

901 MYRTLE AVENUE

Brooklyn, NEW YORK

Remedial Action Work Plan

NYC VCP Project Number 16CVCP047K

OER Project Number 15EHAN579K

Prepared For:

Metropolitan Realty Exemptions Inc

394 Marcy Avenue

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Prepared By:

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DECEMBER 2015

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LIST OF ACRONYMS

| Acronym | Definition |
|----------------|---|
| AOC | Area of Concern |
| AS/SVE | Air Sparging/Soil Vapor Extraction |
| BOA | Brownfield Opportunity Area |
| CAMP | Community Air Monitoring Plan |
| C&D | Construction and Demolition |
| CEQR | City Environmental Quality Review |
| CFR | Code of Federal Regulations |
| CHASP | Construction Health and Safety Plan |
| COC | Certificate of Completion |
| CQAP | Construction Quality Assurance Plan |
| CSOP | Contractors Site Operation Plan |
| DCR | Declaration of Covenants and Restrictions |
| ECs/ICs | Engineering Controls and Institutional Controls |
| ELAP | Environmental Laboratory Accreditation Program |
| HASP | Health and Safety Plan |
| HAZWOPER | Hazardous Waste Operations Emergency Response |
| IRM | Interim Remedial Measure |
| BCA | Brownfield Cleanup Agreement |
| MNA | Monitored Natural Attenuation |
| NOC | Notice of Completion |
| NYS DEC | New York State Department of Environmental Conservation |
| NYC DEP | New York City Department of Environmental Protection |
| NYC DOHMH | New York State Department of Health and Mental Hygiene |
| NYC OER | New York City Office of Environmental Remediation |
| NYC VCP | New York City Voluntary Cleanup Program |
| NYCRR | New York Codes Rules and Regulations |

| | |
|-------------|---|
| NYS DEC | New York State Department of Environmental Conservation |
| NYS DEC DER | New York State Department of Environmental Conservation Division of Environmental Remediation |
| NYS DOH | New York State Department of Health |
| NYS DOT | New York State Department of Transportation |
| ORC | Oxygen-Release Compound |
| OSHA | United States Occupational Health and Safety Administration |
| PCBs | Professional Engineer Polychlorinated Biphenyls |
| PE | Professional Engineer |
| PID | Photo Ionization Detector |
| QEP | Qualified Environmental Professional |
| QHHEA | Qualitative Human Health Exposure Assessment |
| RAOs | Remedial Action Objectives |
| RAR | Remedial Action Report |
| RAWP | Remedial Action Work Plan or Plan |
| RCA | Recycled Concrete Aggregate |
| RD | Remedial Design |
| RI | Remedial Investigation |
| RMZ | Residual Management Zone |
| SCOs | Soil Cleanup Objectives |
| SCG | Standards, Criteria and Guidance |
| SMP | Site Management Plan |
| SPDES | State Pollutant Discharge Elimination System |
| SSDS | Sub-Slab Depressurization System |
| SVOC | Semi-Volatile Organic Compound |
| TAL | Target Analyte List |
| TCL | Target Compound List |
| USGS | United States Geological Survey |
| UST | Underground Storage Tank |
| VOC | Volatile Organic Compound |



CERTIFICATION

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

- I have reviewed this document, to which my signature and seal are affixed.
- Engineering Controls developed for this remedial action were designed by me or a person under my direct supervision and achieve to achieve the goals established in this Remedial Action Work Plan for this site.
- The Engineering Controls to be constructed during this remedial action are accurately reflected in the text and drawings of the Remedial Action Work Plan and are of sufficient detail to enable proper construction.
- This Remedial Action Work Plan (RAWP) has a plan for handling, transport and disposal of soil, fill, fluids and other materials removed from the property in accordance with applicable City, State and Federal laws and regulations. Importation of all soil, fill and other material from off-Site will be in accordance with all applicable City, State and Federal laws and requirements. This RAWP has provisions to control nuisances during the remediation and all invasive work, including dust and odor suppression.

