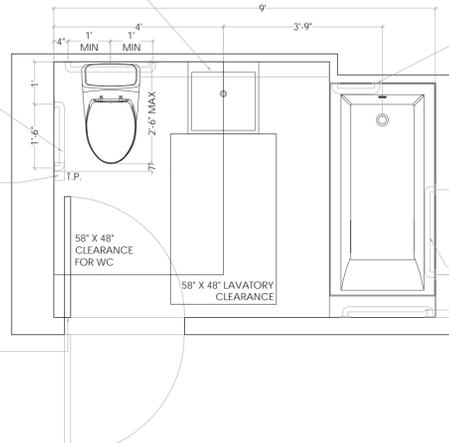
NYBC - P102.3 EXCEPTION 2 - THE DOOR MAY SWING INTO CLEAR FLOOR SPACE FOR FIXTURES IF FUTURE REVERSAL OF THE DOOR SWING IS PROVIDED.

BOTTOM SHELF OF MEDICINE CABINET SHALL NOT BE HIGHER THAN 44" ABOVE FINISHED FLOOR. THE BOTTOM OF THE MIRROR SHALL NOT BE HIGHER THAN 40" ABOVE FINISHED FLOOR.

18" GRAB BAR 30" FROM CENTERLINE OF THE BAR TO THE REAR WALL. 39" MIN. TO 41" MAX ABOVE THE FINISHED FLOOR.

TOILET PAPER HOLDER 7" MIN AND 9" MAX FROM THE OUTER EDGE OF THE W.C. TO THE CENTERLINE OF THE T.P.H. 14" MIN AND 19" MAX FROM THE OUTLET OF THE T.P.H. TO THE FINISHED FLOOR.

MIN. 32" DOOR



ALIGN GRAB BAR WITH FRONT EDGE OF BATHTUB

VERTICAL GRAB BAR

2 HORIZONTAL GRAB BARS

5 R2 OCCUPANCY APPENDIX P BATHROOM - TYPE 4

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

NOTE:

GRAB BARS ARE NOT REQUIRED TO BE INSTALLED WHERE REINFORCEMENT FOR SUCH GRAB BARS IS INSTALLED AND LOCATED TO PERMIT FUTURE INSTALLATION OF SUCH GRAB BARS, OPERABLE PARTS SUCH AS LIGHTING CONTROLS, SWITCHES AND RECEPTACLE OUTLETS, AND ENVIRONMENTAL CONTROLS SHALL BE ACCESSIBLE.

NYBC - P102.3 EXCEPTION 2 - THE DOOR MAY SWING INTO CLEAR FLOOR SPACE FOR FIXTURES IF FUTURE REVERSAL OF THE DOOR SWING IS PROVIDED.

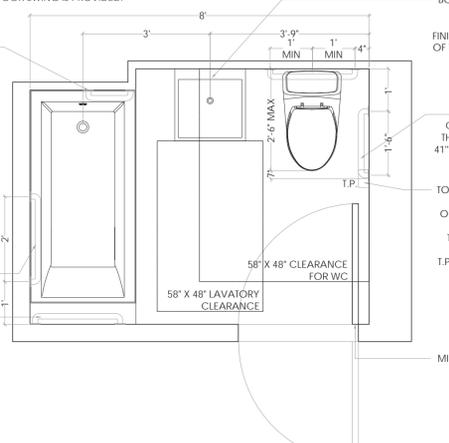
ALIGN GRAB BAR WITH FRONT EDGE OF BATHTUB

2 HORIZONTAL GRAB BARS

VERTICAL GRAB BAR

2 HORIZONTAL GRAB BARS

MIN. 32" DOOR



BOTTOM SHELF OF MEDICINE CABINET SHALL NOT BE HIGHER THAN 44" ABOVE FINISHED FLOOR. THE BOTTOM OF THE MIRROR SHALL NOT BE HIGHER THAN 40" ABOVE FINISHED FLOOR.

18" GRAB BAR 30" FROM CENTERLINE OF THE BAR TO THE REAR WALL. 39" MIN. TO 41" MAX ABOVE THE FINISHED FLOOR.

TOILET PAPER HOLDER 7" MIN AND 9" MAX FROM THE OUTER EDGE OF THE W.C. TO THE CENTERLINE OF THE T.P.H. 14" MIN AND 19" MAX FROM THE OUTLET OF THE T.P.H. TO THE FINISHED FLOOR.

MIN. 32" DOOR

6 R2 OCCUPANCY APPENDIX P BATHROOM - TYPE 5

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

KITCHEN SINK TO BE MOUNTED AT 34" A.F.F. MAX.

PROJECT:

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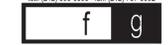


308 MALCOLM X BLVD,
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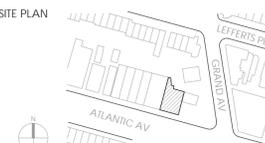
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FAX: 212.979.9281

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SITE PLAN



PROJECT No:	1405 BA_929
DOB REVIEW	04/02/15
DOB REVIEW	02/05/15
DRAWING	REV. # DATE



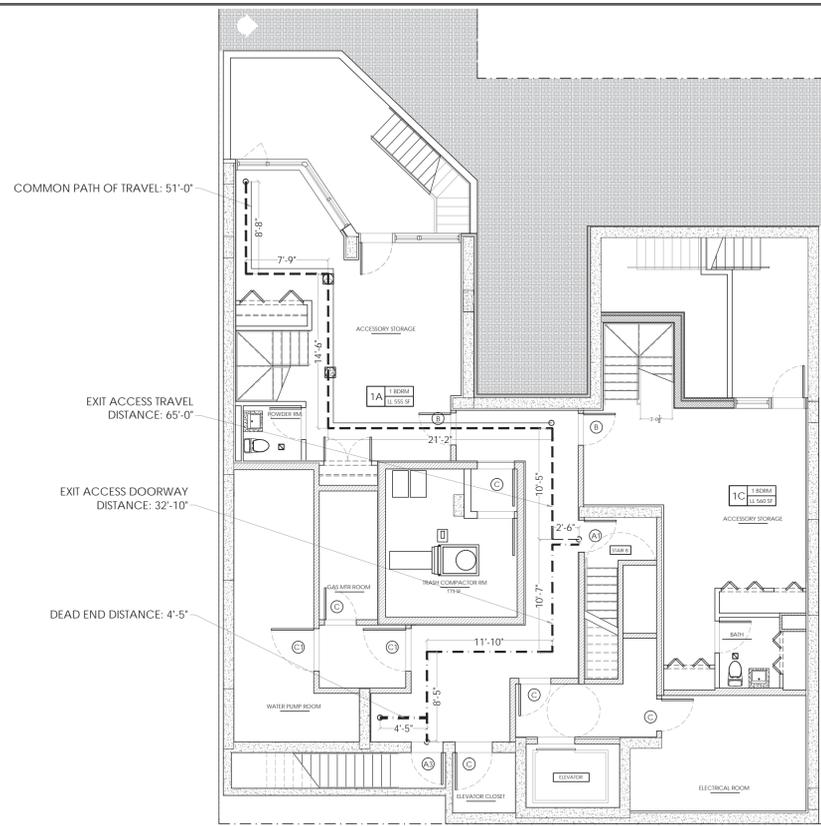
PAUL GREGORY, R.A.

TITLE: ADA CLEARANCES
BATHROOM AND ELEVATOR

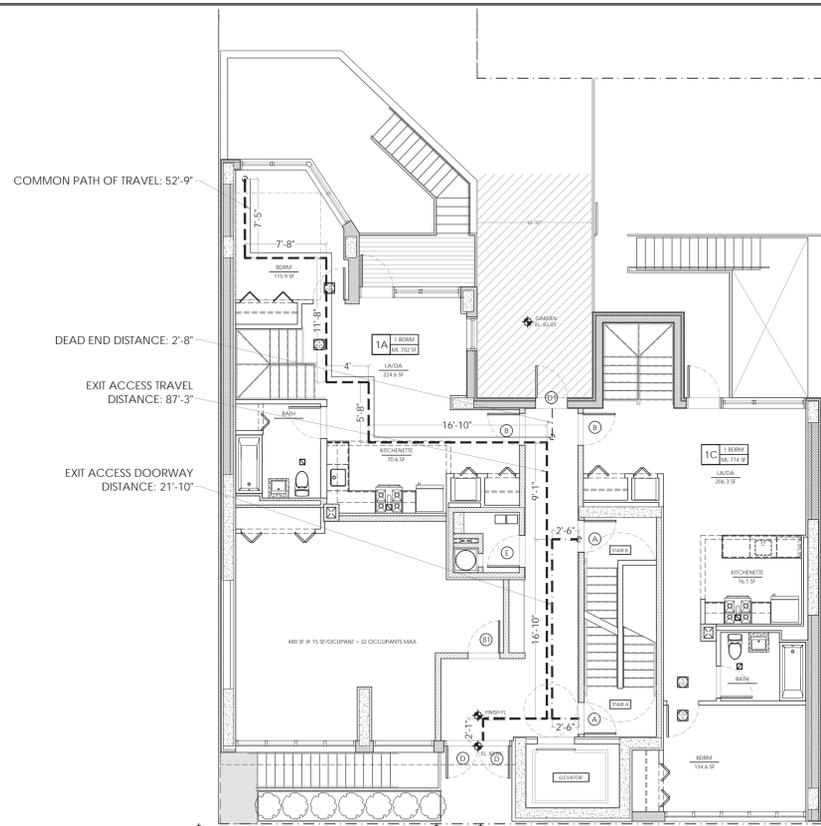
DATE: 04/02/2015

SCALE: AS NOTED

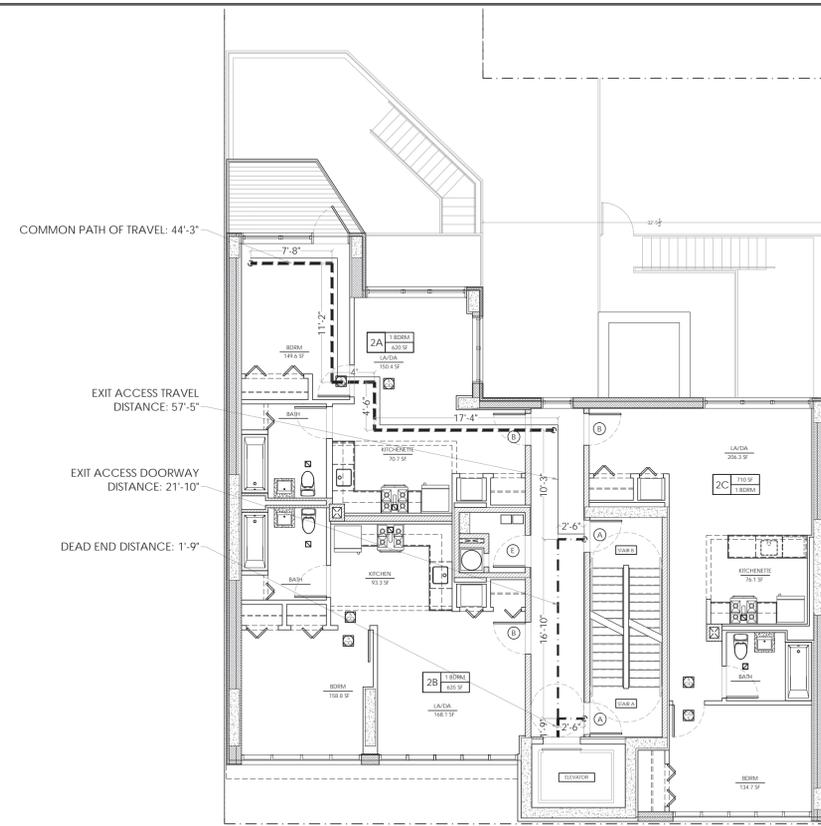
SHEET: A-004.00



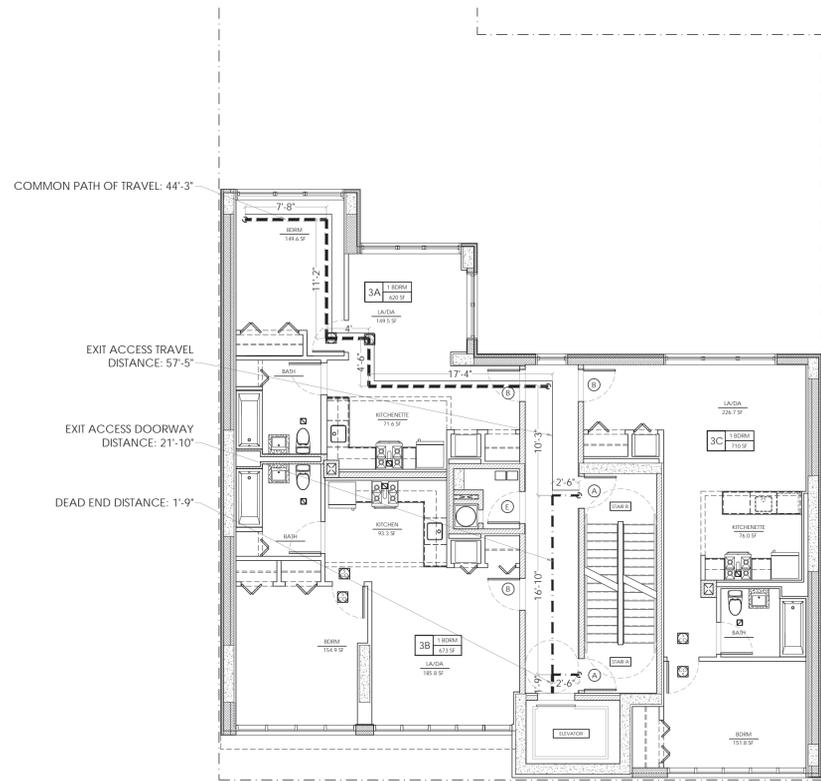
1 CELLAR EGRESS PLAN
SCALE: 1/8" = 1'-0"



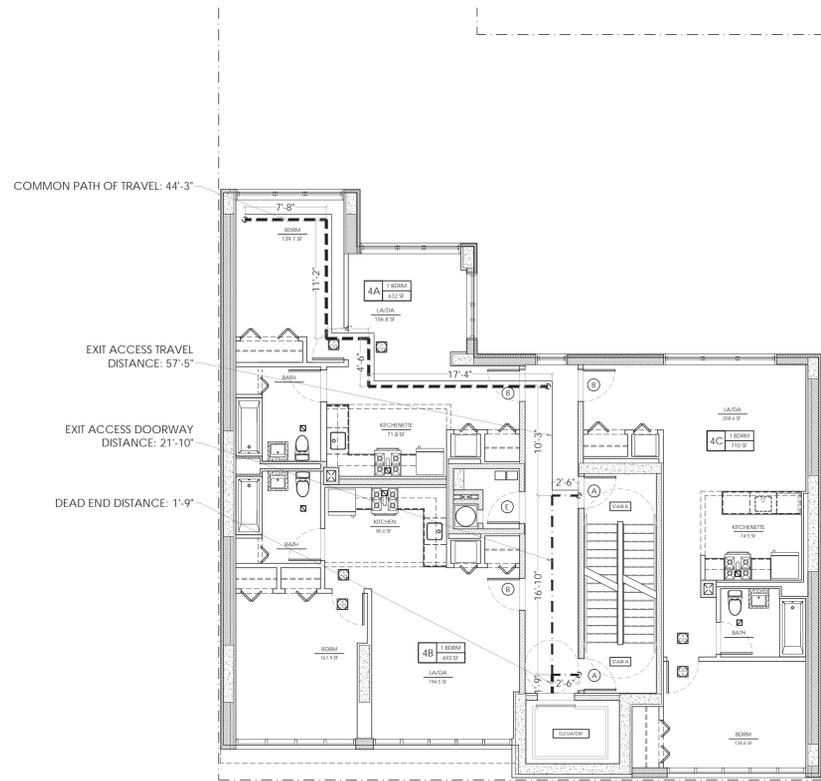
2 FIRST FLOOR EGRESS PLAN
SCALE: 1/8" = 1'-0"



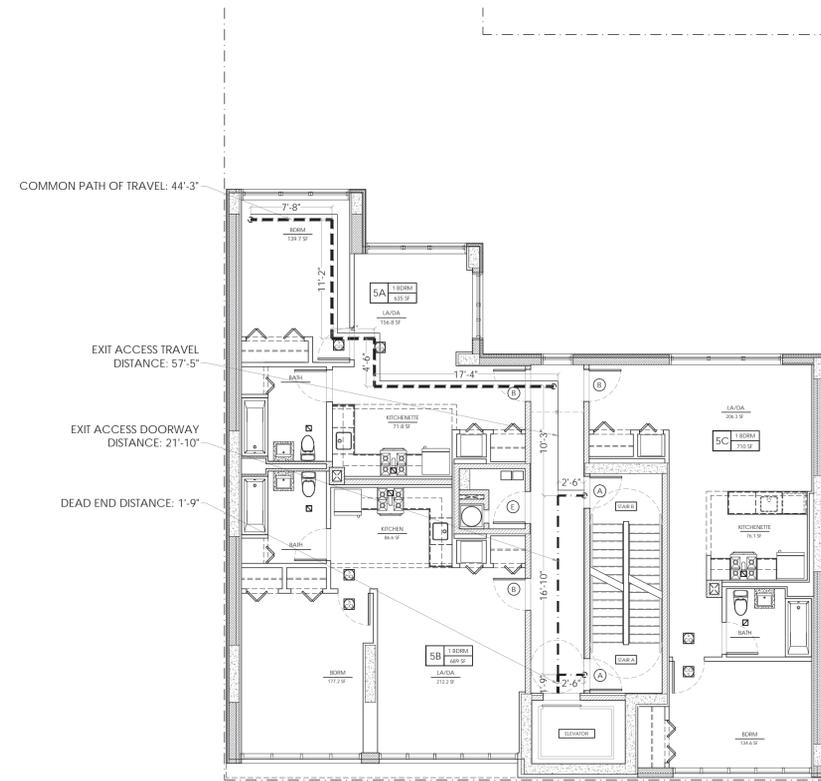
3 SECOND FLOOR EGRESS PLAN
SCALE: 1/8" = 1'-0"



4 THIRD FLOOR EGRESS PLAN
SCALE: 1/8" = 1'-0"



5 FOURTH FLOOR EGRESS PLAN
SCALE: 1/8" = 1'-0"



6 FIFTH FLOOR EGRESS PLAN
SCALE: 1/8" = 1'-0"

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FOR ANY CHANGES FROM
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COMMENCE SUCH WORK.

STRUCTURAL ENGINEER



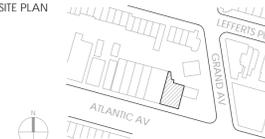
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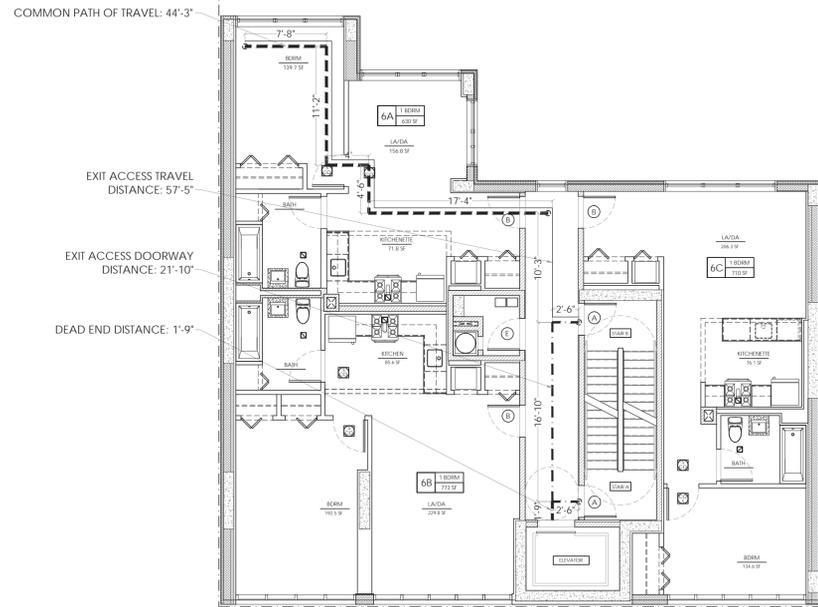
SITE PLAN



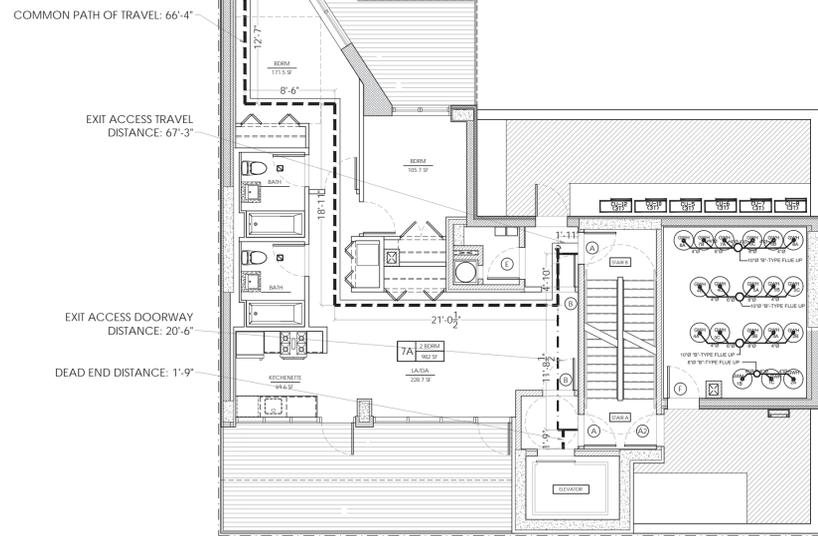
PROJECT No:	1405 BA_929
DOB REVIEW	04/02/15
DOB REVIEW	02/05/15
DRAWING	REV. # DATE



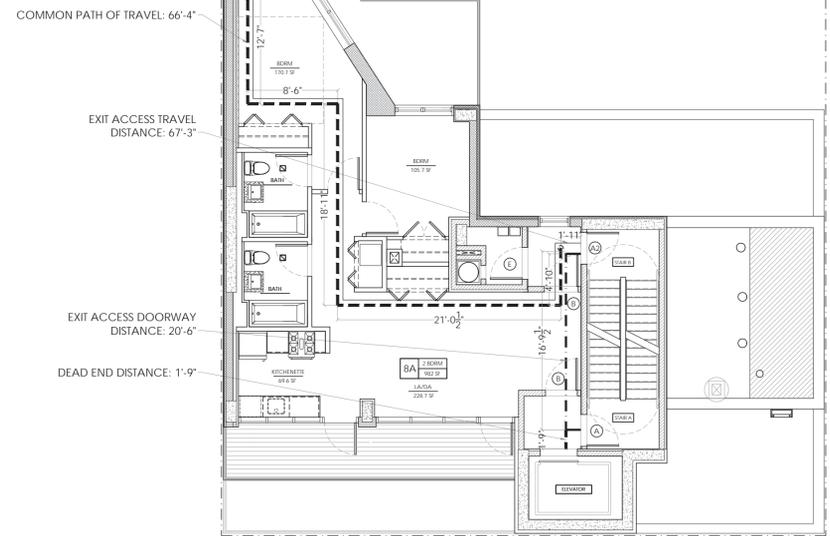
TITLE: EGRESS PLANS
DATE: 04/02/2015
SCALE: AS NOTED
SHEET: A-010.00



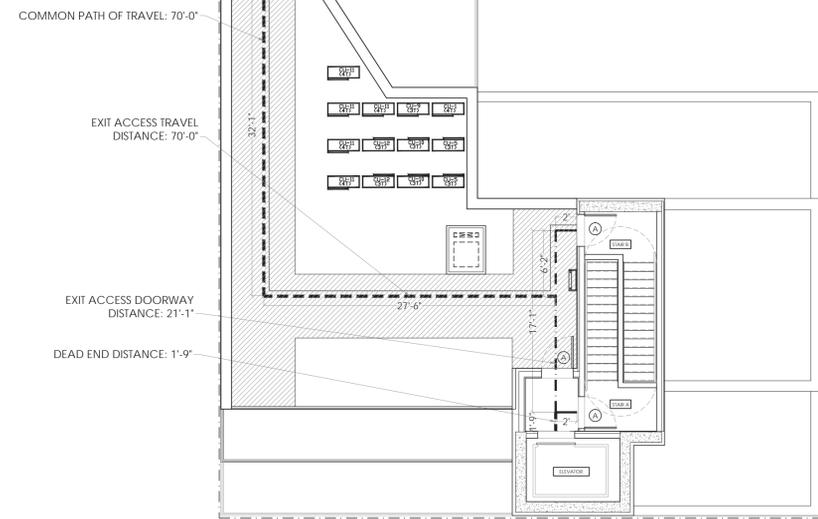
1 SIXTH FLOOR EGRESS PLAN
SCALE: 1/8" = 1'-0"



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

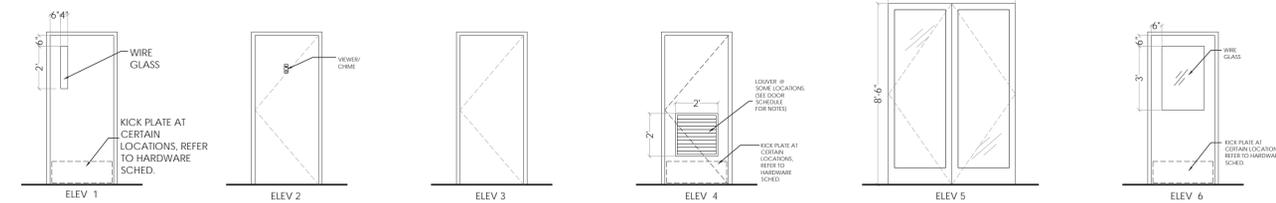


3 EIGHTH FLOOR EGRESS PLAN
SCALE: 1/8" = 1'-0"



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

DOOR TYPE



DOOR TYPE SCHEDULE

TYPE	FROM ROOM - TO ROOM	DOOR ELEV.	MATERIAL	WIDTH	HEIGHT	THK	FRAME MATERIAL	W/KD	RATING
A	CORRIDOR TO STAIR	1	METAL	3'-0"	7'-0"	1-3/4"	METAL		1.5 HR. FPSC
A1	CORRIDOR TO STAIR CELLAR	1	METAL	3'-0"	7'-0"	1-3/4"	METAL		1.5 HR. FPSC
A2	STAIR BULKHEAD TO ROOF	1	METAL	3'-0"	7'-0"	1-3/4"	METAL		1.5 HR. FPSC
A3	EXTR. TO EGRESS STAIR CELLAR	1	METAL	3'-0"	7'-0"	1-3/4"	METAL		1.5 HR. FPSC
B	APT ENTRY DOOR	2	METAL	3'-0"	7'-0"	1-3/4"	METAL		1.5 HR. FPSC
B1	CORRIDOR TO GYM	3	METAL	3'-0"	7'-0"	1-3/4"	METAL		1.5 HR. FPSC
C	MECHANICAL/UTILITY ROOM	4	METAL	3'-0"	7'-0"	1-3/4"	METAL		1.5 HR. FPSC
C1	MECHANICAL/UTILITY ROOM	4	METAL	4'-0"	7'-0"	1-3/4"	METAL		1.5 HR. FPSC
D	RESIDENTIAL ENTRY TO EXTR.	5	ALUM./GL.	6'-0"	8'-6"	1-3/4"	ALUM.		1.5 HR. FPSC
D1	EXTR. TO REAR YARD	6	ALUM./GL.	3'-0"	8'-0"	1-3/4"	ALUM.		1.5 HR. FPSC
E	TRASH ROOM	4	METAL	3'-0"	7'-0"	1-3/4"	METAL		1.5 HR. FPSC
F	MECHANICAL ROOM ROOF	4	METAL	3'-0"	7'-0"	1-3/4"	METAL		1.5 HR. FPSC

TACTILE EXIT SIGNS: BC1011.3

A TACTILE EXIT SIGN STATING 'EXIT' AND COMPLYING WITH IC A117.1 SHALL BE PROVIDED ADJACENT TO EACH DOOR TO AN EGRESS STAIRWAY, AN EXIT PASSAGEWAY AND THE EXIT DISCHARGE.

5 DOOR TYPES
SCALE: 1/4" = 1'-0"

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STRUCTURAL ENGINEER

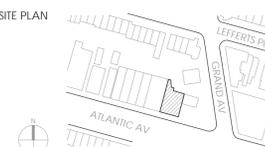
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SITE PLAN



PROJECT No:	1405 BA_929
DOB REVIEW	04/02/15
DOB REVIEW	02/05/15
DRAWING	REV. # DATE



TITLE: EGRESS PLANS
DATE: 04/02/2015
SCALE: AS NOTED
SHEET: A-011.00

EXIT SUMMARY CHART - IN CONFORMANCE WITH SECTION BC 1003

	WIDTH (IN.)	STAIRWAYS ¹ (IN. PER OCC.)	OTHER EGRESS COMPONENTS ¹ (IN. PER OCC.)	EXIT CAPACITY (WIDTH/IN. PER OCC.)	NOTES	EXIT ACCESS TRAVEL DIST. ² (SPRINKLERED)	EXIT ACCESS DOORWAY DIST. ³	COMMON PATH DIST. ⁴	DEAD END DIST. ⁵
CELLAR									
CORRIDOR	60		0.2	300					
STAIR EXIT DOOR 1	36		0.2	180	TO STAIR A				
STAIR EXIT DOOR 2	36		0.2	180	TO STAIR C				
STAIR A	36	0.3		120	STAIR WIDTH GOVERNS				
STAIR C	36	0.3		120	STAIR WIDTH GOVERNS				
TOTAL EXIT CAPACITY				240		MAX. 200' REQ'D; 65'-0" PROVIDED	MIN. 15' REQ'D; 32'-10" PROVIDED	MAX. 75' REQ'D; 51'-0" PROVIDED	MAX. 80' REQ'D; 4'-5" PROVIDED
FIRST FLOOR									
CORRIDOR	60		0.2	300					
LOBBY EXIT DOOR 1	72		0.2	360	TO GRADE				
STAIR EXIT DOOR 1	36		0.2	180	TO STAIR A				
STAIR A	36	0.3		120	STAIR WIDTH GOVERNS				
TOTAL EXIT CAPACITY				120		MAX. 200' REQ'D; 87'-3" PROVIDED	MIN. 15' REQ'D; 21'-10" PROVIDED	MAX. 75' REQ'D; 52'-9" PROVIDED	MAX. 80' REQ'D; 2'-8" PROVIDED
SECOND FLOOR									
CORRIDOR	60		0.2	300					
STAIR EXIT DOOR 1	36		0.2	180	TO STAIR A				
STAIR EXIT DOOR 2	36		0.2	180	TO STAIR B				
STAIR A	36	0.3		120	STAIR WIDTH GOVERNS				
STAIR B	36	0.3		120	STAIR WIDTH GOVERNS				
TOTAL EXIT CAPACITY				240		MAX. 200' REQ'D; 57'-5" PROVIDED	MIN. 15' REQ'D; 21'-10" PROVIDED	MAX. 75' REQ'D; 44'-3" PROVIDED	MAX. 80' REQ'D; 1'-9" PROVIDED
THIRD FLOOR									
CORRIDOR	60		0.2	300					
STAIR EXIT DOOR 1	36		0.2	180	TO STAIR A				
STAIR EXIT DOOR 2	36		0.2	180	TO STAIR B				
STAIR A	36	0.3		120	STAIR WIDTH GOVERNS				
STAIR B	36	0.3		120	STAIR WIDTH GOVERNS				
TOTAL EXIT CAPACITY				240		MAX. 200' REQ'D; 57'-5" PROVIDED	MIN. 15' REQ'D; 21'-10" PROVIDED	MAX. 75' REQ'D; 44'-3" PROVIDED	MAX. 80' REQ'D; 1'-9" PROVIDED
FOURTH FLOOR									
CORRIDOR	60		0.2	300					
STAIR EXIT DOOR 1	36		0.2	180	TO STAIR A				
STAIR EXIT DOOR 2	36		0.2	180	TO STAIR B				
STAIR A	36	0.3		120	STAIR WIDTH GOVERNS				
STAIR B	36	0.3		120	STAIR WIDTH GOVERNS				
TOTAL EXIT CAPACITY				240		MAX. 200' REQ'D; 57'-5" PROVIDED	MIN. 15' REQ'D; 21'-10" PROVIDED	MAX. 75' REQ'D; 44'-3" PROVIDED	MAX. 80' REQ'D; 1'-9" PROVIDED
FIFTH FLOOR									
CORRIDOR	60		0.2	300					
STAIR EXIT DOOR 1	36		0.2	180	TO STAIR A				
STAIR EXIT DOOR 2	36		0.2	180	TO STAIR B				
STAIR A	36	0.3		120	STAIR WIDTH GOVERNS				
STAIR B	36	0.3		120	STAIR WIDTH GOVERNS				
TOTAL EXIT CAPACITY				240		MAX. 200' REQ'D; 57'-5" PROVIDED	MIN. 15' REQ'D; 21'-10" PROVIDED	MAX. 75' REQ'D; 44'-3" PROVIDED	MAX. 80' REQ'D; 1'-9" PROVIDED
SIXTH FLOOR									
CORRIDOR	60		0.2	300					
STAIR EXIT DOOR 1	36		0.2	180	TO STAIR A				
STAIR EXIT DOOR 2	36		0.2	180	TO STAIR B				
STAIR A	36	0.3		120	STAIR WIDTH GOVERNS				
STAIR B	36	0.3		120	STAIR WIDTH GOVERNS				
TOTAL EXIT CAPACITY				240		MAX. 200' REQ'D; 57'-5" PROVIDED	MIN. 15' REQ'D; 21'-10" PROVIDED	MAX. 75' REQ'D; 44'-3" PROVIDED	MAX. 80' REQ'D; 1'-9" PROVIDED
SEVENTH FLOOR									
CORRIDOR	60		0.2	300					
STAIR EXIT DOOR 1	36		0.2	180	TO STAIR A				
STAIR EXIT DOOR 2	36		0.2	180	TO STAIR B				
STAIR A	36	0.3		120	STAIR WIDTH GOVERNS				
STAIR B	36	0.3		120	STAIR WIDTH GOVERNS				
TOTAL EXIT CAPACITY				240		MAX. 200' REQ'D; 67'-3" PROVIDED	MIN. 15' REQ'D; 20'-6" PROVIDED	MAX. 75' REQ'D; 66'-4" PROVIDED	MAX. 80' REQ'D; 1'-9" PROVIDED
EIGHTH FLOOR									
CORRIDOR	60		0.2	300					
STAIR EXIT DOOR 1	36		0.2	180	TO STAIR A				
STAIR EXIT DOOR 2	36		0.2	180	TO STAIR B				
STAIR A	36	0.3		120	STAIR WIDTH GOVERNS				
STAIR B	36	0.3		120	STAIR WIDTH GOVERNS				
TOTAL EXIT CAPACITY				240		MAX. 200' REQ'D; 67'-3" PROVIDED	MIN. 15' REQ'D; 20'-6" PROVIDED	MAX. 75' REQ'D; 66'-4" PROVIDED	MAX. 80' REQ'D; 1'-9" PROVIDED
ROOF									
STAIR EXIT DOOR 1	36		0.2	180	TO STAIR A				
STAIR EXIT DOOR 2	36		0.2	180	TO STAIR B				
STAIR EXIT DOOR 3	36		0.2	180	TO STAIR B				
STAIR A	36	0.3		120	STAIR WIDTH GOVERNS				
STAIR B	36	0.3		120	STAIR WIDTH GOVERNS				
TOTAL EXIT CAPACITY				240		MAX. 200' REQ'D; 70'-0" PROVIDED	MIN. 15' REQ'D; 21'-1" PROVIDED	MAX. 75' REQ'D; 70'-0" PROVIDED	N/A
NOTES:									
1. AS PER BC TABLE 1005.1	4. AS PER BC 1013.3								
2. AS PER BC TABLE 1015.1	5. AS PER BC 1016.3(4)								
3. AS PER BC 1014.2.1(3)									

OCCUPANT LOAD CALCULATIONS

	OCC. GROUP	FLOOR AREA (SF)	FA PER OCC. (SF) ¹	OCC. LOAD (AREA/FA)	NOTES
CELLAR					
ELECTRICAL ROOM	U	165.4	300	1	
COMPACTOR ROOM	U	173.1	300	1	
ELEVATOR CONTROL ROOM	U	33.7	300	1	
WATER PUMP ROOM	U	197.2	300	1	
GAS METER ROOM	U	66.5	300	1	
UNIT 1A - LOWER LEVEL	R-2	541	200	3	
UNIT 1C - LOWER LEVEL	R-2	521	200	3	
TOTAL OCCUPANT LOAD				11	
FIRST FLOOR					
ENTRANCE LOBBY	R-2	95.3	200	1	
UNIT 1A - MAIN LEVEL	R-2	633	200	4	
GYM	R-2	480	200	3	
UNIT 1C - MAIN LEVEL	R-2	703	200	4	
REFUSE ROOM	R-2	36	300	1	INCIDENTAL USE TO R-2
TOTAL OCCUPANT LOAD				13	
SECOND FLOOR					
UNIT 2A	R-2	567	200	3	
UNIT 2B	R-2	595	200	3	
UNIT 2C	R-2	649	200	4	
REFUSE ROOM	R-2	23.4	300	1	INCIDENTAL USE TO R-2
TOTAL OCCUPANT LOAD				11	
THIRD FLOOR					
UNIT 3A	R-2	567	200	3	
UNIT 3B	R-2	631	200	4	
UNIT 3C	R-2	649	200	4	
REFUSE ROOM	R-2	36	300	1	INCIDENTAL USE TO R-2
TOTAL OCCUPANT LOAD				12	
FOURTH FLOOR					
UNIT 4A	R-2	580	200	3	
UNIT 4B	R-2	650	200	4	
UNIT 4C	R-2	641	200	4	
REFUSE ROOM	R-2	36	300	1	INCIDENTAL USE TO R-2
TOTAL OCCUPANT LOAD				12	
FIFTH FLOOR					
UNIT 5A	R-2	582	200	3	
UNIT 5B	R-2	689	200	4	
UNIT 5C	R-2	649	200	4	
REFUSE ROOM	R-2	36	300	1	INCIDENTAL USE TO R-2
TOTAL OCCUPANT LOAD				12	
SIXTH FLOOR					
UNIT 6A	R-2	587	200	3	
UNIT 6B	R-2	728	200	4	
UNIT 6C	R-2	649	200	4	
REFUSE ROOM	R-2	36	300	1	INCIDENTAL USE TO R-2
TOTAL OCCUPANT LOAD				12	
SEVENTH FLOOR					
UNIT 7A	R-2	907	200	5	
REFUSE ROOM	R-2	36	300	1	INCIDENTAL USE TO R-2
TOTAL OCCUPANT LOAD				6	
EIGHTH FLOOR					
UNIT 8A	R-2	907	200	5	
REFUSE ROOM	R-2	23.4	300	1	INCIDENTAL USE TO R-2
TOTAL OCCUPANT LOAD				7	
ROOF					
ELEVATOR VESTIBULE	R-2	25	200	1	
RECREATION SPACE	R-2	609.7	200	6	
TOTAL OCCUPANT LOAD				7	
BUILDING TOTAL OCCUPANT LOAD					
				102	
NOTES:					
1. AS PER BC TABLE 1004.1.2					

PROJECT:

929 ATLANTIC AVE
BROOKLYN, NEW YORK 11238

ROART

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Tel: (212) 595-6886 - Fax: (212) 751-8992

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STRUCTURAL ENGINEER



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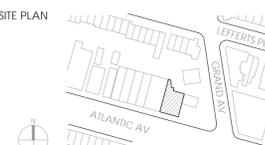
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MECHANICAL ENGINEER



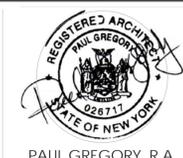
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SITE PLAN



PROJECT No: 1405 BA_929

DOB REVIEW 04/02/15
DOB REVIEW 02/05/15
DRAWING REV. # DATE



TITLE: EGRESS & OCCUPANT
LOAD CALCULATIONS

DATE: 04/02/2015

SCALE: AS NOTED

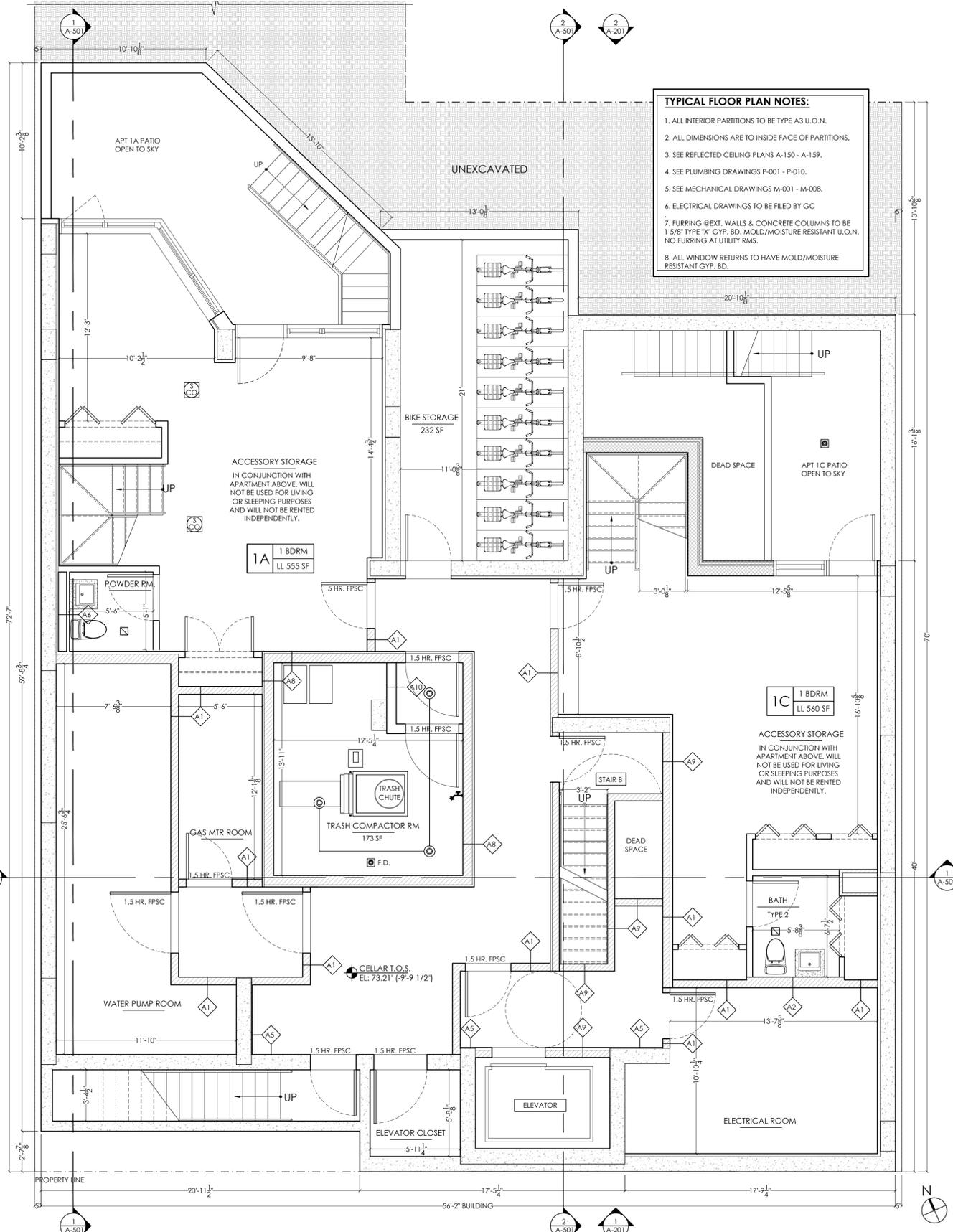
SHEET: A-012.00

TYPICAL FLOOR PLAN NOTES:

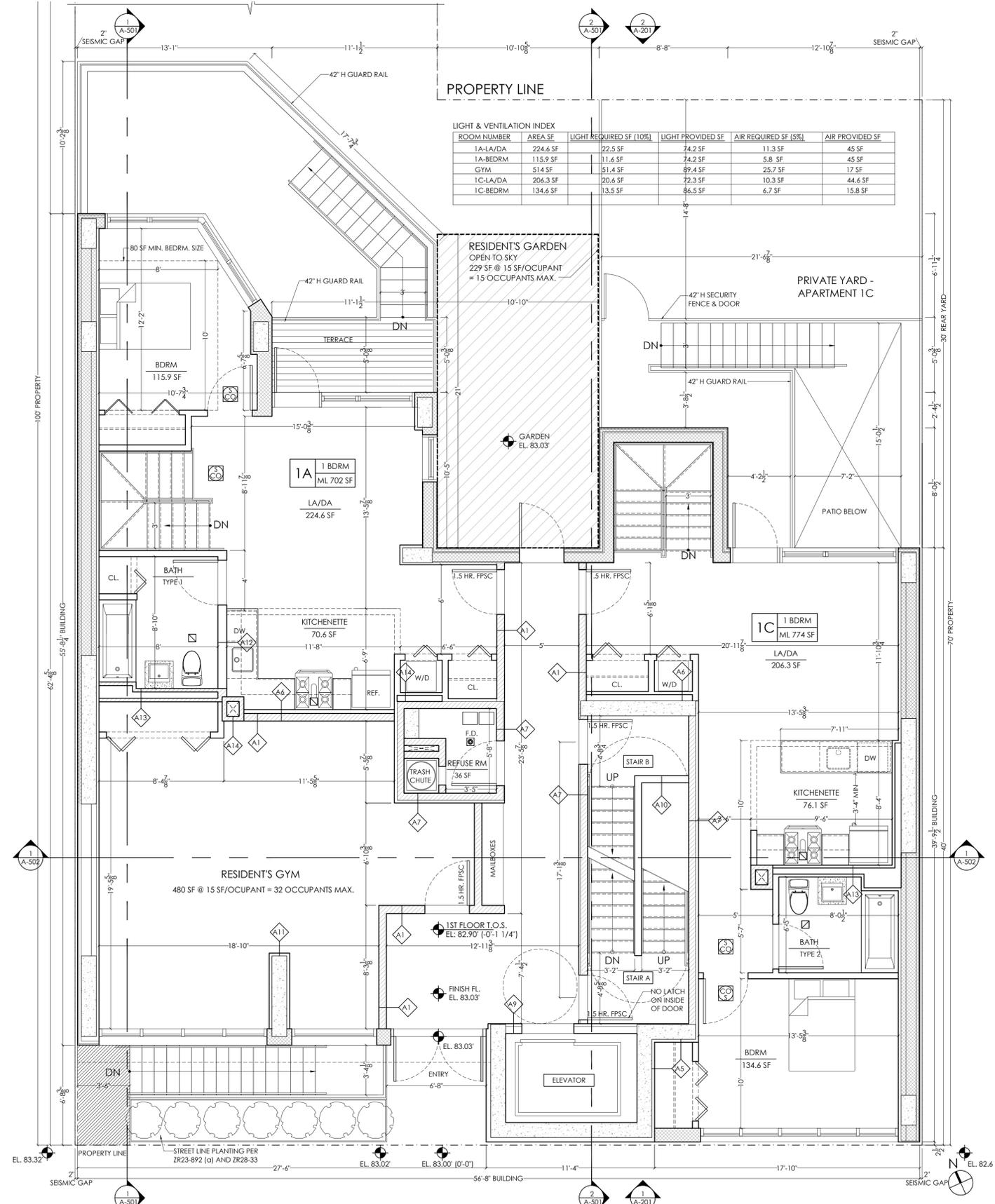
1. ALL INTERIOR PARTITIONS TO BE TYPE A3 U.O.N.
2. ALL DIMENSIONS ARE TO INSIDE FACE OF PARTITIONS.
3. SEE REFLECTED CEILING PLANS A-150 - A-159.
4. SEE PLUMBING DRAWINGS P-001 - P-010.
5. SEE MECHANICAL DRAWINGS M-001 - M-008.
6. ELECTRICAL DRAWINGS TO BE FILED BY GC
7. FURRING @ EXT. WALLS & CONCRETE COLUMNS TO BE 1.5/8" TYPE "X" GYP. BD. MOLD/MOISTURE RESISTANT U.O.N. NO FURRING AT UTILITY RMS.
8. ALL WINDOW RETURNS TO HAVE MOLD/MOISTURE RESISTANT GYP. BD.

PROPERTY LINE

ROOM NUMBER	AREA SF	LIGHT REQUIRED SF (10%)	LIGHT PROVIDED SF	AIR REQUIRED SF (5%)	AIR PROVIDED SF
1A-LA/DA	224.6 SF	22.46 SF	74.2 SF	11.3 SF	45 SF
1A-BDRM	115.9 SF	11.59 SF	74.2 SF	5.8 SF	45 SF
GYM	514.5 SF	51.45 SF	89.4 SF	25.7 SF	17 SF
1C-LA/DA	206.3 SF	20.63 SF	72.3 SF	10.3 SF	44.6 SF
1C-BDRM	134.6 SF	13.46 SF	86.5 SF	6.7 SF	15.8 SF



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



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

PROJECT:
929 ATLANTIC AVE
BROOKLYN, NEW YORK 11238

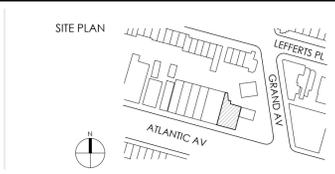
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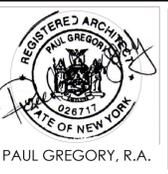
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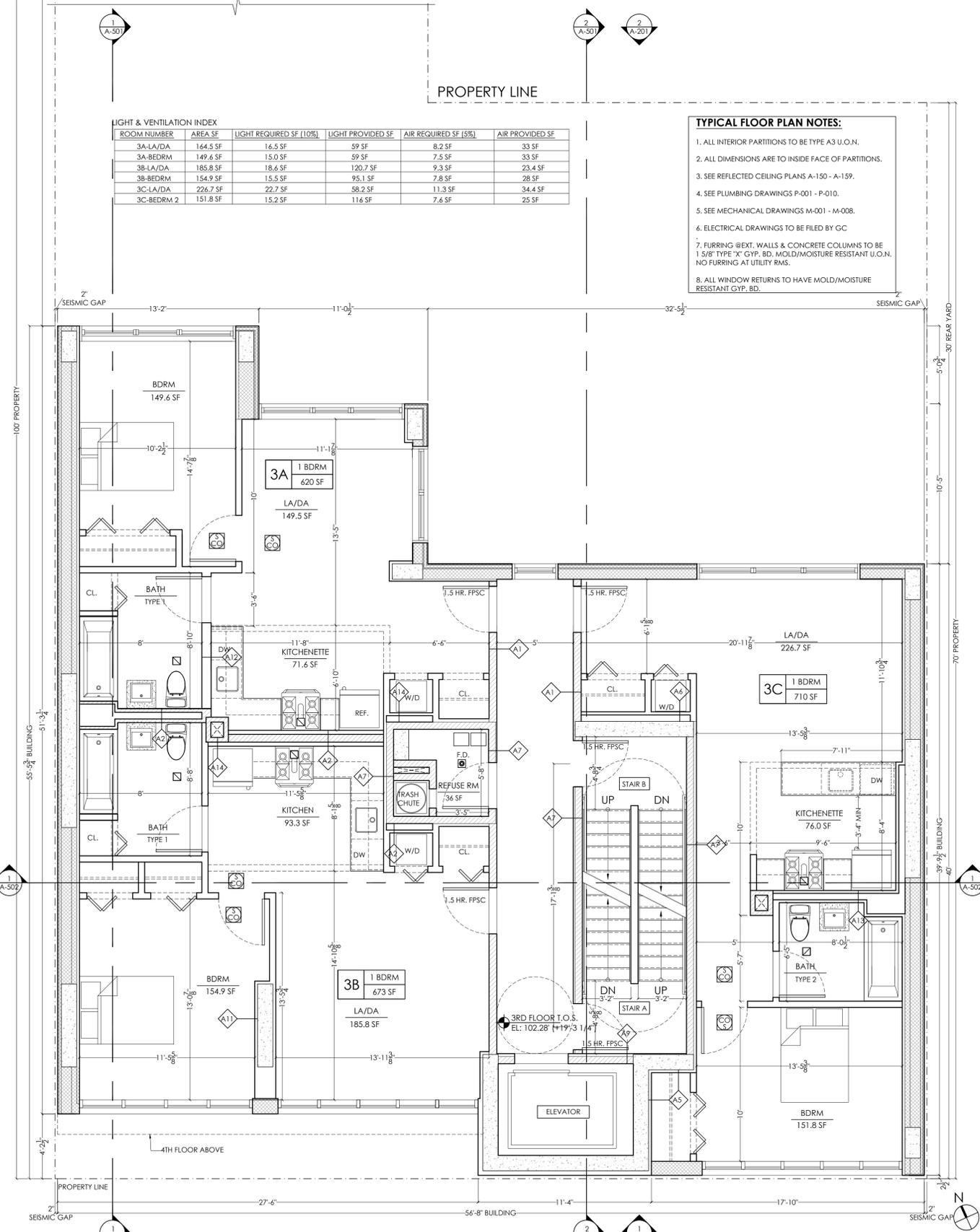
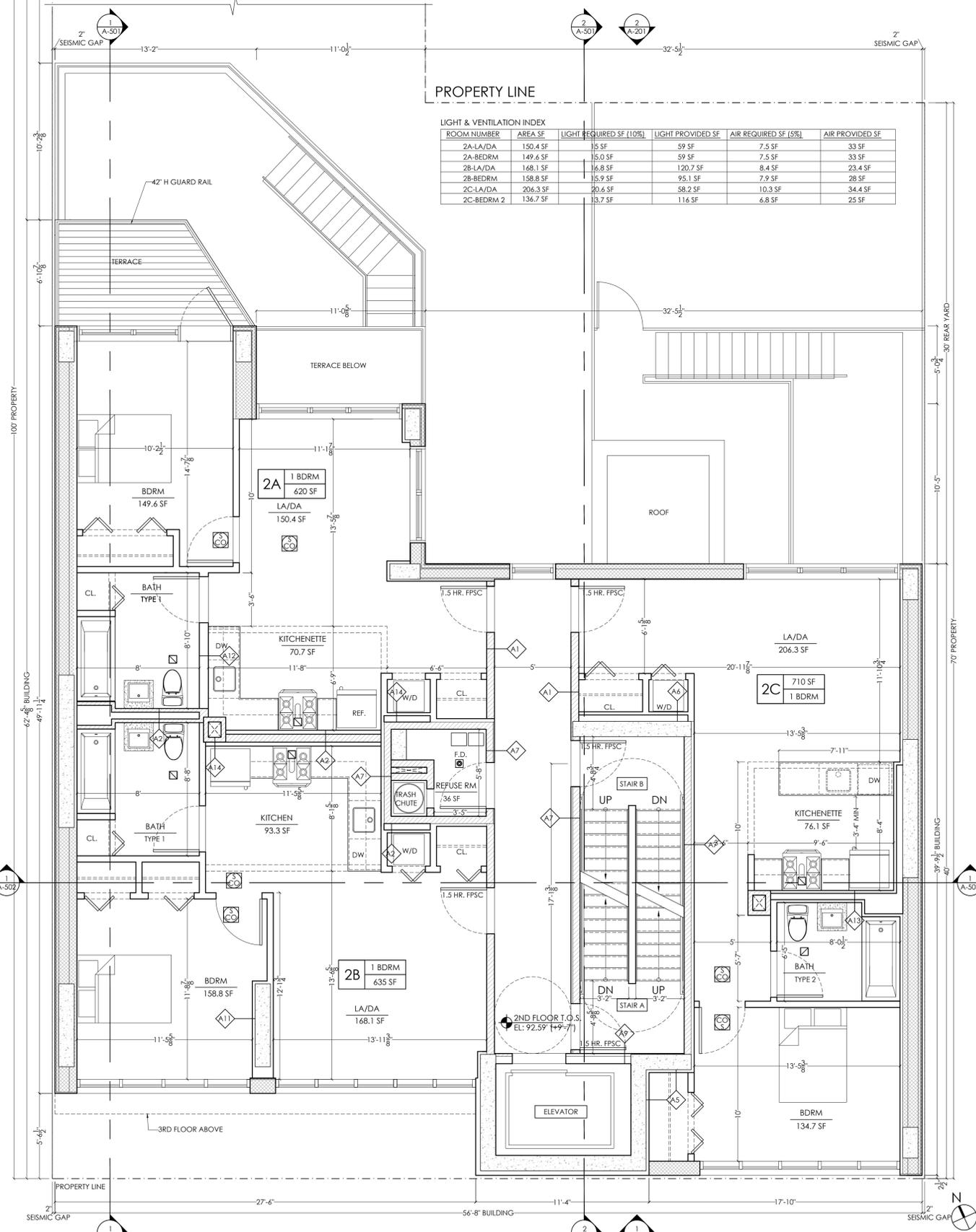
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PROJECT No:	1405 BA_929
DOB REVIEW	04/02/15
DOB REVIEW	02/05/15
DRAWING	REV. # DATE



TITLE: FLOOR PLANS
DATE: 04/02/2015
SCALE: AS NOTED
SHEET: **A-101.00**



- TYPICAL FLOOR PLAN NOTES:**
1. ALL INTERIOR PARTITIONS TO BE TYPE A3 U.O.N.
 2. ALL DIMENSIONS ARE TO INSIDE FACE OF PARTITIONS.
 3. SEE REFLECTED CEILING PLANS A-150 - A-159.
 4. SEE PLUMBING DRAWINGS P-001 - P-010.
 5. SEE MECHANICAL DRAWINGS M-001 - M-008.
 6. ELECTRICAL DRAWINGS TO BE FILED BY GC
 7. FURRING @ EXT. WALLS & CONCRETE COLUMNS TO BE 1" 5/8" TYPE "X" GYP. BD. MOULD/MOISTURE RESISTANT U.O.N. NO FURRING AT UTILITY RMS.
 8. ALL WINDOW RETURNS TO HAVE MOLD/MOISTURE RESISTANT GYP. BD.

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

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

PROJECT:
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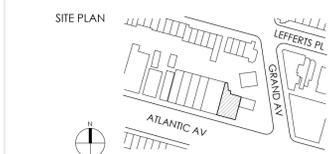
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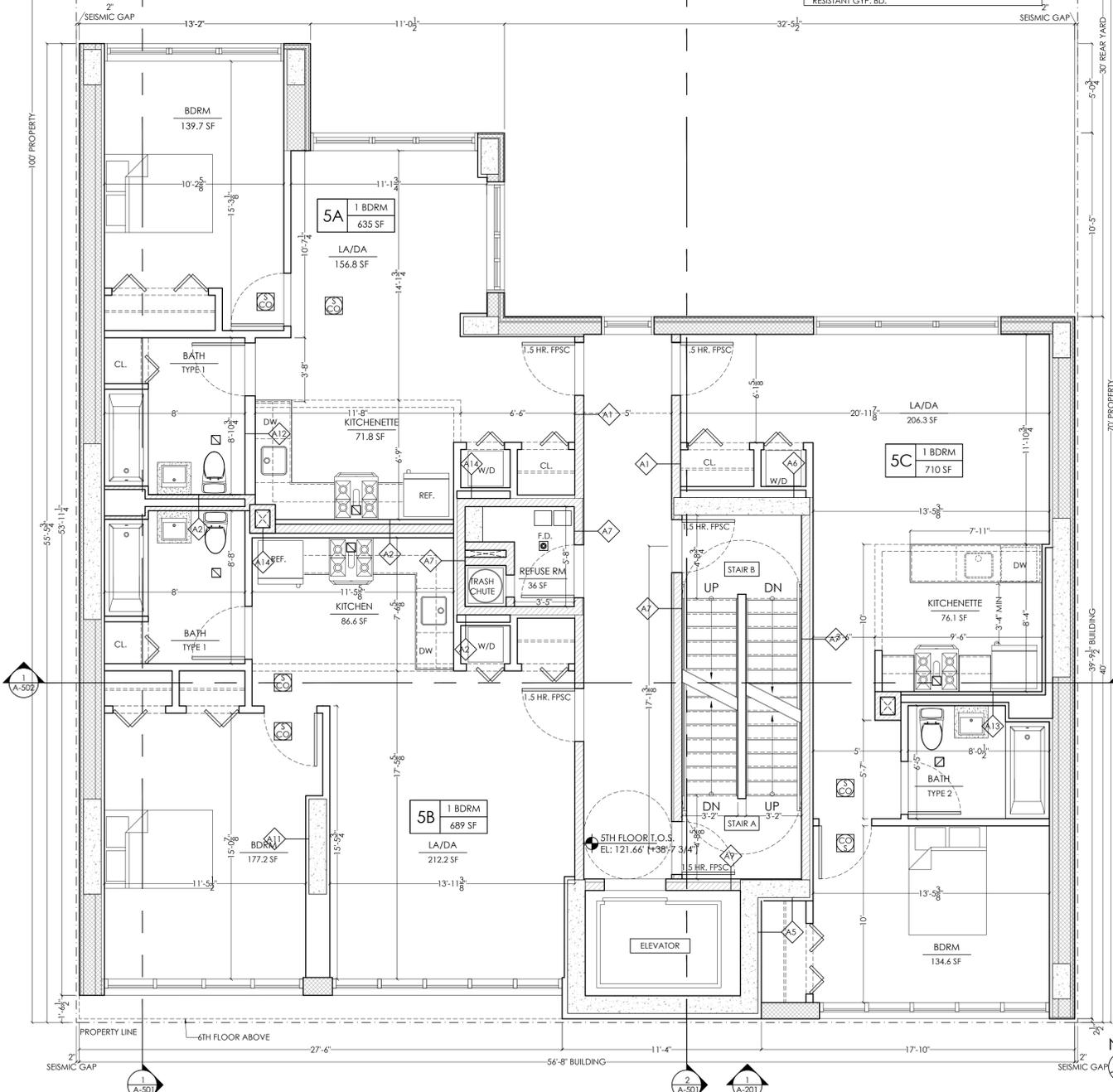
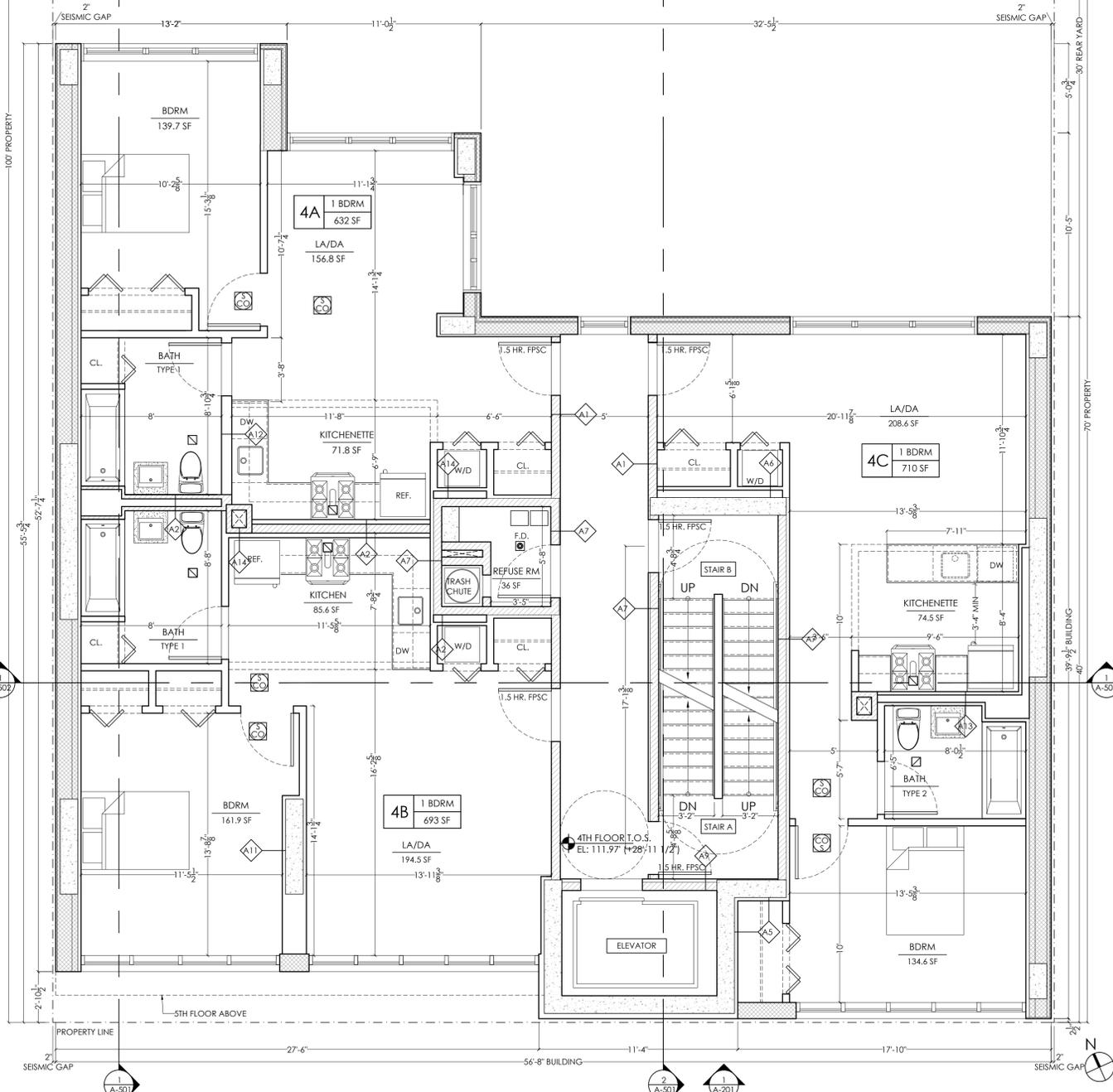


TITLE: FLOOR PLANS
DATE: 04/02/2015
SCALE: AS NOTED
SHEET: **A-102.00**

ROOM NUMBER	AREA SF	LIGHT REQUIRED SF (10%)	LIGHT PROVIDED SF	AIR REQUIRED SF (5%)	AIR PROVIDED SF
4A-LA/DA	156.8 SF	15.7 SF	59 SF	7.8 SF	33 SF
4A-BEDRM	139.7 SF	14 SF	59 SF	7.8 SF	33 SF
4B-LA/DA	194.5 SF	19.5 SF	120.7 SF	9.7 SF	23.4 SF
4B-BEDRM	161.9 SF	14.2 SF	95.1 SF	8.1 SF	28 SF
4C-LA/DA	208.6 SF	20.7 SF	58.2 SF	10.4 SF	34.4 SF
4C-BEDRM 2	134.6 SF	13.5 SF	116 SF	6.7 SF	25 SF

ROOM NUMBER	AREA SF	LIGHT REQUIRED SF (10%)	LIGHT PROVIDED SF	AIR REQUIRED SF (5%)	AIR PROVIDED SF
5A-LA/DA	156.8 SF	15.7 SF	59 SF	7.8 SF	33 SF
5A-BEDRM	139.7 SF	14 SF	59 SF	7.8 SF	33 SF
5B-LA/DA	212.2 SF	21.2 SF	120.7 SF	10.4 SF	23.4 SF
5B-BEDRM	177.2 SF	17.7 SF	95.1 SF	8.7 SF	28 SF
5C-LA/DA	206.3 SF	20.6 SF	58.2 SF	10.3 SF	34.4 SF
5C-BEDRM 2	134.6 SF	13.5 SF	116 SF	6.7 SF	25 SF

- TYPICAL FLOOR PLAN NOTES:**
1. ALL INTERIOR PARTITIONS TO BE TYPE A3 U.O.N.
 2. ALL DIMENSIONS ARE TO INSIDE FACE OF PARTITIONS.
 3. SEE REFLECTED CEILING PLANS A-150 - A-159.
 4. SEE PLUMBING DRAWINGS P-001 - P-010.
 5. SEE MECHANICAL DRAWINGS M-001 - M-008.
 6. ELECTRICAL DRAWINGS TO BE FILED BY GC
 7. FURRING @ EXT. WALLS & CONCRETE COLUMNS TO BE 1" X 2" TYPE "X" GYP. BD. MOLD/MOISTURE RESISTANT U.O.N. NO FURRING AT UTILITY RMS.
 8. ALL WINDOW RETURNS TO HAVE MOLD/MOISTURE RESISTANT GYP. BD.



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

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

PROJECT:
929 ATLANTIC AVE
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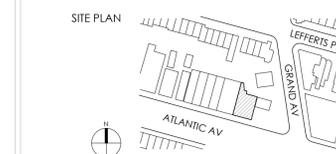
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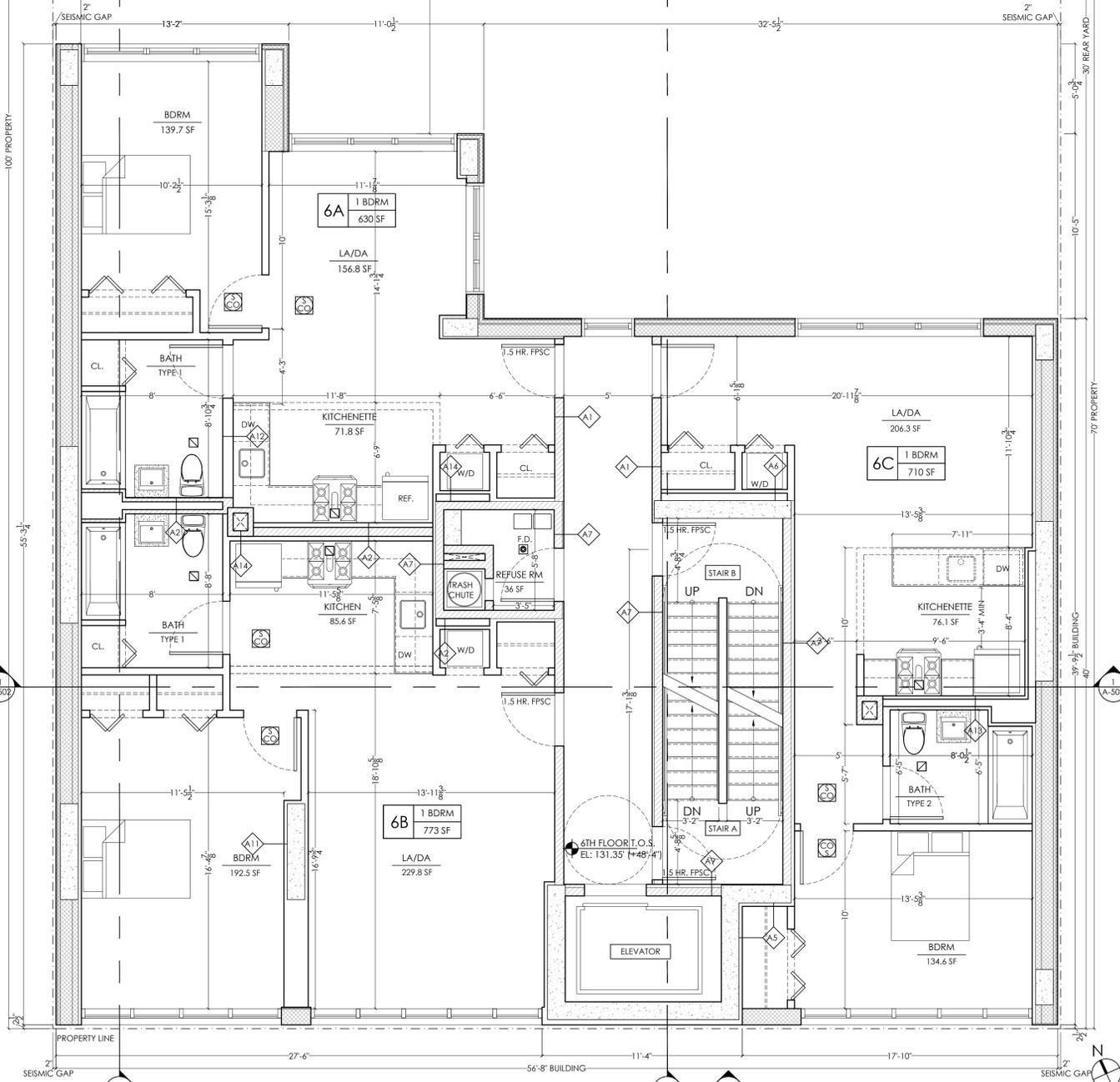


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DOB REVIEW	02/05/15
DRAWING	REV. # DATE



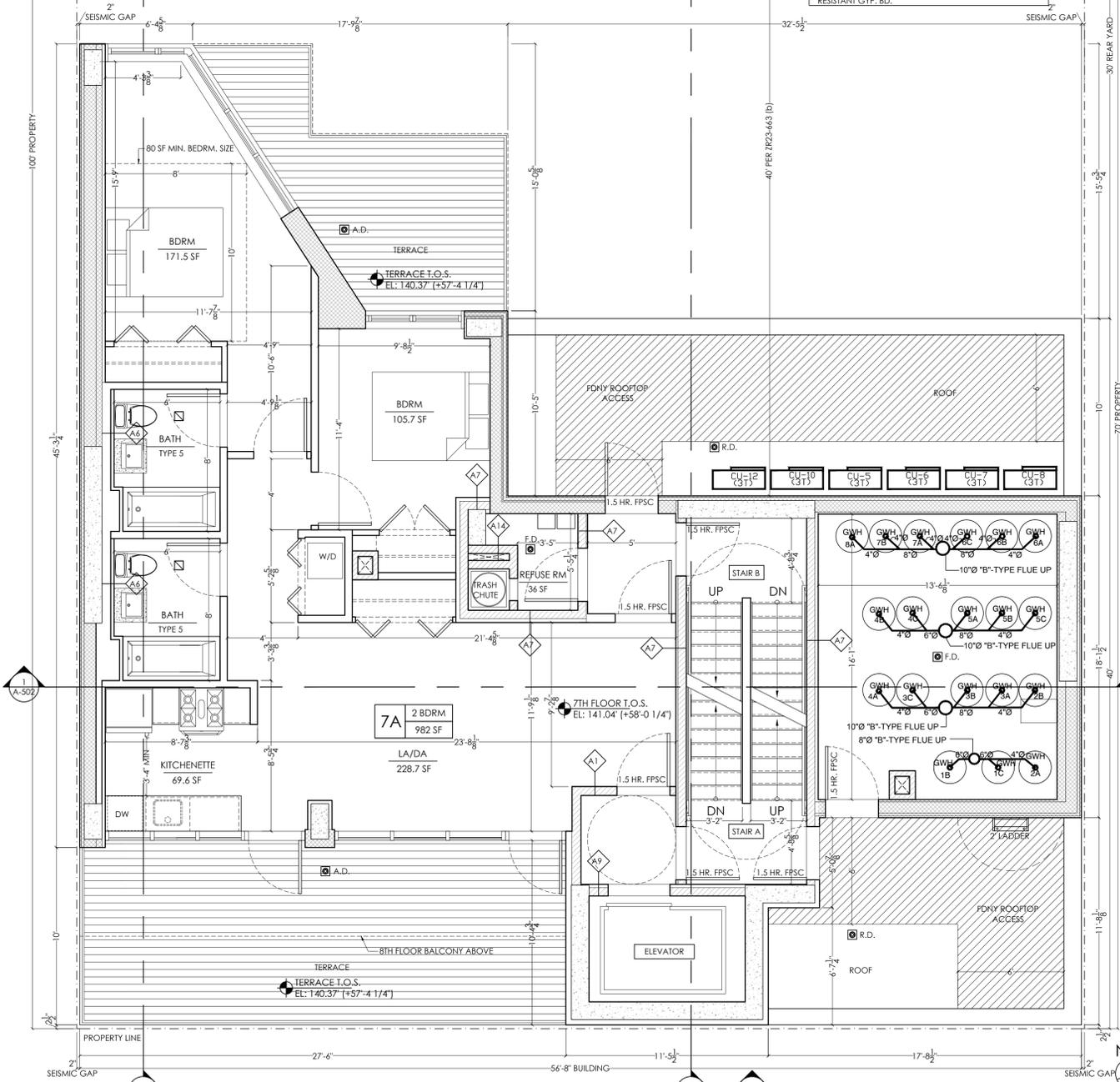
TITLE: FLOOR PLANS
DATE: 04/02/2015
SCALE: AS NOTED
SHEET: **A-103.00**

ROOM NUMBER	AREA SF	LIGHT REQUIRED SF (10%)	LIGHT PROVIDED SF	AIR REQUIRED SF (5%)	AIR PROVIDED SF
6A-LA/DA	156.8 SF	15.7 SF	59 SF	7.8 SF	33 SF
6A-BEDRM	139.7 SF	14 SF	59 SF	7.8 SF	33 SF
6B-LA/DA	229.8 SF	23 SF	120.7 SF	11.5 SF	23.4 SF
6B-BEDRM	192.5 SF	19.3 SF	95.1 SF	9.6 SF	28 SF
6C-LA/DA	206.3 SF	20.6 SF	58.2 SF	10.3 SF	34.4 SF
6C-BEDRM 2	134.6 SF	13.5 SF	116 SF	6.7 SF	25 SF



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

ROOM NUMBER	AREA SF	LIGHT REQUIRED SF (10%)	LIGHT PROVIDED SF	AIR REQUIRED SF (5%)	AIR PROVIDED SF
7A-LA/DA	228.7 SF	22.9 SF	115.8 SF	11.4 SF	20.8 SF
7A-BEDRM 1	170.2 SF	17 SF	71.3 SF	8.5 SF	26.1 SF
7A-BEDRM 2	105.7 SF	10.6 SF	27 SF	5.3 SF	14.3 SF



- TYPICAL FLOOR PLAN NOTES:**
1. ALL INTERIOR PARTITIONS TO BE TYPE A3 U.O.N.
 2. ALL DIMENSIONS ARE TO INSIDE FACE OF PARTITIONS.
 3. SEE REFLECTED CEILING PLANS A-150 - A-159.
 4. SEE PLUMBING DRAWINGS P-001 - P-010.
 5. SEE MECHANICAL DRAWINGS M-001 - M-008.
 6. ELECTRICAL DRAWINGS TO BE FILED BY GC.
 7. FURRING @ EXT. WALLS & CONCRETE COLUMNS TO BE 1" SF TYPE "X" GYP. BD. MOLD/MOISTURE RESISTANT U.O.N. NO FURRING AT UTILITY RMS.
 8. ALL WINDOW RETURNS TO HAVE MOLD/MOISTURE RESISTANT GYP. BD.

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

PROJECT:
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BROOKLYN, NEW YORK 11238

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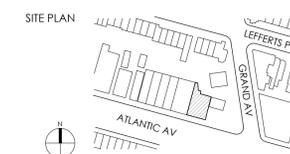


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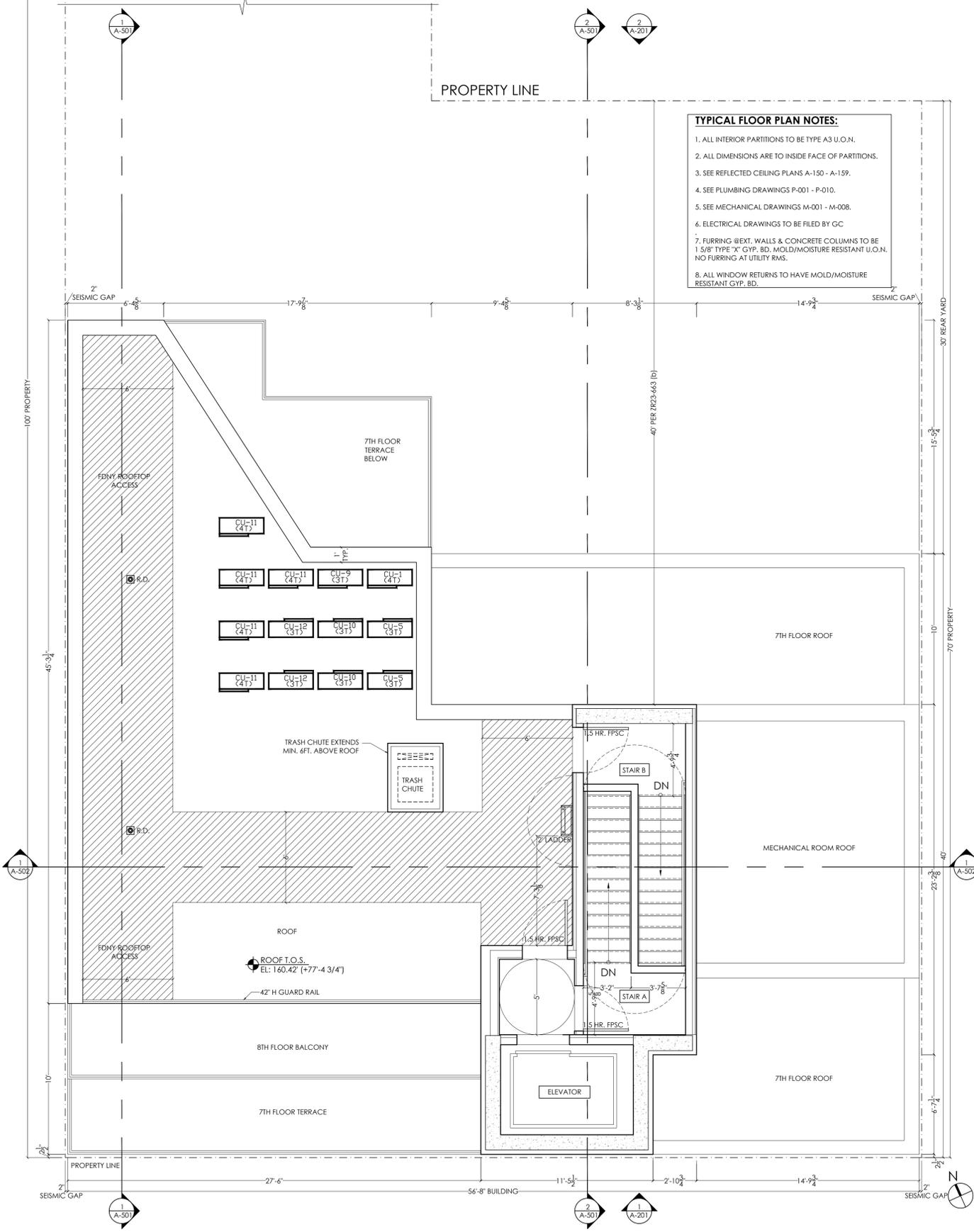
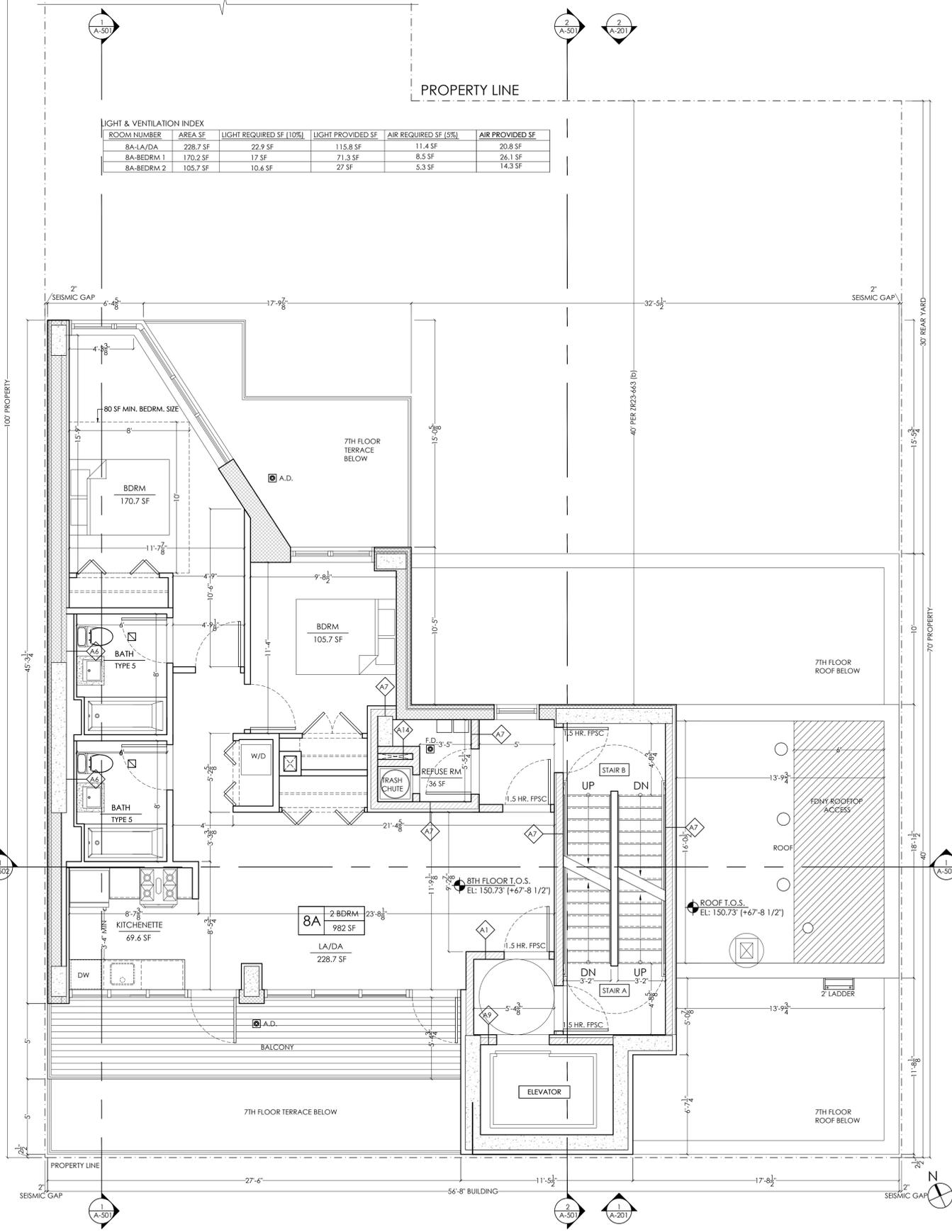
PROJECT No:	1405 BA_929
DOB REVIEW	04/02/15
DOB REVIEW	02/05/15
DRAWING	REV. # DATE



TITLE: FLOOR PLANS
DATE: 04/02/2015
SCALE: AS NOTED
SHEET: **A-104.00**

ROOM NUMBER	AREA SF	LIGHT REQUIRED SF (10%)	LIGHT PROVIDED SF	AIR REQUIRED SF (5%)	AIR PROVIDED SF
8A-LA/DA	228.7 SF	22.9 SF	115.8 SF	11.4 SF	20.8 SF
8A-BEDRM 1	170.2 SF	17 SF	71.3 SF	8.5 SF	26.1 SF
8A-BEDRM 2	105.7 SF	10.6 SF	27 SF	5.3 SF	14.3 SF

- TYPICAL FLOOR PLAN NOTES:**
1. ALL INTERIOR PARTITIONS TO BE TYPE A3 U.O.N.
 2. ALL DIMENSIONS ARE TO INSIDE FACE OF PARTITIONS.
 3. SEE REFLECTED CEILING PLANS A-150 - A-159.
 4. SEE PLUMBING DRAWINGS P-001 - P-010.
 5. SEE MECHANICAL DRAWINGS M-001 - M-008.
 6. ELECTRICAL DRAWINGS TO BE FILED BY GC
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PROJECT:
929 ATLANTIC AVE
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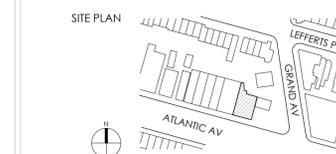
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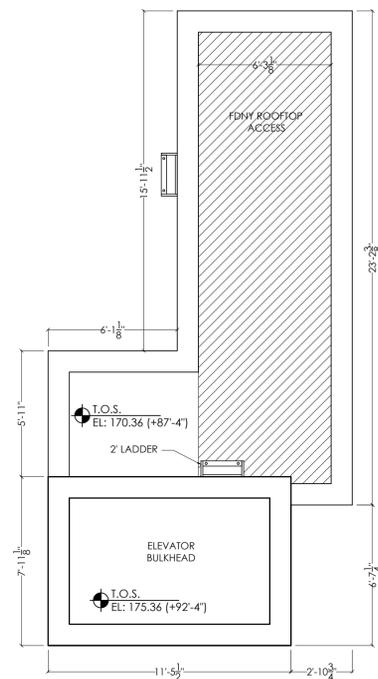
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TITLE: FLOOR PLANS
DATE: 04/02/2015
SCALE: AS NOTED
SHEET: **A-105.00**



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

PROJECT:

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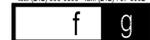


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STRUCTURAL ENGINEER



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NEW YORK, NY 10010

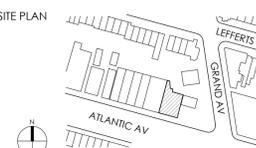
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SITE PLAN



PROJECT No: 1405 BA_929

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PAUL GREGORY, R.A.

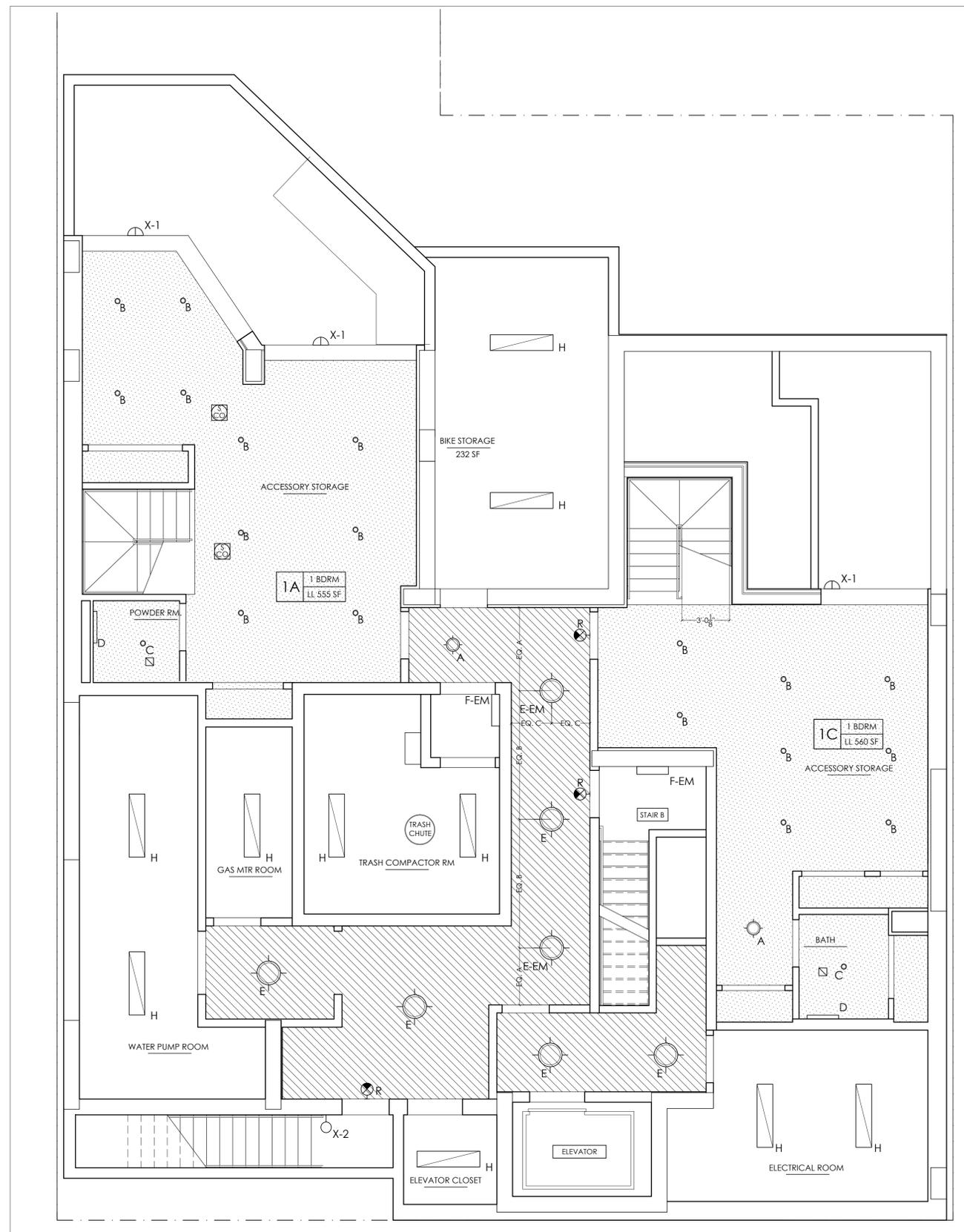
TITLE:

FLOOR PLANS

DATE: 04/02/2015

SCALE: AS NOTED

SHEET: **A-106.00**



REFLECTED CEILING PLAN SYMBOL KEY

	EXPOSED STRUCTURE		CEILING MOUNTED LIGHT FIXTURE		EXTERIOR CEILING MOUNTED LIGHT FIXTURE		CEILING MOUNTED EXIT LIGHTS
	SUSPENDED GYP. BD SOFFIT/CEILING - TIGHT TO BEAMS/STRUCTURE		RECESSED LIGHT FIXTURE		EXTERIOR WALL MOUNTED LIGHT FIXTURE		DIRECTIONAL ARROWS
	SUSPENDED GYP. BD SOFFIT/CEILING @ 8'-5" A.F.F.		WALL MOUNTED SCOFFICE		MECHANICAL VENT		WALL MOUNTED EXIT LIGHTS
	SUSPENDED GYP. BD SOFFIT/CEILING @ 7'-8" A.F.F.		UNDER CABINET LIGHT FIXTURE		CARBON/SMOKE DETECTOR		EM EMERGENCY PACK
	SUSPENDED GYP. BD SOFFIT/CEILING @ 8'-0" A.F.F.		WALL OR CLNG. MOUNTED LIGHT FIXTURE		CEILING ACCESS DOOR		CEILING HEIGHT
	2X2 ACT CEILING TILES		LINEAR CEILING MOUNTED LIGHT FIXTURE				
	2X4 EXTERIOR RAIN SCREEN PANELS						

NOTES:

1. ALL SWITCHES AND OUTLETS TO BE BY LEVITON DECORA SERIES, WHITE, U.O.N. EXCEPT IN MECHANICAL ROOMS AND RESTRICTED ACCESS AREAS, INCLUDING PARKING. SEE ELEC. DWGS. FOR WIRING AND FOR SMOKE TEST NOTES AT APARTMENTS.
2. REFER TO FIRE ALARM DWGS. FOR SMOKE TEST NOTE FOR FIRE ALARM SYSTEM.
3. ALL EXIT & EMERGENCY LIGHTING WILL BE PROVIDED WITH BUILT IN EMERGENCY BATTERY PACK TO PROVIDE A MINIMUM OF 90 MINUTES OF EMERGENCY LIGHTING.
4. SEE FIRE PROTECTION DWGS. FOR SPRINKLER INFO.
5. SEE MECH DWGS. FOR EQUIPMENT INFO.