Name

PE License Number

Signature

Date

PE Stamp

I, Chawinie Reilly, am a qualified Environmental Professional. I had primary direct responsibility for implementation remedial program for the 901 Myrtle Avenue site, site number 15EHAN579K. I certify to the following:

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

Chawinie Reilly
QEP Name


QEP Signature

12/16/15
Date

EXECUTIVE SUMMARY

Metropolitan Realty Exemptions Inc is working with the NYC Office of Environmental Remediation (OER) in the New York City Voluntary Cleanup Program to investigate and remediate a 6,363-square foot site located at 901 Myrtle Avenue in 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 with applicable laws and regulations.

Site Location and Background

The Site is located at 901 Myrtle Avenue in the Bedford Stuyvesant section of Brooklyn, New York, and is currently identified as Block 1747, Lot 34 on the New York City Tax Map. Figure 1 shows the Site location. The Lots are rectangular shaped and consist of 54.17 feet of street frontage on Myrtle Avenue, 25 feet of frontage on Tompkins Avenue and extends 100 feet deep for a total of approximately 6,363 ft². The Site is located on the north side of Myrtle Avenue and the west side of Tompkins Avenue. To the north the Site is bordered by a commercial building and residential buildings. The properties adjacent to the south, east and west are developed with residential buildings. A map of the site boundary is shown on Figure 2.

The Site is currently developed with one two- story structure with a full basement. The current basement is roughly 10 feet below grade. A barber shop occupies the 1st floor. In addition, a yard area is present on the Myrtle Avenue and Tompkins Avenue sides of the site.

Summary of Redevelopment Plan

The proposed new building will consist of a seven-story residential and commercial development. A majority of the proposed new building will be slab on grade and the central



portion will have a basement. The cellar will be equipped with a janitor / storage room, gas meter / sprinkler room and electrical meter room. The first floor will be occupied by two commercial tenants, compactor room and bike storage area. The 2nd through 7th floors will be occupied by residential tenants. 50% of the lot will be excavated to a depth of 2 feet. 10 feet from each of the adjacent structures will not be excavated to avoid shoring. The cellar area on the central portion of the site will be excavated to a depth of 10-12 feet. The elevator pit will be excavated to a depth of 5 feet below grade. The site will be equipped with a courtyard and recreation area; which will be unexcavated and capped.

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

Summary of Surrounding Property

The area immediately surrounding Site consists of mixed use residential and commercial buildings adjacent to the north. Residential buildings are located adjacent to the east and west of the site. Beyond Myrtle Avenue is developed with residential buildings. Figure 4 shows the surrounding land usage of the adjacent properties listed below as well as additional properties located up to 500 feet away from the Site. No hospitals are located within a 250 ft radius of the Site. One school facility is located within a 500 ft radius of the Site at 662 Park Avenue to the north.

Summary of Past Site Uses and Areas of Concern

A Phase I screening was completed by EBC in September 2015. The following Site history was established based on historic Sanborn maps:

The Site was developed prior to 1887 with three 3-story store fronts with rear yards on the south side of the Site and two 2-story and one 1-story stables on the northern side of the Site. In 1904 the two western store fronts remained and merged into one 3-story store with a small 1-story addition in the rear yard of the western most building, the eastern most store remained the same with the addition of a single story building occupying the entire footprint of the rear yard, and the northern portion of the lot was redeveloped with one 3-story stable with an elevator and office.



In 1918, the northern stable was noted as an auto warehouse on the first floor and the second and third floors were utilized as storage and a warehouse. The lot remained in this configuration until 1977. In 1977, the two western buildings on the southern side of the site and the 3-story building on the northern side of the site were demolished and the areas left vacant. In 2006, the western most portion of the lot was developed with a 5-story building consisting of a commercial space on the first floor and residential apartments on the remaining 4 floors. In 2007, the western building was not noted on the Sanborn map.

The western most portions and the northern portion of the lot have remained vacant, while the eastern building on the south side of the Site was utilized as commercial space on the first floor and two residential apartments on the second and third floors.

Based upon reconnaissance of the subject site and surrounding properties, and review of historical records and regulatory agency databases, no recognized environmental conditions were identified in connection with the subject site.