INTERIOR LIGHTING FIXTURE SCHEDULE - CELLAR

SYMBOL	FIXTURE	DESCRIPTION	MODEL	LAMP TYPE & QTY	VOLTAGE	WATTAGE	NOTES	FIXTURE QTY
	A	CLNG. MTD. @ FOYER/BDRM/LR @ KITCHEN/HALLWAY	TBD	2 x 13W CFL	120 V	26 W		2
	B	RECESSED CLNG. MTD. @ BATHROOM/SHOWER	TBD	1 x 32W CFL	120 V	32W		18
	C	RECESSED CLNG. MTD. @ BATHROOM/SHOWER	TBD	1 x 13W CFL	120 V	13 W		2
	D	WALL MTD. @ VANITY	TBD	1 x F24 T5	120 V	24 W		2
	E	CLNG. MTD. @ CORRIDOR	TBD	1 x 32 FC12 T9	120 V	32 W	MOTION SENSOR BILEVEL	7
	F	WALL MTD. 4 FT. @ EGRESS STAIR	TBD	2 x F32 T8	120 V	64 W	MOTION SENSOR BILEVEL	2
	G	WALL MTD. 2 FT. @ REFUSE ROOM	TBD	2 x F32 T8	120 V	64 W	MOTION SENSOR / ON/OFF	0
	H	CLNG. MTD. @ UTILITY ROOM	TBD	2 x F32 T8	120 V	64 W		10
	M	UNDER CABINET	TBD	1 x F14 T5	120 V	14 W		0
	P	WALL MTD.	TBD	1 x 13W CFL	120 V	13 W		0
	Q	CLNG. MTD. EXIT SIGN	TBD	LED	UNIV	4 W		0
	R	WALL MTD. EXIT SIGN	TBD	LED	UNIV	4 W		3
TOTAL WATTAGE :								1706 W

EXTERIOR LIGHTING FIXTURE SCHEDULE

SYMBOL	FIXTURE	DESCRIPTION	MODEL	LAMP TYPE & QTY	VOLTAGE	WATTAGE	NOTES	FIXTURE QTY
	X-1	WALL MTD.	TBD	1X LED MOD 18W	120 V	18 W	VANDAL RESISTANT ; TIMER ON/OFF; SWITCHED AT PRIVATE TERRACES ONLY	3
	X-2	WALL MTD.	TBD	1X CFL TRIPLE 26W	120 V	26 W	VANDAL RESISTANT ; PHOTOCELL ON TIMER OFF	1
	X-3	CLNG. MTD.	TBD	1X 50 W MH	120 V	50 W	VANDAL RESISTANT ; TIMER ON/OFF	0
	X-4	RECESSED CLNG. MTD.	TBD	1X LED PAR 38	120 V	15 W	TIMER ON/OFF	0
	X-5	CLNG. MTD.	TBD	1X LED PAR 38	120 V	15 W	TIMER ON/OFF	1

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

PROJECT:
929 ATLANTIC AVE
BROOKLYN, NEW YORK 11238

ROART
304 MALCOLM X BLVD
BROOKLYN, NEW YORK 11233
718 428 5654
ROART.COM

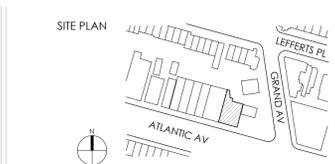
308 MALCOLM X BLVD.
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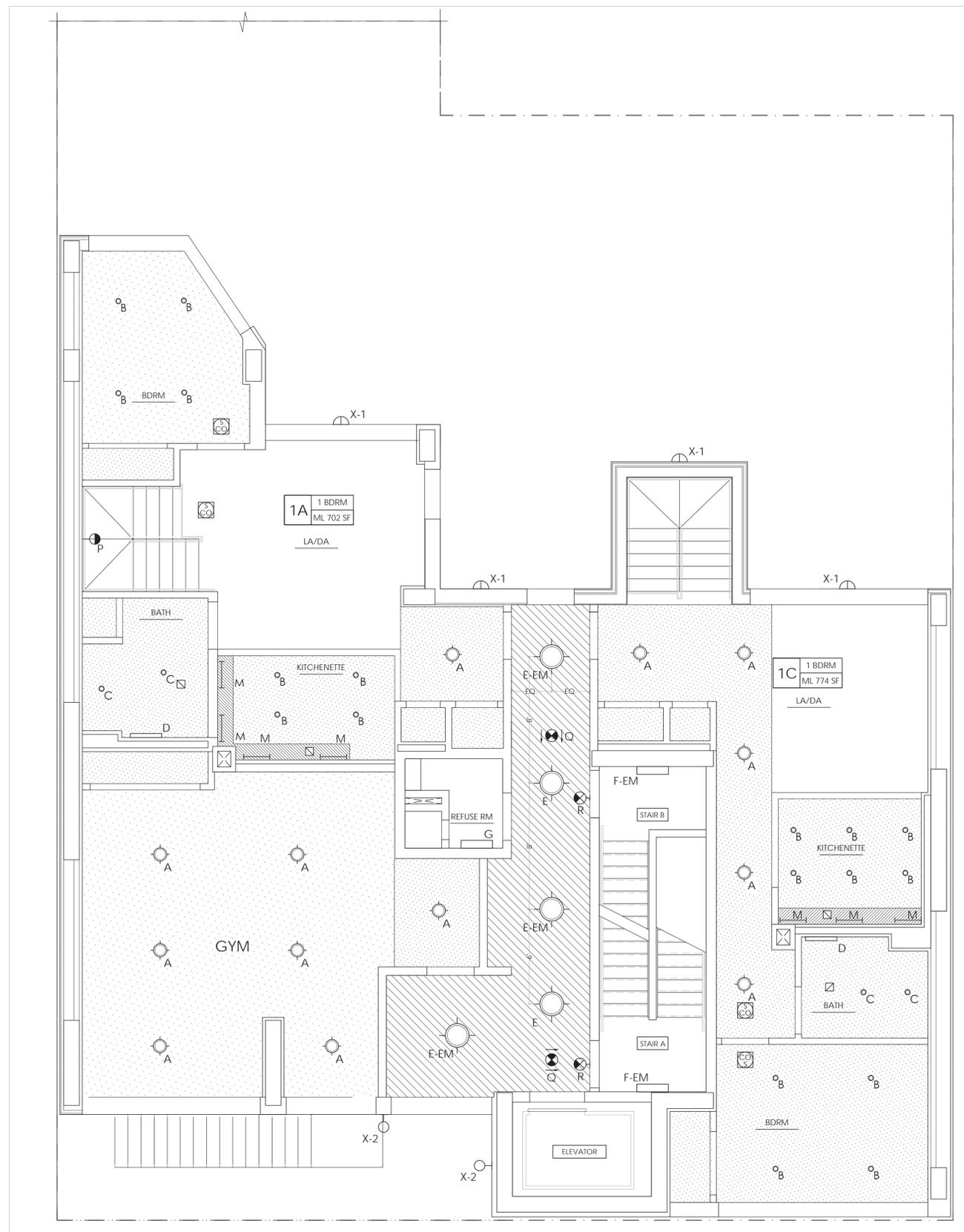
MECHANICAL ENGINEER
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PROJECT No: 1405 BA_929
DOB REVIEW: 04/02/15
DOB REVIEW: 02/05/15
DRAWING REV. # DATE

PAUL GREGORY, R.A.

TITLE:
CELLAR REFLECTED CEILING PLAN
DATE: 04/02/2015
SCALE: AS NOTED
SHEET: A-150.00



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

REFLECTED CEILING PLAN SYMBOL KEY

	EXPOSED STRUCTURE		CEILING MOUNTED LIGHT FIXTURE		EXTERIOR CEILING MOUNTED LIGHT FIXTURE		CEILING MOUNTED EXIT LIGHTS
	SUSPENDED GYP. BD SOFFIT/CEILING - TIGHT TO BEAMS/STRUCTURE		RECESSED LIGHT FIXTURE		EXTERIOR WALL MOUNTED LIGHT FIXTURE		DIRECTIONAL ARROWS
	SUSPENDED GYP. BD SOFFIT/CEILING @ 8'-5" A.F.F.		WALL MOUNTED SCOFFCE		MECHANICAL VENT		WALL MOUNTED EXIT LIGHTS
	SUSPENDED GYP. BD SOFFIT/CEILING @ 7'-8" A.F.F.		UNDER CABINET LIGHT FIXTURE		CARBON/SMOKE DETECTOR		EM EMERGENCY PACK
	SUSPENDED GYP. BD SOFFIT/CEILING @ 8'-0" A.F.F.		WALL OR CLNG. MOUNTED LIGHT FIXTURE		CEILING ACCESS DOOR		X-X' A.F.F. CEILING HEIGHT
	2X2 ACT CEILING TILES		LINEAR CEILING MOUNTED LIGHT FIXTURE				
	2X4 EXTERIOR RAIN SCREEN PANELS						

NOTES:

1. ALL SWITCHES AND OUTLETS TO BE BY LEVITON DECORA SERIES, WHITE, U.O.N. EXCEPT IN MECHANICAL ROOMS AND RESTRICTED ACCESS AREAS, INCLUDING PARKING. SEE ELEC. DWGS. FOR WIRING AND FOR SMOKE TEST NOTES AT APARTMENTS.
2. REFER TO FIRE ALARM DWGS. FOR SMOKE TEST NOTE FOR FIRE ALARM SYSTEM.
3. ALL EXIT & EMERGENCY LIGHTING WILL BE PROVIDED WITH BUILT IN EMERGENCY BATTERY PACK TO PROVIDE A MINIMUM OF 90 MINUTES OF EMERGENCY LIGHTING.
4. SEE FIRE PROTECTION DWGS. FOR SPRINKLER INFO.
5. SEE MECH DWGS. FOR EQUIPMENT INFO.

INTERIOR LIGHTING FIXTURE SCHEDULE - FIRST FLOOR

SYMBOL	FIXTURE	DESCRIPTION	MODEL	LAMP TYPE & QTY	VOLTAGE	WATTAGE	NOTES	FIXTURE QTY
	A	CLNG. MTD. @ FOYER/BDRM/LR	TBD	2 x 13W CFL	120 V	26 W		13
	B	RECESSED CLNG. MTD. @ KITCHEN/HALLWAY	TBD	1 x 32W CFL	120 V	32W		18
	C	RECESSED CLNG. MTD. @ BATHROOM/SHOWER	TBD	1 x 13W CFL	120 V	13 W		4
	D	WALL MTD. @ VANITY	TBD	1 x F24 T5	120 V	24 W		2
	E	CLNG. MTD. @ CORRIDOR	TBD	1 x 32 FC12 T9	120 V	32 W	MOTION SENSOR BILEVEL	5
	F	WALL MTD. 4 FT. @ EGRESS STAIR	TBD	2 x F32 T8	120 V	64 W	MOTION SENSOR BILEVEL	2
	G	WALL MTD. 2 FT. @ REFUSE ROOM	TBD	2 x F32 T8	120 V	64 W	MOTION SENSOR / ON/OFF	1
	H	CLNG. MTD. @ UTILITY ROOM	TBD	2 x F32 T8	120 V	64 W		0
	M	UNDER CABINET	TBD	1 x F14 T5	120 V	14 W		7
	P	WALL MTD.	TBD	1 x 13W CFL	120 V	13 W		1
	Q	CLNG. MTD. EXIT SIGN	TBD	LED	UNIV	4 W		2
	R	WALL MTD. EXIT SIGN	TBD	LED	UNIV	4 W		2
TOTAL WATTAGE :								1493 W

EXTERIOR LIGHTING FIXTURE SCHEDULE

SYMBOL	FIXTURE	DESCRIPTION	MODEL	LAMP TYPE & QTY	VOLTAGE	WATTAGE	NOTES	FIXTURE QTY
	X-1	WALL MTD.	TBD	1X LED MOD 18W	120 V	18 W	VANDAL RESISTANT - TIMER ON/OFF. SWITCHED AT PRIVATE TERRACES ONLY	4
	X-2	WALL MTD.	TBD	1X CFL TRIPLE 26W	120 V	26 W	VANDAL RESISTANT - PHOTOCELL ON TIMER OFF	2
	X-3	CLNG. MTD.	TBD	1X 50 W MH	120 V	50 W	VANDAL RESISTANT - TIMER ON/OFF	0
	X-4	RECESSED CLNG. MTD.	TBD	1X LED PAR 38	120 V	15 W	TIMER ON/OFF	1
	X-5	CLNG. MTD.	TBD	1X LED PAR 38	120 V	15 W	TIMER ON/OFF	0

PROJECT:
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ARCHITECT ASSUMES NO
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THE CONTRACTOR MUST
OBTAIN WRITTEN APPROVAL
FOR ANY CHANGES FROM
THE ARCHITECT BEFORE
COMMENCING SUCH WORK.

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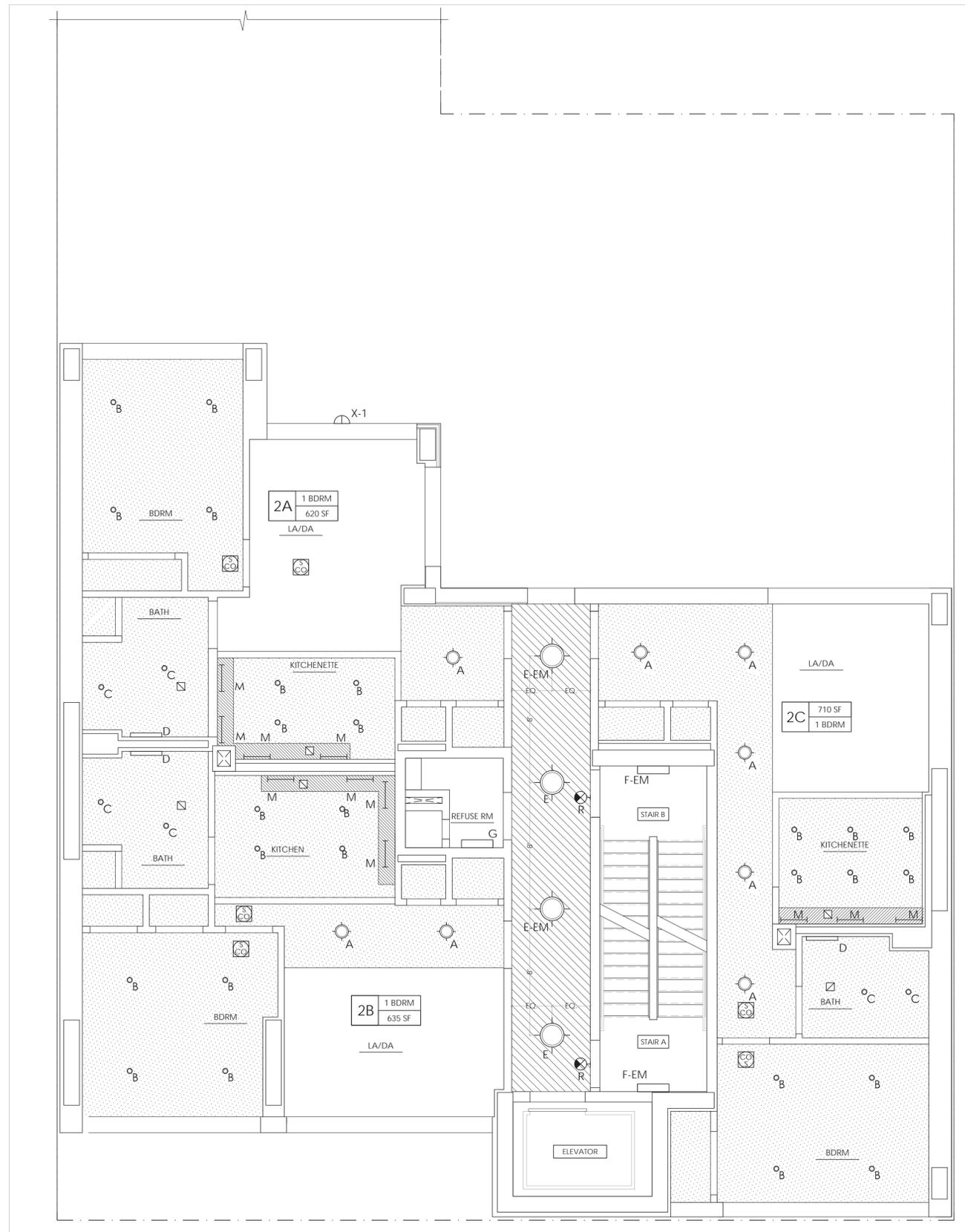
SITE PLAN



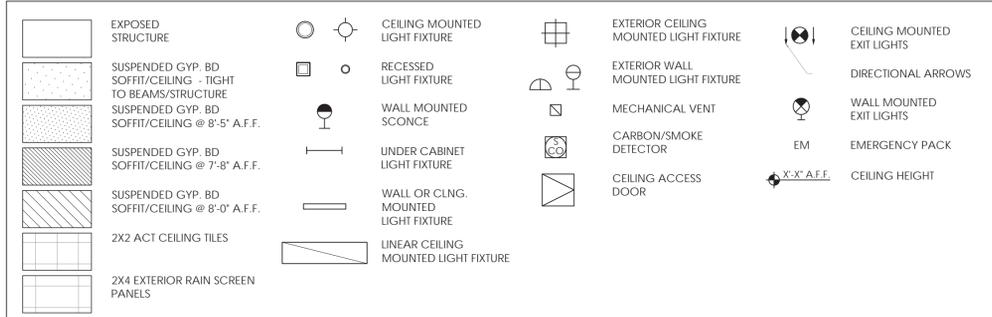
PROJECT No:	1405 BA_929
DOB REVIEW	04/02/15
DOB REVIEW	02/05/15
DRAWING	REV. # DATE



TITLE: FIRST FLOOR REFLECTED CEILING PLAN
DATE: 04/02/2015
SCALE: AS NOTED
SHEET: A-151.00



REFLECTED CEILING PLAN SYMBOL KEY



NOTES:

1. ALL SWITCHES AND OUTLETS TO BE BY LEVITON DECORA SERIES. WHITE, U.O.N. EXCEPT IN MECHANICAL ROOMS AND RESTRICTED ACCESS AREAS, INCLUDING PARKING. SEE ELEC. DWGS. FOR WIRING AND FOR SMOKE TEST NOTES AT APARTMENTS.
2. REFER TO FIRE ALARM DWGS. FOR SMOKE TEST NOTE FOR FIRE ALARM SYSTEM.
3. ALL EXIT & EMERGENCY LIGHTING WILL BE PROVIDED WITH BUILT IN EMERGENCY BATTERY PACK TO PROVIDE A MINIMUM OF 90 MINUTES OF EMERGENCY LIGHTING.
4. SEE FIRE PROTECTION DWGS. FOR SPRINKLER INFO.
5. SEE MECH DWGS. FOR EQUIPMENT INFO.

INTERIOR LIGHTING FIXTURE SCHEDULE - SECOND FLOOR

SYMBOL	FIXTURE	DESCRIPTION	MODEL	LAMP TYPE & QTY	VOLTAGE	WATTAGE	NOTES	FIXTURE QTY
○	A	CLNG. MTD. @ FOYER/BDRM/LR	TBD	2 x 13W CFL	120 V	26 W		8
○	B	RECESSED CLNG. MTD. @ KITCHEN/HALLWAY	TBD	1 x 32W CFL	120 V	32W		26
○	C	RECESSED CLNG. MTD. @ BATHROOM/SHOWER	TBD	1 x 13W CFL	120 V	13 W		6
—	D	WALL MTD. @ VANITY	TBD	1 x F24 T5	120 V	24 W		3
○	E	CLNG. MTD. @ CORRIDOR	TBD	1 x 32 FC12 T9	120 V	32 W	MOTION SENSOR BILEVEL	4
—	F	WALL MTD. 4 FT. @ EGRESS STAIR	TBD	2 x F32 T8	120 V	64 W	MOTION SENSOR BILEVEL	2
—	G	WALL MTD. 2 FT. @ REFUSE ROOM	TBD	2 x F32 T8	120 V	64 W	MOTION SENSOR / ON/OFF	1
—	H	CLNG. MTD. @ UTILITY ROOM	TBD	2 x F32 T8	120 V	64 W		0
—	M	UNDER CABINET	TBD	1 x F14 T5	120 V	14 W		11
○	P	WALL MTD.	TBD	1 x 13W CFL	120 V	13 W		0
⊗	Q	CLNG. MTD. EXIT SIGN	TBD	LED	UNIV	4 W		0
⊗	R	WALL MTD. EXIT SIGN	TBD	LED	UNIV	4 W		2
TOTAL WATTAGE :								1672 W

EXTERIOR LIGHTING FIXTURE SCHEDULE

SYMBOL	FIXTURE	DESCRIPTION	MODEL	LAMP TYPE & QTY	VOLTAGE	WATTAGE	NOTES	FIXTURE QTY
⊓	X-1	WALL MTD.	TBD	1X LED MOD 18W	120 V	18 W	VANDAL RESISTANT : TIMER ON/OFF: SWITCHED AT PRIVATE TERRACES ONLY	1
○	X-2	WALL MTD.	TBD	1X CFL TRIPLE 26W	120 V	26 W	VANDAL RESISTANT : PHOTOCELL ON TIMER OFF	0
⊓	X-3	CLNG. MTD.	TBD	1X 50 W MH	120 V	50 W	VANDAL RESISTANT : TIMER ON/OFF	0
○	X-4	RECESSED CLNG. MTD.	TBD	1X LED PAR 38	120 V	15 W	TIMER ON/OFF	0
○	X-5	CLNG. MTD.	TBD	1X LED PAR 38	120 V	15 W	TIMER ON/OFF	0

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

PROJECT:
929 ATLANTIC AVE
BROOKLYN, NEW YORK 11238

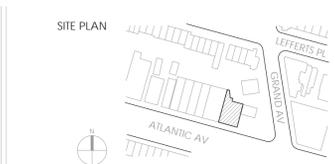
ROART
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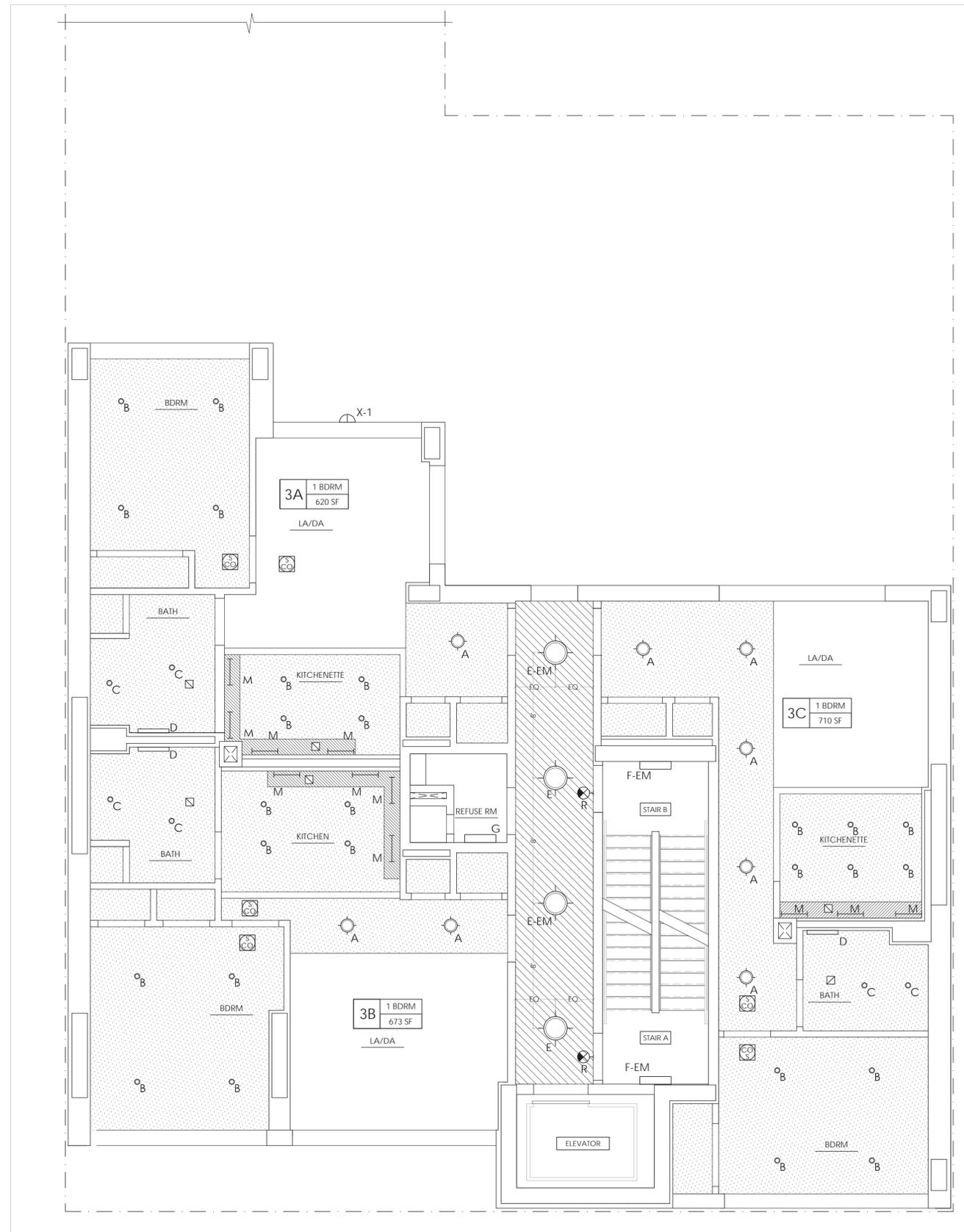
MECHANICAL ENGINEER
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PROJECT No: 1405 BA_929
DOB REVIEW: 04/02/15
DOB REVIEW: 02/05/15
DRAWING REV. # DATE

REGISTERED ARCHITECT
PAUL GREGORY, R.A.
028717
STATE OF NEW YORK

TITLE: SECOND FLOOR REFLECTED CEILING PLAN
DATE: 04/02/2015
SCALE: AS NOTED
SHEET: **A-152.00**



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

REFLECTED CEILING PLAN SYMBOL KEY

	EXPOSED STRUCTURE		CEILING MOUNTED LIGHT FIXTURE		EXTERIOR CEILING MOUNTED LIGHT FIXTURE		CEILING MOUNTED EXIT LIGHTS
	SUSPENDED GYP. BD SOFFIT/CEILING - TIGHT TO BEAMS/STRUCTURE		RECESSED LIGHT FIXTURE		EXTERIOR WALL MOUNTED LIGHT FIXTURE		DIRECTIONAL ARROWS
	SUSPENDED GYP. BD SOFFIT/CEILING @ 8'-5\"/>		WALL MOUNTED SCONCE		MECHANICAL VENT		WALL MOUNTED EXIT LIGHTS
	SUSPENDED GYP. BD SOFFIT/CEILING @ 7'-8\"/>		UNDER CABINET LIGHT FIXTURE		CARBON/SMOKE DETECTOR		EM EMERGENCY PACK
	SUSPENDED GYP. BD SOFFIT/CEILING @ 8'-0\"/>		WALL OR CLNG. MOUNTED LIGHT FIXTURE		CEILING ACCESS DOOR		X'-X\"/>
	2X2 ACT CEILING TILES		LINEAR CEILING MOUNTED LIGHT FIXTURE				
	2X4 EXTERIOR RAIN SCREEN PANELS						

NOTES:

1. ALL SWITCHES AND OUTLETS TO BE BY LEVITON DECORA SERIES, WHITE, U.O.N. EXCEPT IN MECHANICAL ROOMS AND RESTRICTED ACCESS AREAS, INCLUDING PARKING. SEE ELEC. DWGS. FOR WIRING AND FOR SMOKE TEST NOTES AT APARTMENTS.
2. REFER TO FIRE ALARM DWGS. FOR SMOKE TEST NOTE FOR FIRE ALARM SYSTEM.
3. ALL EXIT & EMERGENCY LIGHTING WILL BE PROVIDED WITH BUILT IN EMERGENCY BATTERY PACK TO PROVIDE A MINIMUM OF 90 MINUTES OF EMERGENCY LIGHTING.
4. SEE FIRE PROTECTION DWGS. FOR SPRINKLER INFO.
5. SEE MECH DWGS. FOR EQUIPMENT INFO.

INTERIOR LIGHTING FIXTURE SCHEDULE - THIRD FLOOR

SYMBOL	FIXTURE	DESCRIPTION	MODEL	LAMP TYPE & QTY	VOLTAGE	WATTAGE	NOTES	FIXTURE QTY
	A	CLNG. MTD. @ FOYER/BDRM/LR	TBD	2 x 13W CFL	120 V	26 W		8
	B	RECESSED CLNG. MTD. @ KITCHEN/HALLWAY	TBD	1 x 32W CFL	120 V	32W		26
	C	RECESSED CLNG. MTD. @ BATHROOM/SHOWER	TBD	1 x 13W CFL	120 V	13 W		6
	D	WALL MTD. @ VANITY	TBD	1 x F24 T5	120 V	24 W		3
	E	CLNG. MTD. @ CORRIDOR	TBD	1 x 32 FC12 T9	120 V	32 W	MOTION SENSOR BILEVEL	4
	F	WALL MTD. 4 FT. @ EGRESS STAIR	TBD	2 x F32 T8	120 V	64 W	MOTION SENSOR BILEVEL	2
	G	WALL MTD. 2 FT. @ REFUSE ROOM	TBD	2 x F32 T8	120 V	64 W	MOTION SENSOR / ON/OFF	1
	H	CLNG. MTD. @ UTILITY ROOM	TBD	2 x F32 T8	120 V	64 W		0
	M	UNDER CABINET	TBD	1 x F14 T5	120 V	14 W		11
	P	WALL MTD.	TBD	1 x 13W CFL	120 V	13 W		0
	Q	CLNG. MTD. EXIT SIGN	TBD	LED	UNIV	4 W		0
	R	WALL MTD. EXIT SIGN	TBD	LED	UNIV	4 W		2
TOTAL WATTAGE :								1672 W

EXTERIOR LIGHTING FIXTURE SCHEDULE

SYMBOL	FIXTURE	DESCRIPTION	MODEL	LAMP TYPE & QTY	VOLTAGE	WATTAGE	NOTES	FIXTURE QTY
	X-1	WALL MTD.	TBD	1X LED MOD 18W	120 V	18 W	VANDAL RESISTANT - TIMER ON/OFF- SWITCHED AT PRIVATE TERRACES ONLY	1
	X-2	WALL MTD.	TBD	1X CFL TRIPLE 26W	120 V	26 W	VANDAL RESISTANT - PHOTOCELL ON TIMER OFF	0
	X-3	CLNG. MTD.	TBD	1X 50 W MH	120 V	50 W	VANDAL RESISTANT - TIMER ON/OFF	0
	X-4	RECESSED CLNG. MTD.	TBD	1X LED PAR 38	120 V	15 W	TIMER ON/OFF	0
	X-5	CLNG. MTD.	TBD	1X LED PAR 38	120 V	15 W	TIMER ON/OFF	0

PROJECT:
929 ATLANTIC AVE
BROOKLYN, NEW YORK 11238

ROART
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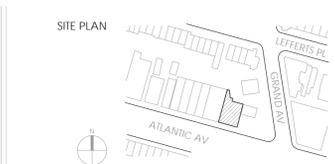
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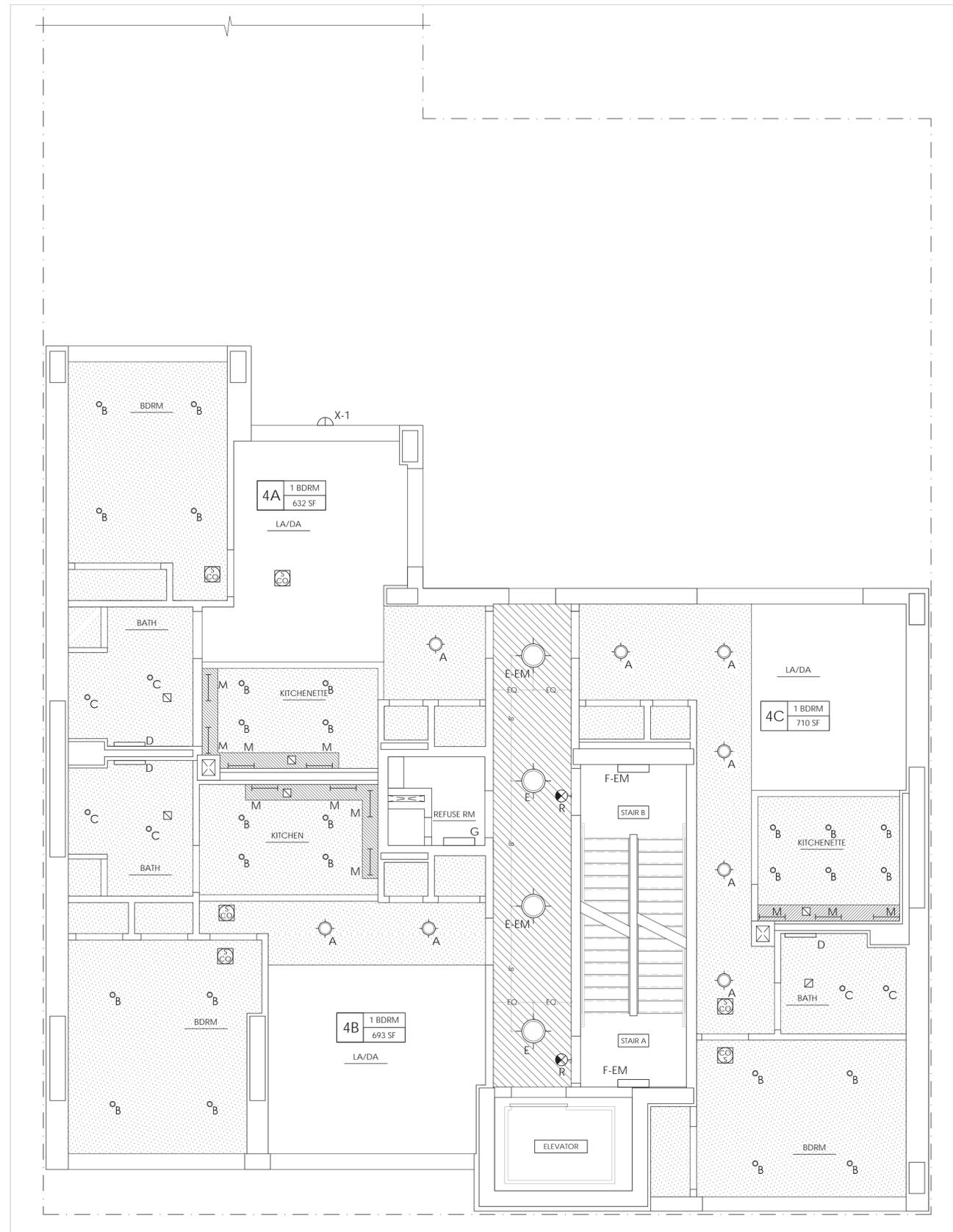
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PROJECT No:	1405 BA_929
DOB REVIEW	04/02/15
DOB REVIEW	02/05/15
DRAWING	REV. # DATE

PAUL GREGORY, R.A.

TITLE: THIRD FLOOR REFLECTED CEILING PLAN
DATE: 04/02/2015
SCALE: AS NOTED
SHEET: **A-153.00**



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

REFLECTED CEILING PLAN SYMBOL KEY

	EXPOSED STRUCTURE		CEILING MOUNTED LIGHT FIXTURE		EXTERIOR CEILING MOUNTED LIGHT FIXTURE		CEILING MOUNTED EXIT LIGHTS
	SUSPENDED GYP. BD SOFFIT/CEILING - TIGHT TO BEAMS/STRUCTURE		RECESSED LIGHT FIXTURE		EXTERIOR WALL MOUNTED LIGHT FIXTURE		DIRECTIONAL ARROWS
	SUSPENDED GYP. BD SOFFIT/CEILING @ 8'-5" A.F.F.		WALL MOUNTED SCOFFCE		MECHANICAL VENT		WALL MOUNTED EXIT LIGHTS
	SUSPENDED GYP. BD SOFFIT/CEILING @ 7'-8" A.F.F.		UNDER CABINET LIGHT FIXTURE		CARBON/SMOKE DETECTOR		EM EMERGENCY PACK
	SUSPENDED GYP. BD SOFFIT/CEILING @ 8'-0" A.F.F.		WALL OR CLNG. MOUNTED LIGHT FIXTURE		CEILING ACCESS DOOR		X-X' A.F.F. CEILING HEIGHT
	2X2 ACT CEILING TILES		LINEAR CEILING MOUNTED LIGHT FIXTURE				
	2X4 EXTERIOR RAIN SCREEN PANELS						

NOTES:

1. ALL SWITCHES AND OUTLETS TO BE BY LEVITON DECORA SERIES, WHITE, U.O.N. EXCEPT IN MECHANICAL ROOMS AND RESTRICTED ACCESS AREAS, INCLUDING PARKING. SEE ELEC. DWGS. FOR WIRING AND FOR SMOKE TEST NOTES AT APARTMENTS.
2. REFER TO FIRE ALARM DWGS. FOR SMOKE TEST NOTE FOR FIRE ALARM SYSTEM.
3. ALL EXIT & EMERGENCY LIGHTING WILL BE PROVIDED WITH BUILT IN EMERGENCY BATTERY PACK TO PROVIDE A MINIMUM OF 90 MINUTES OF EMERGENCY LIGHTING.
4. SEE FIRE PROTECTION DWGS. FOR SPRINKLER INFO.
5. SEE MECH DWGS. FOR EQUIPMENT INFO.

INTERIOR LIGHTING FIXTURE SCHEDULE - FOURTH FLOOR

SYMBOL	FIXTURE	DESCRIPTION	MODEL	LAMP TYPE & QTY	VOLTAGE	WATTAGE	NOTES	FIXTURE QTY
	A	CLNG. MTD. @ FOYER/BDRM/LR	TBD	2 x 13W CFL	120 V	26 W		8
	B	RECESSED CLNG. MTD. @ KITCHEN/HALLWAY	TBD	1 x 32W CFL	120 V	32W		26
	C	RECESSED CLNG. MTD. @ BATHROOM/SHOWER	TBD	1 x 13W CFL	120 V	13 W		6
	D	WALL MTD. @ VANITY	TBD	1 x F24 T5	120 V	24 W		3
	E	CLNG. MTD. @ CORRIDOR	TBD	1 x 32 FC12 T9	120 V	32 W	MOTION SENSOR BILEVEL	4
	F	WALL MTD. 4 FT. @ EGRESS STAIR	TBD	2 x F32 T8	120 V	64 W	MOTION SENSOR BILEVEL	2
	G	WALL MTD. 2 FT. @ REFUSE ROOM	TBD	2 x F32 T8	120 V	64 W	MOTION SENSOR / ON/OFF	1
	H	CLNG. MTD. @ UTILITY ROOM	TBD	2 x F32 T8	120 V	64 W		0
	M	UNDER CABINET	TBD	1 x F14 T5	120 V	14 W		11
	P	WALL MTD.	TBD	1 x 13W CFL	120 V	13 W		0
	Q	CLNG. MTD. EXIT SIGN	TBD	LED	UNIV	4 W		0
	R	WALL MTD. EXIT SIGN	TBD	LED	UNIV	4 W		2
TOTAL WATTAGE :								1672 W

EXTERIOR LIGHTING FIXTURE SCHEDULE

SYMBOL	FIXTURE	DESCRIPTION	MODEL	LAMP TYPE & QTY	VOLTAGE	WATTAGE	NOTES	FIXTURE QTY
	X-1	WALL MTD.	TBD	1X LED MOD 18W	120 V	18 W	VANDAL RESISTANT - TIMER ON/OFF. SWITCHED AT PRIVATE TERRACES ONLY	1
	X-2	WALL MTD.	TBD	1X CFL TRIPLE 26W	120 V	26 W	VANDAL RESISTANT - PHOTOCELL ON TIMER OFF	0
	X-3	CLNG. MTD.	TBD	1X 50 W MH	120 V	50 W	VANDAL RESISTANT - TIMER ON/OFF	0
	X-4	RECESSED CLNG. MTD.	TBD	1X LED PAR 38	120 V	15 W	TIMER ON/OFF	0
	X-5	CLNG. MTD.	TBD	1X LED PAR 38	120 V	15 W	TIMER ON/OFF	0

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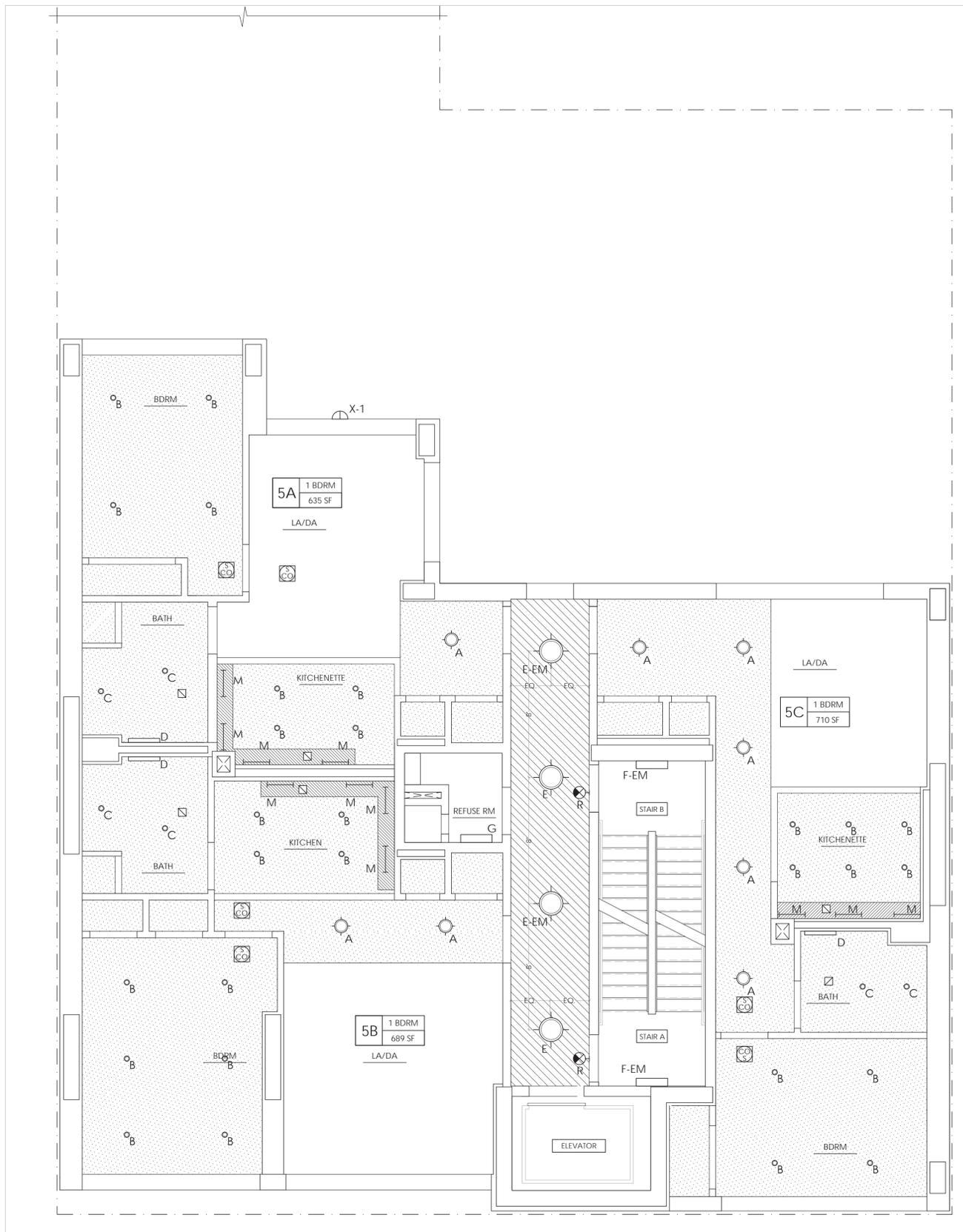
MECHANICAL ENGINEER
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PROJECT No:	1405 BA_929
DOB REVIEW	04/02/15
DOB REVIEW	02/05/15
DRAWING	REV. # DATE



TITLE: FOURTH FLOOR REFLECTED CEILING PLAN
DATE: 04/02/2015
SCALE: AS NOTED
SHEET: **A-154.00**



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

REFLECTED CEILING PLAN SYMBOL KEY

	EXPOSED STRUCTURE		CEILING MOUNTED LIGHT FIXTURE		EXTERIOR CEILING MOUNTED LIGHT FIXTURE		CEILING MOUNTED EXIT LIGHTS
	SUSPENDED GYP. BD SOFFIT/CEILING - TIGHT TO BEAMS/STRUCTURE		RECESSED LIGHT FIXTURE		EXTERIOR WALL MOUNTED LIGHT FIXTURE		DIRECTIONAL ARROWS
	SUSPENDED GYP. BD SOFFIT/CEILING @ 8'-5" A.F.F.		WALL MOUNTED SCOFFCE		MECHANICAL VENT		WALL MOUNTED EXIT LIGHTS
	SUSPENDED GYP. BD SOFFIT/CEILING @ 7'-8" A.F.F.		UNDER CABINET LIGHT FIXTURE		CARBON/SMOKE DETECTOR		EM EMERGENCY PACK
	SUSPENDED GYP. BD SOFFIT/CEILING @ 8'-0" A.F.F.		WALL OR CLNG. MOUNTED LIGHT FIXTURE		CEILING ACCESS DOOR		X-X' A.F.F. CEILING HEIGHT
	2X2 ACT CEILING TILES		LINEAR CEILING MOUNTED LIGHT FIXTURE				
	2X4 EXTERIOR RAIN SCREEN PANELS						

NOTES:

1. ALL SWITCHES AND OUTLETS TO BE BY LEVITON DECORA SERIES, WHITE, U.O.N. EXCEPT IN MECHANICAL ROOMS AND RESTRICTED ACCESS AREAS, INCLUDING PARKING. SEE ELEC. DWGS. FOR WIRING AND FOR SMOKE TEST NOTES AT APARTMENTS.
2. REFER TO FIRE ALARM DWGS. FOR SMOKE TEST NOTE FOR FIRE ALARM SYSTEM.
3. ALL EXIT & EMERGENCY LIGHTING WILL BE PROVIDED WITH BUILT IN EMERGENCY BATTERY PACK TO PROVIDE A MINIMUM OF 90 MINUTES OF EMERGENCY LIGHTING.
4. SEE FIRE PROTECTION DWGS. FOR SPRINKLER INFO.
5. SEE MECH DWGS. FOR EQUIPMENT INFO.

INTERIOR LIGHTING FIXTURE SCHEDULE - FIFTH FLOOR

SYMBOL	FIXTURE	DESCRIPTION	MODEL	LAMP TYPE & QTY	VOLTAGE	WATTAGE	NOTES	FIXTURE QTY
	A	CLNG. MTD. @ FOYER/BDRM/LR	TBD	2 x 13W CFL	120 V	26 W		8
	B	RECESSED CLNG. MTD. @ KITCHEN/HALLWAY	TBD	1 x 32W CFL	120 V	32W		28
	C	RECESSED CLNG. MTD. @ BATHROOM/SHOWER	TBD	1 x 13W CFL	120 V	13 W		6
	D	WALL MTD. @ VANITY	TBD	1 x F24 T5	120 V	24 W		3
	E	CLNG. MTD. @ CORRIDOR	TBD	1 x 32 FC12 T9	120 V	32 W	MOTION SENSOR BILEVEL	4
	F	WALL MTD. 4 FT. @ EGRESS STAIR	TBD	2 x F32 T8	120 V	64 W	MOTION SENSOR BILEVEL	2
	G	WALL MTD. 2 FT. @ REFUSE ROOM	TBD	2 x F32 T8	120 V	64 W	MOTION SENSOR / ON/OFF	1
	H	CLNG. MTD. @ UTILITY ROOM	TBD	2 x F32 T8	120 V	64 W		0
	M	UNDER CABINET	TBD	1 x F14 T5	120 V	14 W		11
	P	WALL MTD.	TBD	1 x 13W CFL	120 V	13 W		0
	Q	CLNG. MTD. EXIT SIGN	TBD	LED	UNIV	4 W		0
	R	WALL MTD. EXIT SIGN	TBD	LED	UNIV	4 W		2
TOTAL WATTAGE :								1736 W

EXTERIOR LIGHTING FIXTURE SCHEDULE

SYMBOL	FIXTURE	DESCRIPTION	MODEL	LAMP TYPE & QTY	VOLTAGE	WATTAGE	NOTES	FIXTURE QTY
	X-1	WALL MTD.	TBD	1X LED MOD 18W	120 V	18 W	VANDAL RESISTANT - TIMER ON/OFF; SWITCHED AT PRIVATE TERRACES ONLY	1
	X-2	WALL MTD.	TBD	1X CFL TRIPLE 26W	120 V	26 W	VANDAL RESISTANT - PHOTOCELL ON TIMER OFF	0
	X-3	CLNG. MTD.	TBD	1X 50 W MH	120 V	50 W	VANDAL RESISTANT - TIMER ON/OFF	0
	X-4	RECESSED CLNG. MTD.	TBD	1X LED PAR 38	120 V	15 W	TIMER ON/OFF	0
	X-5	CLNG. MTD.	TBD	1X LED PAR 38	120 V	15 W	TIMER ON/OFF	0

PROJECT:
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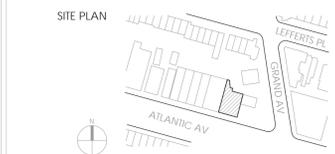
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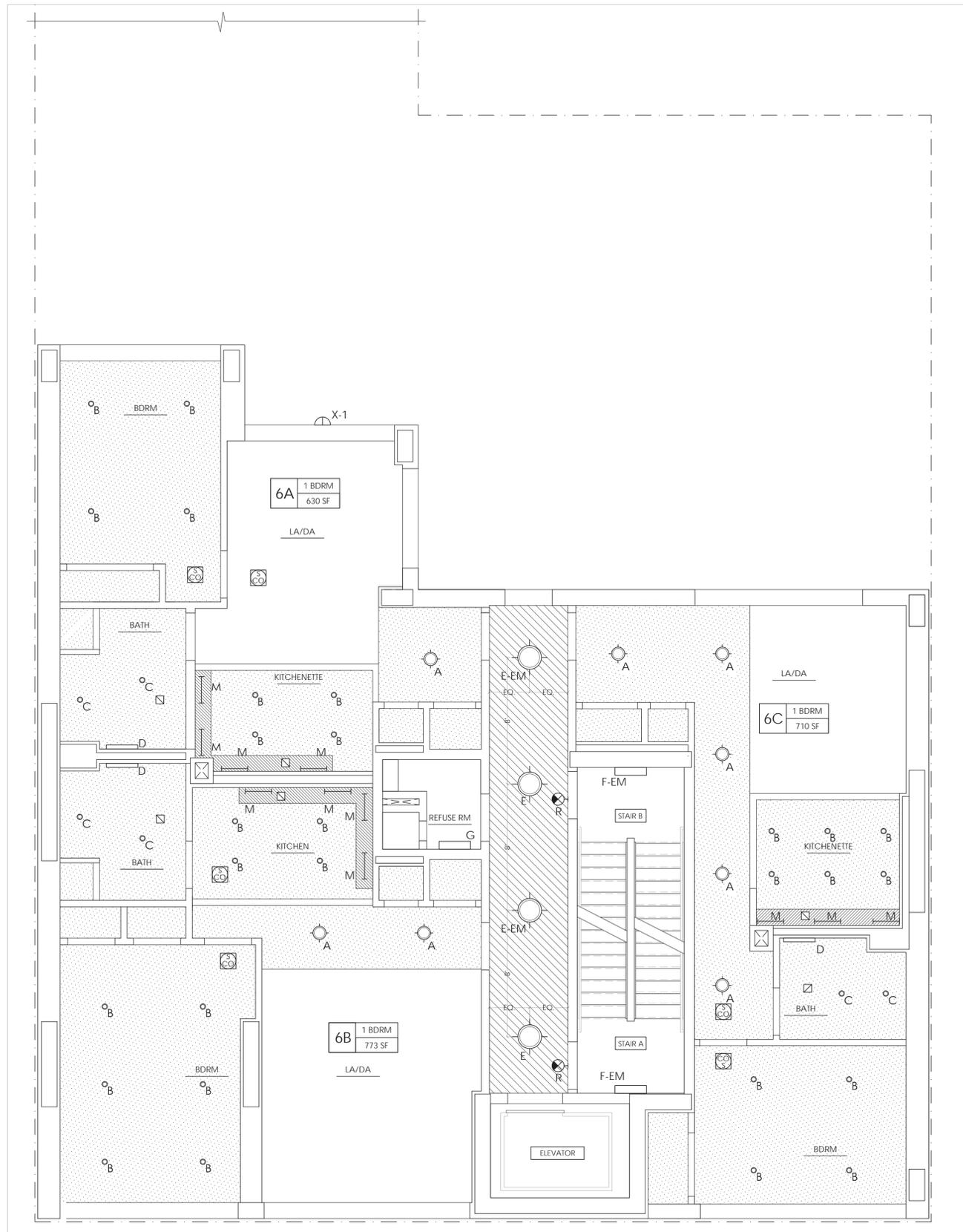
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PROJECT No:	1405 BA_929
DOB REVIEW	04/02/15
DOB REVIEW	02/05/15
DRAWING	REV. # DATE

REGISTERED ARCHITECT
PAUL GREGORY, R.A.

TITLE: FIFTH FLOOR REFLECTED CEILING PLAN
DATE: 04/02/2015
SCALE: AS NOTED
SHEET: **A-155.00**



REFLECTED CEILING PLAN SYMBOL KEY

	EXPOSED STRUCTURE		CEILING MOUNTED LIGHT FIXTURE		EXTERIOR CEILING MOUNTED LIGHT FIXTURE		CEILING MOUNTED EXIT LIGHTS
	SUSPENDED GYP. BD SOFFIT/CEILING - TIGHT TO BEAMS/STRUCTURE		RECESSED LIGHT FIXTURE		EXTERIOR WALL MOUNTED LIGHT FIXTURE		DIRECTIONAL ARROWS
	SUSPENDED GYP. BD SOFFIT/CEILING @ 8'-5" A.F.F.		WALL MOUNTED SCOFFCE		MECHANICAL VENT		WALL MOUNTED EXIT LIGHTS
	SUSPENDED GYP. BD SOFFIT/CEILING @ 7'-8" A.F.F.		UNDER CABINET LIGHT FIXTURE		CARBON/SMOKE DETECTOR		EM EMERGENCY PACK
	SUSPENDED GYP. BD SOFFIT/CEILING @ 8'-0" A.F.F.		WALL OR CLNG. MOUNTED LIGHT FIXTURE		CEILING ACCESS DOOR		X-X' A.F.F. CEILING HEIGHT
	2X2 ACT CEILING TILES		LINEAR CEILING MOUNTED LIGHT FIXTURE				
	2X4 EXTERIOR RAIN SCREEN PANELS						

NOTES:

1. ALL SWITCHES AND OUTLETS TO BE BY LEVITON DECORA SERIES, WHITE, U.O.N. EXCEPT IN MECHANICAL ROOMS AND RESTRICTED ACCESS AREAS, INCLUDING PARKING. SEE ELEC. DWGS. FOR WIRING AND FOR SMOKE TEST NOTES AT APARTMENTS.
2. REFER TO FIRE ALARM DWGS. FOR SMOKE TEST NOTE FOR FIRE ALARM SYSTEM.
3. ALL EXIT & EMERGENCY LIGHTING WILL BE PROVIDED WITH BUILT IN EMERGENCY BATTERY PACK TO PROVIDE A MINIMUM OF 90 MINUTES OF EMERGENCY LIGHTING.
4. SEE FIRE PROTECTION DWGS. FOR SPRINKLER INFO.
5. SEE MECH DWGS. FOR EQUIPMENT INFO.

INTERIOR LIGHTING FIXTURE SCHEDULE - SIXTH FLOOR

SYMBOL	FIXTURE	DESCRIPTION	MODEL	LAMP TYPE & QTY	VOLTAGE	WATTAGE	NOTES	FIXTURE QTY
	A	CLNG. MTD. @ FOYER/BDRM/LR	TBD	2 x 13W CFL	120 V	26 W		8
	B	RECESSED CLNG. MTD. @ KITCHEN/HALLWAY	TBD	1 x 32W CFL	120 V	32W		28
	C	RECESSED CLNG. MTD. @ BATHROOM/SHOWER	TBD	1 x 13W CFL	120 V	13 W		6
	D	WALL MTD. @ VANITY	TBD	1 x F24 T5	120 V	24 W		3
	E	CLNG. MTD. @ CORRIDOR	TBD	1 x 32 FC12 T9	120 V	32 W	MOTION SENSOR BILEVEL	4
	F	WALL MTD. 4 FT. @ EGRESS STAIR	TBD	2 x F32 T8	120 V	64 W	MOTION SENSOR BILEVEL	2
	G	WALL MTD. 2 FT. @ REFUSE ROOM	TBD	2 x F32 T8	120 V	64 W	MOTION SENSOR / ON/OFF	1
	H	CLNG. MTD. @ UTILITY ROOM	TBD	2 x F32 T8	120 V	64 W		0
	M	UNDER CABINET	TBD	1 x F14 T5	120 V	14 W		11
	P	WALL MTD.	TBD	1 x 13W CFL	120 V	13 W		0
	Q	CLNG. MTD. EXIT SIGN	TBD	LED	UNIV	4 W		0
	R	WALL MTD. EXIT SIGN	TBD	LED	UNIV	4 W		2
TOTAL WATTAGE :								1736 W

EXTERIOR LIGHTING FIXTURE SCHEDULE

SYMBOL	FIXTURE	DESCRIPTION	MODEL	LAMP TYPE & QTY	VOLTAGE	WATTAGE	NOTES	FIXTURE QTY
	X-1	WALL MTD.	TBD	1X LED MOD 18W	120 V	18 W	VANDAL RESISTANT - TIMER ON/OFF; SWITCHED AT PRIVATE TERRACES ONLY	1
	X-2	WALL MTD.	TBD	1X CFL TRIPLE 26W	120 V	26 W	VANDAL RESISTANT - PHOTOCELL ON TIMER OFF	0
	X-3	CLNG. MTD.	TBD	1X 50 W MH	120 V	50 W	VANDAL RESISTANT - TIMER ON/OFF	0
	X-4	RECESSED CLNG. MTD.	TBD	1X LED PAR 38	120 V	15 W	TIMER ON/OFF	0
	X-5	CLNG. MTD.	TBD	1X LED PAR 38	120 V	15 W	TIMER ON/OFF	0

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

PROJECT:
929 ATLANTIC AVE
BROOKLYN, NEW YORK 11238

ROART
304 MALCOLM X BLVD
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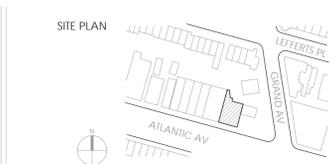
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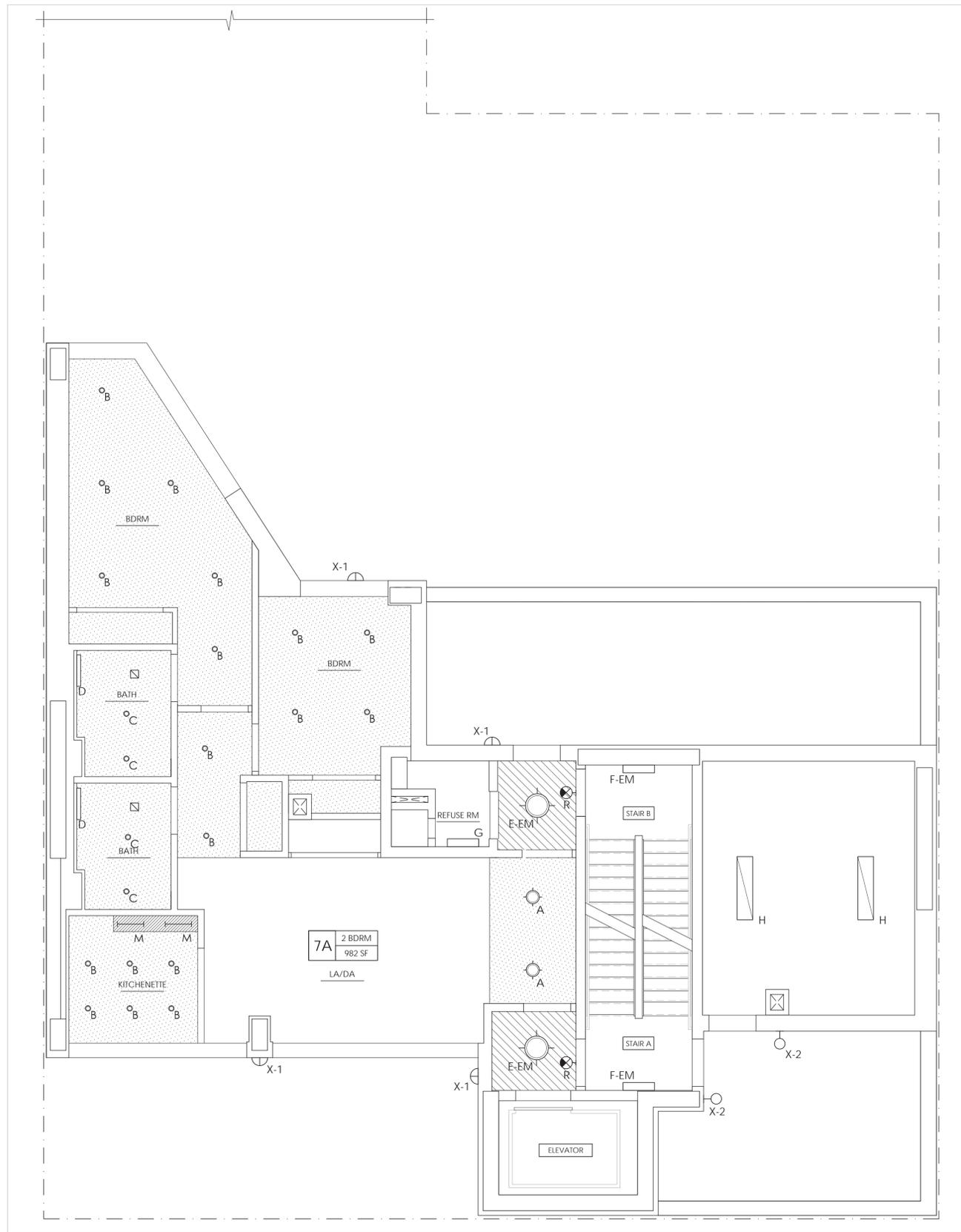
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PROJECT No:	1405 BA_929
DOB REVIEW	04/02/15
DOB REVIEW	02/05/15
DRAWING	REV. # DATE

PAUL GREGORY, R.A.

TITLE: SIXTH FLOOR REFLECTED CEILING PLAN
DATE: 04/02/2015
SCALE: AS NOTED
SHEET: **A-156.00**



REFLECTED CEILING PLAN SYMBOL KEY

	EXPOSED STRUCTURE		CEILING MOUNTED LIGHT FIXTURE		EXTERIOR CEILING MOUNTED LIGHT FIXTURE		CEILING MOUNTED EXIT LIGHTS
	SUSPENDED GYP. BD SOFFIT/CEILING - TIGHT TO BEAMS/STRUCTURE		RECESSED LIGHT FIXTURE		EXTERIOR WALL MOUNTED LIGHT FIXTURE		DIRECTIONAL ARROWS
	SUSPENDED GYP. BD SOFFIT/CEILING @ 8'-5" A.F.F.		WALL MOUNTED SCOFFCE		MECHANICAL VENT		WALL MOUNTED EXIT LIGHTS
	SUSPENDED GYP. BD SOFFIT/CEILING @ 7'-8" A.F.F.		UNDER CABINET LIGHT FIXTURE		CARBON/SMOKE DETECTOR		EM EMERGENCY PACK
	SUSPENDED GYP. BD SOFFIT/CEILING @ 8'-0" A.F.F.		WALL OR CLNG. MOUNTED LIGHT FIXTURE		CEILING ACCESS DOOR		X-X' A.F.F. CEILING HEIGHT
	2X2 ACT CEILING TILES		LINEAR CEILING MOUNTED LIGHT FIXTURE				
	2X4 EXTERIOR RAIN SCREEN PANELS						

NOTES:

1. ALL SWITCHES AND OUTLETS TO BE BY LEVITON DECORA SERIES, WHITE, U.O.N. EXCEPT IN MECHANICAL ROOMS AND RESTRICTED ACCESS AREAS, INCLUDING PARKING. SEE ELEC. DWGS. FOR WIRING AND FOR SMOKE TEST NOTES AT APARTMENTS.
2. REFER TO FIRE ALARM DWGS. FOR SMOKE TEST NOTE FOR FIRE ALARM SYSTEM.
3. ALL EXIT & EMERGENCY LIGHTING WILL BE PROVIDED WITH BUILT IN EMERGENCY BATTERY PACK TO PROVIDE A MINIMUM OF 90 MINUTES OF EMERGENCY LIGHTING.
4. SEE FIRE PROTECTION DWGS. FOR SPRINKLER INFO.
5. SEE MECH DWGS. FOR EQUIPMENT INFO.

INTERIOR LIGHTING FIXTURE SCHEDULE - SEVENTH FLOOR

SYMBOL	FIXTURE	DESCRIPTION	MODEL	LAMP TYPE & QTY	VOLTAGE	WATTAGE	NOTES	FIXTURE QTY
	A	CLNG. MTD. @ FOYER/BDRM/LR	TBD	2 x 13W CFL	120 V	26 W		2
	B	RECESSED CLNG. MTD. @ KITCHEN/HALLWAY	TBD	1 x 32W CFL	120 V	32W		18
	C	RECESSED CLNG. MTD. @ BATHROOM/SHOWER	TBD	1 x 13W CFL	120 V	13 W		4
	D	WALL MTD. @ VANITY	TBD	1 x F24 T5	120 V	24 W		2
	E	CLNG. MTD. @ CORRIDOR	TBD	1 x 32 FC12 T9	120 V	32 W	MOTION SENSOR BILEVEL	2
	F	WALL MTD. 4 FT. @ EGRESS STAIR	TBD	2 x F32 T8	120 V	64 W	MOTION SENSOR BILEVEL	2
	G	WALL MTD. 2 FT. @ REFUSE ROOM	TBD	2 x F32 T8	120 V	64 W	MOTION SENSOR / ON/OFF	1
	H	CLNG. MTD. @ UTILITY ROOM	TBD	2 x F32 T8	120 V	64 W		2
	M	UNDER CABINET	TBD	1 x F14 T5	120 V	14 W		2
	P	WALL MTD.	TBD	1 x 13W CFL	120 V	13 W		0
	Q	CLNG. MTD. EXIT SIGN	TBD	LED	UNIV	4 W		0
	R	WALL MTD. EXIT SIGN	TBD	LED	UNIV	4 W		2
TOTAL WATTAGE :								1148 W

EXTERIOR LIGHTING FIXTURE SCHEDULE

SYMBOL	FIXTURE	DESCRIPTION	MODEL	LAMP TYPE & QTY	VOLTAGE	WATTAGE	NOTES	FIXTURE QTY
	X-1	WALL MTD.	TBD	1X LED MOD 18W	120 V	18 W	VANDAL RESISTANT - TIMER ON/OFF; SWITCHED AT PRIVATE TERRACES ONLY	3
	X-2	WALL MTD.	TBD	1X CFL TRIPLE 26W	120 V	26 W	VANDAL RESISTANT - PHOTOCELL ON TIMER OFF	0
	X-3	CLNG. MTD.	TBD	1X 50 W MH	120 V	50 W	VANDAL RESISTANT - TIMER ON/OFF	0
	X-4	RECESSED CLNG. MTD.	TBD	1X LED PAR 38	120 V	15 W	TIMER ON/OFF	0
	X-5	CLNG. MTD.	TBD	1X LED PAR 38	120 V	15 W	TIMER ON/OFF	0

1 SEVENTH FLOOR REFLECTED CEILING PLAN
SCALE: 1/4" = 1'-0"

PROJECT:
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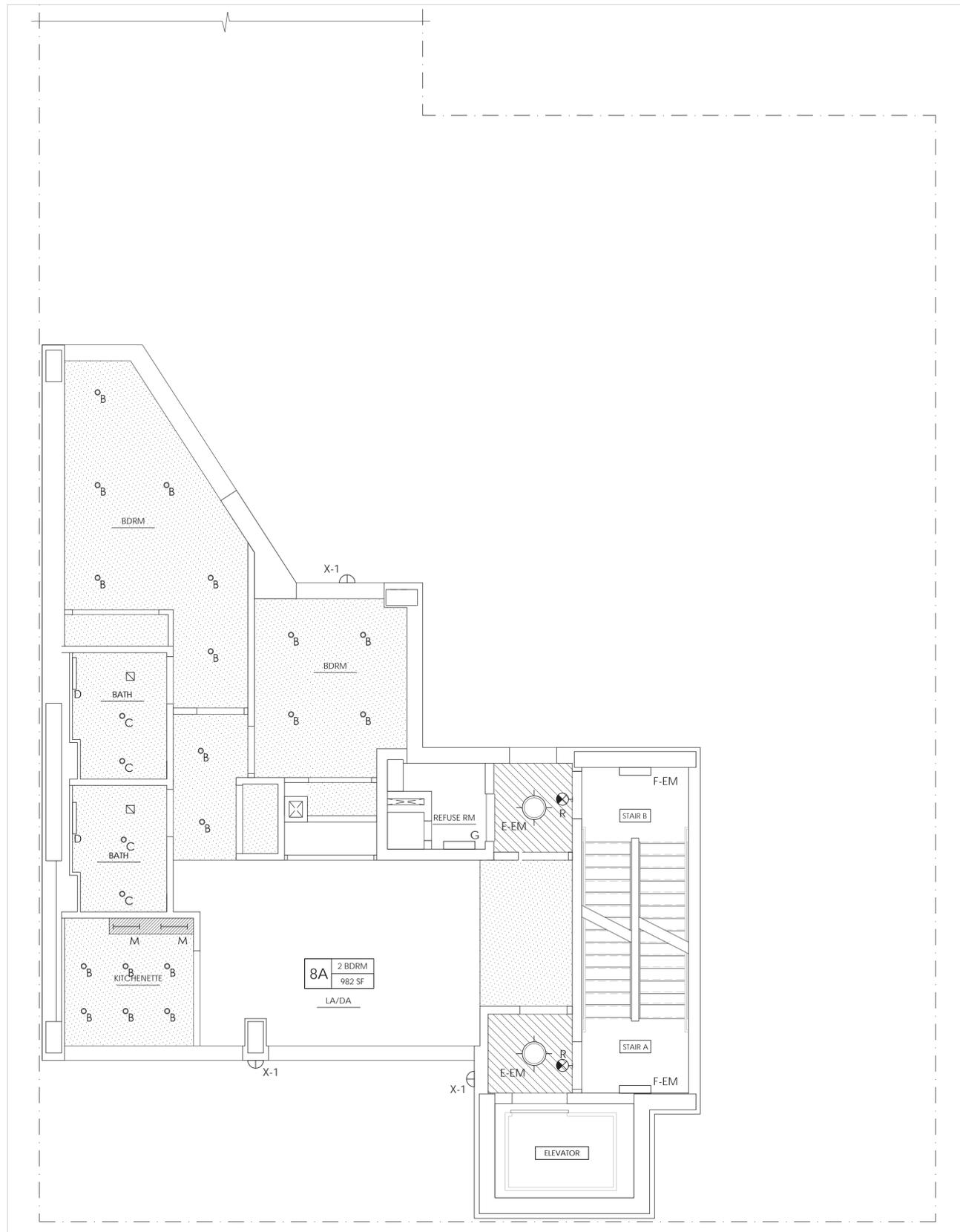
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PROJECT No:	1405 BA_929
DOB REVIEW	04/02/15
DOB REVIEW	02/05/15
DRAWING	REV. # DATE

PAUL GREGORY, R.A.

TITLE: SEVENTH FLOOR REFLECTED CEILING PLAN
DATE: 04/02/2015
SCALE: AS NOTED
SHEET: **A-157.00**



REFLECTED CEILING PLAN SYMBOL KEY

	EXPOSED STRUCTURE		CEILING MOUNTED LIGHT FIXTURE		EXTERIOR CEILING MOUNTED LIGHT FIXTURE		CEILING MOUNTED EXIT LIGHTS
	SUSPENDED GYP. BD SOFFIT/CEILING - TIGHT TO BEAMS/STRUCTURE		RECESSED LIGHT FIXTURE		EXTERIOR WALL MOUNTED LIGHT FIXTURE		DIRECTIONAL ARROWS
	SUSPENDED GYP. BD SOFFIT/CEILING @ 8'-5" A.F.F.		WALL MOUNTED SCOFFCE		MECHANICAL VENT		WALL MOUNTED EXIT LIGHTS
	SUSPENDED GYP. BD SOFFIT/CEILING @ 7'-8" A.F.F.		UNDER CABINET LIGHT FIXTURE		CARBON/SMOKE DETECTOR		EM EMERGENCY PACK
	SUSPENDED GYP. BD SOFFIT/CEILING @ 8'-0" A.F.F.		WALL OR CLNG. MOUNTED LIGHT FIXTURE		CEILING ACCESS DOOR		CEILING HEIGHT
	2X2 ACT CEILING TILES		LINEAR CEILING MOUNTED LIGHT FIXTURE				
	2X4 EXTERIOR RAIN SCREEN PANELS						

NOTES:

1. ALL SWITCHES AND OUTLETS TO BE BY LEVITON DECORA SERIES, WHITE, U.O.N. EXCEPT IN MECHANICAL ROOMS AND RESTRICTED ACCESS AREAS, INCLUDING PARKING. SEE ELEC. DWGS. FOR WIRING AND FOR SMOKE TEST NOTES AT APARTMENTS.
2. REFER TO FIRE ALARM DWGS. FOR SMOKE TEST NOTE FOR FIRE ALARM SYSTEM.
3. ALL EXIT & EMERGENCY LIGHTING WILL BE PROVIDED WITH BUILT IN EMERGENCY BATTERY PACK TO PROVIDE A MINIMUM OF 90 MINUTES OF EMERGENCY LIGHTING.
4. SEE FIRE PROTECTION DWGS. FOR SPRINKLER INFO.
5. SEE MECH DWGS. FOR EQUIPMENT INFO.

INTERIOR LIGHTING FIXTURE SCHEDULE - EIGHTH FLOOR

SYMBOL	FIXTURE	DESCRIPTION	MODEL	LAMP TYPE & QTY	VOLTAGE	WATTAGE	NOTES	FIXTURE QTY
	A	CLNG. MTD. @ FOYER/BDRM/LR	TBD	2 x 13W CFL	120 V	26 W		0
	B	RECESSED CLNG. MTD. @ KITCHEN/HALLWAY	TBD	1 x 32W CFL	120 V	32W		18
	C	RECESSED CLNG. MTD. @ BATHROOM/SHOWER	TBD	1 x 13W CFL	120 V	13 W		4
	D	WALL MTD. @ VANITY	TBD	1 x F24 T5	120 V	24 W		2
	E	CLNG. MTD. @ CORRIDOR	TBD	1 x 32 FC12 T9	120 V	32 W	MOTION SENSOR BILEVEL	2
	F	WALL MTD. 4 FT. @ EGRESS STAIR	TBD	2 x F32 T8	120 V	64 W	MOTION SENSOR BILEVEL	2
	G	WALL MTD. 2 FT. @ REFUSE ROOM	TBD	2 x F32 T8	120 V	64 W	MOTION SENSOR / ON/OFF	1
	H	CLNG. MTD. @ UTILITY ROOM	TBD	2 x F32 T8	120 V	64 W		0
	M	UNDER CABINET	TBD	1 x F14 T5	120 V	14 W		2
	P	WALL MTD.	TBD	1 x 13W CFL	120 V	13 W		0
	Q	CLNG. MTD. EXIT SIGN	TBD	LED	UNIV	4 W		0
	R	WALL MTD. EXIT SIGN	TBD	LED	UNIV	4 W		2
TOTAL WATTAGE :								968 W

EXTERIOR LIGHTING FIXTURE SCHEDULE

SYMBOL	FIXTURE	DESCRIPTION	MODEL	LAMP TYPE & QTY	VOLTAGE	WATTAGE	NOTES	FIXTURE QTY
	X-1	WALL MTD.	TBD	1X LED MOD 18W	120 V	18 W	VANDAL RESISTANT - TIMER ON/OFF; SWITCHED AT PRIVATE TERRACES ONLY	3
	X-2	WALL MTD.	TBD	1X CFL TRIPLE 26W	120 V	26 W	VANDAL RESISTANT - PHOTOCELL ON TIMER OFF	0
	X-3	CLNG. MTD.	TBD	1X 50 W MH	120 V	50 W	VANDAL RESISTANT - TIMER ON/OFF	0
	X-4	RECESSED CLNG. MTD.	TBD	1X LED PAR 38	120 V	15 W	TIMER ON/OFF	0
	X-5	CLNG. MTD.	TBD	1X LED PAR 38	120 V	15 W	TIMER ON/OFF	0

1 EIGHTH FLOOR REFLECTED CEILING PLAN
SCALE: 1/4" = 1'-0"

PROJECT:
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BROOKLYN, NEW YORK 11238

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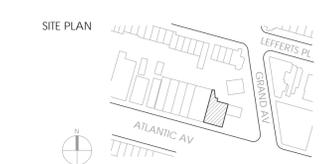
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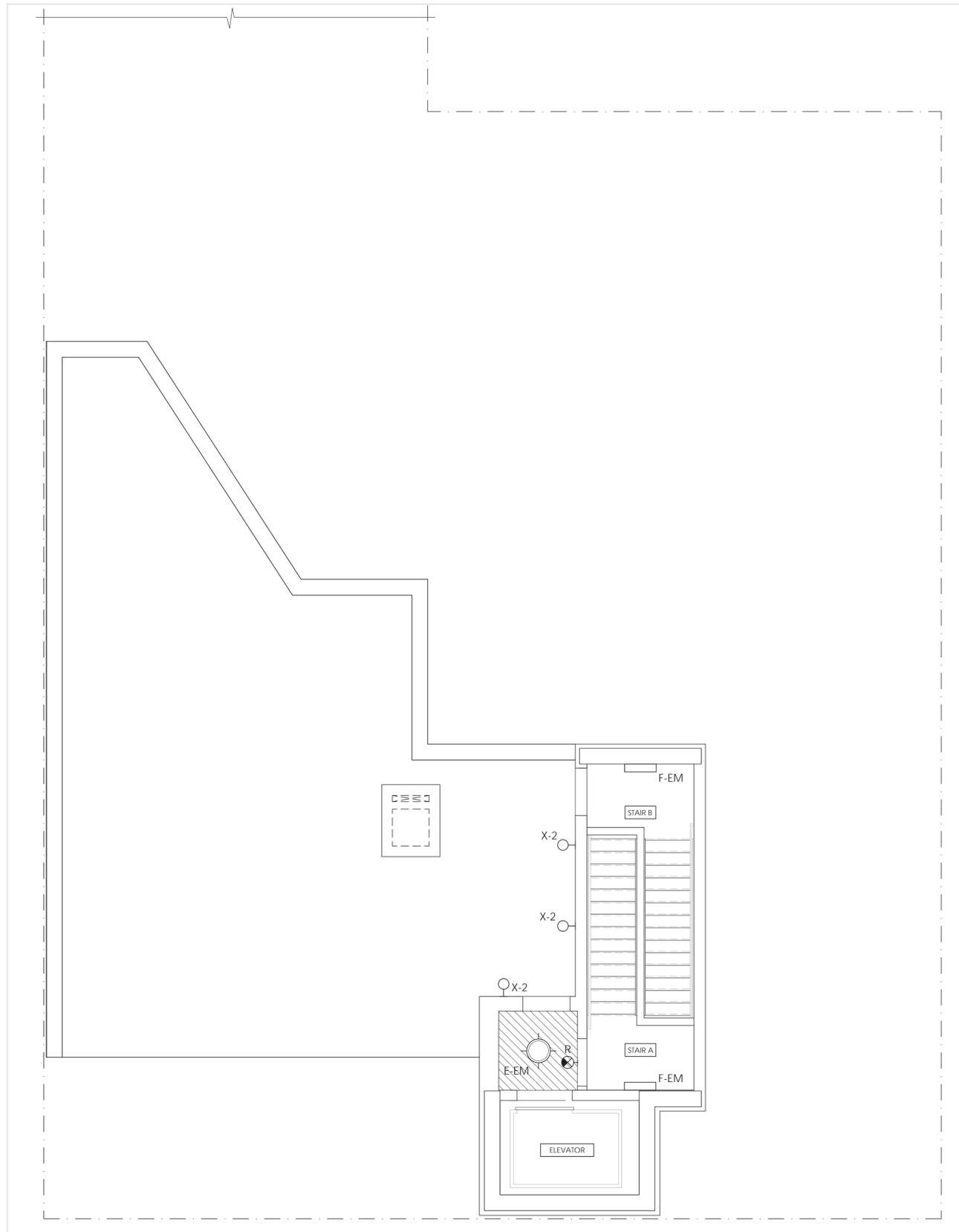
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PROJECT No:	1405 BA_929
DOB REVIEW	04/02/15
DOB REVIEW	02/05/15
DRAWING	REV. # DATE

PAUL GREGORY, R.A.

TITLE: EIGHTH FLOOR REFLECTED CEILING PLAN
DATE: 04/02/2015
SCALE: AS NOTED
SHEET: **A-158.00**



1 ROOF REFLECTED CEILING PLAN
SCALE: 1/4" = 1'-0"

REFLECTED CEILING PLAN SYMBOL KEY

	EXPOSED STRUCTURE		CEILING MOUNTED LIGHT FIXTURE		EXTERIOR CEILING MOUNTED LIGHT FIXTURE		CEILING MOUNTED EXIT LIGHTS
	SUSPENDED GYP. BD SOFFIT/CEILING - TIGHT TO BEAMS/STRUCTURE		RECESSED LIGHT FIXTURE		EXTERIOR WALL MOUNTED LIGHT FIXTURE		DIRECTIONAL ARROWS
	SUSPENDED GYP. BD SOFFIT/CEILING @ 8'-5" A.F.F.		WALL MOUNTED SCOFFCE		MECHANICAL VENT		WALL MOUNTED EXIT LIGHTS
	SUSPENDED GYP. BD SOFFIT/CEILING @ 7'-8" A.F.F.		UNDER CABINET LIGHT FIXTURE		CARBON/SMOKE DETECTOR		EM EMERGENCY PACK
	SUSPENDED GYP. BD SOFFIT/CEILING @ 8'-0" A.F.F.		WALL OR CLNG. MOUNTED LIGHT FIXTURE		CEILING ACCESS DOOR		CEILING HEIGHT
	2X2 ACT CEILING TILES		LINEAR CEILING MOUNTED LIGHT FIXTURE				
	2X4 EXTERIOR RAIN SCREEN PANELS						

NOTES:

1. ALL SWITCHES AND OUTLETS TO BE BY LEVITON DECORA SERIES, WHITE, U.O.N. EXCEPT IN MECHANICAL ROOMS AND RESTRICTED ACCESS AREAS, INCLUDING PARKING. SEE ELEC. DWGS. FOR WIRING AND FOR SMOKE TEST NOTES AT APARTMENTS.
2. REFER TO FIRE ALARM DWGS. FOR SMOKE TEST NOTE FOR FIRE ALARM SYSTEM.
3. ALL EXIT & EMERGENCY LIGHTING WILL BE PROVIDED WITH BUILT IN EMERGENCY BATTERY PACK TO PROVIDE A MINIMUM OF 90 MINUTES OF EMERGENCY LIGHTING.
4. SEE FIRE PROTECTION DWGS. FOR SPRINKLER INFO.
5. SEE MECH DWGS. FOR EQUIPMENT INFO.

INTERIOR LIGHTING FIXTURE SCHEDULE - ROOF

SYMBOL	FIXTURE	DESCRIPTION	MODEL	LAMP TYPE & QTY	VOLTAGE	WATTAGE	NOTES	FIXTURE QTY
	A	CLNG. MTD. @ FOYER/BDRM/LR @ KITCHEN/HALLWAY	TBD	2 x 13W CFL	120 V	26 W		0
	B	RECESSED CLNG. MTD. @ BATHROOM/SHOWER	TBD	1 x 32W CFL	120 V	32W		0
	C	RECESSED CLNG. MTD. @ BATHROOM/SHOWER	TBD	1 x 13W CFL	120 V	13 W		0
	D	WALL MTD. @ VANITY	TBD	1 x F24 T5	120 V	24 W		0
	E	CLNG. MTD. @ CORRIDOR	TBD	1 x 32 FC12 T9	120 V	32 W	MOTION SENSOR BILEVEL	1
	F	WALL MTD. 4 FT. @ EGRESS STAIR	TBD	2 x F32 T8	120 V	64 W	MOTION SENSOR BILEVEL	2
	G	WALL MTD. 2 FT. @ REFUSE ROOM	TBD	2 x F32 T8	120 V	64 W	MOTION SENSOR / ON/OFF	0
	H	CLNG. MTD. @ UTILITY ROOM	TBD	2 x F32 T8	120 V	64 W		0
	M	UNDER CABINET	TBD	1 x F14 T5	120 V	14 W		0
	P	WALL MTD.	TBD	1 x 13W CFL	120 V	13 W		0
	Q	CLNG. MTD. EXIT SIGN	TBD	LED	UNIV	4 W		0
	R	WALL MTD. EXIT SIGN	TBD	LED	UNIV	4 W		1
TOTAL WATTAGE :								164 W

EXTERIOR LIGHTING FIXTURE SCHEDULE

SYMBOL	FIXTURE	DESCRIPTION	MODEL	LAMP TYPE & QTY	VOLTAGE	WATTAGE	NOTES	FIXTURE QTY
	X-1	WALL MTD.	TBD	1X LED MOD 18W	120 V	18 W	VANDAL RESISTANT - TIMER ON/OFF. SWITCHED AT PRIVATE TERRACES ONLY	0
	X-2	WALL MTD.	TBD	1X CFL TRIPLE 26W	120 V	26 W	VANDAL RESISTANT - PHOTOCELL ON TIMER OFF	3
	X-3	CLNG. MTD.	TBD	1X 50 W MH	120 V	50 W	VANDAL RESISTANT - TIMER ON/OFF	0
	X-4	RECESSED CLNG. MTD.	TBD	1X LED PAR 38	120 V	15 W	TIMER ON/OFF	0
	X-5	CLNG. MTD.	TBD	1X LED PAR 38	120 V	15 W	TIMER ON/OFF	0

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PROJECT No:	1405 BA_929
DOB REVIEW	04/02/15
DOB REVIEW	02/05/15
DRAWING	REV. # DATE

PAUL GREGORY, R.A.