Summary of Work Performed under the Remedial Investigation

EBC performed the following scope of work at the Site in July of 2015:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Installed six soil borings across the Site on September 25, 2015 and collected 12 soil samples with a duplicate for chemical analysis from the soil borings to evaluate soil quality;
3. Installed 2 groundwater monitoring wells throughout the Site and collected 2 groundwater samples for chemical analysis to evaluate groundwater quality. MW3 was previously installed. EBC attempted several times to collect a sample from this well and was unsuccessful; and
4. Installed five sub slab soil gas implants and collected five soil gas samples for chemical analysis.

Summary of Findings of Remedial Investigation



A remedial investigation was performed and the results are documented in a companion document called “Remedial Investigation Report, 901 Myrtle Avenue Brooklyn NY”, dated October 2015 (RIR).

Summary of Environmental Findings

1. The elevation of the Site is approximately 35 feet.
2. Depth to groundwater is estimated to be approximately 31.32 to 33.10 feet below sidewalk grade.
3. Groundwater flow is generally north west.
4. Depth to bedrock is at the Site is greater than 100 feet.
5. The stratigraphy of the Site surrounding the existing foundation slab from the surface down consists of historic fill material to depths as great as 3 feet, underlain by native brown fine-sand with gravel and pebbles.
6. Soil/fill samples results were compared to NYSDEC Unrestricted Use Soil Cleanup Objectives and Restricted Residential Soil Cleanup Objectives as presented in 6NYCRR Part 375-6.8. No PCBs were detected in any of the soil samples. Two VOCs were detected at trace concentrations and below Unrestricted Use Soil Cleanup Objectives (UUSCOs) including acetone (at 16 µg/kg) and benzene (max of 1.5 µg/kg). Seven SVOCs including; benz(a)anthracene (max of 6,600 µg/kg), benzo(a)pyrene (max of 6,000 µg/kg), benzo(b)fluoranthene (max of 5,700 µg/kg), Benzo(k)fluoranthene (max of 5,400 µg/kg), chrysene (max of 6,900 µg/kg), dibenz(a,h)anthracene (at 660 µg/kg), indeno(1,2,3-cd)pyrene (max of 3,300 µg/kg) were detected above Restricted Residential Use SCOs. All SVOC exceedances were within one of the six shallow soil samples B-6, indicating a shallow hotspot. Several other SVOCs were detected in trace amounts below UUSCOs in the soil samples. Three pesticides; 4,4' –DDD (maximum concentration of 5.5 µg/kg), 4,4' –DDE (at 5.9 µg/kg) and 4,4' –DDT (max of 9.6 µg/kg) were detected in three of the shallow samples above UUSCOs. Four metals including arsenic (max of 71.8 mg/kg), barium (max of 497 mg/kg), lead (max of 1,210 mg/kg) and mercury (max of 9.96 mg/kg) exceeded RRSCOs in one of the shallow soil samples (B2), indicating a metals hotspot. Metals including copper (max of 128 mg/kg) and zinc (max of 933

mg/kg) also exceeded Unrestricted Use SCOs within soil samples. Overall, soil chemistry is unremarkable and consistent with historic fill sites in New York City.

7. Groundwater samples results were compared to New York State 6NYCRR Part 703.5 Class GA groundwater quality standards (GQS). Groundwater samples showed no PCBs or pesticides at detectable concentrations. Three VOCs including; cis-1,2-dichloroethene (maximum of 13 µg/L), tetrachloroethene (maximum of 210 µg/L) and trichloroethene (maximum of 6.3 µg/L) were above GQS. Several other VOCs were detected at trace amounts including acetone (at 3 µg/L), chloroform (maximum of 1.6 µg/L), chloromethane (max of 1.1 µg/L) and trans-1,2-dichloroethene (at 1.6 µg/L) all were below their respective GQSs. One SVOC, benz(a)anthracene (0.02 µg/L) was detected in one groundwater sample above GQS. Several metals were identified, and only magnesium (max of 36.9 mg/L), manganese (max of 1.04 mg/L) and sodium (max of 302 µg/L) exceeded their GQSs in dissolved samples.
8. Soil vapor results collected during the RI were compared to the compounds listed in Vapor Intrusion Matrices in the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion, dated October 2006. Total concentrations of petroleum-related VOCs (BTEX) were detected at concentrations ranging from 27.75 to 36.23 µg/m³. Highest concentrations were detected for acetone (max. of 10,600 µg/m³) and ethanol at 802 µg/m³. The Chlorinated VOC 1,1,1-trichloroethane were not detected in any of the soil vapor samples. Trichloroethylene (TCE) was detected in four samples ranging from 0.39 µg/m³ to 15.3 µg/m³. Tetrachloroethylene was detected in all five soil gas samples ranging in concentration from 1.42 µg/m³ to 504 µg/m³. Carbon Tetrachloride was detected within all five of the soil gas samples ranging from 0.29 to 14.5 µg/m³. TCE, PCE and Carbon Tetrachloride were above the monitoring level ranges established within the NYSDOH Final Guidance on Soil Vapor Intrusion.