TITLE:
ROOF REFLECTED CEILING PLAN
DATE: 04/02/2015
SCALE: AS NOTED
SHEET: **A-159.00**



1 SOUTH ELEVATION
SCALE: 3/16" = 1'-0"

2 NORTH ELEVATION
SCALE: 3/16" = 1'-0"

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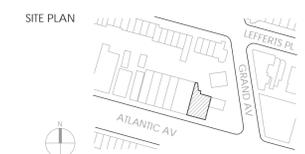


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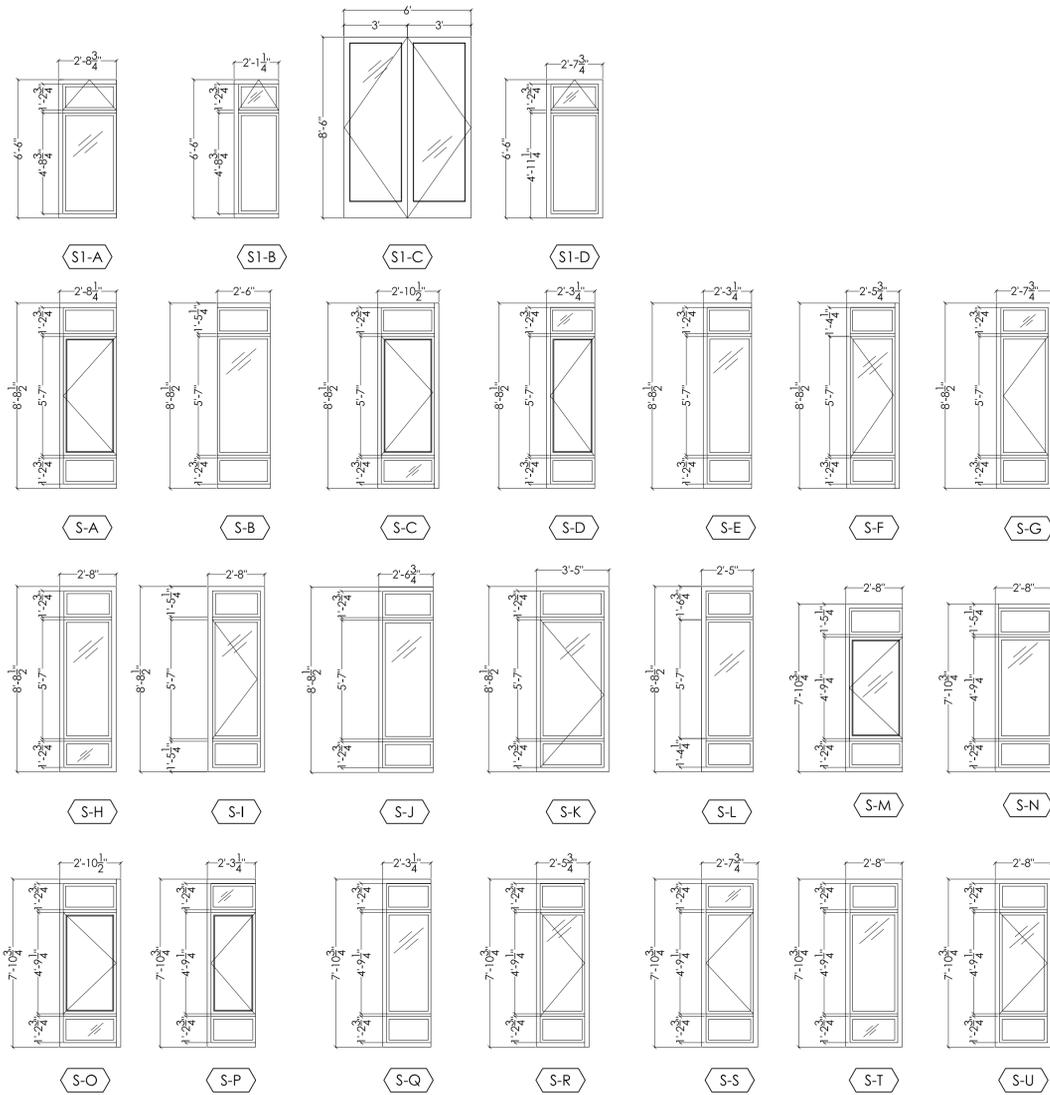
PROJECT No:	1405 BA_929
DOB REVIEW	04/02/15
DOB REVIEW	02/05/15
DRAWING	REV. # DATE



TITLE: EXTERIOR ELEVATIONS
DATE: 04/02/2015
SCALE: AS NOTED
SHEET: **A-201.00**

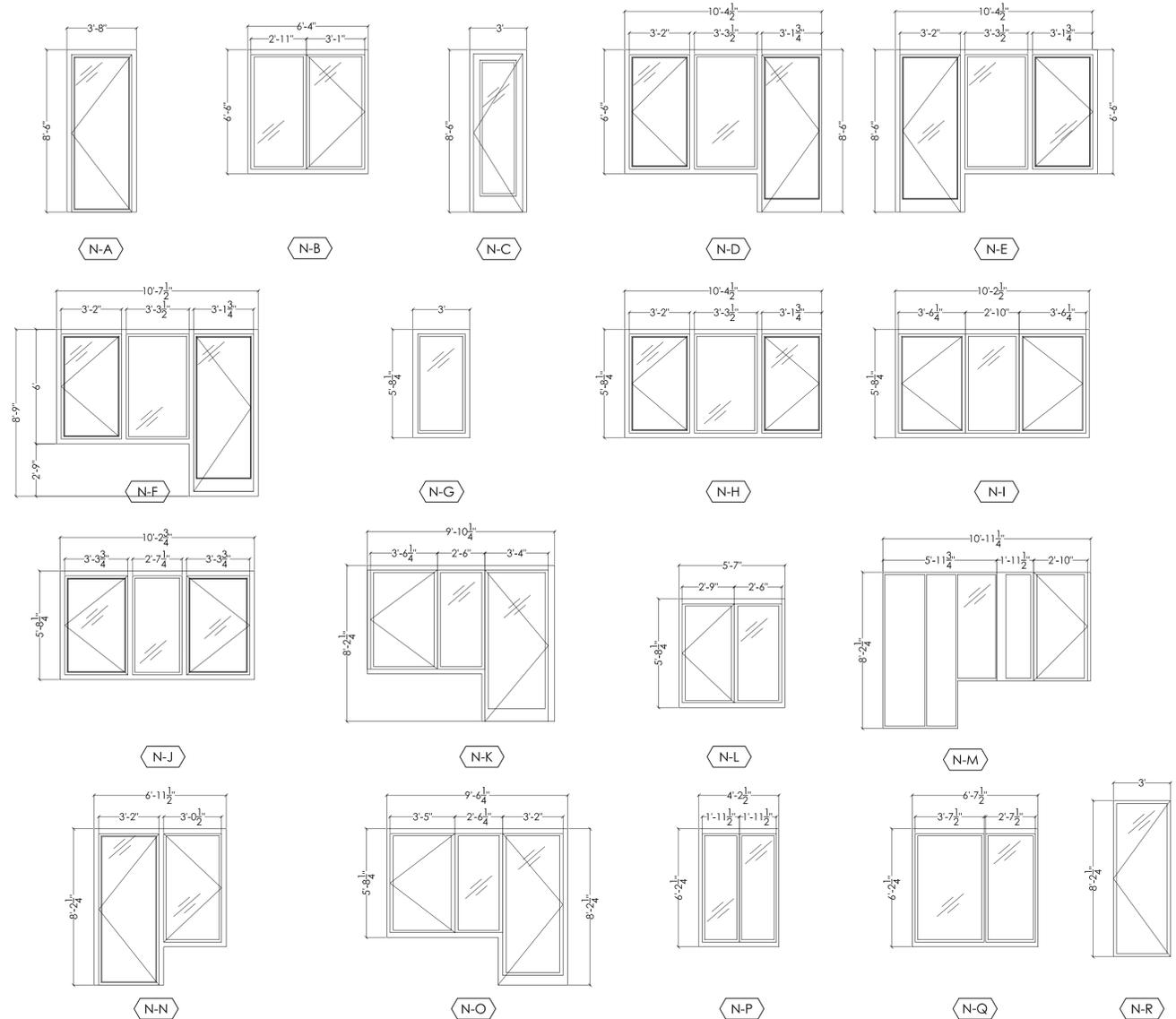
WINDOW SCHEDULE - SOUTH ELEVATION

FLOOR	WINDOW NO.	QTY.	FRAME		GLAZING		OITC RATING	DIMENSIONS		REMARKS
			MATERIAL	FINISH	TYPE	TREATMENT		WIDTH	HEIGHT	
1	S1-A	4	ALUMINUM	ANODIZED	1" IGU	LOW-E	31 OITC	2'-8 3/4"	6'-6"	
	S1-B	2	ALUMINUM	ANODIZED	1" IGU	LOW-E	31 OITC	2'-5"	6'-9 1/2"	
	S1-C	1	ALUMINUM	ANODIZED	1" IGU	LOW-E	31 OITC	6'-0"	8'-6"	
	S1-D	5	ALUMINUM	ANODIZED	1" IGU	LOW-E	31 OITC	2'-7 1/2"	6'-6"	
2-8	S-A	4	ALUMINUM	ANODIZED	1" IGU	LOW-E	31 OITC	2'-8 1/2"	8'-8 1/2"	
	S-B	8	ALUMINUM	ANODIZED	1" IGU	LOW-E	31 OITC	2'-6"	8'-8 1/2"	
	S-C	4	ALUMINUM	ANODIZED	1" IGU	LOW-E	31 OITC	2'-10 1/2"	8'-8 1/2"	
	S-D	4	ALUMINUM	ANODIZED	1" IGU	LOW-E	31 OITC	2'-3 1/4"	8'-8 1/2"	
	S-E	16	ALUMINUM	ANODIZED	1" IGU	LOW-E	31 OITC	2'-3 1/4"	8'-8 1/2"	
	S-F	4	ALUMINUM	ANODIZED	1" IGU	LOW-E	31 OITC	2'-5 1/2"	8'-8 1/2"	
	S-G	4	ALUMINUM	ANODIZED	1" IGU	LOW-E	31 OITC	2'-7 1/2"	8'-8 1/2"	
	S-H	12	ALUMINUM	ANODIZED	1" IGU	LOW-E	31 OITC	2'-8"	8'-8 1/2"	
	S-I	4	ALUMINUM	ANODIZED	1" IGU	LOW-E	31 OITC	2'-8"	8'-8 1/2"	
	S-J	6	ALUMINUM	ANODIZED	1" IGU	LOW-E	31 OITC	2'-6 1/2"	8'-8 1/2"	
	S-K	4	ALUMINUM	ANODIZED	1" IGU	LOW-E	31 OITC	3'-5"	8'-8 1/2"	
	S-L	8	ALUMINUM	ANODIZED	1" IGU	LOW-E	31 OITC	2'-5"	8'-8 1/2"	
	S-M	1	ALUMINUM	ANODIZED	1" IGU	LOW-E	31 OITC	2'-8"	7'-10 1/2"	
	S-N	2	ALUMINUM	ANODIZED	1" IGU	LOW-E	31 OITC	2'-8"	7'-10 1/2"	
	S-O	1	ALUMINUM	ANODIZED	1" IGU	LOW-E	31 OITC	2'-10 1/2"	7'-10 1/2"	
	S-P	1	ALUMINUM	ANODIZED	1" IGU	LOW-E	31 OITC	2'-3 1/4"	7'-10 1/2"	
	S-Q	4	ALUMINUM	ANODIZED	1" IGU	LOW-E	31 OITC	2'-3 1/4"	7'-10 1/2"	
	S-R	1	ALUMINUM	ANODIZED	1" IGU	LOW-E	31 OITC	2'-5 1/2"	7'-10 1/2"	
	S-S	1	ALUMINUM	ANODIZED	1" IGU	LOW-E	31 OITC	2'-7 1/2"	7'-10 1/2"	
S-T	3	ALUMINUM	ANODIZED	1" IGU	LOW-E	31 OITC	2'-8"	7'-10 1/2"		
S-U	1	ALUMINUM	ANODIZED	1" IGU	LOW-E	31 OITC	2'-8"	7'-10 1/2"		



WINDOW SCHEDULE - NORTH ELEVATION

FLOOR	WINDOW NO.	QTY.	FRAME		GLAZING		OITC RATING	DIMENSIONS		REMARKS
			MATERIAL	FINISH	TYPE	TREATMENT		WIDTH	HEIGHT	
C-8	N-A	1	ALUMINUM	ANODIZED	1" IGU	LOW-E	24 OITC	3'-8"	8'-6"	
	N-B	1	ALUMINUM	ANODIZED	1" IGU	LOW-E	24 OITC	6'-4"	6'-6"	
	N-C	1	ALUMINUM	ANODIZED	1" IGU	LOW-E	24 OITC	3'-0"	8'-6"	
	N-D	1	ALUMINUM	ANODIZED	1" IGU	LOW-E	24 OITC	10'-4 1/2"	8'-6"	
	N-E	1	ALUMINUM	ANODIZED	1" IGU	LOW-E	24 OITC	10'-4 1/2"	8'-6"	
	N-G	6	ALUMINUM	ANODIZED	1" IGU	LOW-E	24 OITC	3'-0"	5'-8 1/2"	
	N-H	1	ALUMINUM	ANODIZED	1" IGU	LOW-E	24 OITC	10'-4 1/2"	5'-8 1/2"	
	N-I	5	ALUMINUM	ANODIZED	1" IGU	LOW-E	24 OITC	10'-2 1/2"	5'-8 1/2"	
	N-J	5	ALUMINUM	ANODIZED	1" IGU	LOW-E	24 OITC	10'-2 1/2"	5'-8 1/2"	
	N-K	4	ALUMINUM	ANODIZED	1" IGU	LOW-E	24 OITC	9'-10 1/4"	8'-2 1/4"	
	N-L	2	ALUMINUM	ANODIZED	1" IGU	LOW-E	24 OITC	5'-7"	5'-8 1/2"	
	N-M	2	ALUMINUM	ANODIZED	1" IGU	LOW-E	24 OITC	10'-1 1/2"	8'-2 1/4"	
	N-N	1	ALUMINUM	ANODIZED	1" IGU	LOW-E	24 OITC	13'-6 1/2"	8'-2 1/4"	
	N-O	1	ALUMINUM	ANODIZED	1" IGU	LOW-E	24 OITC	9'-6 1/2"	8'-2 1/4"	
	N-P	1	ALUMINUM	ANODIZED	1" IGU	LOW-E	24 OITC	4'-2 1/2"	6'-2 1/4"	
	N-Q	1	ALUMINUM	ANODIZED	1" IGU	LOW-E	24 OITC	6'-7 1/2"	6'-2 1/4"	
	N-R	1	ALUMINUM	ANODIZED	1" IGU	LOW-E	24 OITC	3'-0"	8'-2 1/4"	



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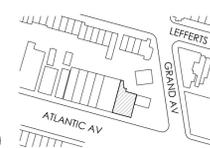
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SITE PLAN

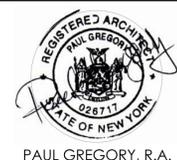


PROJECT No: 1405 BA_929

DOB REVIEW 04/02/15

DOB REVIEW 02/05/15

DRAWING REV. # DATE



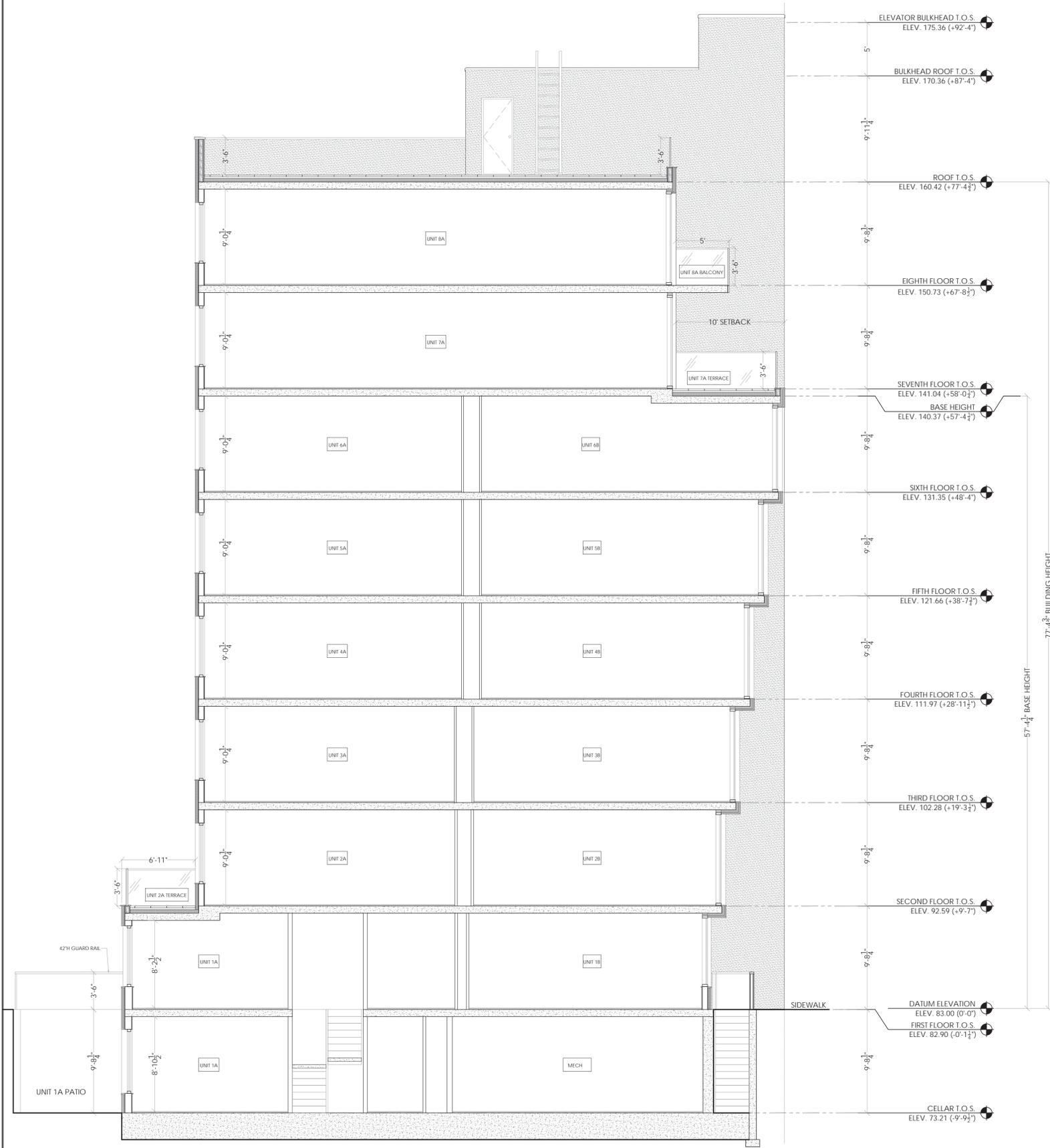
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WINDOW SCHEDULES

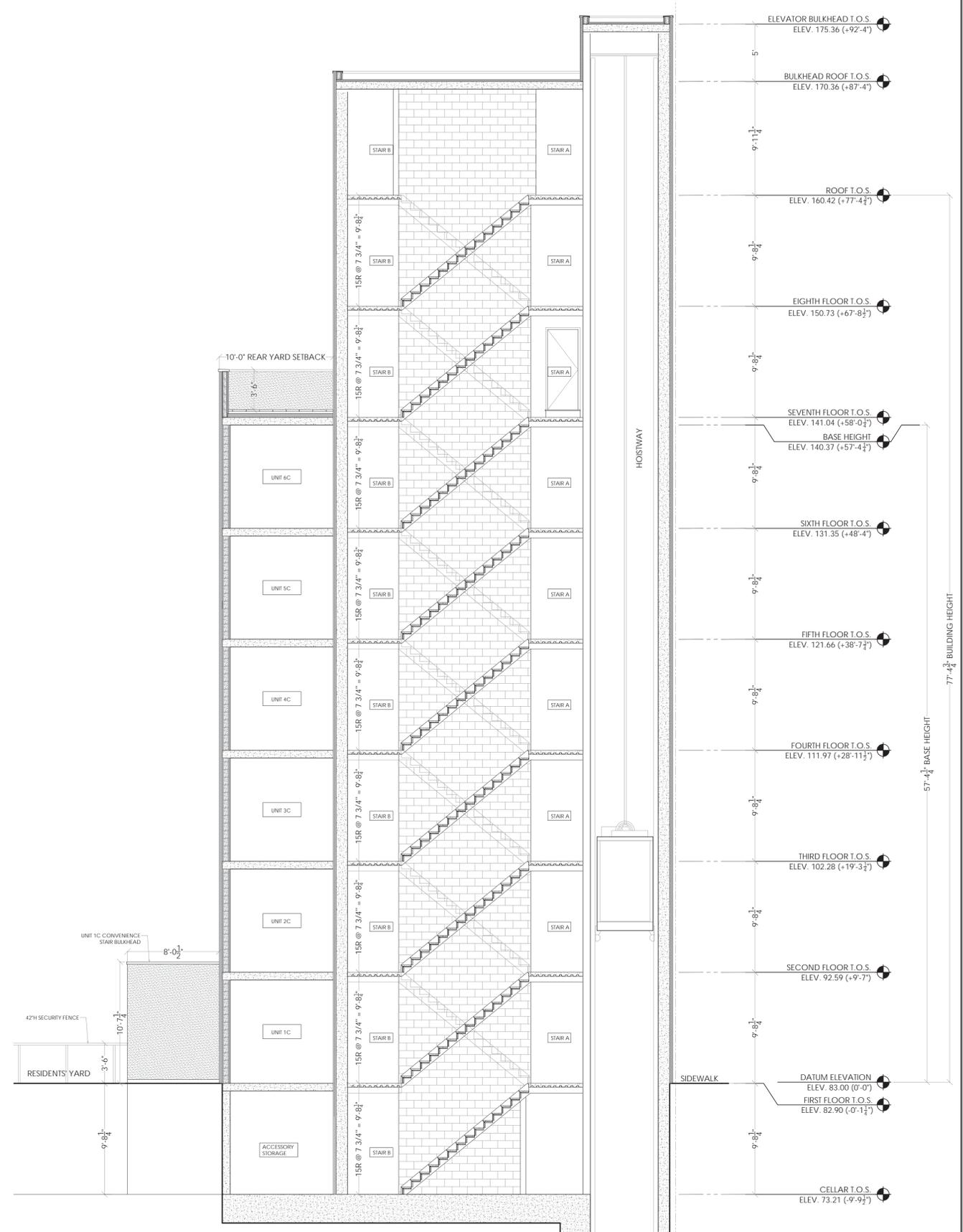
DATE: 04/02/2015

SCALE: AS NOTED

SHEET: A-210.00



1 SECTION
SCALE: 3/16" = 1'-0"



2 SECTION
SCALE: 3/16" = 1'-0"

PROJECT:
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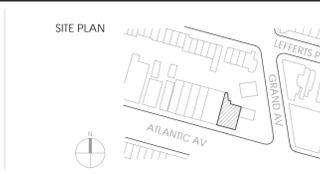
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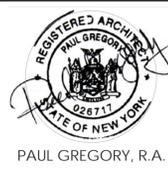
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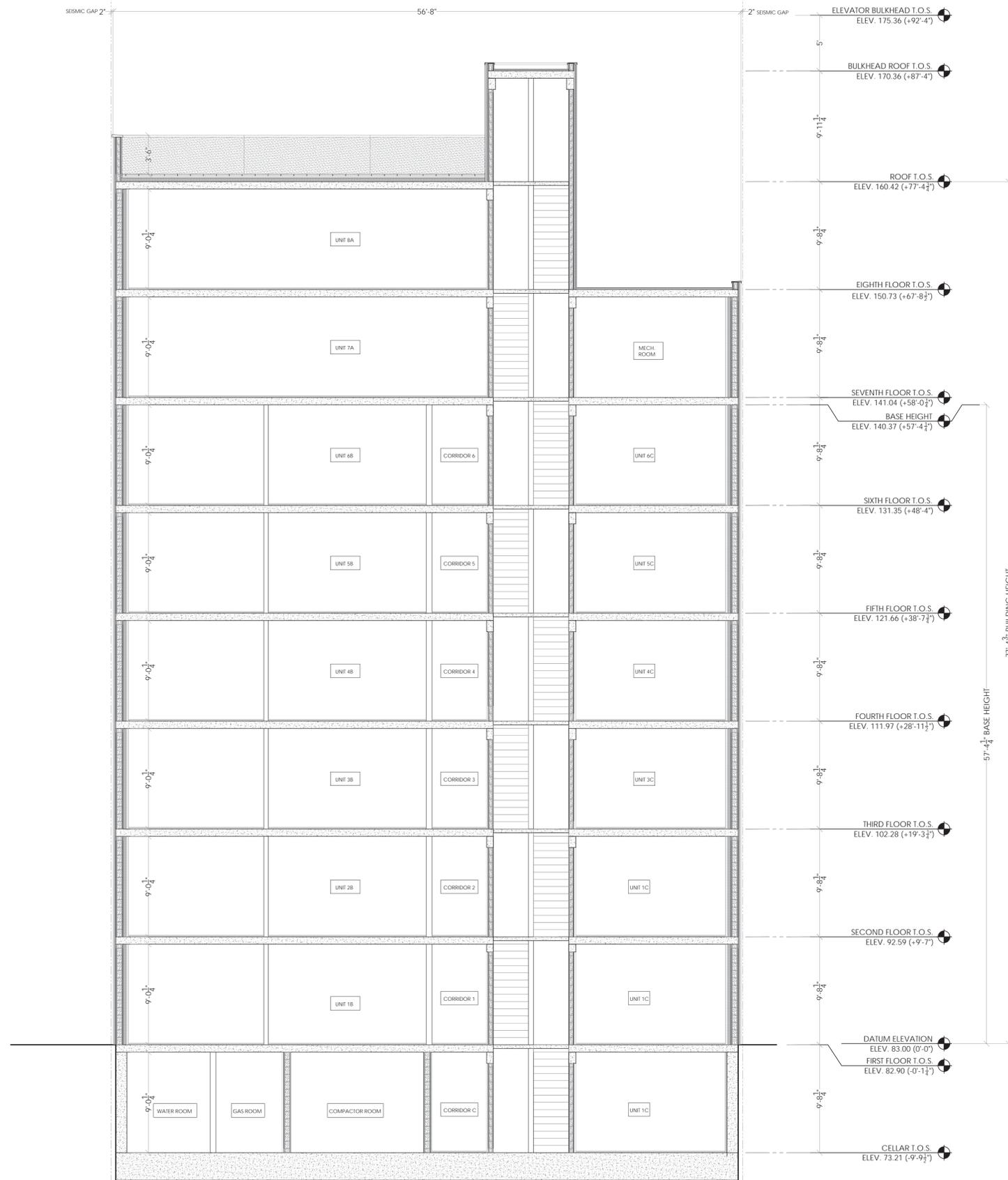
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PROJECT No:	1405 BA_929
DOB REVIEW	04/02/15
DOB REVIEW	02/05/15
DRAWING	REV. # DATE



TITLE: BUILDING SECTION
DATE: 04/02/2015
SCALE: AS NOTED
SHEET: **A-501.00**



1 SECTION
SCALE: 3/16" = 1'-0"

PROJECT:

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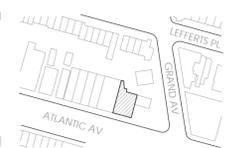
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SITE PLAN



PROJECT No: 1405 BA_929

DOB REVIEW	DATE
04/02/15 <td>02/05/15</td>	02/05/15
DRAWING	REV. # DATE



PAUL GREGORY, R.A.

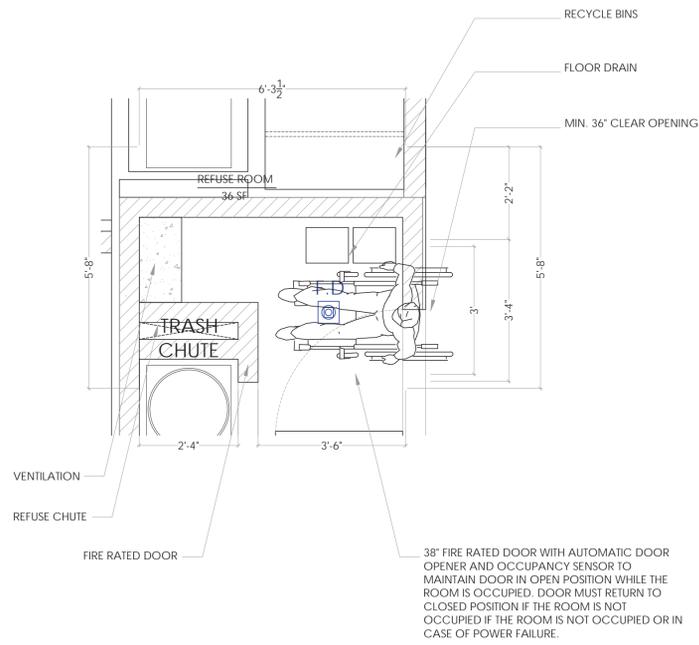
TITLE:

BUILDING SECTION

DATE: 04/02/2015

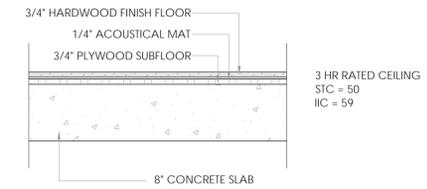
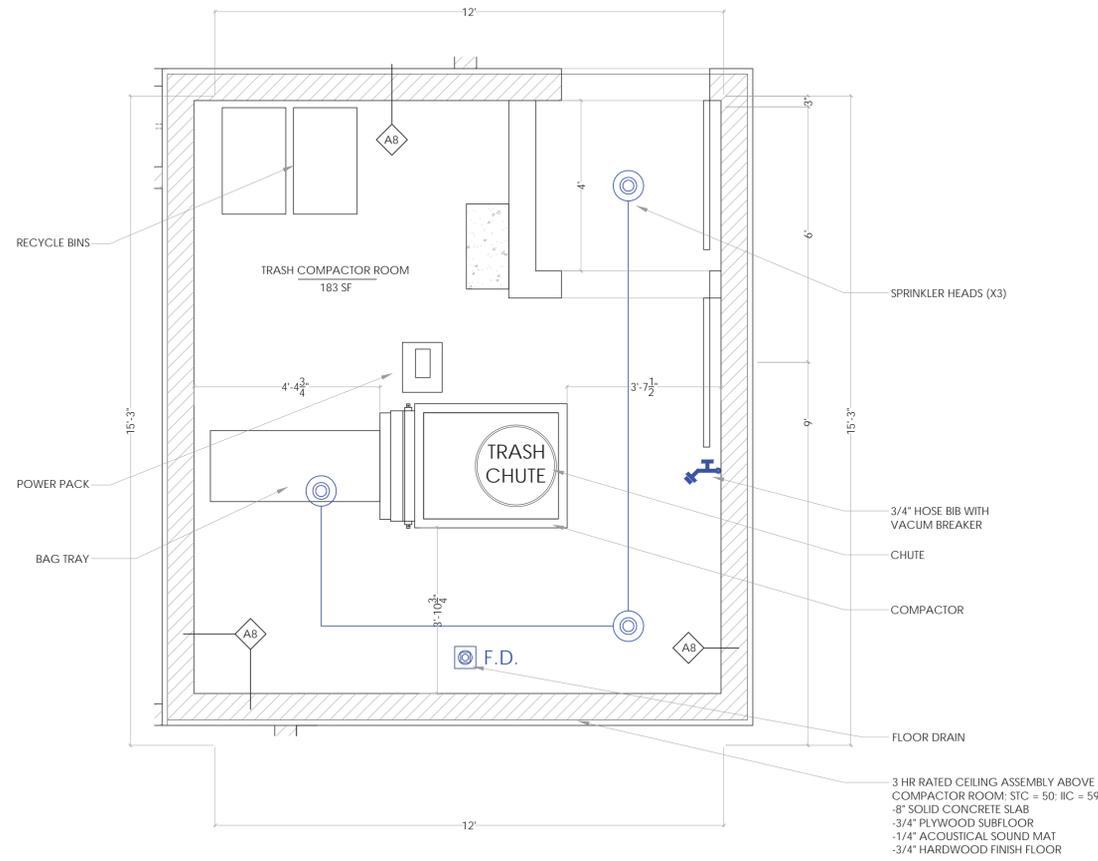
SCALE: AS NOTED

SHEET: **A-502.00**



38" FIRE RATED DOOR WITH AUTOMATIC DOOR OPENER AND OCCUPANCY SENSOR TO MAINTAIN DOOR IN OPEN POSITION WHILE THE ROOM IS OCCUPIED. DOOR MUST RETURN TO CLOSED POSITION IF THE ROOM IS NOT OCCUPIED IF THE ROOM IS NOT OCCUPIED OR IN CASE OF POWER FAILURE.

1 REFUSE ROOM PLAN
SCALE: 1/2" = 1'-0"



2 COMPACTOR ROOM PLAN
SCALE: 1/2" = 1'-0"

3 COMPACTOR ROOM CEILING ASSEMBLY
SCALE: 1" = 1'-0"

PROJECT:

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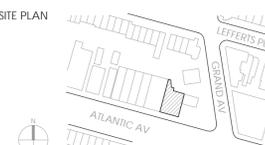
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SITE PLAN



PROJECT No: 1405 BA_929

DOB REVIEW	04/02/15
DOB REVIEW	02/05/15
DRAWING	REV. # DATE



PAUL GREGORY, R.A.

TITLE: REFUSE ROOM & COMPACTOR ROOM DETAILS

DATE: 04/02/2015

SCALE: AS NOTED

SHEET: A-610.00

ATTACHMENT B
CITIZEN PARTICIPATION PLAN

ATTACHMENT B CITIZEN PARTICIPATION PLAN

The NYC Office of Environmental Remediation and Elevation Holdings 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, Elevation Holdings 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, Hannah Moore, 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. Elevation Holdings LLC will inspect the repositories to ensure that they are fully populated with project information. The repository for this project is:

Repository Name: Brooklyn Public Library - Walt Whitman Branch

Repository Address: 93 Saint Edwards Street, Brooklyn NY 11205

Repository Telephone Number: 718-935-0244

Repository Hours of Operation:

Mon	10:00AM - 6:00PM
Tue	10:00 AM - 6:00 PM
Wed	1:00 AM - 8:00 PM
Thu	10:00 AM - 6:00 PM
Fri	10:00 AM - 6:00 PM
Sat	closed
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. The major issues of concern to the public will be potential impacts of nuisance odors and dust during the disturbance of historic fill soils at the Site. This work will be performed in accordance with procedures which will be specified under a detailed Remedial Program which considers and takes preventive measures for exposures to future

residents of the property and those on adjacent properties during construction. Detailed plans to monitor the potential for exposure including a Construction Health and Safety Plan and a Community Air Monitoring Plan are required components of the remedial program. Implementation of these plans will be under the direct oversight of the New York City Department of Environmental Remediation (NYCOER).

These plans will specify the following worker and community health and safety activities during remedial activity at the Site:

- On-Site air monitoring for worker protection,
- Perimeter air monitoring for community protection.

The Health and Safety Plan and the Community Air Monitoring Plan prepared as part of the Remedial Action Work Plan will be available for public review at the document repository.

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 Elevation Holdings LLC, reviewed and approved by OER prior to distribution and mailed by Elevation Holdings LLC. Public comment is solicited in public notices for all work plans developed under the NYC Voluntary Cleanup Program. Final review of all work plans by OER will consider all public comments. Approval will not be granted until the public comment period has been completed.

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

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

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

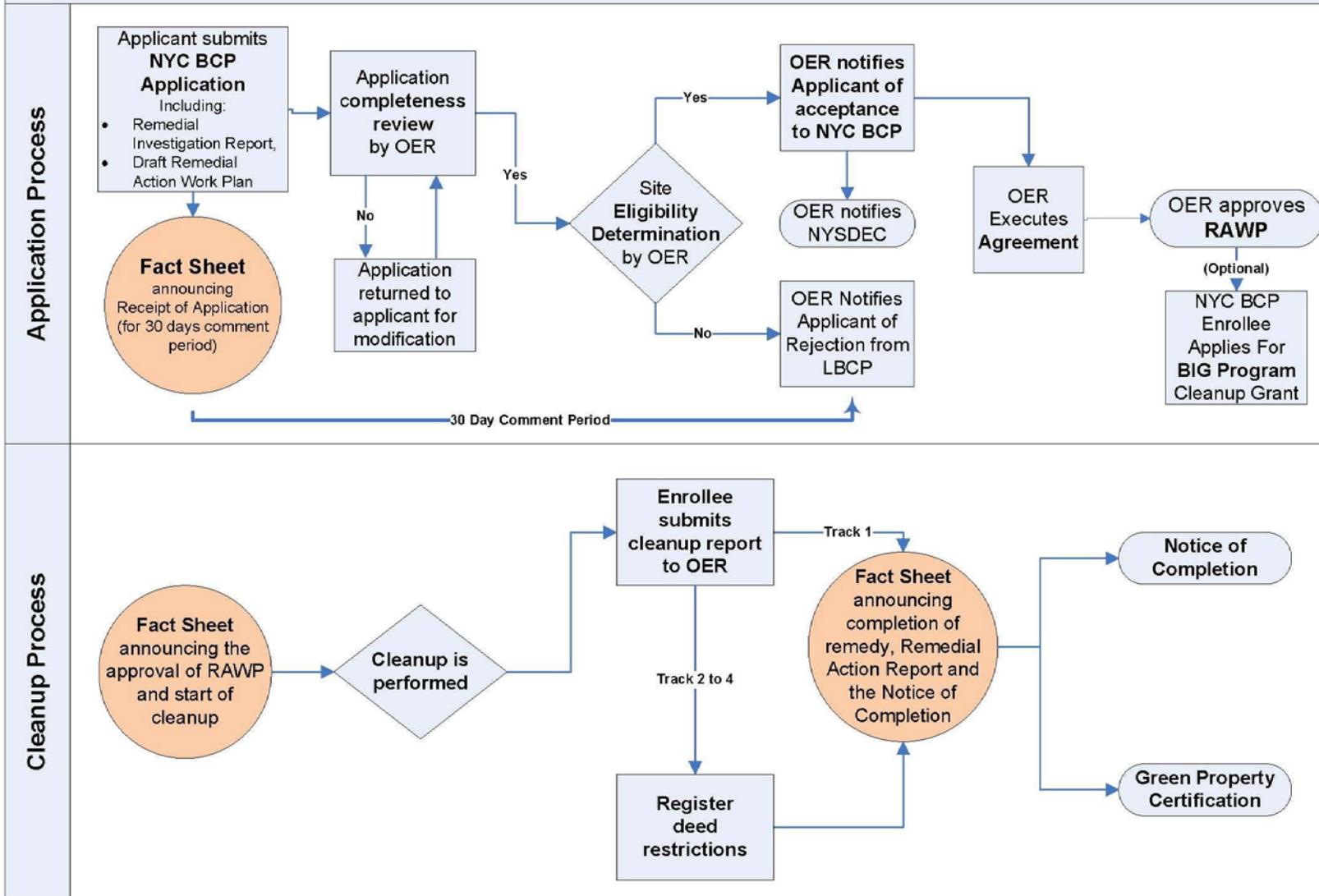
- **Public Notice announcing the approval of the RAWP and the start of remediation**

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

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

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

Flow Chart For NYC Brownfield Cleanup Program (NYC BCP)



ATTACHMENT C
SUSTAINABILITY STATEMENT

ATTACHMENT C SUSTAINABILITY STATEMENT

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

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

This project intends to use recycled concrete aggregate wherever possible in grading and backfilling the Site. An estimate of the quantity (in tons) of clean, non-virgin materials (reported by type of material) reused under this plan will be quantified and reported in the RAR.

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

The project will reduce the consumption of virgin materials by substituting recycled concrete aggregate for mined gravel and/or sand backfill whenever possible. An estimate of the quantity (in tons) of virgin and non-renewable resources, the use of which will be avoided under this plan, will be quantified and reported in the RAR.

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

Recycled concrete materials and other backfill materials will be locally sourced reducing the energy consumption associated with transporting these materials to the Site. Best efforts will be made to quantify energy efficiencies achieved during the remediation and will be reported in the Remedial Action Report (RAR). Where energy savings cannot be easily quantified, a gross indicator of the amount of energy saved or the means by which energy savings was achieved will be reported.

Paperless Voluntary Cleanup Program. Elevation Holdings LLC is participating in OER's Paperless Voluntary Cleanup Program. Under this program, submission of electronic documents will replace submission of hard copies for the review of project documents, communications and milestone reports.

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

ATTACHMENT D
SOIL/MATERIALS MANAGEMENT PLAN

ATTACHMENT D

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; and
- ensure that all egress points for truck and equipment transport from the Site will be kept clean of Site-derived materials during Site remediation.

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

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

1.5 OFF-SITE MATERIALS TRANSPORT

Loaded vehicles leaving the Site will comply with all applicable materials transportation requirements (including appropriate covering, manifests, and placards) in accordance with applicable laws and regulations, including use of licensed haulers in accordance with 6 NYCRR Part 364. If loads contain wet material capable of causing leakage from trucks, truck liners will be used. Queuing of trucks will be performed on-Site, when possible in order to minimize off Site disturbance. Off-Site queuing will be minimized. The outbound truck transport route is shown on Figure 8.

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 Brooklyn, New York under a governmental remediation program. The letter will provide the project identity and the name and phone number of the PE/QEP or Enrollee. The letter will include as an attachment a summary of all chemical data for the material being transported; and (2) a letter from each disposal facility stating it is in receipt of the correspondence (1, above) and is approved to accept the material. These documents will be included in the RAR.

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

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

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

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

1.7 MATERIALS REUSE ON-SITE

Soil and fill that is derived from the property that meets the soil cleanup objectives established in this plan may be reused on-Site. The soil cleanup objectives for on-Site reuse are listed in Table 1. 'Reuse on-Site' means material that is excavated during the remedy or development, does not leave the property, and is relocated within the same property and on comparable soil/fill material, and addressed pursuant to the NYC VCP agreement subject to Engineering and Institutional Controls. The PE/QEP will ensure that reused materials are segregated from other materials to be exported from the Site and that procedures defined for material reuse in this RAWP are followed.

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

1.8 DEMARCATION

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

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

1.9 IMPORT OF BACKFILL SOIL FROM OFF-SITE SOURCES

This Section presents the requirements for imported fill materials to be used below the cover layer and within the clean soil cover layer. All imported soils will meet OER-approved backfill and cover soil quality objectives for this Site. The backfill and cover soil quality objectives are listed in Table 1.

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

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

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

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

Source Screening and Testing

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

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

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

Recycled concrete aggregate (RCA) will be imported from facilities permitted or registered by NYSDEC. Facilities will be identified in the RAR. A PE/QEP is responsible to ensure that the facility is compliant with 6NYCRR Part 360 registration and permitting requirements for the period of acquisition of RCA. RCA imported from compliant facilities will not require additional

testing, unless required by NYSDEC under its terms for operation of the facility. RCA imported to the Site must be derived from recognizable and uncontaminated concrete. RCA material is not acceptable for, and will not be used as cover material.

1.10 FLUIDS MANAGEMENT

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

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

1.11 STORM-WATER POLLUTION PREVENTION

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

Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

1.12 CONTINGENCY PLAN

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

1.13 ODOR, DUST AND NUISANCE CONTROL

Odor Control

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

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

Dust Control

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

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

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

Other Nuisances

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

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

ATTACHMENT E
SITE SPECIFIC HEALTH & SAFETY PLAN

Health and Safety Plan

929-933 Atlantic Avenue
Brooklyn, New York 11238
Block 2018; Lots 54, 55, 56

OER Project Number 15EHA-N004K
E-Designation E-183
CEQR Number 07DCP066K

Prepared for:
Elevation Holdings LLC
308 Malcolm X Boulevard
Brooklyn, NY

Prepared by:
Alpha-Hydro Environmental
1503 Wave Avenue,
Medford, New York 11763

November 2014
Project#:14-1350



Alpha-Hydro Environmental

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ATTACHMENT

1. HOSPITAL DIRECTIONS

2. FACT SHEETS

HEALTH & SAFETY PLAN

1.0 Introduction

The HASP has been prepared in conformance with applicable regulations, safe work practices and the project's requirements. It addresses those activities associated with the installation, sampling of soil and groundwater probes and the infield characterization of soil samples. The Project Manager (PM), Site Safety Officer (SSO) and Alpha-Hydro Environmental field staff will implement the Plan during site work. Compliance with this HASP is required of all persons and third parties who perform fieldwork for this project. Assistance in implementing this HASP can be obtained from Alpha-Hydro's SSO. The content of this HASP may change or undergo revision based upon additional information that is made available to health and safety personnel, monitoring results or changes in the technical scope of work. Any changes proposed must be reviewed by the SSO.

SCOPE OF WORK

The Scope of Work activities will include the following:

- Performance of a geophysical survey
- Advancement of soil probes and installation of soil-gas points

EMERGENCY NUMBERS

	<u>Phone Number</u>
Brooklyn Hospital Center	(718) 250-8000
New York City EMS	911
NYPD	911
NYFD	911
National Response Center	800-424-8802
Poison Information Center	800-562-8816
Chemtree	800-424-9555

Project Management/Health and Safety Personnel

<u>Title</u>	<u>Contact</u>	<u>Cell Phone</u>
President-Technical Operations	David Oloke	(631) 448-1862
Site Safety Officer	Olawale Kenku	(631) 522-7981

Directions to Brooklyn Hospital Center (see attached map Attachment # 1)

Upon leaving the Site, start out going west on Atlantic Avenue toward St. James Place. Turn right onto Clermont Avenue. Turn left onto Dekalb Avenue. Brooklyn Hospital Center is on the right.

1.2 Health and Safety Staff

This section briefly describes the personnel and their health and safety responsibilities:

SENIOR GEOLOGIST - David Oloke

- Has the overall responsibility for the health and safety of site personnel
- Ensures that adequate resources are provided to the field health and safety staff to carry out their responsibilities as outlined below
- Ensures that fieldwork is scheduled with adequate personnel and equipment resources to complete the job safely
- Ensures that adequate telephone communication between field crews and emergency response personnel is maintained
- Ensures that field site personnel are adequately trained and qualified to work at the Site

SITE SAFETY OFFICER – Olawale Kenku

- Directs and coordinates health and safety monitoring activities
- Ensures that field teams utilize proper personal protective equipment (PPE)
- Conducts initial onsite, specific training prior to personnel and/or subcontractors proceeding to work
- Conducts and documents periodic safety briefings; ensures that field team members comply with this HASP
- Completes and maintains Accident/Incident Report Forms
- Notifies Alpha-Hydro corporate administration of all accidents/incidents
- Determines upgrade or downgrade of PPE based on site conditions and/or downgrade of PPE based on site conditions and/or real-time monitoring results
- Ensures that monitoring instruments are calibrated daily or as determined by manufacturer suggested instructions
- Maintains health and safety field log books
- Develops and ensures implementation of the HASP
- Approves revised or new safety protocols for field operations
- Coordinates revisions of this HASP with field personnel and the SSO Division Contracting Officer
- Responsible for the development of new company safety protocols and procedures and resolution of any outstanding safety issues which may arise during the conduction of site work
- Reviews personnel and subcontractors current and up-to-date medical examination and acceptability of health and safety training

FIELD PERSONNEL AND SUBCONTRACTORS (IF ANY)

- Reports any unsafe or potentially hazardous conditions to the SSO.
- Maintains knowledge of the information, instructions and emergency response actions contained in this HASP
- Comply with rules, regulations and procedures as set forth in this HASP and any revisions that are instituted
- Prevents admittance to work sites by unauthorized personnel

1.3 Chemical & Waste Description/Characterization

The following list of chemicals is based on the materials either once stored onsite or believed to be formerly stored onsite:

- Unknown contaminant(s) including VOCs, SVOCs, Pesticides, PCBs and TAL metals (see attachment #2 – Fact Sheets).

The following information references are presented in order to identify the properties and hazards of the materials that may/will be encountered at the Site.

- Dangerous Properties of Industrial Materials - Sax
- Chemical Hazards of the Workplace - Proctor/Hughes
- Condensed Chemical Dictionary - Hawley
- Rapid Guide to Hazardous Chemical in the Workplace - Lewis 1990
- NIOSH Guide to Chemical Hazards - 1990
- ACGIH TLV Values and Biological Exposure Indices - 1991-1992

1.4 Hazard Assessment

The potential hazards associated with planned site activities include chemical, physical and biological hazards. This section discusses those hazards that are anticipated to be encountered during the activities listed in the scope of work.

The potential to encounter chemical hazards is dependent upon the work activity performed (invasive or non-invasive), the duration and location of the work activity. Such hazards could include inhalation or skin contact with chemicals that could cause: dermatitis, skin burn, being overcome by vapors or asphyxiation. In addition, the handling of contaminated materials and chemicals could result in fire and/or explosion.

The potential to encounter physical hazards during site work includes: heat stress, exposure to excessive noise, loss of limbs, being crushed, head injuries, cuts and bruises and other physical hazards due to motor vehicle operation, heavy equipment and power tools.

CHEMICAL HAZARDS

The potential for personnel and subcontractors to come in contact with chemical hazards may occur during the following tasks:

- Installation of soil/groundwater probes
- Removal of any dedicated, contaminated materials during sampling

Exposure Pathways

Exposure to these compounds during ongoing activities may occur through inhalation of contaminated dust particles, inhalation of volatile (VOC) and semi-volatile (SVOC) vapor fume compounds, by way of dermal absorption, and accidental ingestion of the contaminant by either direct or indirect cross contamination activities (eating, smoking, poor hygiene). Indirectly, inhalation of contaminated dust particles (metals, silica, VOCs, SVOCs) can occur during adverse weather conditions (high or changing wind directions) or during operations that may generate airborne dust such as excavation and sampling activities. Dust control measures such as applying water to roadways and work sites will be implemented, where visible dust is generated from non-contaminated and contaminated soils. Where dust control measures are not feasible or effective, respiratory protection will be used.

Additional Precautions

Dermal absorption or skin contact with chemical compounds is possible during invasive activities at the Site, including removal of product, excavation of tanks, and handling of contaminated soils. The use of PPE in accordance with Section 9.2 and strict adherence to proper decontamination procedures should significantly reduce the risk of skin contact.

The potential for accidental ingestion of potentially hazardous chemicals is expected to be remote, when good hygiene practices are used.

PHYSICAL HAZARDS

A variety of physical hazards may be present during Site activities. These hazards are similar to those associated with any construction type project. These physical hazards are due to motor vehicles and heavy equipment operation, the use of improper use of power and hand tools, misuse of pressurized cylinders, walking on objects, tripping over objects, working on surfaces which have the potential to promote falling, mishandling and improper storage of solid and hazardous materials, skin burns, crushing of fingers, toes, limbs, being hit on the head by falling objects or hitting one's head due to not seeing the object of concern, temporary loss of one's hearing and/or eyesight. These hazards are not unique and are generally familiar to most hazardous waste site workers at construction sites. Additional task specific safety requirements will be covered during safety briefings.

Noise

Noise is a potential hazard associated with operation of heavy equipment, power tools, pumps and generators. High noise operators will be evaluated at the discretion of the SSO. Employees with an 8-hour time weighted average exposure exceeding 85 decibels (db) will be included in the hearing conservation program in accordance with 29 CFR 1910.85.

It is mandated that employees working around heavy equipment or using power tools that dispense noise levels exceeding 95 db are to wear hearing protection that shall consist of earplugs and earphones. This is particularly relevant as the jet engines of modern airplanes can give sound level readings of greater than 110 db.

Heat/ Cold Stress

Extremes in temperature and the effects of hard work in impervious clothing can result in heat stress and/or hypothermia. The human body is designed to function at a certain internal temperature. When metabolism or external sources (fire, hot summer day, winter weather, etc.) cause the body temperature to rise or fall excessively, the body seeks to protect itself by triggering cooling/warming mechanisms. Profuse sweating is an example of a cooling mechanism, while uncontrollable shivering is an example of a warming mechanism. The SSO monitor the temperature to determine potential adverse affects the weather can cause on site personnel.

Protective clothing worn to guard against chemical contact effectively stops the evaporation of perspiration. Thus the use of protective clothing increases heat stress problems. Cold stress can easily occur in winter with sub-freezing ambient temperatures. Workers in protective garments may heat-up and sweat, only to rapidly cool once out of the tank and the PPE. The major disorders due to heat stress are heat cramps, heat exhaustion and heat stroke.

HEAT CRAMPS are painful spasms that occur in the skeletal muscles of workers who sweat profusely in the heat and drink large quantities of water, but fail to replace the body's lost salts or electrolytes. Drinking water while continuing to lose salt tends to dilute the body's extra cellular fluids. Soon water seeps by osmosis into active muscles and causes pain. Muscles fatigued from work as usually most susceptible to cramps.

HEAT EXHAUSTION is characterized by extreme weakness or fatigue, dizziness, nausea, and headache. In serious cases, a person may vomit or lose consciousness. The skin is clammy and moist, complexion pale or flushed, and body temperature normal or slightly higher than normal. Treatment is rest in a cool place and replacement of body water lost by perspiration. Mild cases may recover spontaneously with this treatment; severe cases may require care for several days. There are no permanent effects.

HEAT STROKE is a very serious condition caused by the breakdown of the body's heat regulating mechanisms. The skin is very dry and hot with red mottled or bluish appearance. Unconsciousness, mental confusion or convulsions may occur. Without quick and adequate treatment, the result can be death or permanent brain damage. Get medical assistance quickly! As first aid treatment, the person should be moved to a cool place. Soaking the person's clothes with water and fanning them should reduce body heat artificially, but not too rapidly.

Steps that can be taken to reduce heat stress are:

- Acclimatize the body. Allow a period of adjustment to make further heat exposure endurable
- Drink more liquids to replace body water lost during sweating
- Rest is necessary and should be conducted under the monitoring condition from the SSO and the effect personnel physiological state
- Wearing personal cooling devices. There are two basic designs; units with pockets for holding frozen packets and units that circulate a cooling fluid from a reservoir through tubes to different parts of the body. Both designs can be in the form of a vest, jacket or coverall. Some circulating units also have a copy for cooling the head.

Cold temperatures can cause problems. The severe effects are FROSTBITE and HYPOTHERMIA.

FROSTBITE is the most common injury resulting from exposure to cold. The extremities of the body are often affected. The signs of frostbite are:

- The skin turns white or grayish-yellow
- Pain is sometimes felt early but subsides later; often there is no pain
- The affected part feels intensely cold and numb

Shivering, numbness, drowsiness, muscular weakness and a low internal body temperature characterize the condition known as HYPOTHERMIA. This can lead to unconsciousness and death. With both frostbite and hypothermia, the affected areas need to be warmed quickly. Immersing in warm, not hot, water best does this. In such cases medical assistance will be sought.

To prevent these effects from occurring, persons working in the cold should wear adequate clothing and reduce the time spent in the cold area. The field SSO, to determine appropriate time personnel may spend in adverse weather conditions, will monitor this.

Lockout/Tagout

PURPOSE -- This program establishes procedures for de-energizing, isolating and ensuring the energy isolation of equipment and machinery. The program will be used to ensure that equipment and machinery is de-energizing and isolated from unexpected energization by physically locking (Lockout) energy isolation devices or, in the absence of locking capabilities, tagout (Tagout) the device to warn against energization. These procedures will provide the means of achieving the purpose of this program, prevention of injury to Alpha-Hydro employees from the unexpected energization or start-up of equipment and machinery, or from the release of stored energy.

APPLICATION — This program applies to the control of energy during the servicing and/or maintenance of equipment and machinery. This program covers normal operations only if a guard or other safety device is removed or bypassed, or any part of the body is placed into an area of the equipment or machinery where work is performed on the material, or a danger zone exists during the operating cycle. Minor tool changes, adjustments, and other minor servicing activities which take place during normal production operations do not require isolation and lockout/tagout if they are routine and integral to the use of the equipment.

SCOPE -- This program will include all employees whose duties require them to service, install, repair, adjust, lubricate, inspect or perform work on powered equipment or machinery that may also have the potential for stored energy.

PROGRAM RESPONSIBILITIES - The SSO will have the overall responsibility of the program to ensure that; authorized and affected employees receive adequate training and information, the program is evaluated annually, and the lockout/tagout equipment is properly used and the procedures of this program are followed.

The program evaluation will be conducted to ensure that the procedures and requirements of the program are being followed and will be utilized to correct any deviations or inadequacies that may be discovered. The evaluation will consist of one or more inspections or audits of actual lockout/tagout procedures being used to isolate equipment. A review of the authorized and affected employee's responsibilities will be conducted at the time of the inspection /audit. Any authorized employee, except the one(s) utilizing the energy isolation procedure being inspected, may perform the inspection/audit.

A record will be maintained of program evaluation inspections and will include:

1. The identity of the equipment or machine on which energy control procedures were being utilized
2. The date(s) of the inspection(s)
3. The employee(s) included in the inspection(s)
4. The person performing the inspection

Authorized employees (persons who implement lockout/tagout procedures) will be responsible for following the procedures established by this program.

Affected employees are responsible for understanding the significance of a lockout/tagout device and the prohibition relating to attempts to restart or re-energize equipment or machinery that is locked out or tagged out.

TRAINING - Where applicable, Alpha-Hydro employees will be provided instruction in the purpose and functions of the energy control program to ensure that they understand the significance of locked or tagged out equipment and also have the knowledge and skill to correctly apply and remove energy controls. Training will include:

The recognition of applicable hazardous energy source(s), the type and magnitude of energy available, and the policies and procedures of the Alpha-Hydro energy control program.

1. Affected employees will be made aware of the purpose and use of energy control procedures and the prohibition relating to attempts to remove lockout or tagout devices
2. Instruction in the limitations of tagout as a sole means of energy control
 - a. Tags are warning devices and do not provide the physical restraint that a lock would
 - b. Tags may provide a false sense of security
 - c. Tags may become detached during use

Initial training will be provided during to energy control program implementation, when new employees are hired or when job responsibilities change to include utilization of energy control procedures.

Retraining will be conducted whenever there is a change in job assignments that require the employee to utilize energy control procedures, a change in equipment that presents a new *hazard*, a change in the energy control procedures or when the program evaluation identifies inadequacies in the energy control program procedures.

Records of employee training will be maintained and will include the employee's name and date(s) of training.

STANDARD OPERATING PROCEDURES - Where necessary, Alpha-Hydro will provide the necessary devices to effectively lockout or tagout energy isolating devices. Lockout/tagout devices will be the only devices used for controlling energy and shall not be used for other purposes. Any device used for lockout/tagout will be capable of withstanding the environment to which they are exposed for the maximum period they are to be exposed. The devices will be substantial enough to prevent removal without excessive force. Excessive force for a locking device would be bolt cutters or other metal cuttings tools. Tagout devices will be attached by a non-reusable method, attachable by hand, and very difficult to remove by hand. A nylon cable tie or equivalent will be used.

Lockout/tagout devices will indicate the identity of the employee who applied the device, and the tagout device will warn against the hazards if the equipment is energized.

Lockout is the preferred method of energy isolation. When physical lockout is not possible, the energy isolation will be tagged out of service with a warning tag attached at the power source. In the case of plug-in power source, the tag will be attached at the male plug. To ensure full employee protection using tagout instead of lockout, additional steps should be taken to guard

against accidental or inadvertent energization. These steps may include, where applicable: removal of effuses, blocking switches, removal of a valve handle.

STANDARD OPERATING PROCEDURES

I. APPLICATION OF CONTROLS

A. Preparing to Shut Down Equipment

1. Prior to equipment shutdown, the authorized employee(s) must have knowledge of:
 - a. The type(s) and magnitude of power
 - b. The hazards of the energy to be controlled
 - c. The method(s) to control the energy
 - d. The location and identity of all isolating devices that control or feed the equipment to be locked/tagged out
2. Notify all affected employees that the lockout/tagout system will be in effect
3. Assemble applicable lockout/tagout devices, i.e., padlocks, tags, multiple lock hasps,

B. Equipment Shutdown and Isolation

1. If equipment is in operation, shut it down by the normal stopping procedure (stop button, switch)
2. Operate disconnects, switches, valves, or other energy isolating devices so that the equipment is de-energizing and isolated from its energy source(s)
3. Verify that equipment is shut down by operating equipment from the normal operating location and any remote locations

C. Installation of Lockout/Tagout Device, Release of Stored Energy, and Verification

1. Attach individually assigned lock(s) or tag(s) to energy isolating device(s). Where it is not possible to lock a switch, valve or other isolating device, electrical fuses must be removed, blank flanges installed in piping, lines disconnected, or other suitable methods used to ensure that equipment is isolated from energy sources. A tag must be installed at the point of power interruption to warn against energizing.
 - a. Each lock or tag must positively identify the person who applied it and locks must be individually keyed
 - b. If more than one person is involved in the task, employees will place their own lock and tag. Multiple lock hasps are available for this
2. Release, restrain, or dissipate stored energy such as spring tension, elevated machine members, rotating flywheels, hydraulic pressure, pistons and air, gas, steam, water pressure, etc. by repositioning, blocking bleeding, or other suitable means
3. Prior to starting work on equipment and after ensuring that no personnel are exposed, the authorized employee will verify that isolation and de-energization have been accomplished by:
 - a. Attempting, through normal effort, to operate energy isolating devices such as switches, valves, or circuit breaker with locks or tags installed
 - b. Attempting to operate the equipment or machinery that is locked or tagged out. This includes all sources of energy, i.e. electrical, hydraulic, gravity, air, water, steam pressure, etc.
 - c. Verifying the presence and effectiveness of restraint (blocking) and energy dissipation or release (bleeding)
4. If there is a possibility of the re-accumulation of stored energy to a hazardous level, verification of isolation will be contained until the servicing or maintenance is completed, or until the possibility of such accumulation no longer exists

D. Group Lockout/Tagout

1. When more than one individual is involved in locking or tagging equipment out of operation, each individual will attach their individual lock or tag, or the equivalent, to the energy isolating device(s).
 - a. An equivalent lockout device may be in the form of a group lockout device such as a multiple lock hasp or lock box
 - b. Primary responsibility for a group of authorized employees working under a group lockout device will be vested in a designated authorized employee

- c. Group lockout methods will provide a level of protection equal to that afforded by a personal lockout/tagout device

II. RETURNING EQUIPMENT TO SERVICE

A. Restore Equipment to Normal Operating Status

1. Re-install all parts or subassemblies removed for servicing or maintenance
2. Re-install all tools, rests, or other operating devices
3. Re-install all guards and protective devices (i.e. limit switches)
4. Remove all blocks, wedges, or other restraints from the operating area of the equipment (ways, slides, etc.)
5. Remove all tools, equipment, and shop towels from the operating area of the equipment.

B. Verify Equipment Ready for Operation

1. Inspect area for non-essential items
2. Ensure that all employees are safely positioned clear of the operating areas of the equipment. Post a watch if energy isolation devices are not in line of sight of the equipment.

C. Notify Affected Employees of Impending Start-up

1. The sudden noise of start-up may startle nearby employees
2. Equipment may need to be tested to determine operational safety by a qualified operator.

D. Remove Energy Isolation Devices - Only by authorized employee(s) who installed it/them.

1. Remove line blanks, reconnect piping (if applicable), and remove warning tag
2. Close bleeder valves, remove warning tag
3. Replace fuse(s), close circuit breaker(s) and remove warning tag
4. Remove lock and tag from control panel, valve, etc

Employee(s) who installed them may make an exception for removal of lockout/tagout devices. If it is necessary to operate a piece of equipment that is locked/tagged out, every effort must be made to locate the employee whose lock or tag is on the equipment. If he or she cannot be located and only after positive assurance is made that no one is working on the locked out equipment, the supervisor may personally remove the lock. The supervisor must assure that the equipment is once again locked out, or the employee notified that the equipment has been reenergized, before the employee resumes work. Employees will recheck locked out equipment if they have left the equipment (breaks, lunch, and end of shift) to make sure it is still de-energized and locked out.

III. TEMPORARY REMOVAL OF LOCKOUT/TAGOUT PROTECTION

A. In situations when the equipment must be temporarily energized to test or position the equipment or its components, the following steps will be followed:

1. Clear the equipment of tools and materials that are non-essential to the operation
2. Ensure the equipment components are operationally intact
3. Remove employees from the equipment area
4. Remove the lockout/tagout devices by the employee who installed in/them
5. Energize and proceed with testing or positioning
6. De-energize all systems and re-install all energy control measures
7. Verify re-installed energy control measures are effective

IV. SHIFT OR PERSONNEL CHANGES

A. The following steps will be followed to ensure continuity of employee protection during personnel changes.

1. All personnel involved in the maintenance or servicing activity will be notified that a transfer of personal locks/tags is about to occur
2. Clear all personnel from hazardous area(s) of equipment
3. Under the supervision of the shift supervisor or group designee, the off-going employee will immediately install theirs.
 - a. If an entire group or more than one employee will be transferring work responsibility, locks/tags will be removed and replaced one at a time in order of installation
4. When the transfer of lockout/tagout devices is complete, the effectiveness of all energy isolation devices will be verified to the satisfaction of all personnel involved
5. Once the effectiveness of energy isolation protection is confirmed, the service/maintenance operation may continue

V. CONTRACTOR NOTIFICATION

- A. Whenever outside personnel may be engaged in activities covered by this program, they will inform the contractor of applicable lockout/tagout procedures used to protect Alpha-Hydro employees from the hazards of working near energized equipment.
 1. The contractor will be expected to ensure that his/her employees understand and comply with the restrictions and prohibitions of this program
 2. Alpha-Hydro requires, under these circumstances, the contractor to inform us of their lockout/tagout procedures so that Alpha-Hydro employees can comply with the restrictions and prohibitions of the contractor's program
 3. Alpha-Hydro also requires the contractor to notify the program administrator, the area supervisor, and affected Alpha-Hydro employees prior to de-energizing, isolating and locking out Alpha-Hydro equipment. Conversely, notification is also required when this equipment will be returned to service

DEFINITIONS

Affected employee - An employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.

Authorized employee (s) - A person or persons who locks or implements a tagout system procedure to perform servicing or maintenance on a machine or equipment. An authorized employee and an affected employee may be the same person when the affected employee's duties also include performing maintenance or service on a machine or equipment that must be locked or tagged out.

"Capable of being locked out" - An energy isolating device will be considered to be capable of being locked out either if it is designed with a hasp or other attachment or integral part to which, or through which, a lock can be affixed, or if it has a locking mechanism built into it. Other energy isolating devices will also be considered to be capable of being locked out, if lockout can be achieved without the need to dismantle, rebuild, or replace the energy-isolating device or permanently alter its energy control capability.

Energized - Connected to an energy source or containing residual or stored energy.

Energy isolating device - A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: a manually operated electrical circuit breaker; a disconnect switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors and, in addition, no pole can be operated independently; a slide gate; a slip blind; a line valve; a block; and any similar device used to block or isolate energy. The term does not include a push button, selector switch, and other control circuit type devices.

Energy source - any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal or other type of energy.

Lockout - The placement of lockout device on an energy-isolating device, in accordance with an established procedure, is ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

Lockout device - A device that utilizes positive means such as a lock, either key or combination type, to hold an energy isolating device in the safety position and prevent the energizing of a machine or equipment.

Normal production operations - The utilization of a machine or equipment to perform its intended production function.

Servicing and/or maintenance - Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or unjamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the unexpected energization or startup of the equipment or release of hazardous energy.

Setting up - Any work performed to prepare a machine or equipment to perform its normal production operation.

Stored energy - Energy that is available and may cause movement even after energy sources have been isolated. Stored energy may be in the form of compressed springs, elevated equipment components, hydraulic oil pressure, pressurized water, air, steam, or gas, or rotating flywheels, shafts or cams.

Tagout - The placement of a tagout device on an energy-isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

Tagout device - A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

GENERAL MACHINERY AND EQUIPMENT LIST

EQUIPMENT/LOCATION	ENERGY SOURCES/LOCATION
A. Geoprobe Probing Machine	Diesel Engine
B. Ground-Penetrating Radar Machine	Internal Lithium battery.

1.5 Training

GENERAL HEALTH AND SAFETY TRAINING

In accordance with Alpha-Hydro corporate policy, and pursuant to 29 CFR 1910.120, hazardous waste site workers shall, at the time of job assignment, have received a minimum of 40 hours of initial health and safety training for hazardous waste site operations. As a minimum, the training shall have consisted of instruction in the topics outlined in the above reference. Personnel who have not met the requirements for initial training will not be allowed to work in any site activities in which they may be exposed to hazards (chemical or physical).

Completion of the Alpha-Hydro Health and Safety Training Course for Hazardous Waste Operations or an approved equivalent will fulfill the requirements of this section. In addition to the required initial training, each employee shall have received three (3) days of directly supervised on-the-job training. This training will address the duties the employees are expected to perform.

Alpha-Hydro SSO has the responsibility of ensuring that personnel assigned to this project comply with these requirements. Written certification of completion of the required training will be provided to the SSO.

MANAGER/SUPERVISOR TRAINING

In accordance with 29 CFR 1910.120, onsite management and supervisors who will be directly responsible for, or who supervise employees engaged in hazardous waste operation shall receive training as required in this HASP and at least eight (8) additional hours of specialized training on managing such operations at the time of job assignment.

ANNUAL 8-HOUR REFRESHER TRAINING

Annual 8-hour refresher training will be required of all hazardous waste site field personnel in order to maintain their qualification for fieldwork. The following topics will be reviewed: toxicology, respiratory protection, including air purifying devices and self-contained breathing apparatus (SCBA), medical surveillance, decontamination procedures and personnel protective clothing. In addition, topics deemed necessary by the SSO may be added to the above list.

SITE SPECIFIC TRAINING

Prior to commencement of field activities, all personnel assigned to the project will be provided training that will specifically address the activities, procedures, monitoring and equipment for the site operations. It will include Site and facility layout, hazards, and emergency services at the Site, and will highlight all provisions contained within this HASP. This training will also allow field workers to clarify anything they do not understand and to reinforce their responsibilities regarding safety and operations for their particular activity.

ONSITE SAFETY BRIEFINGS

Project personnel and visitors will be given periodic onsite health and safety briefings by the SSO, or their designee, to assist site personnel in safely conducting their work activities. The briefings will include information on new operations to be conducted, changes in work practices or changes in the Site's environmental conditions. 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 audits.

ADDITIONAL TRAINING

Additional training may be required by the SSO for participation in certain field tasks during the course of the project. Such additional training could be in the safe operation of heavy or power tool equipment or hazard communication training.

SUBCONTRACTOR TRAINING

Subcontractor personnel who work onsite occasionally for a specific limited task and who are unlikely to be exposed over permissible exposure limits, may be exempted from the initial 40-hour training requirement. The SSO will determine if this exemption is allowed. In any case, the subcontractor personnel who are exposed to hazards are not exempted from the 40-hours training requirement nor medical surveillance requirements found in Section 8.1.

1.6 Medical Surveillance

GENERAL

All contractor and subcontractor personnel performing field work at the Site are required to have passed a complete medical surveillance examination in accordance with 29 CFR 1910.120 (f). A physician's medical release for work will be confirmed by the SSO before an employee can begin site activities. Such examinations shall include a statement as to the worker's present health status, the ability to work in a hazardous environment (including any required PPE which may be used during temperature extremes), and the worker's ability to wear respiratory protection.

A medical data sheet will be completed by all onsite personnel and kept at the Site. Where possible, this medical data sheet will accompany the personnel needing medical assistance or transport to hospital facilities.

MEDICAL SURVEILLANCE PROTOCOL

The medical surveillance protocol to be implemented is the occupational physicians' responsibility, but shall meet the requirements of CFR 1910.120 and ANSI Z88.2 (1980). The medical surveillance protocol shall, as a minimum, cover the following:

- a. Medical and Occupational History
- b. General physical examination (including evaluation of major organ system)
- c. Serum lead and ZPP
- d. Chest X-ray (performed no more frequently than every four years, except when otherwise indicated).
- e. Pulmonary Function Testing (FVC and FEV1.0).
- f. Ability to wear respirator
- g. Audiometric testing.

Additional clinical tests may be included at the discretion of the occupational physician.

1.7 Site Control, PPE & Communications

SITE CONTROL

A Support Zone (SZ) is an uncontaminated area that will be the field support area for most operations. The SZ provides for field team communications and staging for emergency response. Appropriate sanitary facilities and safety equipment will be located in this zone. Potentially contaminated personnel or materials are not allowed in this zone. The only exception will be appropriately packaged/decontaminated and labeled samples. A contamination reduction corridor will be established. This is the route of entry and egress to the Site, and it provides an area for decontamination of personnel and portable equipment as well.

The area where contamination exists is considered to be the Exclusion Zone (EZ). All areas where excavation and handling of contaminated materials take place are considered the EZ. This zone will be clearly delineated by cones, tape or other means. The SSO may establish more than one EZ where different levels of protection may be employed or where different hazards exist. Personnel are not allowed in the EZ without:

- A buddy
- Appropriate personal protective equipment
- Medical authorization
- Training certification

PERSONAL PROTECTIVE EQUIPMENT

GENERAL

The level of protection worn by field personnel will be enforced by the SSO. Levels of protection for general operations are provided below and are defined in this section. Levels of protection may be upgraded or downgraded at the discretion of the SSO. The decision shall be based on real-time air monitoring, site history data, and prior site experience. Any changes in the level of protection shall be recorded in the health and safety field logbook.

PERSONAL PROTECTIVE EQUIPMENT SPECIFICATIONS

For tasks requiring Level B PPE, the following equipment shall be used:

- Cotton or disposable coveralls
- Chemical protective suit (e.g. Saran-coated Tyvek®)
- Gloves, inner (latex)
- Gloves, outer (Nitrile®)
- Boots (PVC), steel toe/shank

- Boot Covers (as needed)
- Hard Hat
- Hearing protection (as needed)

For tasks requiring Level C PPE, the following equipment shall be used:

- Cotton or disposable coveralls
- Disposable outer coveralls (Poly-coated Tyvek)
- Gloves, inner (latex)
- Gloves, outer (Nitrile®)
- Boots (PVC), steel toe/shank
- Boot covers (as needed)
- Hard Hat
- Hearing protection (as needed)
- Splash suit and face shield for decontamination operations (as needed)

For tasks requiring Level D PPE, the following equipment shall be used:

- Cotton or disposable coveralls
- Gloves, inner (latex)
- Gloves, outer (Nitrile®)
- Boots (PVC) steel toe/shank
- Boot covers (as needed)
- Hard hat
- Hearing protection (as needed)
- Safety glasses

For tasks requiring respiratory protection, the following equipment shall be used:

Level D - No respiratory protective equipment necessary except for a dust mask. Level C -

A full-face air-purifying respirator equipped with organic vapor/pesticide-HEPA cartridges.

Level B - An air line respirator or a self-contained breathing apparatus (SCBA)

INITIAL LEVELS OF PROTECTION

Levels of protection for the activities may be upgraded or downgraded depending on direct-reading instruments or personnel monitoring. The following are the initial levels of protection that shall be used for each planned field activity.

LEVEL OF PERSONAL PROTECTIVE EQUIPMENT REQUIRED

Activity	Level of Protection Respiratory/PPE
Drilling/Coring	C/D
Sampling	C/D
Ground Penetrating Radar	C/D

COMMUNICATIONS

Communications is the ability to talk with others. While working in Level C/B Protection, personnel may find that communication become a more difficult task and process to accomplish. This is further complicated by distance and space. In order to address this problem, electronic instruments, mechanical devices or hand signals will be used as follows:

- Walkie-Talkies - Hand held radios would be utilized as much as possible by field teams for communication between downrange operations and the Command Post base station.
- Telephones - A mobile telephone will be located in the Command Post vehicle in the Support Zone for communication with emergency support services/facilities. If a telephone is demobilized, the nearest public phones will be identified.
- Air Horns - A member of the downrange field team will carry an air horn and another will be evident in the Support Zone to alert field personnel to an emergency situation.
- Hand Signals - Members of the field team along with use of the buddy system will employ this communication method. Signals become especially important when in the vicinity of heavy moving equipment and when using Level B respiratory equipment. The signals shall become familiar to the entire field team before site operations commence and they will be reinforced and reviewed during site-specific training.

HAND SIGNALS FOR ON-SITE COMMUNICATION

Signal	Meaning
Hand gripping throat	Out of air, can't breathe
Grip partners' wrist	Leave area immediately; no debate
Hands on top of head	Need assistance
Thumbs up	OK, I'm all right; I understand
Thumps down	No; Negative, unable to understand you. I'm not all right

1.8 Air Monitoring Plan

GENERAL

Continuous air monitoring in the EZ during invasive tasks will accompany site operations, as indicated in this HASP or as required by the SSO. Monitoring will be performed to verify the adequacy of respiratory protection, to aid in site layout and to document work exposure. All monitoring instruments shall be operated by qualified personnel only and will be calibrated daily prior to use, or more often as necessary.

REAL-TIME MONITORING

INSTRUMENTATION

At least one (1) of the following monitoring instruments will be available for use during field operations as necessary:

- Photoionization Detector (PID), Rae Instruments with 10.2 EV probe or equivalent
- Flame Ionization Detector (FID), Foxboro Model 128 or equivalent
- Combustible Gas Indicator (CGI)/Oxygen (O₂) Meter, MSA or equivalent.

A FID or PID shall be used to monitor the organic vapor concentrations in active work areas. Organic vapor concentrations shall be measured upwind of the work areas to determine background concentrations. The SSO will interpret monitoring results using professional judgment. The PPE utilized shall always be the most protective, thus the action level criteria are flexible guidelines.

A CGI/O₂ meter shall be used to monitor for combustible gases and oxygen content in the boreholes during drilling activities.

Calibration records shall be documented, and included in the health and safety logbook or instrument calibration logbook. All instruments shall be calibrated before and after each daily use in accordance with the manufacturers' procedures.

ACTION LEVELS

Action levels for upgrading of PPE in this HASP will apply to all site work during the duration of field activities at the Site. Action levels are for unknown contaminants using direct reading in the Breathing Zone (BZ) for organic vapors and dusts, and at the source for combustible gases.

MONITORING DURING FIELD ACTIVITIES

Alpha-Hydro shall perform real time air monitoring prior to the commencement of work to establish baseline conditions. Baseline conditions will be established at the approximate center of the Site and at the perimeter of the Site both upwind and downwind.

During all work activities real time monitoring will occur. As necessary, Alpha-Hydro shall have at each applicable workstation a PID, explosimeter and oxygen deficiency meter. The real time monitoring for remedial activities will be conducted approximating the Breathing Zone of the workers. The monitoring will be continuous during working operations.

The air monitoring instrument may indicate that personnel working in the exclusion zone increase their level of protection. All personnel will be trained in the action levels. When conditions warrant an increase in protection, all personnel will stop working and immediately leave the exclusion zone. They will then don the appropriate safety equipment necessary and return to their current workstation. All of this activity will be monitored by the SSO. The SSO will keep the Alpha-Hydro Project Manager aware of any extraordinary situations and conditions that may occur. Working conditions and monitoring levels will be noted in the Field Notebook along with the time, date and page number. Verbal reports will be given to the Project Manager when there is a change in the PPE level.

The previous day's results shall be reviewed each morning to determine what actions are necessary and the general conditions resulting from and around the Site.

The record keeping will include:

- Date & Time of Monitoring
- Air Monitoring Location
- Instrument, Model #, Serial #
- Calibration/Background Levels
- Results of Monitoring
- SSO Signature
- Comments

Excavation Operations - Monitoring will be performed continuously during all excavation and demolition operations. A PID and/or FID shall be utilized to monitor the breathing zone, the excavated area and any material taken from the excavation. A CGI/O₂ meter shall be used to monitor the excavation for the presence of combustible gases.

ACTION LEVELS OF AIRBORNE CONTAMINANTS

<u>Instrument</u>	<u>Action Level</u>	<u>Action to be Taken</u>
FID/PID	< 100 ppm, for a 15-minute average	Stop work & initiate vapor control
	> 100 ppm, for a 15-minute average	Stop work & initiate evacuation procedure
CGI	10%LEL	Stop work, initiate ventilating
	50% LEL	Stop work, initiate evacuation procedure and contact fire dept.

PERSONNEL MONITORING PROCEDURE

The Site SSO, concurrent with activities that may generate the contaminants in excess of OSHA PEL's, may perform assessment and evaluation of field personnel exposures to airborne contaminants.

Procedures to be followed include:

The SSO may select high-risk individuals who may be subject to contaminant exposure based on job assignment.

The Personal Sampling is being conducted to determine the proper levels of respiratory protection required, to document potential exposures to compounds, and to assure compliance with OSHA standards. Therefore, it is important that the data collected be from "worst case" locations and personnel.

For example: when work is being conducted to excavate at an underground tank location, those persons closest to the excavation and most intimately involved with the work should be sampled. If a backhoe operator solely conducted the excavation, then that employee should be monitored. However, if there are additional workers who must enter the excavation and work with the freshly excavated soil, these persons would be closer to the potential contaminants and they should be sampled.

To meet the intent of the sampling will require sampling at periods of the most disturbances. To be accurate in determining potential exposures, as many tasks/trades shall be sampled as possible during the course of this project. At completion of the project, a goal of 20% of all workers who must perform their duties in or around the contaminated soil, tanks and excavations is sought. All sampling data must be provided in writing to the employees within three (3) days of receipt of results by Alpha-Hydro.

Air sampling pumps used to collect employee exposure samples shall be calibrated before and after use each day. Calibration shall be accomplished using a primary standard calibration system, e.g. the bubble tube method. Results of the calibrations shall be included in the health and safety field logbook and with the exposure report.

Chemical analysis of samples collected for assessment of employee exposures shall be performed in accordance with NIOSH or OSHA analytical methods only by laboratories accredited by the American Industrial Hygiene Association.

Results of the personal exposure assessment shall be provided to the individual, in writing within fifteen (15) working days after receipt of laboratory reports. Reports to field personnel shall provide calculated time-weighted average exposures and shall provide comparative information relative to established permissible exposure limits. The air sampling data sheet and laboratory report is considered a part of the employee exposure report. A copy of the employee personal exposure assessment report shall also be included in the project file and the employees' medical record for Alpha-Hydro employees. Reports for subcontractor employees will be sent directly to the subcontractors' employer.

AIR MONITORING REPORTS

Air Monitoring Reports will be completed by the SSO and/or authorized personnel and submitted to the Project Manager in the daily safety logs and will include the following:

- Date of monitoring
- Equipment utilized for air monitoring
- Real-time air monitoring results from each work location
- Calibration method of equipment and results

1.9 Safety Considerations

GENERAL

In addition to the specific requirements of this HASP, common sense should be used at all times. The general safety rules and practices below will be in effect at the Site at the discretion of the Project Manager, SSO or other authorized personnel.

- The Site will be suitably marked or barricaded as necessary to prevent unauthorized visitors but not hinder emergency services if needed.
- As needed, all open holes, trenches and obstacles will be properly barricaded in accordance with local site requirements. These requirements will be determined by proximity to traffic ways, both pedestrian and vehicular, and site of the hole, trench or obstacle. If holes are required to be left open during non-working hours, they will be adequately decked over or barricaded and sufficiently lighted.
- Before any digging or boring operations are conducted, underground utility locations will be identified. All boring, excavation and other site work will be planned and performed with consideration for underground lines. Any excavation work will be performed in accordance with Alpha-Hydro's Standard Operating Procedures for Excavations.
- Either workers or other people will enact dust-mitigating procedures when there exists the potential for the inhalation of dust particles.
- The act of smoking and ignition sources in the vicinity of potentially flammable or contaminated material is strictly prohibited.
- Drilling, boring, and use of cranes and drilling rigs, erection of towers, movement of vehicles and equipment and other activities will be planned and performed with consideration for the location, height, and relative position of aboveground utilities and fixtures, including signs; canopies; building and other structures and construction; and natural features such as trees, boulders, bodies of water, and terrain.
- When working in areas where flammable vapors may be present, particular care shall be exercised with tools and equipment that may be sources of ignition. All tools and equipment provided must be properly bonded and/or grounded. Metal buttons and zippers are prohibited on safety clothing for areas that may contain a flammable or explosive atmosphere.
- Approved and appropriate safety equipment (as specified in this HASP), such as eye protection, hard hats, foot protection, and respirators, must be worn in areas where required. In addition, eye protection must be worn when sampling soil or water that may be contaminated.
- Beards interfere with respirator fit and are not allowed within the site boundaries because all site personnel may be called upon to use respirator protection in some situations.
- No smoking, eating, chewing tobacco, gum chewing or drinking will be allowed in the contaminated areas.
- Contaminated tools and hands must be kept away from the face.
- Personnel must use personal hygiene safe guards (washing up) at the end of the shift or as soon as possible after leaving the Site.
- Each sample must be treated and handled as though it were contaminated.
- Persons with long hair and/or loose fitting clothing that could become entangled in power equipment must take adequate precautions.
- Horseplay is prohibited in the work area.
- Work while under the influence of intoxicants, narcotics or controlled substances is prohibited.

POSTED SIGNS

Posted danger signs will be used where an immediate hazard exists. Caution signs will be posted to warn against potential hazards and to caution against unsafe practices. Traffic control methods and barricades will be used as needed. Wooden stakes and flagging tape, or equally effective material will be used to demarcate all restricted areas.

Other postings may include the OSHA poster, emergency hospital route and telephone numbers of contact personnel.

INVASIVE OPERATIONS

The SSO will be present onsite during all invasive work (e.g. demolition, excavations). The SSO will ensure that appropriate monitoring; levels of protection and safety procedures are followed. No personnel will enter any excavations for any reasons. All personnel will stay at least 10 feet back from the edge of the excavation and out of the swing radius of the backhoe. No drums or other potential sources will be sampled or removed during this phase without further additions to the HASP.

The possibility of the presence of underground conduits or vessels containing materials under pressure will also be investigated prior to invasive operations. Properly sized containment systems will be utilized and consideration of the potential volume of liquid or waste released during operations will be discussed with members of the field team to minimize the potential for spills and provide a method for collection of waste materials. Emergency evacuation procedures and the location of safety equipment will be established prior to start up operations. The use of protective clothing, especially hard hats, boots, and gloves will be required during drilling and other heavy equipment work.

SOIL, GROUNDWATER AND LIQUID WASTE SAMPLING

Personnel must wear prescribed protective clothing and equipment including eye protection, chemical resistant gloves and splash aprons (where appropriate) when sampling solids and liquids. Sample bottles are to be bagged prior to sampling to ease decontamination. Personnel must be aware of the location of emergency equipment, including spill containment materials prior to sampling. Personnel are to practice contamination avoidance at all times, as well as to utilize the buddy system and maintain communications with the Command Post. In some situations, such as sampling groundwater wells, additional monitoring may be needed to confirm or establish the proper level of protection before the sampling team can proceed.

SAMPLE HANDLING

Personnel responsible for the handling of samples will wear the prescribed level of protection. Samples are to be identified as to their hazard and packaged as to prevent spillage or breakage. Any unusual sample conditions shall be noted. Laboratory personnel and all field personnel shall be advised of sample *hazard levels* and the potential contaminants present. This can be accomplished by a phone call to the lab coordinator and/or including a written statement with the samples reviewing lab safety procedures in handling in order to assure that the practices are appropriate for the suspected contaminants in the sample.

HEAVY EQUIPMENT DECONTAMINATION

Personnel steam cleaning heavy equipment shall use the prescribed level of protection and adhere to the buddy system. Initially this task usually employs level C. The heavy equipment decontamination shall be restricted to authorized personnel only. Special consideration will be given to wind speed and direction. Downwind areas are to be kept free of personnel to avoid unnecessary exposure to potential airborne contamination.

ADDITIONAL SAFETY CONSIDERATIONS

No other additional safety considerations at this time.

1.10 Decontamination and Disposal Procedures

CONTAMINATION PREVENTION

One of the most important aspects of decontamination is the prevention of contamination. Good contamination prevention should minimize worker exposure and help ensure valid sample results by precluding cross-contamination. Procedures for contamination avoidance include:

Personnel:

Do not walk through areas of obvious or known contamination
Do not directly handle or touch contaminated materials
Make sure that there are no cuts or tears on PPE.
Fasten all closures in suits; cover with tape if necessary
Particular care should be taken to prevent any skin injuries
Stay upwind of airborne contaminants
Do not carry cigarettes, cosmetics, gum, etc. into contaminated areas.

Sampling and Monitoring:

When required by the SSO, cover instruments with clear plastic, leaving openings for sampling ports. Bag sample containers prior to emplacement of sample material.

Heavy Equipment:

Care should be taken to limit the amount of contamination that comes in contact with heavy equipment (tires, contaminated augers). Dust control measures may be needed on roads inside the site boundaries.

PERSONNEL DECONTAMINATION

All personnel shall pass through an outlined decontamination procedure when exiting the hot zone at each location. A field wash for equipment and PPE shall be set up at each drilling location. The system will include a gross wash and rinse for all disposable clothing and boots worn in the EZ. Upon exiting the EZ, all personnel will wash their hands, arms, neck, and face before entering the Support Zone.

EQUIPMENT DECONTAMINATION

Equipment used at the Site that is potentially contaminated shall be decontaminated to prevent hazardous materials from leaving the Site. All heavy equipment will be decontaminated at the decontamination pad and inspected by the SSO and Project Manager before it leaves the Site. The decontamination area will provide for the containment of all wastewater from the decontamination process. Respirators, airline and any other personnel equipment that comes in contact with contaminated soils shall pass through a field wash.

DECONTAMINATION DURING MEDICAL EMERGENCIES

If emergency life-saving first aid and/or medical treatment are required, normal decontamination procedures may need to be abbreviated or omitted. The Site SSO or designee will accompany contaminated victims to the medical facility to advise on matters involving decontamination, when necessary. The outer garments can be removed if they do not cause delays, interfere with treatment or aggravate the problem. Respiratory equipment must always be removed. Protective clothing can be cut away. If the outer contaminated garments cannot be safely removed, a plastic barrier between the individual and clean surfaces should be used to help prevent contaminating the inside of ambulances and /or medical personnel. Outer garments are then removed at the medical facility.

No attempt will be made to wash or rinse the victim, unless it is known that the individual has been contaminated with an extremely toxic or corrosive material that could also cause severe injury or loss of life to emergency response personnel. For minor medical problems or injuries, the normal decontamination procedures will be followed. Note that heat stroke requires prompt treatment to prevent irreversible damage or death. Protective clothing must be promptly removed. Less serious forms of heat stress also require prompt attention and removal of protective clothing immediately. Unless the victim is obviously contaminated, decontamination should be omitted or minimized and treatment begun immediately.

DISPOSAL PROCEDURES

A segregating system of non-hazardous waste and hazardous waste will be developed by the SSO and PM. All discarded material, waste materials or other objects shall be handled in such a way as to preclude the potential for spreading contamination, creating sanitary hazards, or causing litter to be left on Site. All potentially contaminated materials, e.g. clothing, gloves, etc., will be bagged or drummed as necessary, labeled and segregated for disposal. All non-contaminated materials shall be collected and bagged for appropriate disposal as normal domestic waste.

1.11 Emergency Plan

The potential for the development of an emergency situation is low considering the low concentrations of hazardous substances at the work site. Nevertheless, an emergency situation could occur. All Alpha-Hydro and subcontractor field team members prior to the start of work will know the emergency plan outlined in this section. The emergency plan will be available for use at all times during site work.

Various individual site characteristics will determine preliminary actions taken to assure that this emergency plan is successfully implemented in the event of a site emergency. Careful consideration must be given to the proximity of neighborhood housing or places of employment, and to the relative possibility of site fire, explosion or release of vapors or gases that could affect the surrounding community.

The Project Manager shall make contact with local fire, police and other emergency units prior to beginning work on site. In these contacts, the Project Manager will inform the emergency units about the nature and duration of work expected at the Site and the type of contaminants and the possible health or safety effects of emergencies involving these contaminants. At this time, the Project Manager and the emergency response units shall make the necessary arrangements to be prepared for any emergencies that could occur.

The Project Manager shall implement the contingency plan whenever conditions at the Site warrant such action. The Project Manager will be responsible for coordination of the evacuation emergency treatment, and transportation of site personnel as necessary, and notification of emergency response units and the appropriate management staff.

The cases where the PM is not available, the SSO shall serve as the alternate emergency coordinator.

EVACUATION

In the event of an emergency situation, such as fire, explosion, or significant release of toxic gases, an air horn or other appropriate device will be sounded for approximately 10 second intervals indicating the initiation of evacuation procedures. All personnel will evacuate and assemble near the entrance to the site. The location shall be upwind of the Site where possible.

For efficient and safe site evacuation and assessment of the emergency situation, the Project Manager will have authority to initiate action if outside services are required. Under no circumstances will incoming personnel or visitors be allowed to proceed into the area once the emergency signal has been given. The SSO or designated SSO must ensure that access for emergency equipment is provided and that all combustion apparatuses have been shut down once the alarm has been sounded. Once the safety of all personnel is established, the Fire Department and other emergency response groups as necessary will be notified by telephone of the emergency.

POTENTIAL OR ACTUAL FIRE OR EXPLOSION

Immediately evacuate the Site (air horn will sound for 10-second intervals), notify the local fire and police departments, and other appropriate emergency response groups if an actual fire or explosion has taken place.

PERSONNEL INJURY

Emergency first aid shall be applied on site as deemed necessary. If necessary, the individual shall be decontaminated and transported to the nearest medical facility.

The ambulance/rescue squad shall be contacted for transport as necessary in an emergency. However, since some situations may require transport of an injured party by other means, the hospital route is identified below. A map to this facility provided with this HASP in Section 2.2.3.

ACCIDENT/INCIDENT REPORTING

As soon as first aid and/or emergency response needs have been met, the following parties are to be contacted by telephone:

1. Dorcas B. Oloke -- cell phone (631) 605-5855
2. The employer of any injured worker if not an Alpha-Hydro employee

Written confirmation of verbal reports is to be submitted within 24 hours. The report form entitled "Accident Data Report" is to be used for this purpose. All Alpha-Hydro representatives contacted by telephone are to receive a copy of this report. If the employee involved is not an Alpha-Hydro employee, his employer shall receive a copy of this report.

For reporting purposes, the term accident refers to fatalities, lost time injuries, spill or exposure to hazardous materials (toxic materials, explosive or flammable materials).

Any information released from the health care provider, which is not deemed confidential patient information, is to be attached to the appropriate form. Any medical information that is released by patient consent is to be filed in the individuals' medical records and treated as confidential.

OVERT PERSONNEL EXPOSURE

SKIN CONTACT: Use copious amounts of soap and water. Wash/rinse affected area thoroughly, and then provide appropriate medical attention. Eyes should be rinsed for 15 minutes upon chemical contamination.

INHALATION: Move personnel to fresh air and if necessary, decontaminate and transport to hospital.

INGESTION: Decontamination and transport to emergency medical facility.

PUNCTURE WOUND

OR LACERATION: Decontaminate and transport to emergency medical facility.

ADVERSE WEATHER CONDITIONS

In the event of adverse weather conditions, the SSO or designee will determine if work can continue without sacrificing the health and safety of all field workers. Some of the items to be considered prior to determining if work should continue are:

- Potential for heat stress and heat-related injuries
- Potential for cold stress and cold-related injuries
- Treacherous weather-related conditions
- Limited visibility
- Potential for electrical storms

Site activities will be limited to daylight hours and acceptable weather conditions. Inclement working conditions include heavy rain, fog, high winds, and lightning. Observe daily weather reports and evacuate if necessary in case of inclement weather conditions.

EMERGENCY RESPONSE EQUIPMENT LIST

Some or all of the following will either be available onsite or be able to be brought to the Site within a 2-hour period:

- 55 Gallon Drums
- 85 Gallon Drums
- Absorbent Pads
- Absorbent Booms
- Speedy-Dry
- Plastic Sheeting
- Hay Bales
- Pneumatic Nibbler
- Back Hoe
- Pressure Washer
- Air Compressor
- Wilden Pumps

- Equipment Storage Trailer
- Submersible Pumps
- Miscellaneous Hand Tools
- Portable Lighting

LARGE EQUIPMENT

If necessary, Alpha-Hydro can have the following large equipment brought to the Site within 2-hours:

- Large Vacuum Truck
- Super Sucker
- Dump Trucks
- Drill Rig
- Utility Vehicle

1.12 Logs, Reports and Record Keeping

MEDICAL AND TRAINING RECORDS

The employer keeps medical and training records. All subcontractors must provide verification of training and medical qualifications to the SSO. The SSO will keep a log of personnel meeting appropriate training and medical qualifications for site work. The log will be kept in the project file. Medical records will be maintained in accordance with 29 CFR 1910.20.

ONSITE LOG

A log of personnel onsite each day will be kept by the SSO or designee. A copy of these logs will be sent to the Alpha-Hydro records coordinator for data entry. Originals will be kept in the project file.

EXPOSURE RECORDS

Any personal monitoring results, laboratory reports, calculations and air sampling data sheets are part of an employee exposure record. These records will be kept in accordance with 29 CFR 1910.20. For Alpha-Hydro employees, the originals will be sent to the Alpha-Hydro records coordinator. For subcontractor employees, the original will be sent to the subcontractor employer and a copy kept in the project file.

ACCIDENT/INCIDENT REPORTS

An accident/incident report must be completed for all accidents and incidents. The originals will be sent to the appropriate Alpha-Hydro records coordinator for maintenance by Alpha-Hydro. Copies will be distributed as stated. A copy of the forms will be kept in the project file.

OSHA FORM 200

An OSHA Form 200 (Log of Occupational Injuries and Illnesses) will be kept at the Site. All recordable injuries or illnesses will be recorded on this form. At the end of the project, the original will be sent to the Alpha-Hydro corporate records administrator for maintenance. Subcontractor employers must also meet the requirements of maintaining an OSHA 200 form. The Alpha-Hydro accident/incident report meets the requirements of the OSHA Form 101 (Supplemental Record) and must be maintained with the OSHA Form 200 for all recordable injuries or illnesses.