Summary of the Remedial Action

The preferred remedy for the site is Alternative 2, Site Specific Track 4 cleanup. Vapor management involving active SSDS is required which is not allowed in Track 1 remedies. The Alternative 2 remedy will remove all soil/fill exceeding Track 4 Site Specific SCOs throughout



the Site, which will be confirmed with post-excavation sampling. Engineering Controls are required for soil management for a Track 4 cleanup. Use restrictions will be imposed on the site and the Site would continue to be encumbered with an E-designation for hazardous material.

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 dictated by disposal facility(s).
6. Excavation and removal of soil/fill exceeding Track 4 Site Specific SCOs.
50 % of the site will be excavated to a depth of 2 feet, the cellar area located in the center of the building will be excavated to a depth of 10-12 feet and the elevator pit will be excavated to a depth of 5 feet. In addition the areas of B2 and B5 will be excavated as hotspots (bottom and side wall samples will be collected). A total of 750 tons of soil will be excavated and removed from this Site.

7. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID. Appropriate segregation of excavated media on-Site.
8. Management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.
9. Removal of all UST's that are encountered during soil/fill removal actions. Registration of tanks and reporting of any petroleum spills associated with UST's and appropriate closure of these petroleum spills in compliance with applicable local, State and Federal laws and regulations.
10. Transportation and off-Site disposal of all soil/fill material at licensed or permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media on-Site.
11. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of SCOs.
12. Demarcation of residual soil/fill in landscaped areas.
13. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
14. Construction of an engineered composite cover consisting of a six-inch thick concrete building slab under the building, in the court yard and in the recreation space. A cross section of the composite cover is located in Appendix 1.
15. Installation of a vapor barrier system consisting of vapor barrier beneath the building slab and outside of sub-grade foundation sidewalls to mitigate soil vapor migration into the building. The vapor barrier will consist of the Raven Industries' VaporBlock 20 Plus or equivalent system. VaporBlock 20 Plus is a seven layer co-extruded barrier made from state-of-the-art polyethylene and EVOH resins; below the slab throughout the full building (slab on grade areas and cellar area) area and outside all sub-grade foundation sidewalls. All welds, seams and penetrations will be properly sealed to prevent preferential pathways for vapor migration. The vapor barrier system is an Engineering Control for the remedial action. The remedial engineer will certify in the

- RAR that the vapor barrier system was designed and properly installed to mitigate soil vapor migration into the building. Vapor barrier installation details are included in Appendix 6.
16. Installation of an active sub-slab depressurization system (SSDS) consisting of three venting pipe loops installed within porous granular material: One beneath the basement foundation and two beneath the slab-on-grade portion. The SSDS loops will provide the correct coverage in accordance with USEPA sub-slab depressurization design specifications which recommend a separate vent loop for every 4,000 ft² of slab area. The loops will be outfitted with risers that will extend to the roof of the building and finished with blowers/fans. The pipes will be finished at the roof line with a 6-inch goose neck pipe to prevent rain infiltration. The active SSDS will be hardwired and will include an RP-265 Radonaway blower installed above the roof line. Pressure gauges and alarms will be located in an accessible area in the basement and the first floor on each riser. The active sub-slab depressurization system is an Engineering Control for the remedial action. The remedial engineer will certify in the RAR that the active sub-slab depressurization system was designed and properly installed to establish a vacuum in the gas permeable layer and a negative (decreasing outward) pressure gradient across the building slab to prevent vapor migration into the building.
 17. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
 18. Performance of all activities required for the remedial action, including acquisition of required permits and attainment of pretreatment requirements, in compliance with applicable laws and regulations.
 19. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
 20. Submission of a RAR that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, lists any changes from this RAWP, and describes all Engineering and Institutional Controls to be implemented at the Site.