HEALTH AND SAFETY FIELD LOG BOOK

The SSO or designee will maintain the logbook in accordance with standard Alpha-Hydro procedures. Daily site conditions, activities, personnel, calibration records, monitoring results and significant events will be recorded. The original logbooks will become part of the exposure records file.

1.13 Sanitation

If sanitary sewers are not provided at the Site, provisions shall be made for access to sanitary systems by using nearby public facilities consistent with provisions of governing local ordinance codes. In the latter case, provisions are required for the removal of accumulated waste products within those units.

If a commercial/industrial laundry is used to clean or launder clothing that is potentially contaminated, they shall be informed of the potential harmful effects of exposure to hazardous substances related to the affected clothing.

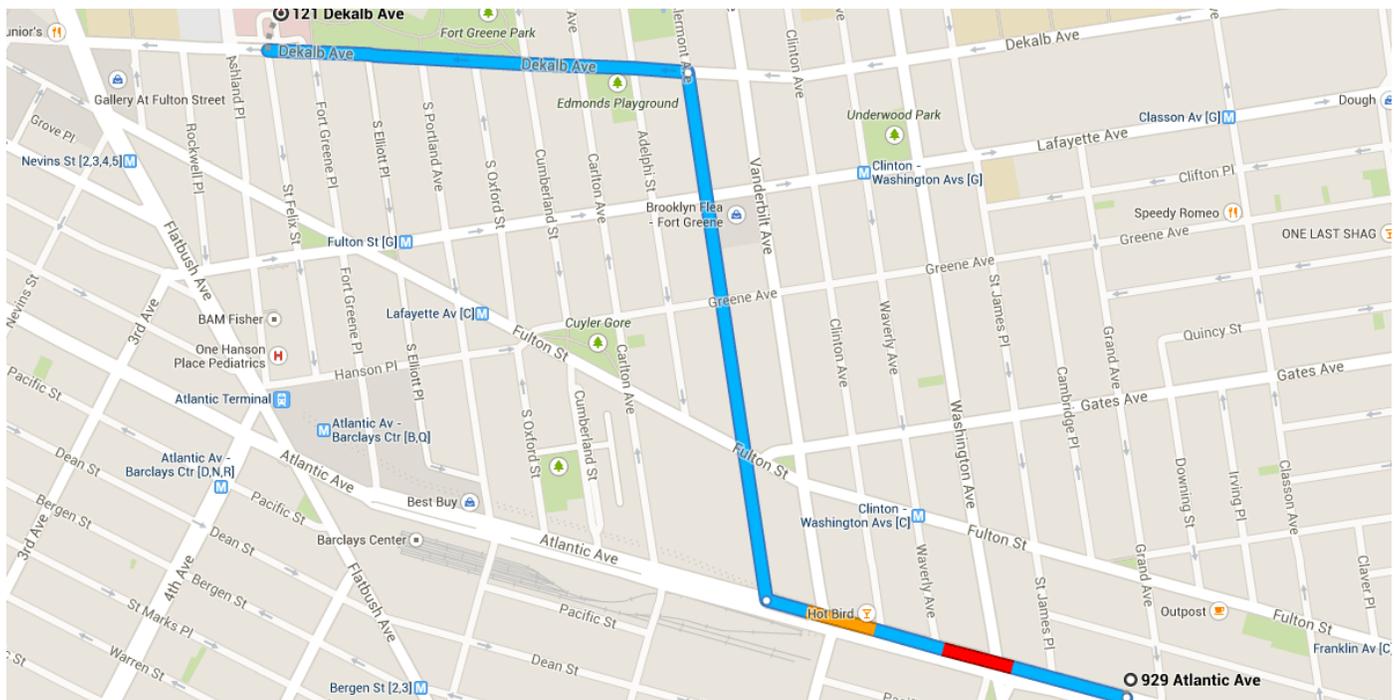
Personnel and subcontractors sites shall follow decontamination procedures described in the HASP, or as directed by the SSO. This will generally include at a minimum site-specific training in shower usage and cleanup, personal hygiene requirements and the donning of protective equipment/clothing.

ATTACHMENT #1
HOSPITAL DIRECTIONS



Drive 1.3 miles, 4 min

Directions from 929 Atlantic Ave to 121 Dekalb Ave



○ 929 Atlantic Ave

Brooklyn, NY 11238

- 1. Head west on Atlantic Ave toward St James Pl



0.4 mi

- 2. Turn right onto Clermont Ave



0.5 mi

- 3. Turn left onto Dekalb Ave



Destination will be on the right

0.4 mi

⊙ 121 Dekalb Ave

Brooklyn, NY 11201

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Map data ©2014 Google

ATTCHMENT # 2

FACT SHEETS

Health and Safety Plan

929-933 Atlantic Avenue
Brooklyn, New York 11238
Block 2018; Lots 54, 55, 56

OER Project Number xxEHANxxxx
E-Designation E-183
CEQR Number 07DCP066K

Prepared for:
Elevation Holdings LLC
308 Malcolm X Boulevard
Brooklyn, NY

Prepared by:
Alpha-Hydro Environmental
1503 Wave Avenue,
Medford, New York 11763

June 25, 2014
Project#:14-1336



Alpha-Hydro Environmental

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ATTACHMENT

1. HOSPITAL DIRECTIONS

2. FACT SHEETS

HEALTH & SAFETY PLAN

1.0 Introduction

The HASP has been prepared in conformance with applicable regulations, safe work practices and the project's requirements. It addresses those activities associated with the installation, sampling of soil and groundwater probes and the infield characterization of soil samples. The Project Manager (PM), Site Safety Officer (SSO) and Alpha-Hydro Environmental field staff will implement the Plan during site work. Compliance with this HASP is required of all persons and third parties who perform fieldwork for this project. Assistance in implementing this HASP can be obtained from Alpha-Hydro's SSO. The content of this HASP may change or undergo revision based upon additional information that is made available to health and safety personnel, monitoring results or changes in the technical scope of work. Any changes proposed must be reviewed by the SSO.

SCOPE OF WORK

The Scope of Work activities will include the following:

- Performance of a geophysical survey
- Advancement of soil probes and installation of soil-gas points

EMERGENCY NUMBERS

	<u>Phone Number</u>
Brooklyn Hospital Center	(718) 250-8000
New York City EMS	911
NYPD	911
NYFD	911
National Response Center	800-424-8802
Poison Information Center	800-562-8816
Chemtree	800-424-9555

Project Management/Health and Safety Personnel

<u>Title</u>	<u>Contact</u>	<u>Cell Phone</u>
President-Technical Operations	David Oloke	(631) 448-1862
Site Safety Officer	Chibuzo Anyaegbunam	(631) 522-7981

Directions to Brooklyn Hospital Center (see attached map Attachment # 1)

Upon leaving the Site, start out going west on Atlantic Avenue toward St. James Place. Turn right onto Clermont Avenue. Turn left onto Dekalb Avenue. Brooklyn Hospital Center is on the right.

1.2 Health and Safety Staff

This section briefly describes the personnel and their health and safety responsibilities:

SENIOR GEOLOGIST - David Oloke

- Has the overall responsibility for the health and safety of site personnel
- Ensures that adequate resources are provided to the field health and safety staff to carry out their responsibilities as outlined below
- Ensures that fieldwork is scheduled with adequate personnel and equipment resources to complete the job safely
- Ensures that adequate telephone communication between field crews and emergency response personnel is maintained
- Ensures that field site personnel are adequately trained and qualified to work at the Site

SITE SAFETY OFFICER – Chibuzo Anyagbunam

- Directs and coordinates health and safety monitoring activities
- Ensures that field teams utilize proper personal protective equipment (PPE)
- Conducts initial onsite, specific training prior to personnel and/or subcontractors proceeding to work
- Conducts and documents periodic safety briefings; ensures that field team members comply with this HASP
- Completes and maintains Accident/Incident Report Forms
- Notifies Alpha-Hydro corporate administration of all accidents/incidents
- Determines upgrade or downgrade of PPE based on site conditions and/or downgrade of PPE based on site conditions and/or real-time monitoring results
- Ensures that monitoring instruments are calibrated daily or as determined by manufacturer suggested instructions
- Maintains health and safety field log books
- Develops and ensures implementation of the HASP
- Approves revised or new safety protocols for field operations
- Coordinates revisions of this HASP with field personnel and the SSO Division Contracting Officer
- Responsible for the development of new company safety protocols and procedures and resolution of any outstanding safety issues which may arise during the conduction of site work
- Reviews personnel and subcontractors current and up-to-date medical examination and acceptability of health and safety training

FIELD PERSONNEL AND SUBCONTRACTORS (IF ANY)

- Reports any unsafe or potentially hazardous conditions to the SSO.
- Maintains knowledge of the information, instructions and emergency response actions contained in this HASP
- Comply with rules, regulations and procedures as set forth in this HASP and any revisions that are instituted
- Prevents admittance to work sites by unauthorized personnel

1.3 Chemical & Waste Description/Characterization

The following list of chemicals is based on the materials either once stored onsite or believed to be formerly stored onsite:

- Unknown contaminant(s) including VOCs, SVOCs, Pesticides, PCBs and TAL metals (see attachment #2 – Fact Sheets).

The following information references are presented in order to identify the properties and hazards of the materials that may/will be encountered at the Site.

- Dangerous Properties of Industrial Materials - Sax
- Chemical Hazards of the Workplace - Proctor/Hughes
- Condensed Chemical Dictionary - Hawley
- Rapid Guide to Hazardous Chemical in the Workplace - Lewis 1990
- NIOSH Guide to Chemical Hazards - 1990
- ACGIH TLV Values and Biological Exposure Indices - 1991-1992

1.4 Hazard Assessment

The potential hazards associated with planned site activities include chemical, physical and biological hazards. This section discusses those hazards that are anticipated to be encountered during the activities listed in the scope of work.

The potential to encounter chemical hazards is dependent upon the work activity performed (invasive or non-invasive), the duration and location of the work activity. Such hazards could include inhalation or skin contact with chemicals that could cause: dermatitis, skin burn, being overcome by vapors or asphyxiation. In addition, the handling of contaminated materials and chemicals could result in fire and/or explosion.

The potential to encounter physical hazards during site work includes: heat stress, exposure to excessive noise, loss of limbs, being crushed, head injuries, cuts and bruises and other physical hazards due to motor vehicle operation, heavy equipment and power tools.

CHEMICAL HAZARDS

The potential for personnel and subcontractors to come in contact with chemical hazards may occur during the following tasks:

- Installation of soil/groundwater probes
- Removal of any dedicated, contaminated materials during sampling

Exposure Pathways

Exposure to these compounds during ongoing activities may occur through inhalation of contaminated dust particles, inhalation of volatile (VOC) and semi-volatile (SVOC) vapor fume compounds, by way of dermal absorption, and accidental ingestion of the contaminant by either direct or indirect cross contamination activities (eating, smoking, poor hygiene). Indirectly, inhalation of contaminated dust particles (metals, silica, VOCs, SVOCs) can occur during adverse weather conditions (high or changing wind directions) or during operations that may generate airborne dust such as excavation and sampling activities. Dust control measures such as applying water to roadways and work sites will be implemented, where visible dust is generated from non-contaminated and contaminated soils. Where dust control measures are not feasible or effective, respiratory protection will be used.

Additional Precautions

Dermal absorption or skin contact with chemical compounds is possible during invasive activities at the Site, including removal of product, excavation of tanks, and handling of contaminated soils. The use of PPE in accordance with Section 9.2 and strict adherence to proper decontamination procedures should significantly reduce the risk of skin contact.

The potential for accidental ingestion of potentially hazardous chemicals is expected to be remote, when good hygiene practices are used.

PHYSICAL HAZARDS

A variety of physical hazards may be present during Site activities. These hazards are similar to those associated with any construction type project. These physical hazards are due to motor vehicles and heavy equipment operation, the use of improper use of power and hand tools, misuse of pressurized cylinders, walking on objects, tripping over objects, working on surfaces which have the potential to promote falling, mishandling and improper storage of solid and hazardous materials, skin burns, crushing of fingers, toes, limbs, being hit on the head by falling objects or hitting one's head due to not seeing the object of concern, temporary loss of one's hearing and/or eyesight. These hazards are not unique and are generally familiar to most hazardous waste site workers at construction sites. Additional task specific safety requirements will be covered during safety briefings.

Noise

Noise is a potential hazard associated with operation of heavy equipment, power tools, pumps and generators. High noise operators will be evaluated at the discretion of the SSO. Employees with an 8-hour time weighted average exposure exceeding 85 decibels (db) will be included in the hearing conservation program in accordance with 29 CFR 1910.85.

It is mandated that employees working around heavy equipment or using power tools that dispense noise levels exceeding 95 db are to wear hearing protection that shall consist of earplugs and earphones. This is particularly relevant as the jet engines of modern airplanes can give sound level readings of greater than 110 db.

Heat/ Cold Stress

Extremes in temperature and the effects of hard work in impervious clothing can result in heat stress and/or hypothermia. The human body is designed to function at a certain internal temperature. When metabolism or external sources (fire, hot summer day, winter weather, etc.) cause the body temperature to rise or fall excessively, the body seeks to protect itself by triggering cooling/warming mechanisms. Profuse sweating is an example of a cooling mechanism, while uncontrollable shivering is an example of a warming mechanism. The SSO monitor the temperature to determine potential adverse affects the weather can cause on site personnel.

Protective clothing worn to guard against chemical contact effectively stops the evaporation of perspiration. Thus the use of protective clothing increases heat stress problems. Cold stress can easily occur in winter with sub-freezing ambient temperatures. Workers in protective garments may heat-up and sweat, only to rapidly cool once out of the tank and the PPE. The major disorders due to heat stress are heat cramps, heat exhaustion and heat stroke.

HEAT CRAMPS are painful spasms that occur in the skeletal muscles of workers who sweat profusely in the heat and drink large quantities of water, but fail to replace the body's lost salts or electrolytes. Drinking water while continuing to lose salt tends to dilute the body's extra cellular fluids. Soon water seeps by osmosis into active muscles and causes pain. Muscles fatigued from work as usually most susceptible to cramps.

HEAT EXHAUSTION is characterized by extreme weakness or fatigue, dizziness, nausea, and headache. In serious cases, a person may vomit or lose consciousness. The skin is clammy and moist, complexion pale or flushed, and body temperature normal or slightly higher than normal. Treatment is rest in a cool place and replacement of body water lost by perspiration. Mild cases may recover spontaneously with this treatment; severe cases may require care for several days. There are no permanent effects.

HEAT STROKE is a very serious condition caused by the breakdown of the body's heat regulating mechanisms. The skin is very dry and hot with red mottled or bluish appearance. Unconsciousness, mental confusion or convulsions may occur. Without quick and adequate treatment, the result can be death or permanent brain damage. Get medical assistance quickly! As first aid treatment, the person should be moved to a cool place. Soaking the person's clothes with water and fanning them should reduce body heat artificially, but not too rapidly.

Steps that can be taken to reduce heat stress are:

- Acclimatize the body. Allow a period of adjustment to make further heat exposure endurable
- Drink more liquids to replace body water lost during sweating
- Rest is necessary and should be conducted under the monitoring condition from the SSO and the effect personnel physiological state
- Wearing personal cooling devices. There are two basic designs; units with pockets for holding frozen packets and units that circulate a cooling fluid from a reservoir through tubes to different parts of the body. Both designs can be in the form of a vest, jacket or coverall. Some circulating units also have a copy for cooling the head.

Cold temperatures can cause problems. The severe effects are FROSTBITE and HYPOTHERMIA.

FROSTBITE is the most common injury resulting from exposure to cold. The extremities of the body are often affected. The signs of frostbite are:

- The skin turns white or grayish-yellow
- Pain is sometimes felt early but subsides later; often there is no pain
- The affected part feels intensely cold and numb

Shivering, numbness, drowsiness, muscular weakness and a low internal body temperature characterize the condition known as HYPOTHERMIA. This can lead to unconsciousness and death. With both frostbite and hypothermia, the affected areas need to be warmed quickly. Immersing in warm, not hot, water best does this. In such cases medical assistance will be sought.

To prevent these effects from occurring, persons working in the cold should wear adequate clothing and reduce the time spent in the cold area. The field SSO, to determine appropriate time personnel may spend in adverse weather conditions, will monitor this.

Lockout/Tagout

PURPOSE -- This program establishes procedures for de-energizing, isolating and ensuring the energy isolation of equipment and machinery. The program will be used to ensure that equipment and machinery is de-energizing and isolated from unexpected energization by physically locking (Lockout) energy isolation devices or, in the absence of locking capabilities, tagout (Tagout) the device to warn against energization. These procedures will provide the means of achieving the purpose of this program, prevention of injury to Alpha-Hydro employees from the unexpected energization or start-up of equipment and machinery, or from the release of stored energy.

APPLICATION — This program applies to the control of energy during the servicing and/or maintenance of equipment and machinery. This program covers normal operations only if a guard or other safety device is removed or bypassed, or any part of the body is placed into an area of the equipment or machinery where work is performed on the material, or a danger zone exists during the operating cycle. Minor tool changes, adjustments, and other minor servicing activities which take place during normal production operations do not require isolation and lockout/tagout if they are routine and integral to the use of the equipment.

SCOPE -- This program will include all employees whose duties require them to service, install, repair, adjust, lubricate, inspect or perform work on powered equipment or machinery that may also have the potential for stored energy.

PROGRAM RESPONSIBILITIES - The SSO will have the overall responsibility of the program to ensure that; authorized and affected employees receive adequate training and information, the program is evaluated annually, and the lockout/tagout equipment is properly used and the procedures of this program are followed.

The program evaluation will be conducted to ensure that the procedures and requirements of the program are being followed and will be utilized to correct any deviations or inadequacies that may be discovered. The evaluation will consist of one or more inspections or audits of actual lockout/tagout procedures being used to isolate equipment. A review of the authorized and affected employee's responsibilities will be conducted at the time of the inspection /audit. Any authorized employee, except the one(s) utilizing the energy isolation procedure being inspected, may perform the inspection/audit.

A record will be maintained of program evaluation inspections and will include:

1. The identity of the equipment or machine on which energy control procedures were being utilized
2. The date(s) of the inspection(s)
3. The employee(s) included in the inspection(s)
4. The person performing the inspection

Authorized employees (persons who implement lockout/tagout procedures) will be responsible for following the procedures established by this program.

Affected employees are responsible for understanding the significance of a lockout/tagout device and the prohibition relating to attempts to restart or re-energize equipment or machinery that is locked out or tagged out.

TRAINING - Where applicable, Alpha-Hydro employees will be provided instruction in the purpose and functions of the energy control program to ensure that they understand the significance of locked or tagged out equipment and also have the knowledge and skill to correctly apply and remove energy controls. Training will include:

The recognition of applicable hazardous energy source(s), the type and magnitude of energy available, and the policies and procedures of the Alpha-Hydro energy control program.

1. Affected employees will be made aware of the purpose and use of energy control procedures and the prohibition relating to attempts to remove lockout or tagout devices
2. Instruction in the limitations of tagout as a sole means of energy control
 - a. Tags are warning devices and do not provide the physical restraint that a lock would
 - b. Tags may provide a false sense of security
 - c. Tags may become detached during use

Initial training will be provided during to energy control program implementation, when new employees are hired or when job responsibilities change to include utilization of energy control procedures.

Retraining will be conducted whenever there is a change in job assignments that require the employee to utilize energy control procedures, a change in equipment that presents a new *hazard*, a change in the energy control procedures or when the program evaluation identifies inadequacies in the energy control program procedures.

Records of employee training will be maintained and will include the employee's name and date(s) of training.

STANDARD OPERATING PROCEDURES - Where necessary, Alpha-Hydro will provide the necessary devices to effectively lockout or tagout energy isolating devices. Lockout/tagout devices will be the only devices used for controlling energy and shall not be used for other purposes. Any device used for lockout/tagout will be capable of withstanding the environment to which they are exposed for the maximum period they are to be exposed. The devices will be substantial enough to prevent removal without excessive force. Excessive force for a locking device would be bolt cutters or other metal cuttings tools. Tagout devices will be attached by a non-reusable method, attachable by hand, and very difficult to remove by hand. A nylon cable tie or equivalent will be used.

Lockout/tagout devices will indicate the identity of the employee who applied the device, and the tagout device will warn against the hazards if the equipment is energized.

Lockout is the preferred method of energy isolation. When physical lockout is not possible, the energy isolation will be tagged out of service with a warning tag attached at the power source. In the case of plug-in power source, the tag will be attached at the male plug. To ensure full employee protection using tagout instead of lockout, additional steps should be taken to guard

against accidental or inadvertent energization. These steps may include, where applicable: removal of effuses, blocking switches, removal of a valve handle.

STANDARD OPERATING PROCEDURES

I. APPLICATION OF CONTROLS

A. Preparing to Shut Down Equipment

1. Prior to equipment shutdown, the authorized employee(s) must have knowledge of:
 - a. The type(s) and magnitude of power
 - b. The hazards of the energy to be controlled
 - c. The method(s) to control the energy
 - d. The location and identity of all isolating devices that control or feed the equipment to be locked/tagged out
2. Notify all affected employees that the lockout/tagout system will be in effect
3. Assemble applicable lockout/tagout devices, i.e., padlocks, tags, multiple lock hasps,

B. Equipment Shutdown and Isolation

1. If equipment is in operation, shut it down by the normal stopping procedure (stop button, switch)
2. Operate disconnects, switches, valves, or other energy isolating devices so that the equipment is de-energizing and isolated from its energy source(s)
3. Verify that equipment is shut down by operating equipment from the normal operating location and any remote locations

C. Installation of Lockout/Tagout Device, Release of Stored Energy, and Verification

1. Attach individually assigned lock(s) or tag(s) to energy isolating device(s). Where it is not possible to lock a switch, valve or other isolating device, electrical fuses must be removed, blank flanges installed in piping, lines disconnected, or other suitable methods used to ensure that equipment is isolated from energy sources. A tag must be installed at the point of power interruption to warn against energizing.
 - a. Each lock or tag must positively identify the person who applied it and locks must be individually keyed
 - b. If more than one person is involved in the task, employees will place their own lock and tag. Multiple lock hasps are available for this
2. Release, restrain, or dissipate stored energy such as spring tension, elevated machine members, rotating flywheels, hydraulic pressure, pistons and air, gas, steam, water pressure, etc. by repositioning, blocking bleeding, or other suitable means
3. Prior to starting work on equipment and after ensuring that no personnel are exposed, the authorized employee will verify that isolation and de-energization have been accomplished by:
 - a. Attempting, through normal effort, to operate energy isolating devices such as switches, valves, or circuit breaker with locks or tags installed
 - b. Attempting to operate the equipment or machinery that is locked or tagged out. This includes all sources of energy, i.e. electrical, hydraulic, gravity, air, water, steam pressure, etc.
 - c. Verifying the presence and effectiveness of restraint (blocking) and energy dissipation or release (bleeding)
4. If there is a possibility of the re-accumulation of stored energy to a hazardous level, verification of isolation will be contained until the servicing or maintenance is completed, or until the possibility of such accumulation no longer exists

D. Group Lockout/Tagout

1. When more than one individual is involved in locking or tagging equipment out of operation, each individual will attach their individual lock or tag, or the equivalent, to the energy isolating device(s).
 - a. An equivalent lockout device may be in the form of a group lockout device such as a multiple lock hasp or lock box
 - b. Primary responsibility for a group of authorized employees working under a group lockout device will be vested in a designated authorized employee

- c. Group lockout methods will provide a level of protection equal to that afforded by a personal lockout/tagout device

II. RETURNING EQUIPMENT TO SERVICE

A. Restore Equipment to Normal Operating Status

1. Re-install all parts or subassemblies removed for servicing or maintenance
2. Re-install all tools, rests, or other operating devices
3. Re-install all guards and protective devices (i.e. limit switches)
4. Remove all blocks, wedges, or other restraints from the operating area of the equipment (ways, slides, etc.)
5. Remove all tools, equipment, and shop towels from the operating area of the equipment.

B. Verify Equipment Ready for Operation

1. Inspect area for non-essential items
2. Ensure that all employees are safely positioned clear of the operating areas of the equipment. Post a watch if energy isolation devices are not in line of sight of the equipment.

C. Notify Affected Employees of Impending Start-up

1. The sudden noise of start-up may startle nearby employees
2. Equipment may need to be tested to determine operational safety by a qualified operator.

D. Remove Energy Isolation Devices - Only by authorized employee(s) who installed it/them.

1. Remove line blanks, reconnect piping (if applicable), and remove warning tag
2. Close bleeder valves, remove warning tag
3. Replace fuse(s), close circuit breaker(s) and remove warning tag
4. Remove lock and tag from control panel, valve, etc

Employee(s) who installed them may make an exception for removal of lockout/tagout devices. If it is necessary to operate a piece of equipment that is locked/tagged out, every effort must be made to locate the employee whose lock or tag is on the equipment. If he or she cannot be located and only after positive assurance is made that no one is working on the locked out equipment, the supervisor may personally remove the lock. The supervisor must assure that the equipment is once again locked out, or the employee notified that the equipment has been reenergized, before the employee resumes work. Employees will recheck locked out equipment if they have left the equipment (breaks, lunch, and end of shift) to make sure it is still de-energized and locked out.

III. TEMPORARY REMOVAL OF LOCKOUT/TAGOUT PROTECTION

A. In situations when the equipment must be temporarily energized to test or position the equipment or its components, the following steps will be followed:

1. Clear the equipment of tools and materials that are non-essential to the operation
2. Ensure the equipment components are operationally intact
3. Remove employees from the equipment area
4. Remove the lockout/tagout devices by the employee who installed in/them
5. Energize and proceed with testing or positioning
6. De-energize all systems and re-install all energy control measures
7. Verify re-installed energy control measures are effective

IV. SHIFT OR PERSONNEL CHANGES

A. The following steps will be followed to ensure continuity of employee protection during personnel changes.

1. All personnel involved in the maintenance or servicing activity will be notified that a transfer of personal locks/tags is about to occur
2. Clear all personnel from hazardous area(s) of equipment
3. Under the supervision of the shift supervisor or group designee, the off-going employee will immediately install theirs.
 - a. If an entire group or more than one employee will be transferring work responsibility, locks/tags will be removed and replaced one at a time in order of installation
4. When the transfer of lockout/tagout devices is complete, the effectiveness of all energy isolation devices will be verified to the satisfaction of all personnel involved
5. Once the effectiveness of energy isolation protection is confirmed, the service/maintenance operation may continue

V. CONTRACTOR NOTIFICATION

- A. Whenever outside personnel may be engaged in activities covered by this program, they will inform the contractor of applicable lockout/tagout procedures used to protect Alpha-Hydro employees from the hazards of working near energized equipment.
 1. The contractor will be expected to ensure that his/her employees understand and comply with the restrictions and prohibitions of this program
 2. Alpha-Hydro requires, under these circumstances, the contractor to inform us of their lockout/tagout procedures so that Alpha-Hydro employees can comply with the restrictions and prohibitions of the contractor's program
 3. Alpha-Hydro also requires the contractor to notify the program administrator, the area supervisor, and affected Alpha-Hydro employees prior to de-energizing, isolating and locking out Alpha-Hydro equipment. Conversely, notification is also required when this equipment will be returned to service

DEFINITIONS

Affected employee - An employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.

Authorized employee (s) - A person or persons who locks or implements a tagout system procedure to perform servicing or maintenance on a machine or equipment. An authorized employee and an affected employee may be the same person when the affected employee's duties also include performing maintenance or service on a machine or equipment that must be locked or tagged out.

"Capable of being locked out" - An energy isolating device will be considered to be capable of being locked out either if it is designed with a hasp or other attachment or integral part to which, or through which, a lock can be affixed, or if it has a locking mechanism built into it. Other energy isolating devices will also be considered to be capable of being locked out, if lockout can be achieved without the need to dismantle, rebuild, or replace the energy-isolating device or permanently alter its energy control capability.

Energized - Connected to an energy source or containing residual or stored energy.

Energy isolating device - A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: a manually operated electrical circuit breaker; a disconnect switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors and, in addition, no pole can be operated independently; a slide gate; a slip blind; a line valve; a block; and any similar device used to block or isolate energy. The term does not include a push button, selector switch, and other control circuit type devices.

Energy source - any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal or other type of energy.

Lockout - The placement of lockout device on an energy-isolating device, in accordance with an established procedure, is ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

Lockout device - A device that utilizes positive means such as a lock, either key or combination type, to hold an energy isolating device in the safety position and prevent the energizing of a machine or equipment.

Normal production operations - The utilization of a machine or equipment to perform its intended production function.

Servicing and/or maintenance - Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or unjamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the unexpected energization or startup of the equipment or release of hazardous energy.

Setting up - Any work performed to prepare a machine or equipment to perform its normal production operation.

Stored energy - Energy that is available and may cause movement even after energy sources have been isolated. Stored energy may be in the form of compressed springs, elevated equipment components, hydraulic oil pressure, pressurized water, air, steam, or gas, or rotating flywheels, shafts or cams.

Tagout - The placement of a tagout device on an energy-isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

Tagout device - A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

GENERAL MACHINERY AND EQUIPMENT LIST

EQUIPMENT/LOCATION	ENERGY SOURCES/LOCATION
A. Geoprobe Probing Machine	Diesel Engine
B. Ground-Penetrating Radar Machine	Internal Lithium battery.

1.5 Training

GENERAL HEALTH AND SAFETY TRAINING

In accordance with Alpha-Hydro corporate policy, and pursuant to 29 CFR 1910.120, hazardous waste site workers shall, at the time of job assignment, have received a minimum of 40 hours of initial health and safety training for hazardous waste site operations. As a minimum, the training shall have consisted of instruction in the topics outlined in the above reference. Personnel who have not met the requirements for initial training will not be allowed to work in any site activities in which they may be exposed to hazards (chemical or physical).

Completion of the Alpha-Hydro Health and Safety Training Course for Hazardous Waste Operations or an approved equivalent will fulfill the requirements of this section. In addition to the required initial training, each employee shall have received three (3) days of directly supervised on-the-job training. This training will address the duties the employees are expected to perform.

Alpha-Hydro SSO has the responsibility of ensuring that personnel assigned to this project comply with these requirements. Written certification of completion of the required training will be provided to the SSO.

MANAGER/SUPERVISOR TRAINING

In accordance with 29 CFR 1910.120, onsite management and supervisors who will be directly responsible for, or who supervise employees engaged in hazardous waste operation shall receive training as required in this HASP and at least eight (8) additional hours of specialized training on managing such operations at the time of job assignment.

ANNUAL 8-HOUR REFRESHER TRAINING

Annual 8-hour refresher training will be required of all hazardous waste site field personnel in order to maintain their qualification for fieldwork. The following topics will be reviewed: toxicology, respiratory protection, including air purifying devices and self-contained breathing apparatus (SCBA), medical surveillance, decontamination procedures and personnel protective clothing. In addition, topics deemed necessary by the SSO may be added to the above list.

SITE SPECIFIC TRAINING

Prior to commencement of field activities, all personnel assigned to the project will be provided training that will specifically address the activities, procedures, monitoring and equipment for the site operations. It will include Site and facility layout, hazards, and emergency services at the Site, and will highlight all provisions contained within this HASP. This training will also allow field workers to clarify anything they do not understand and to reinforce their responsibilities regarding safety and operations for their particular activity.

ONSITE SAFETY BRIEFINGS

Project personnel and visitors will be given periodic onsite health and safety briefings by the SSO, or their designee, to assist site personnel in safely conducting their work activities. The briefings will include information on new operations to be conducted, changes in work practices or changes in the Site's environmental conditions. 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 audits.

ADDITIONAL TRAINING

Additional training may be required by the SSO for participation in certain field tasks during the course of the project. Such additional training could be in the safe operation of heavy or power tool equipment or hazard communication training.

SUBCONTRACTOR TRAINING

Subcontractor personnel who work onsite occasionally for a specific limited task and who are unlikely to be exposed over permissible exposure limits, may be exempted from the initial 40-hour training requirement. The SSO will determine if this exemption is allowed. In any case, the subcontractor personnel who are exposed to hazards are not exempted from the 40-hours training requirement nor medical surveillance requirements found in Section 8.1.

1.6 Medical Surveillance

GENERAL

All contractor and subcontractor personnel performing field work at the Site are required to have passed a complete medical surveillance examination in accordance with 29 CFR 1910.120 (f). A physician's medical release for work will be confirmed by the SSO before an employee can begin site activities. Such examinations shall include a statement as to the worker's present health status, the ability to work in a hazardous environment (including any required PPE which may be used during temperature extremes), and the worker's ability to wear respiratory protection.

A medical data sheet will be completed by all onsite personnel and kept at the Site. Where possible, this medical data sheet will accompany the personnel needing medical assistance or transport to hospital facilities.

MEDICAL SURVEILLANCE PROTOCOL

The medical surveillance protocol to be implemented is the occupational physicians' responsibility, but shall meet the requirements of CFR 1910.120 and ANSI Z88.2 (1980). The medical surveillance protocol shall, as a minimum, cover the following:

- a. Medical and Occupational History
- b. General physical examination (including evaluation of major organ system)
- c. Serum lead and ZPP
- d. Chest X-ray (performed no more frequently than every four years, except when otherwise indicated).
- e. Pulmonary Function Testing (FVC and FEV1.0).
- f. Ability to wear respirator
- g. Audiometric testing.

Additional clinical tests may be included at the discretion of the occupational physician.

1.7 Site Control, PPE & Communications

SITE CONTROL

A Support Zone (SZ) is an uncontaminated area that will be the field support area for most operations. The SZ provides for field team communications and staging for emergency response. Appropriate sanitary facilities and safety equipment will be located in this zone. Potentially contaminated personnel or materials are not allowed in this zone. The only exception will be appropriately packaged/decontaminated and labeled samples. A contamination reduction corridor will be established. This is the route of entry and egress to the Site, and it provides an area for decontamination of personnel and portable equipment as well.

The area where contamination exists is considered to be the Exclusion Zone (EZ). All areas where excavation and handling of contaminated materials take place are considered the EZ. This zone will be clearly delineated by cones, tape or other means. The SSO may establish more than one EZ where different levels of protection may be employed or where different hazards exist. Personnel are not allowed in the EZ without:

- A buddy
- Appropriate personal protective equipment
- Medical authorization
- Training certification

PERSONAL PROTECTIVE EQUIPMENT

GENERAL

The level of protection worn by field personnel will be enforced by the SSO. Levels of protection for general operations are provided below and are defined in this section. Levels of protection may be upgraded or downgraded at the discretion of the SSO. The decision shall be based on real-time air monitoring, site history data, and prior site experience. Any changes in the level of protection shall be recorded in the health and safety field logbook.

PERSONAL PROTECTIVE EQUIPMENT SPECIFICATIONS

For tasks requiring Level B PPE, the following equipment shall be used:

- Cotton or disposable coveralls
- Chemical protective suit (e.g. Saran-coated Tyvek®)
- Gloves, inner (latex)
- Gloves, outer (Nitrile®)
- Boots (PVC), steel toe/shank

- Boot Covers (as needed)
- Hard Hat
- Hearing protection (as needed)

For tasks requiring Level C PPE, the following equipment shall be used:

- Cotton or disposable coveralls
- Disposable outer coveralls (Poly-coated Tyvek)
- Gloves, inner (latex)
- Gloves, outer (Nitrile®)
- Boots (PVC), steel toe/shank
- Boot covers (as needed)
- Hard Hat
- Hearing protection (as needed)
- Splash suit and face shield for decontamination operations (as needed)

For tasks requiring Level D PPE, the following equipment shall be used:

- Cotton or disposable coveralls
- Gloves, inner (latex)
- Gloves, outer (Nitrile®)
- Boots (PVC) steel toe/shank
- Boot covers (as needed)
- Hard hat
- Hearing protection (as needed)
- Safety glasses

For tasks requiring respiratory protection, the following equipment shall be used:

Level D - No respiratory protective equipment necessary except for a dust mask. Level C - A full-face air-purifying respirator equipped with organic vapor/pesticide-HEPA cartridges. Level B - An air line respirator or a self-contained breathing apparatus (SCBA)

INITIAL LEVELS OF PROTECTION

Levels of protection for the activities may be upgraded or downgraded depending on direct-reading instruments or personnel monitoring. The following are the initial levels of protection that shall be used for each planned field activity.

LEVEL OF PERSONAL PROTECTIVE EQUIPMENT REQUIRED

Activity	Level of Protection Respiratory/PPE
Drilling/Coring	C/D
Sampling	C/D
Ground Penetrating Radar	C/D

COMMUNICATIONS

Communications is the ability to talk with others. While working in Level C/B Protection, personnel may find that communication become a more difficult task and process to accomplish. This is further complicated by distance and space. In order to address this problem, electronic instruments, mechanical devices or hand signals will be used as follows:

- Walkie-Talkies - Hand held radios would be utilized as much as possible by field teams for communication between downrange operations and the Command Post base station.
- Telephones - A mobile telephone will be located in the Command Post vehicle in the Support Zone for communication with emergency support services/facilities. If a telephone is demobilized, the nearest public phones will be identified.
- Air Horns - A member of the downrange field team will carry an air horn and another will be evident in the Support Zone to alert field personnel to an emergency situation.
- Hand Signals - Members of the field team along with use of the buddy system will employ this communication method. Signals become especially important when in the vicinity of heavy moving equipment and when using Level B respiratory equipment. The signals shall become familiar to the entire field team before site operations commence and they will be reinforced and reviewed during site-specific training.

HAND SIGNALS FOR ON-SITE COMMUNICATION

Signal	Meaning
Hand gripping throat	Out of air, can't breathe
Grip partners' wrist	Leave area immediately; no debate
Hands on top of head	Need assistance
Thumbs up	OK, I'm all right; I understand
Thumps down	No; Negative, unable to understand you. I'm not all right

1.8 Air Monitoring Plan

GENERAL

Continuous air monitoring in the EZ during invasive tasks will accompany site operations, as indicated in this HASP or as required by the SSO. Monitoring will be performed to verify the adequacy of respiratory protection, to aid in site layout and to document work exposure. All monitoring instruments shall be operated by qualified personnel only and will be calibrated daily prior to use, or more often as necessary.

REAL-TIME MONITORING

INSTRUMENTATION

At least one (1) of the following monitoring instruments will be available for use during field operations as necessary:

- Photoionization Detector (PID), Rae Instruments with 10.2 EV probe or equivalent
- Flame Ionization Detector (FID), Foxboro Model 128 or equivalent
- Combustible Gas Indicator (CGI)/Oxygen (O₂) Meter, MSA or equivalent.

A FID or PID shall be used to monitor the organic vapor concentrations in active work areas. Organic vapor concentrations shall be measured upwind of the work areas to determine background concentrations. The SSO will interpret monitoring results using professional judgment. The PPE utilized shall always be the most protective, thus the action level criteria are flexible guidelines.

A CGI/O₂ meter shall be used to monitor for combustible gases and oxygen content in the boreholes during drilling activities.

Calibration records shall be documented, and included in the health and safety logbook or instrument calibration logbook. All instruments shall be calibrated before and after each daily use in accordance with the manufacturers' procedures.

ACTION LEVELS

Action levels for upgrading of PPE in this HASP will apply to all site work during the duration of field activities at the Site. Action levels are for unknown contaminants using direct reading in the Breathing Zone (BZ) for organic vapors and dusts, and at the source for combustible gases.

MONITORING DURING FIELD ACTIVITIES

Alpha-Hydro shall perform real time air monitoring prior to the commencement of work to establish baseline conditions. Baseline conditions will be established at the approximate center of the Site and at the perimeter of the Site both upwind and downwind.

During all work activities real time monitoring will occur. As necessary, Alpha-Hydro shall have at each applicable workstation a PID, explosimeter and oxygen deficiency meter. The real time monitoring for remedial activities will be conducted approximating the Breathing Zone of the workers. The monitoring will be continuous during working operations.

The air monitoring instrument may indicate that personnel working in the exclusion zone increase their level of protection. All personnel will be trained in the action levels. When conditions warrant an increase in protection, all personnel will stop working and immediately leave the exclusion zone. They will then don the appropriate safety equipment necessary and return to their current workstation. All of this activity will be monitored by the SSO. The SSO will keep the Alpha-Hydro Project Manager aware of any extraordinary situations and conditions that may occur. Working conditions and monitoring levels will be noted in the Field Notebook along with the time, date and page number. Verbal reports will be given to the Project Manager when there is a change in the PPE level.

The previous day's results shall be reviewed each morning to determine what actions are necessary and the general conditions resulting from and around the Site.

The record keeping will include:

- Date & Time of Monitoring
- Air Monitoring Location
- Instrument, Model #, Serial #
- Calibration/Background Levels
- Results of Monitoring
- SSO Signature
- Comments

Excavation Operations - Monitoring will be performed continuously during all excavation and demolition operations. A PID and/or FID shall be utilized to monitor the breathing zone, the excavated area and any material taken from the excavation. A CGI/O₂ meter shall be used to monitor the excavation for the presence of combustible gases.

ACTION LEVELS OF AIRBORNE CONTAMINANTS

<u>Instrument</u>	<u>Action Level</u>	<u>Action to be Taken</u>
FID/PID	< 100 ppm, for a 15-minute average	Stop work & initiate vapor control
	> 100 ppm, for a 15-minute average	Stop work & initiate evacuation procedure
CGI	10%LEL	Stop work, initiate ventilating
	50% LEL	Stop work, initiate evacuation procedure and contact fire dept.

PERSONNEL MONITORING PROCEDURE

The Site SSO, concurrent with activities that may generate the contaminants in excess of OSHA PEL's, may perform assessment and evaluation of field personnel exposures to airborne contaminants.

Procedures to be followed include:

The SSO may select high-risk individuals who may be subject to contaminant exposure based on job assignment.

The Personal Sampling is being conducted to determine the proper levels of respiratory protection required, to document potential exposures to compounds, and to assure compliance with OSHA standards. Therefore, it is important that the data collected be from "worst case" locations and personnel.

For example: when work is being conducted to excavate at an underground tank location, those persons closest to the excavation and most intimately involved with the work should be sampled. If a backhoe operator solely conducted the excavation, then that employee should be monitored. However, if there are additional workers who must enter the excavation and work with the freshly excavated soil, these persons would be closer to the potential contaminants and they should be sampled.

To meet the intent of the sampling will require sampling at periods of the most disturbances. To be accurate in determining potential exposures, as many tasks/trades shall be sampled as possible during the course of this project. At completion of the project, a goal of 20% of all workers who must perform their duties in or around the contaminated soil, tanks and excavations is sought. All sampling data must be provided in writing to the employees within three (3) days of receipt of results by Alpha-Hydro.

Air sampling pumps used to collect employee exposure samples shall be calibrated before and after use each day. Calibration shall be accomplished using a primary standard calibration system, e.g. the bubble tube method. Results of the calibrations shall be included in the health and safety field logbook and with the exposure report.

Chemical analysis of samples collected for assessment of employee exposures shall be performed in accordance with NIOSH or OSHA analytical methods only by laboratories accredited by the American Industrial Hygiene Association.

Results of the personal exposure assessment shall be provided to the individual, in writing within fifteen (15) working days after receipt of laboratory reports. Reports to field personnel shall provide calculated time-weighted average exposures and shall provide comparative information relative to established permissible exposure limits. The air sampling data sheet and laboratory report is considered a part of the employee exposure report. A copy of the employee personal exposure assessment report shall also be included in the project file and the employees' medical record for Alpha-Hydro employees. Reports for subcontractor employees will be sent directly to the subcontractors' employer.

AIR MONITORING REPORTS

Air Monitoring Reports will be completed by the SSO and/or authorized personnel and submitted to the Project Manager in the daily safety logs and will include the following:

- Date of monitoring
- Equipment utilized for air monitoring
- Real-time air monitoring results from each work location
- Calibration method of equipment and results

1.9 Safety Considerations

GENERAL

In addition to the specific requirements of this HASP, common sense should be used at all times. The general safety rules and practices below will be in effect at the Site at the discretion of the Project Manager, SSO or other authorized personnel.

- The Site will be suitably marked or barricaded as necessary to prevent unauthorized visitors but not hinder emergency services if needed.
- As needed, all open holes, trenches and obstacles will be properly barricaded in accordance with local site requirements. These requirements will be determined by proximity to traffic ways, both pedestrian and vehicular, and site of the hole, trench or obstacle. If holes are required to be left open during non-working hours, they will be adequately decked over or barricaded and sufficiently lighted.
- Before any digging or boring operations are conducted, underground utility locations will be identified. All boring, excavation and other site work will be planned and performed with consideration for underground lines. Any excavation work will be performed in accordance with Alpha-Hydro's Standard Operating Procedures for Excavations.
- Either workers or other people will enact dust-mitigating procedures when there exists the potential for the inhalation of dust particles.
- The act of smoking and ignition sources in the vicinity of potentially flammable or contaminated material is strictly prohibited.
- Drilling, boring, and use of cranes and drilling rigs, erection of towers, movement of vehicles and equipment and other activities will be planned and performed with consideration for the location, height, and relative position of aboveground utilities and fixtures, including signs; canopies; building and other structures and construction; and natural features such as trees, boulders, bodies of water, and terrain.
- When working in areas where flammable vapors may be present, particular care shall be exercised with tools and equipment that may be sources of ignition. All tools and equipment provided must be properly bonded and/or grounded. Metal buttons and zippers are prohibited on safety clothing for areas that may contain a flammable or explosive atmosphere.
- Approved and appropriate safety equipment (as specified in this HASP), such as eye protection, hard hats, foot protection, and respirators, must be worn in areas where required. In addition, eye protection must be worn when sampling soil or water that may be contaminated.
- Beards interfere with respirator fit and are not allowed within the site boundaries because all site personnel may be called upon to use respirator protection in some situations.
- No smoking, eating, chewing tobacco, gum chewing or drinking will be allowed in the contaminated areas.
- Contaminated tools and hands must be kept away from the face.
- Personnel must use personal hygiene safe guards (washing up) at the end of the shift or as soon as possible after leaving the Site.
- Each sample must be treated and handled as though it were contaminated.
- Persons with long hair and/or loose fitting clothing that could become entangled in power equipment must take adequate precautions.
- Horseplay is prohibited in the work area.
- Work while under the influence of intoxicants, narcotics or controlled substances is prohibited.

POSTED SIGNS

Posted danger signs will be used where an immediate hazard exists. Caution signs will be posted to warn against potential hazards and to caution against unsafe practices. Traffic control methods and barricades will be used as needed. Wooden stakes and flagging tape, or equally effective material will be used to demarcate all restricted areas.

Other postings may include the OSHA poster, emergency hospital route and telephone numbers of contact personnel.

INVASIVE OPERATIONS

The SSO will be present onsite during all invasive work (e.g. demolition, excavations). The SSO will ensure that appropriate monitoring; levels of protection and safety procedures are followed. No personnel will enter any excavations for any reasons. All personnel will stay at least 10 feet back from the edge of the excavation and out of the swing radius of the backhoe. No drums or other potential sources will be sampled or removed during this phase without further additions to the HASP.

The possibility of the presence of underground conduits or vessels containing materials under pressure will also be investigated prior to invasive operations. Properly sized containment systems will be utilized and consideration of the potential volume of liquid or waste released during operations will be discussed with members of the field team to minimize the potential for spills and provide a method for collection of waste materials. Emergency evacuation procedures and the location of safety equipment will be established prior to start up operations. The use of protective clothing, especially hard hats, boots, and gloves will be required during drilling and other heavy equipment work.

SOIL, GROUNDWATER AND LIQUID WASTE SAMPLING

Personnel must wear prescribed protective clothing and equipment including eye protection, chemical resistant gloves and splash aprons (where appropriate) when sampling solids and liquids. Sample bottles are to be bagged prior to sampling to ease decontamination. Personnel must be aware of the location of emergency equipment, including spill containment materials prior to sampling. Personnel are to practice contamination avoidance at all times, as well as to utilize the buddy system and maintain communications with the Command Post. In some situations, such as sampling groundwater wells, additional monitoring may be needed to confirm or establish the proper level of protection before the sampling team can proceed.

SAMPLE HANDLING

Personnel responsible for the handling of samples will wear the prescribed level of protection. Samples are to be identified as to their hazard and packaged as to prevent spillage or breakage. Any unusual sample conditions shall be noted. Laboratory personnel and all field personnel shall be advised of sample *hazard levels* and the potential contaminants present. This can be accomplished by a phone call to the lab coordinator and/or including a written statement with the samples reviewing lab safety procedures in handling in order to assure that the practices are appropriate for the suspected contaminants in the sample.

HEAVY EQUIPMENT DECONTAMINATION

Personnel steam cleaning heavy equipment shall use the prescribed level of protection and adhere to the buddy system. Initially this task usually employs level C. The heavy equipment decontamination shall be restricted to authorized personnel only. Special consideration will be given to wind speed and direction. Downwind areas are to be kept free of personnel to avoid unnecessary exposure to potential airborne contamination.

ADDITIONAL SAFETY CONSIDERATIONS

No other additional safety considerations at this time.

1.10 Decontamination and Disposal Procedures

CONTAMINATION PREVENTION

One of the most important aspects of decontamination is the prevention of contamination. Good contamination prevention should minimize worker exposure and help ensure valid sample results by precluding cross-contamination. Procedures for contamination avoidance include:

Personnel:

Do not walk through areas of obvious or known contamination
Do not directly handle or touch contaminated materials
Make sure that there are no cuts or tears on PPE.
Fasten all closures in suits; cover with tape if necessary
Particular care should be taken to prevent any skin injuries
Stay upwind of airborne contaminants
Do not carry cigarettes, cosmetics, gum, etc. into contaminated areas.

Sampling and Monitoring:

When required by the SSO, cover instruments with clear plastic, leaving openings for sampling ports. Bag sample containers prior to emplacement of sample material.

Heavy Equipment:

Care should be taken to limit the amount of contamination that comes in contact with heavy equipment (tires, contaminated augers). Dust control measures may be needed on roads inside the site boundaries.

PERSONNEL DECONTAMINATION

All personnel shall pass through an outlined decontamination procedure when exiting the hot zone at each location. A field wash for equipment and PPE shall be set up at each drilling location. The system will include a gross wash and rinse for all disposable clothing and boots worn in the EZ. Upon exiting the EZ, all personnel will wash their hands, arms, neck, and face before entering the Support Zone.

EQUIPMENT DECONTAMINATION

Equipment used at the Site that is potentially contaminated shall be decontaminated to prevent hazardous materials from leaving the Site. All heavy equipment will be decontaminated at the decontamination pad and inspected by the SSO and Project Manager before it leaves the Site. The decontamination area will provide for the containment of all wastewater from the decontamination process. Respirators, airline and any other personnel equipment that comes in contact with contaminated soils shall pass through a field wash.

DECONTAMINATION DURING MEDICAL EMERGENCIES

If emergency life-saving first aid and/or medical treatment are required, normal decontamination procedures may need to be abbreviated or omitted. The Site SSO or designee will accompany contaminated victims to the medical facility to advise on matters involving decontamination, when necessary. The outer garments can be removed if they do not cause delays, interfere with treatment or aggravate the problem. Respiratory equipment must always be removed. Protective clothing can be cut away. If the outer contaminated garments cannot be safely removed, a plastic barrier between the individual and clean surfaces should be used to help prevent contaminating the inside of ambulances and /or medical personnel. Outer garments are then removed at the medical facility.

No attempt will be made to wash or rinse the victim, unless it is known that the individual has been contaminated with an extremely toxic or corrosive material that could also cause severe injury or loss of life to emergency response personnel. For minor medical problems or injuries, the normal decontamination procedures will be followed. Note that heat stroke requires prompt treatment to prevent irreversible damage or death. Protective clothing must be promptly removed. Less serious forms of heat stress also require prompt attention and removal of protective clothing immediately. Unless the victim is obviously contaminated, decontamination should be omitted or minimized and treatment begun immediately.

DISPOSAL PROCEDURES

A segregating system of non-hazardous waste and hazardous waste will be developed by the SSO and PM. All discarded material, waste materials or other objects shall be handled in such a way as to preclude the potential for spreading contamination, creating sanitary hazards, or causing litter to be left on Site. All potentially contaminated materials, e.g. clothing, gloves, etc., will be bagged or drummed as necessary, labeled and segregated for disposal. All non-contaminated materials shall be collected and bagged for appropriate disposal as normal domestic waste.

1.11 Emergency Plan

The potential for the development of an emergency situation is low considering the low concentrations of hazardous substances at the work site. Nevertheless, an emergency situation could occur. All Alpha-Hydro and subcontractor field team members prior to the start of work will know the emergency plan outlined in this section. The emergency plan will be available for use at all times during site work.

Various individual site characteristics will determine preliminary actions taken to assure that this emergency plan is successfully implemented in the event of a site emergency. Careful consideration must be given to the proximity of neighborhood housing or places of employment, and to the relative possibility of site fire, explosion or release of vapors or gases that could affect the surrounding community.

The Project Manager shall make contact with local fire, police and other emergency units prior to beginning work on site. In these contacts, the Project Manager will inform the emergency units about the nature and duration of work expected at the Site and the type of contaminants and the possible health or safety effects of emergencies involving these contaminants. At this time, the Project Manager and the emergency response units shall make the necessary arrangements to be prepared for any emergencies that could occur.

The Project Manager shall implement the contingency plan whenever conditions at the Site warrant such action. The Project Manager will be responsible for coordination of the evacuation emergency treatment, and transportation of site personnel as necessary, and notification of emergency response units and the appropriate management staff.

The cases where the PM is not available, the SSO shall serve as the alternate emergency coordinator.

EVACUATION

In the event of an emergency situation, such as fire, explosion, or significant release of toxic gases, an air horn or other appropriate device will be sounded for approximately 10 second intervals indicating the initiation of evacuation procedures. All personnel will evacuate and assemble near the entrance to the site. The location shall be upwind of the Site where possible.

For efficient and safe site evacuation and assessment of the emergency situation, the Project Manager will have authority to initiate action if outside services are required. Under no circumstances will incoming personnel or visitors be allowed to proceed into the area once the emergency signal has been given. The SSO or designated SSO must ensure that access for emergency equipment is provided and that all combustion apparatuses have been shut down once the alarm has been sounded. Once the safety of all personnel is established, the Fire Department and other emergency response groups as necessary will be notified by telephone of the emergency.

POTENTIAL OR ACTUAL FIRE OR EXPLOSION

Immediately evacuate the Site (air horn will sound for 10-second intervals), notify the local fire and police departments, and other appropriate emergency response groups if an actual fire or explosion has taken place.

PERSONNEL INJURY

Emergency first aid shall be applied on site as deemed necessary. If necessary, the individual shall be decontaminated and transported to the nearest medical facility.

The ambulance/rescue squad shall be contacted for transport as necessary in an emergency. However, since some situations may require transport of an injured party by other means, the hospital route is identified below. A map to this facility provided with this HASP in Section 2.2.3.

ACCIDENT/INCIDENT REPORTING

As soon as first aid and/or emergency response needs have been met, the following parties are to be contacted by telephone:

1. Dorcas B. Oloke -- cell phone (631) 605-5855
2. The employer of any injured worker if not an Alpha-Hydro employee

Written confirmation of verbal reports is to be submitted within 24 hours. The report form entitled "Accident Data Report" is to be used for this purpose. All Alpha-Hydro representatives contacted by telephone are to receive a copy of this report. If the employee involved is not an Alpha-Hydro employee, his employer shall receive a copy of this report.

For reporting purposes, the term accident refers to fatalities, lost time injuries, spill or exposure to hazardous materials (toxic materials, explosive or flammable materials).

Any information released from the health care provider, which is not deemed confidential patient information, is to be attached to the appropriate form. Any medical information that is released by patient consent is to be filed in the individuals' medical records and treated as confidential.

OVERT PERSONNEL EXPOSURE

SKIN CONTACT: Use copious amounts of soap and water. Wash/rinse affected area thoroughly, and then provide appropriate medical attention. Eyes should be rinsed for 15 minutes upon chemical contamination.

INHALATION: Move personnel to fresh air and if necessary, decontaminate and transport to hospital.

INGESTION: Decontamination and transport to emergency medical facility.

PUNCTURE WOUND

OR LACERATION: Decontaminate and transport to emergency medical facility.

ADVERSE WEATHER CONDITIONS

In the event of adverse weather conditions, the SSO or designee will determine if work can continue without sacrificing the health and safety of all field workers. Some of the items to be considered prior to determining if work should continue are:

- Potential for heat stress and heat-related injuries
- Potential for cold stress and cold-related injuries
- Treacherous weather-related conditions
- Limited visibility
- Potential for electrical storms

Site activities will be limited to daylight hours and acceptable weather conditions. Inclement working conditions include heavy rain, fog, high winds, and lightning. Observe daily weather reports and evacuate if necessary in case of inclement weather conditions.

EMERGENCY RESPONSE EQUIPMENT LIST

Some or all of the following will either be available onsite or be able to be brought to the Site within a 2-hour period:

- 55 Gallon Drums
- 85 Gallon Drums
- Absorbent Pads
- Absorbent Booms
- Speedy-Dry
- Plastic Sheeting
- Hay Bales
- Pneumatic Nibbler
- Back Hoe
- Pressure Washer
- Air Compressor
- Wilden Pumps

- Equipment Storage Trailer
- Submersible Pumps
- Miscellaneous Hand Tools
- Portable Lighting

LARGE EQUIPMENT

If necessary, Alpha-Hydro can have the following large equipment brought to the Site within 2-hours:

- Large Vacuum Truck
- Super Sucker
- Dump Trucks
- Drill Rig
- Utility Vehicle

1.12 Logs, Reports and Record Keeping

MEDICAL AND TRAINING RECORDS

The employer keeps medical and training records. All subcontractors must provide verification of training and medical qualifications to the SSO. The SSO will keep a log of personnel meeting appropriate training and medical qualifications for site work. The log will be kept in the project file. Medical records will be maintained in accordance with 29 CFR 1910.20.

ONSITE LOG

A log of personnel onsite each day will be kept by the SSO or designee. A copy of these logs will be sent to the Alpha-Hydro records coordinator for data entry. Originals will be kept in the project file.

EXPOSURE RECORDS

Any personal monitoring results, laboratory reports, calculations and air sampling data sheets are part of an employee exposure record. These records will be kept in accordance with 29 CFR 1910.20. For Alpha-Hydro employees, the originals will be sent to the Alpha-Hydro records coordinator. For subcontractor employees, the original will be sent to the subcontractor employer and a copy kept in the project file.

ACCIDENT/INCIDENT REPORTS

An accident/incident report must be completed for all accidents and incidents. The originals will be sent to the appropriate Alpha-Hydro records coordinator for maintenance by Alpha-Hydro. Copies will be distributed as stated. A copy of the forms will be kept in the project file.

OSHA FORM 200

An OSHA Form 200 (Log of Occupational Injuries and Illnesses) will be kept at the Site. All recordable injuries or illnesses will be recorded on this form. At the end of the project, the original will be sent to the Alpha-Hydro corporate records administrator for maintenance. Subcontractor employers must also meet the requirements of maintaining an OSHA 200 form. The Alpha-Hydro accident/incident report meets the requirements of the OSHA Form 101 (Supplemental Record) and must be maintained with the OSHA Form 200 for all recordable injuries or illnesses.

HEALTH AND SAFETY FIELD LOG BOOK

The SSO or designee will maintain the logbook in accordance with standard Alpha-Hydro procedures. Daily site conditions, activities, personnel, calibration records, monitoring results and significant events will be recorded. The original logbooks will become part of the exposure records file.

1.13 Sanitation

If sanitary sewers are not provided at the Site, provisions shall be made for access to sanitary systems by using nearby public facilities consistent with provisions of governing local ordinance codes. In the latter case, provisions are required for the removal of accumulated waste products within those units.

If a commercial/industrial laundry is used to clean or launder clothing that is potentially contaminated, they shall be informed of the potential harmful effects of exposure to hazardous substances related to the affected clothing.

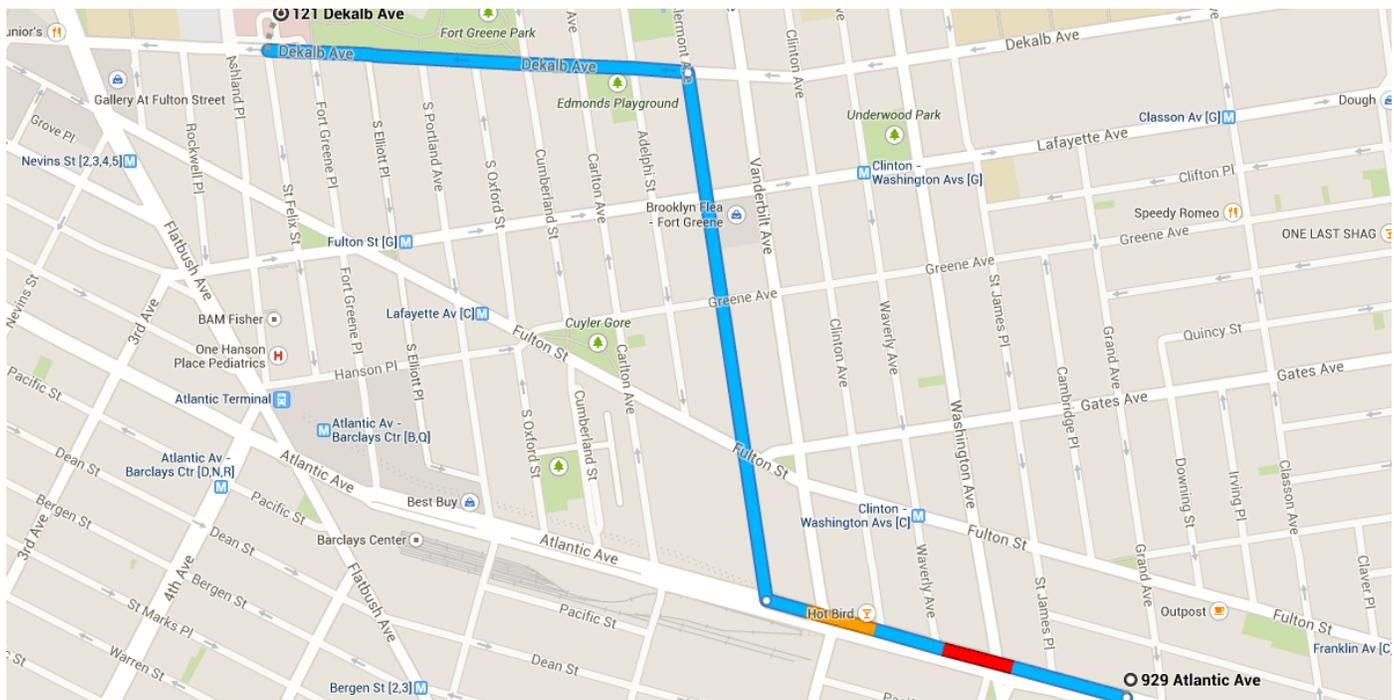
Personnel and subcontractors sites shall follow decontamination procedures described in the HASP, or as directed by the SSO. This will generally include at a minimum site-specific training in shower usage and cleanup, personal hygiene requirements and the donning of protective equipment/clothing.

ATTACHMENT #1
HOSPITAL DIRECTIONS



Drive 1.3 miles, 4 min

Directions from 929 Atlantic Ave to 121 Dekalb Ave



○ 929 Atlantic Ave

Brooklyn, NY 11238

- 1. Head west on Atlantic Ave toward St James Pl

↑ _____ 0.4 mi

- 2. Turn right onto Clermont Ave

↘ _____ 0.5 mi

- 3. Turn left onto Dekalb Ave

↙ **i** Destination will be on the right _____ 0.4 mi

⊙ 121 Dekalb Ave

Brooklyn, NY 11201

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Map data ©2014 Google

ATTCHMENT # 2

FACT SHEETS

Volatile Organic Compounds (VOCs) in Commonly Used Products

People spend most of their time indoors – at home, school and work. This makes the quality of the indoor air you breathe important. This fact sheet focuses on certain kinds of chemicals called *volatile organic compounds* or VOCs that are found in many products that we commonly use. It is designed to help you think about what VOCs may be present in your indoor air and steps you can take to reduce them.

What are VOCs?

VOCs are chemicals that easily enter the air as gases from some solids or liquids. They are ingredients in many commonly used products and are in the air of just about every indoor setting. The table to the right shows some examples of products that contain VOCs.

How do VOCs get into indoor air?

Products containing VOCs can release these chemicals when they are used and when they are stored. Many times you'll notice an odor when using these products. Product labels often list VOC ingredients and recommend that they should be used in well ventilated areas. *Ventilation* means bringing in fresh, outdoor air to mix with indoor air.

When you use a product containing VOCs indoors, the levels of these chemicals in the air increase, then decrease over time after you stop using them. The amount of time the chemical stays in the air depends on how quickly fresh air enters the room and the amount of the chemical used. Levels of VOCs will decrease faster if you open windows or doors, or use exhaust fans.

Building materials and furnishings, such as new carpets or furniture, slowly release VOCs over time. It may be necessary to ventilate areas with new carpeting or furniture for longer time periods because VOC levels can build up again after the windows are closed. If possible, unroll new carpets or store furniture outside your home (in a shed or detached garage) to minimize odors before bringing them in the home. If that's not possible, open windows, close doors and try to stay out of rooms until odors are reduced.

If VOC containing products are used outdoors near your home, you may want to close windows and nearby vents to prevent chemicals from coming inside.

Products used at home or work can release VOCs into the air when used and stored.



Examples of Household Products	Possible VOC Ingredients
Fuel containers or devices using gasoline, kerosene, fuel oil and products with petroleum distillates: paint thinner, oil-based stains and paint, aerosol or liquid insect pest products, mineral spirits, furniture polishes	BTEX (benzene, toluene, ethylbenzene, xylene), hexane, cyclohexane, 1,2,4-trimethylbenzene
Personal care products: nail polish, nail polish remover, colognes, perfumes, rubbing alcohol, hair spray	Acetone, ethyl alcohol, isopropyl alcohol, methacrylates (methyl or ethyl), ethyl acetate
Dry cleaned clothes, spot removers, fabric/leather cleaners	Tetrachloroethene (perchloroethene (PERC), trichloroethene (TCE))
Citrus (orange) oil or pine oil cleaners, solvents and some odor masking products	d-limonene (citrus odor), a-pinene (pine odor), isoprene
PVC cement and primer, various adhesives, contact cement, model cement	Tetrahydrofuran, cyclohexane, methyl ethyl ketone (MEK), toluene, acetone, hexane, 1,1,1-trichloroethane, methyl-iso-butyl ketone (MIBK)
Paint stripper, adhesive (glue) removers	Methylene chloride, toluene, older products may contain carbon tetrachloride
Degreasers, aerosol penetrating oils, brake cleaner, carburetor cleaner, commercial solvents, electronics cleaners, spray lubricants	Methylene chloride, PERC, TCE, toluene, xylenes, methyl ethyl ketone, 1,1,1-trichloroethane
Moth balls, moth flakes, deodorizers, air fresheners	1,4-dichlorobenzene, naphthalene
Refrigerant from air conditioners, freezers, refrigerators, dehumidifiers	Freons (trichlorofluoromethane, dichlorodifluoromethane)
Aerosol spray products for some paints, cosmetics, automotive products, leather treatments, pesticides	Heptane, butane, pentane
Upholstered furniture, carpets, plywood, pressed wood products	Formaldehyde

VOCs can also get into indoor air from contaminated soils and groundwater under buildings. The chemicals enter buildings through cracks and openings in basements or slabs. When nearby soil or groundwater is contaminated, you might be asked for permission to investigate indoor air at your property. More information can be found at www.nyhealth.gov/environmental/indoors/vapor_intrusion/.

Should I be surprised if VOCs are in the air I breathe?

No. Because they are commonly used, some VOCs are almost always found in indoor air. The New York State Department of Health (DOH) and other agencies have studied typical levels of VOCs that may be present in indoor and outdoor air. Sometimes these levels are called "background levels".

The term "background levels" can be confusing because they can vary depending on where an air sample was collected and whether VOCs were used or stored. For example, a study of VOCs in urban areas might find higher levels than another study in rural areas. Some studies look at office environments, others examine residences. Please keep in mind study findings may or may not make sense for your setting.

More information about levels of VOCs collected by DOH is available in Appendix C of the guidance for evaluating vapor intrusion at www.nyhealth.gov/environmental/investigations/soil_gas/svi_guidance.

How can VOCs affect human health?

Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure*. No matter how dangerous a substance or activity is, it cannot harm you without exposure.

Whether or not a person will have health effects after breathing in VOCs depends on:

1. The *toxicity* of the chemical (the amount of harm that can be caused by contact with the chemical).
2. How much of the chemical is in the air.
3. How long and how often the air is breathed.

Differences in age, health condition, gender and exposure to other chemicals also can affect whether or not a person will have health effects.

Short-term exposure to high levels of some VOCs can cause headaches, dizziness, light-headedness, drowsiness, nausea, and eye and respiratory irritation. These effects usually go away after the exposure stops. In laboratory animals, long-

term exposure to high levels of some VOCs has caused cancer and affected the liver, kidney and nervous system. In general, we recommend minimizing exposure to chemicals, if possible.

How can I reduce the levels of VOCs indoors?

- Find out if products used or stored in your home contain VOCs. Information about the chemicals in many household products are listed on the front of this fact sheet and a larger list is on the National Institute of Health's website at hpd.nlm.nih.gov/products.htm.
- If you must store products containing VOCs, do so in tightly sealed, original containers in a secure and well-ventilated area. If possible store products in places where people do not spend much time, such as a garage or outdoor shed. Better yet, buy these products in amounts that are used quickly.
- Dispose of unneeded products containing VOCs. Many of these products are considered *household hazardous wastes* and should be disposed of at special facilities or during special household hazardous waste collection programs in your area. Contact your town or visit the New York State Department of Environmental Conservation's website at www.dec.ny.gov/chemical/8485.html for more information about disposing of these products.
- Use products containing VOCs in well-ventilated areas or outdoors. Open windows and doors or use an exhaust fan to increase ventilation. Repeated or prolonged ventilation may be necessary for reducing levels from building materials (new carpeting or furniture) that release VOCs slowly over time.
- Carefully read labels and follow directions for use.

Where can I find out more?

- **New York State Department of Health** (800) 458-1158 www.nyhealth.gov/environmental/
- **Indoor Air Quality and Your Home** from the New York State Energy Research and Development Authority www.nyserda.org/publications/iaq.pdf
- **The Inside Story: A Guide to Indoor Air Quality** www.epa.gov/iaq/pubs/insidest.html
- **New York State Department of Environmental Conservation** website for information about household hazardous waste disposal www.dec.ny.gov/chemical/8485.html
- **National Institute of Health's** website for information about chemicals found in many household products. hpd.nlm.nih.gov/products.htm



December 2007



Mid-Atlantic Brownfields & Land Revitalization

You are here: [EPA Home](#) » [Mid-Atlantic Cleanup](#) » [Brownfields and Land Revitalization](#) » [Analytical Profiles](#)
» [Semi-Volatile Organic Compounds](#)

Semi-Volatile Organic Compounds

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

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

LIST OF SEMIVOLATILE ORGANIC COMPOUNDS *

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

- Di-n-butylphthalate
- Fluoranthene
- Pyrene
- Butylbenzylphthalate
- 3,3'-Dichlorobenzidine
- Benzo(a)anthracene
- Chrysene
- Bis(2-ethylhexyl)phthalate
- Di-n-octylphthalate
- Benzo(b)fluoranthene
- Benzo(k)fluoranthene
- Benzo(a)pyrene
- Indeno(1,2,3-cd)pyrene
- Dibenz(a,h)anthracene
- Benzo(g,h,i)perylene

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

ANALYSIS METHODS

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

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

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

COLLECTION MEDIA/VOLUME

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

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

MINIMUM LABORATORY QUALITY CONTROL MEASURES

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

QC TYPE	FREQUENCY OF ANALYSIS	ACCEPTABLE LIMITS
Gas Chromatograph/Mass Spectrometer (GC/MS) Tuning	Once per day or more frequently if required by method	See method criteria for acceptable limits
Initial Calibration	Prior to analysis of samples (minimum three concentration levels for every compound and an instrument blank)	% Relative Standard Deviation of Response Factors of ≤ 30 (see method for any allowable variations), and a minimum Response Factor of ≥ 0.05 (see method for calculation)
Continuing Calibration	Once per day (mid-level standard containing all compounds) or more frequently if required by method	% Difference for Response Factor of ≤ 25 (see method for any allowable variations), and a minimum Response Factor of ≥ 0.05 (see method for calculation)
Method Blank	Once per extraction batch	See method for allowable limits
Internal Standards	Six per sample (see method for suggested internal standard compounds)	-50% to + 100% of Daily standard area and retention time shift (limits depend if packed or capillary column, see method)
Matrix Spike/Matrix Spike Duplicate	One set of MS/MSD per 20 samples or analysis set	See method for allowable limits
Surrogate Spikes	Added to each sample (see method for suggested surrogate compounds)	Report recovery

MINIMUM DATA PACKAGE REQUIREMENTS

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

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



Pesticides: Topical & Chemical Fact Sheets

You are here: [EPA Home](#) » [Pesticides](#) » [Fact Sheets](#) » [Health and Safety](#) » [Assessing Health Risks from Pesticides](#)

Assessing Health Risks from Pesticides

Este Web page está disponible [en español](#)

Current as of: April 5, 2007
735-F-99-002

Questions on Pesticides?

- Contact the National Pesticide Information Center (NPIC) 1-800-858-7378

The Federal Government, in cooperation with the States, carefully regulates pesticides to ensure that they do not pose unreasonable risks to human health or the environment. As part of that effort, the Environmental Protection Agency (EPA) requires extensive test data from pesticide producers that demonstrate pesticide products can be used without posing harm to human health and the environment. EPA scientists and analysts carefully review these data to determine whether to register (license) a pesticide product or a use and whether specific restrictions are necessary. This fact sheet is a brief overview of EPA's process for assessing potential risks to human health when evaluating pesticide products.

Background

There are more than 1055 active ingredients registered as pesticides, which are formulated into thousands of pesticide products that are available in the marketplace.

EPA plays a critical role in evaluating these chemicals prior to registration, and in reevaluating older pesticides already on the market, to ensure that they can be used with a reasonable certainty of no harm. The process EPA uses for evaluating the health impacts of a pesticide is called risk assessment.

EPA uses the National Research Council's four-step process for human health risk assessment:

- Step One:** Hazard Identification
- Step Two:** Dose-Response Assessment
- Step Three:** Exposure Assessment
- Step Four:** Risk Characterization

Step One: Hazard Identification (Toxicology)

The first step in the risk assessment process is to identify potential health effects that may occur from different types of pesticide exposure. EPA considers the full spectrum of a pesticide's potential health effects.

Generally, for human health risk assessments, many toxicity studies are conducted on animals by pesticide companies in independent laboratories and evaluated for acceptability by EPA scientists. EPA evaluates pesticides for a wide range of adverse effects, from eye and skin irritation to cancer and birth defects in laboratory animals. EPA may also consult the public literature or other sources of supporting information on any aspect of the chemical.

Step Two: Dose-Response Assessment

Paracelsus, the Swiss physician and alchemist, the "father" of modern toxicology (1493-1541) said,

"The dose makes the poison."

In other words, **the amount of a substance a person is exposed to** is as important as **how toxic the chemical might be**. For example, small doses of aspirin can be beneficial to people, but at very high doses, this common medicine can be deadly. In some individuals, even at very low doses, aspirin may be deadly.

Dose-response assessment involves considering the dose levels at which adverse effects were observed in test animals, and using these dose levels to calculate an equal dose in humans.

Step Three: Exposure Assessment

People can be exposed to pesticides in three ways:

1. Inhaling pesticides (inhalation exposure),
2. Absorbing pesticides through the skin (dermal exposure), and
3. Getting pesticides in their mouth or digestive tract (oral exposure).

Depending on the situation, pesticides could enter the body by any one or all of these routes. Typical sources of pesticide exposure include:

- **Food**
Most of the foods we eat have been grown with the use of pesticides. Therefore, pesticide residues may be present inside or on the surfaces of these foods.
- **Home and Personal Use Pesticides**
You might use pesticides in and around your home to control insects, weeds, mold, mildew, bacteria, lawn and garden pests and to protect your pets from pests such as fleas. Pesticides may also be used as insect repellants which are directly applied to the skin or clothing.
- **Pesticides in Drinking Water**
Some pesticides that are applied to farmland or other land structures can make their way in small amounts to the ground water or surface water systems that feed drinking water supplies.
- **Worker Exposure to Pesticides**
Pesticide applicators, vegetable and fruit pickers and others who work around pesticides can be exposed due to the nature of their jobs. To address the unique risks workers face from occupational exposure, EPA evaluates occupational exposure through a separate program. All pesticides registered by EPA have been shown to be safe when used properly.

Step Four: Risk Characterization

Risk characterization is the final step in assessing human health risks from pesticides. It is the process of combining the hazard, dose-response and exposure assessments to describe the overall risk from a pesticide. It explains the assumptions used in assessing exposure as well as the uncertainties that are built into the dose-response assessment. The strength of the overall database is considered, and broad conclusions are made. EPA's role is to evaluate both toxicity and exposure and to determine the risk associated with use of the pesticide.

Simply put,

$$\text{RISK} = \text{TOXICITY} \times \text{EXPOSURE}.$$

This means that the risk to human health from pesticide exposure depends on both the toxicity of the pesticide and the likelihood of people coming into contact with it. At least *some* exposure and *some* toxicity are required to result in a risk. For example, if the pesticide is very poisonous, but no people are exposed, there is no risk. Likewise, if there is ample exposure but the chemical is non-

such as a respirator or chemical resistant gloves, or not allowing workers to enter treated crop fields until a specific period of time has passed.

If, after considering all appropriate risk reduction measures, the pesticide still does not meet EPA's safety standard, the Agency will not allow the proposed chemical or use. Regardless of the specific measures enforced, EPA's primary goal is to ensure that legal uses of the pesticide are protective of human health, especially the health of children, and the environment.

Human Health Risk Assessment and the Law

Federal law requires detailed evaluation of pesticides to protect human health and the environment. In 1996, Congress made significant changes to strengthen pesticide laws through the Food Quality Protection Act (FQPA). Many of these changes are key elements of the current risk assessment process. FQPA required that EPA consider:

- **A New Safety Standard:** FQPA strengthened the safety standard that pesticides must meet before being approved for use. EPA must ensure with a reasonable certainty that no harm will result from the legal uses of the pesticide.
- **Exposure from All Sources:** In evaluating a pesticide, EPA must estimate the combined risk from that pesticide from all non-occupational sources, such as:
 - Food Sources
 - Drinking Water Sources
 - Residential Sources
- **Cumulative Risk:** EPA is required to evaluate pesticides in light of similar toxic effects that different pesticides may share, or "a common mechanism of toxicity." Read about how EPA evaluates [cumulative risk](#) for pesticides.
- **Special Sensitivity of Children to Pesticides:** EPA must ascertain whether there is an increased susceptibility from exposure to the pesticide to infants and children. EPA must build an additional 10-fold safety factor into risk assessments to ensure the protection of infants and children, unless it is determined that a lesser margin of safety will be safe for infants and children.

For More Information

If you would like more information about EPA's pesticide programs, contact the Communication Service Branch at (703) 305-5017 or visit the [Pesticides Web site](#).

For more information on specific pesticides, or to inquire about the symptoms of pesticide poisoning, call the National Pesticide Information Center (NPIC), a toll-free hotline information at: 1-800-858-7378, or visit their [Web site](#) [\[EXIT Disclaimer\]](#).

Fact Sheet: Sources of Polychlorinated Biphenyls

Purpose

This fact sheet is intended to help Oregon Department of Environmental Quality (DEQ) project managers and City of Portland stormwater inspectors understand the types of industries, processes, and products that might be potential sources of polychlorinated biphenyls (PCBs). There are a variety of potential PCB sources in addition to more commonly recognized sources such as electrical transformer and capacitor oils and fluorescent light ballasts.

Background

PCBs are mixtures of synthetic organic chemicals that were commonly used for various applications from approximately 1929 until 1979 when the U.S. banned PCB manufacturing, processing, distribution, and use (EIP Associates, 1997). The U.S. was responsible for approximately half of the world's production of PCBs and imported approximately 50% of the remainder produced by other countries (minus exports) (EIP Associates, 1997; UNEP Chemicals, 1999). PCBs were produced and marketed in the U.S. under the trade names of Aroclor (produced by Monsanto Chemical Company) and Pyranol (produced by General Electric) (Nagpal, 1992). Because of health concerns, in 1971 Monsanto voluntarily restricted manufacturing of PCBs to use only in closed systems. Monsanto discontinued manufacture of PCBs in 1977, though PCBs continued to be imported into the U.S. until 1979 when the U.S. ban took effect (EIP Associates, 1997; ATSDR, 2000).

There are no natural sources of PCBs. Although their current commercial use is restricted in the U.S., they continue to be a common environmental contaminant because they are extremely stable.

Regulatory Framework

PCBs were regulated under a series of EPA actions culminating with a ban in 1979 on manufacturing, processing, distribution, and use of PCBs under the Toxic Substances Control Act (TSCA). Items such as transformers and hydraulic fluids were identified as high-risk sources and were targeted for accelerated phase-out. EPA anticipated that other lower-risk sources would eventually be removed from circulation as various products reached the end of their useful lives.

Certain current uses of PCBs are authorized under 40 CFR Part 761 and are summarized in Table 1:

- Manufactured or imported products must contain < 25 ppm PCBs;
- Manufactured or imported detergent bars must contain < 5 ppm PCBs;
- PCB concentrations must be less than 10 ppm at the point which PCBs are released to ambient air;
- "...PCBs added to water discharged from a manufacturing site must be less than 100 micrograms per resolvable gas chromatographic peak per liter of water discharged"; and
- Disposal of process wastes with PCB concentrations > 50 ppm must be conducted in accordance with 40 CFR Part 761 Subpart D.

Sources of PCBs

In the U.S., the most commonly used Aroclors were: 1221, 1232, 1242, 1248, 1254, and 1260 (DEQ, 1997). These and other Aroclors were used in a variety of materials to enhance insulative properties, improve physical and chemical resistance, and act as plasticizers, coolants, and lubricants. Additional information about specific Aroclors is included in Table A-1 (see Attachment 1).

Approximate usage of PCBs in the US is summarized as follows (EIP Associates, 1997):

Closed system and heat transfer fluids (transformers, capacitors, fluorescent light ballasts, etc.): 60%

Plasticizers: 25%

Hydraulic fluids and lubricants: 10%

Miscellaneous uses: 5%

As shown in Table 2, PCBs were commonly used in a number of electrical, heat transfer, and hydraulic applications as well as a range of other applications.

TABLE 2 PCB Uses	
Primary Applications	
Dielectric fluids and transformers	Used as insulating material, coolant, and for fire-resistant properties. Potential sources would be facilities which used, stored, and serviced electrical equipment and which used significant amounts of electricity. These facilities could include, but are not limited to: Electrical transmission and distribution facilities; electrical equipment maintenance facilities and salvage yards; rail yards; and manufacturing facilities (sawmills, pulp and paper mills, chemical manufacturing, shipyards, primary and secondary metals smelting and refining, etc.)
Capacitors	Present in industrial facilities, industrial machinery both fixed and mobile, and consumer products. Includes larger power-factor correction capacitors associated with transformers, manufacturing facilities, and commercial buildings (usually near high power-usage equipment such as computer rooms and heating and cooling units); and smaller electric motor-start capacitors used in industrial

	equipment and appliances such as hair dryers, air conditioners, refrigerators, power tools, and submersible well pumps. Also includes capacitors used in appliances and electronics such as televisions and microwave ovens.
Fluorescent light ballasts	PCB-containing capacitors were used in fluorescent light ballasts. PCB-containing asphaltic resin (potting material) was also utilized as insulating material for some ballasts.
Electromagnets	Oil-cooled electromagnets are constructed with coils immersed in transformer oil to prevent over-heating and shorting. Used in cranes for picking up metal and for metal separation in recycling operations (metal scrap yards, tire shredding, concrete crushing, slag operations, etc.).
Miscellaneous electrical equipment	Switches, voltage regulators, circuit breakers, reclosers, rectifiers, and some oil-cooled electric motors.
Heat transfer systems	Where oil is circulated through a non-contact system as a heat transfer medium for heating, cooling, and maintaining uniform temperature throughout a system or manufacturing process. Wide variety of applications in manufacturing industries including high-tech, asphalt, pulp and paper, metal products such as steel tubing and die casting, adhesives, chemicals, food processing, paint & coatings, textiles, etc.
Hydraulic fluids	Any application of hydraulic oil such as industrial equipment and machinery, commercial equipment, automotive brake fluid, etc.
Plasticizers	Used in polyvinyl chloride plastic, neoprene, chlorinated rubbers, laminating adhesives, sealants and caulking, joint compounds (concrete), etc.
Lubricants	Cutting oils, compressors, electrical equipment, oil-impregnated gaskets and filters; also currently present in low concentrations in recycled oil. Also used in vacuum pumps at high tech and electronics manufacturing facilities, research labs, and wastewater treatment plants.
Other applications of PCBs	
Dust control (dedusting agents)	Present in dust control formulations, and used oil historically used for dust suppression.
Pesticides	As an extender to extend the life of pesticides.
Fire retardants	Coatings on ceiling tiles, and textiles including ironing boards and yarn.
Paints, coatings	As plasticizers in paint, corrosion resistant paints for various applications including military/navy ships, corrosion resistant epoxy resins on metal surfaces, film casting solutions for electrical coatings, varnish, lacquers, and waterproofing coatings for various applications.
Carbonless copy paper	Used as an ink pigment carrier (microencapsulation of dye); when the top sheet was pressed down, ink and PCB oil were transferred to the copy.
Printing inks	Ink for newsprint and as a dye carrier; also used as a solvent for deinking newsprint for recycling.
Investment casting waxes	Used as wax extenders.
Wood treatment	May be present as an impurity in pentachlorophenol (Warrington, 1996).
Sources: ATSDR (2000), DEQ (1997), EIP Associates (1997), UNEP Chemicals (1999)	

Due to the long service life of many PCB-containing items and the use of PCBs in some durable, relatively inert products, PCB-containing materials will continue to be disposed of and processed in waste and recycling operations. Waste products and recycling operations that may process significant quantities of PCB-containing materials are described in Table 3:

Material or Operation	Comments
Scrap metal recycling	Transformer shell salvaging; heat transfer and hydraulic equipment; and fluff (shredder waste from cars and appliances including upholstery, padding and insulation). Also present in non-ferrous metal salvaging as parts from PCB-containing electrical equipment, and oil & grease insulated electrical cable.
Auto salvage yards, auto crushing	Hydraulic fluid, brake fluid, recycled oil, capacitors, and oil-filled electrical equipment such as some ignition coils.
Repair activities	Shipyards (electrical equipment, hydraulic oil, paint, etc.), locomotive repair, heavy equipment repair facilities, auto repair, repair of manufacturing equipment, etc.
Used oil	May be present in used oil from various sources including auto salvage yards, automotive and heavy equipment repair shops, hydraulic equipment repair, industrial machinery repair, etc. Because some PCBs have been mixed with used oil, some recycled oils currently in circulation may contain PCBs at concentrations generally < 50 ppm. PCBs may also be present where used oil has been used for dust suppression/road oiling, weed control, and energy recovery.
Recycled paper	Paper may contain PCBs where carbonless copy paper has been used in recycling. However, PCB concentrations have decreased over time as the volume of unrecycled carbonless copy paper is reduced. Recycled paper containing PCBs has historically been used for food packaging (CWC, 1997). PCB concentrations in food packaging are restricted to 10 ppm unless an impermeable barrier is present between the packaging and food product (FDA, 2003).
Effluent	PCBs may be in wastewaters from manufacturing facilities and equipment such as chemical and pesticide facilities, pulp and paper mills, cooling waters from vacuum pumps and electric power generation facilities where leaks have occurred, and condensate from vacuum pumps and natural gas pipelines. Significant cleanup activities have been performed at natural gas pipeline compressor stations from discharges of condensate to ground and storm drainage systems (DOJ, 2002).
Asphalt roofing materials, tar paper, and roofing felt	Anticipated at generally very low concentrations where used oil containing PCBs has been used in asphalt mix.
Building demolition	Electrical equipment, joint caulking, oil & grease insulated cable, surface coatings as flame retardant and waterproofing.
Dredge spoils	From areas where contaminated sediments are present.
Landfills	Municipal and industrial solid waste; virtually all potential sources could be present, including waste materials and soils from remediation sites.
Wastewater treatment plant sludge	Derived from atmospheric deposition and stormwater, water supply systems, leaks and spills, leaching from coatings and plastics containing PCBs, PCBs in food and human waste.
Sources: EIP Associates (1997), EPA (2002), UNEP Chemicals (1999)	

Releases of PCBs

Prior to the regulation of PCBs under the Toxic Substances Control Act (TSCA) in 1976, PCBs were released (both accidentally and intentionally) into the atmosphere, water, and land through sewers, smokestacks, stormwater runoff, spills, and direct application to the environment (for example, to reduce dust emissions and to extend the life of some agricultural pesticide formulations) (Flynn, 1997). Large volumes of PCBs have been introduced to the environment through the burning of PCB-containing products, vaporization from PCB-containing coatings and materials, releases into sewers and streams, improper disposal of PCB-containing equipment in non-secure landfill sites and municipal disposal facilities, and by other routes (such as ocean dumping) (ATSDR, 2001).

Based on the current regulation of PCBs, the current primary “new” sources of PCB contamination are limited to outdated or illegal landfills and scrap yards and leaks or explosions of electrical equipment and other equipment (such as locomotive transformers) that may still contain PCBs (ATSDR, 2001). Other sources are facilities or sites that were previously contaminated with PCBs (for example, contaminated sediments). From contaminated sites, PCBs are emitted and re-deposited to the environment via volatilization from water and soil, wet and dry depositions, and re-volatilization (HSDB, 2003). These processes are discussed in further detail in Attachment 2.

HEAVY METAL ENVIRONMENTAL HEALTH FACT SHEET

H. Staninger© October 25, 2010

Heavy Metals are in your daily environment, you are constantly exposed to environmental stress factors that lead to the development of toxicity in your body. Of these, the major category of toxic substances are heavy metals. Heavy metals primarily consist of the following: lead, cadmium, zinc, copper, arsenic, and silver (from over exposure to colloidal silver and/or other colloidal mineral oral administration for long periods of time).

Overall the heavy metals tend to do the following:

- Decrease the function of the immune system.
- Increase allergic reactions, cancer (arsenic/skin) and systemic organ system disease states.
- Increase sensitivities to electromagnetic frequency.
- Alter genetic mutations of natural flora and the individual exposed.
- Increase acidity of the blood.
- Increase inflammation of arteries and tissues
- Increase hardening of artery walls.
- Increase progressive blockage of arteries.
- Increase risk of hair loss, nail changes and color teeth.

In general the impact of toxins on unhealthy and healthy functions in the body can have these types of results:

Unhealthy

- Toxins form internally, leaking through the unhealthy intestine and flow to the liver.
- Toxins are not completely detoxified in the unhealthy liver or kidney.
- Unchanged toxins leave the liver and are stored in tissues, such as fat, the brain and the nervous system or deep muscle tissue.

Healthy

- Few toxins are formed and most of them are excreted as parent compounds.
- The metabolites of the parent compounds (toxins) are transported to the liver in addition to the original compounds.
- Toxins are transformed into metabolites, degradation products and sub-metabolites.
- The intermediate substances are transformed into a more water soluble substance and released into the kidneys. Kidneys may accumulate the toxins, if not healthy.
- The water soluble substance is excreted via the urine, saliva and sweat. If re-absorbed through the intestinal colon, a minimum of 35 % of the toxin will be re-circulated in peripheral blood. This process will repeat itself, if no intestinal cleansing occurs.

Reference:

Eliopoulos, Charlotte. [Initiation to Holistic Health: A Guide to Living a Balanced Life.](#) Chapter 12: *Environmental Effects on the Immune System.* Jones and Bartlett Publishers. Boston, MA. © 2004 pgs: 203-223.

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- Increase progressive blockage of arteries.
- Increase risk of hair loss, nail changes and color teeth.

In general the impact of toxins on unhealthy and healthy functions in the body can have these types of results:

ATTACHMENT F
VAPOR BARRIER SPECIFICATIONS

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 VBP 20

APPLICATIONS

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

VaporBlock® Plus™
UNDERSLAB VAPOR RETARDER / GAS BARRIER

		VAPORBLOCK PLUS 20	
PROPERTIES	TEST METHOD	IMPERIAL	METRIC
APPEARANCE		White/Gold	
THICKNESS, NOMINAL		20 mil	0.51 mm
WEIGHT		102 lbs/MSF	498 g/m ²
CLASSIFICATION	ASTM E 1745	CLASS A, B & C	
TENSILE STRENGTH LBF/IN (N/CM) 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	0.0051 Perms grains/(ft ² ·hr·in·Hg)	0.0034 Perms g/(24hr·m ² ·mm Hg)
RADON DIFFUSION COEFFICIENT	K124/02/95	< 1.1 x 10 ⁻¹³ m ² /s	
METHANE PERMEANCE	ASTM D 1434	< 1.7 x 10 ⁻¹⁰ m ² /d·atm 0.32 GTR (Gas Transmission Rate) ml/m ² ·D·ATM	

VaporBlock[®] Plus[™] Placement

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



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

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



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Limited Warranty available at www.RavenEFD.com

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

10/10 EFD 1125