21. Submission of an approved Site Management Plan (SMP) in the Remedial Action Plan (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.
22. The property will continue to be registered with an E-Designation at the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls in this RAWP and a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

COMMUNITY PROTECTION STATEMENT

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

Project Information:

- Site Address: 901 Myrtle Avenue Brooklyn New York
- NYC Voluntary Cleanup Program Project Number: TBD

Project Contacts:

- OER Project Manager: Kate Glass, 212-788-8841
- Site Project Manager: Chawinie Reilly, 631-504-6000
- Site Safety Officer: Kevin Waters, 631-504-6000
- Online Document Repository:
<http://www.nyc.gov/html/oer/html/repository/RBrooklyn.shtml>

Remedial Investigation and Cleanup Plan: Under the oversight of the NYC OER, 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 to identify contaminant sources present on the property. The cleanup plan has been designed to address all contaminant sources that have been identified during the study of this property.

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

Qualitative Human Health Exposure Assessment: An important part of the cleanup planning for the Site is 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 RAWP are in compliance with applicable safety requirements of the United States Occupational Safety and Health Administration (OSHA). This RAWP includes many protective elements including those discussed below.

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

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

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

Odor, Dust and Noise Control: This cleanup plan includes actions for odor and dust control. These actions are designed to prevent off-Site odor and dust nuisances and includes steps to be taken if nuisances are detected. Generally, dust is managed by application of physical covers and by water sprays. Odors are controlled by limiting the area of open excavations, physical covers, spray foams and by a series of other actions (called operational measures). The project is also required to comply with applicable NYC noise control standards. If you observe problems in these areas, please contact the onsite Project Manager or NYC Office of Environmental Remediation Project Manager listed on the first page of this Community Protection Statement document.

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

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

Hours of Operation: The hours for operation of cleanup will comply with the NYC Department of Buildings construction code requirements or according to specific variances

issued by that agency. For this cleanup project, the hours of operation will conform to requirements of Department of Buildings.

Signage: While the cleanup is in progress, a placard will be prominently posted at the main entrance of the property with a laminated project Fact Sheet that states that the project is in the NYC Voluntary Cleanup Program and provides project contact names and numbers, and 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 or the NYC Office of Environmental Remediation Project Manager listed on the first page of this Community Protection Statement document, or call 311 and mention the Site is in the NYC Voluntary Cleanup Program.

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

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

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

Stockpile Management: Soil stockpiles will be kept covered with tarps to prevent dust, odor and erosion. Stockpiles will be frequently inspected. Damaged tarp covers will be

promptly replaced. Stockpiles will be protected with silt fences. Hay bales will be used, as needed to protect storm water catch basins and other discharge points.

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

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

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

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

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

Final Report: The results of all cleanup work will be fully documented in a final report (called the Remedial Action Report) that will be available for public review online. A link to the online document repository and the public library with Internet access nearest the Site are listed on the first page of this Community Protection Statement document.

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

REMEDIAL ACTION WORK PLAN

1.0 Project Background

Metropolitan Realty Exemptions Inc is working with the NYC Office of Environmental Remediation (OER) in the New York City Voluntary Cleanup Program to investigate and remediate a property located at 901 Myrtle Avenue in the Bedford Stuyvesant 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) in a manner that will render the Site protective of public health and the environment consistent with the contemplated end use. This RAWP establishes remedial action objectives, provides a remedial alternatives analysis that includes consideration of a permanent cleanup, and provides a description of the selected remedial action. The remedial action described in this document provides for the protection of public health and the environment, and complies with applicable environmental standards, criteria and guidance and applicable laws and regulations.

1.1 Site Location and Background

The Site is located at 901 Myrtle Avenue in the Bedford Stuyvesant section of Brooklyn, New York, and is currently identified as Block 1747, Lot 34 on the New York City Tax Map. Figure 1 shows the Site location. The Lots are rectangular shaped and consist of 54.17 feet of street frontage on Myrtle Avenue, 25 feet of frontage on Tompkins Avenue and extends 100 feet deep for a total of approximately 6,363 ft². The Site is located on the north side of Myrtle Avenue and the west side of Tompkins Avenue. To the north the Site is bordered by a commercial building and residential buildings. The properties adjacent to the south, east and west are developed with residential buildings. A map of the site boundary is shown on Figure 2.

The Site is currently developed with one two- story structure with basement is currently present on the Site and occupied by a barber shop on the 1st floor. In addition, a yard area is present on the Myrtle Avenue and Tompkins Avenue sides of the site.

1.2 Redevelopment Plan

The proposed new building will consist of a seven-story residential and commercial development. A majority of the proposed new building will be slab on grade and the central portion will have basement. The cellar will be equipped with a janitor / storage room, gas meter / sprinkler room and electrical meter room. The first floor will be occupied by two commercial tenants, compactor room and bike storage area. The 2nd through 7th floors will be occupied by residential tenants. 50% of the lot will be excavated to a depth of 2 feet. 10 feet from each of the adjacent structures will not be excavated to avoid shoring. The cellar area on the central portion of the site will be excavated to a depth of 10-12 feet. The elevator pit will be excavated to a depth of 5 feet below grade. The site will be equipped with a courtyard and recreation area; which will be unexcavated and capped.

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

1.3 Description of Surrounding Property

The area immediately surrounding Site consists of mixed use residential and commercial buildings adjacent to the north. Residential buildings are located adjacent to the east and west of the site. Beyond Myrtle Avenue is developed with residential buildings. Figure 4 shows the surrounding land usage of the adjacent properties listed below as well as additional properties located up to 500 feet away from the Site. No hospitals are located within a 250 ft radius of the Site. One school facility is located within a 500 ft radius of the Site at 662 Park Avenue to the north.

Surrounding Property Usage

| Direction | Property Description |
|---------------------|--|
| North – Adjacent | Block 1747, Lot 33 & 28, – 96 Tompkins Avenue; a residential building and 146 Stockton Street; a church |
| South – Adjacent | Block 1755, Lot 7502 & 40 – 886 Myrtle Avenue ; 1 residential building and 890 Myrtle Avenue a parking lot |



| | |
|---------------------------|---|
| East – Adjacent | <u>Block 1747, Lot 36 & 35</u> – 905 Myrtle Avenue and 903 Myrtle Avenue; residential buildings |
| West – Adjacent | <u>Block 1747, Lot 7501</u> – 895 Myrtle Avenue; developed with a residential building |

Figure 4 shows the surrounding land usage.

1.4 Summary of Past Site Uses and Areas of Concern

A Phase I screening was completed by EBC in September 2015. The following Site history was established based on historic Sanborn maps:

The Site was developed prior to 1887 with three 3-story store fronts with rear yards on the south side of the Site and two 2-story and one 1-story stables on the northern side of the Site. In 1904 the two western store fronts remained and merged into one 3-story store with a small 1-story addition in the rear yard of the western most building, the eastern most store remained the same with the addition of a single story building occupying the entire footprint of the rear yard, and the northern portion of the lot was redeveloped with one 3-story stable with an elevator and office. In 1918, the northern stable was noted as an auto warehouse on the first floor and the second and third floors were utilized as storage and a warehouse. The lot remained in this configuration until 1977. In 1977, the two western buildings on the southern side of the site and the 3-story building on the northern side of the site were demolished and the areas left vacant. In 2006, the western most portion of the lot was developed with a 5-story building consisting of a commercial space on the first floor and residential apartments on the remaining 4 floors. In 2007, the western building was not noted on the Sanborn map.

The western most portions and the northern portion of the lot have remained vacant, while the eastern building on the south side of the Site was utilized as commercial space on the first floor and two residential apartments on the second and third floors.

Based upon reconnaissance of the subject site and surrounding properties, and review of historical records and regulatory agency databases, no recognized environmental conditions were identified in connection with the subject site.

1.5 Summary of Work Performed under the Remedial Investigation

EBC performed the following scope of work at the Site in July of 2015:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Installed six soil borings across the Site on September 25, 2015 and collected 12 soil samples with a duplicate for chemical analysis from the soil borings to evaluate soil quality;
3. Installed 2 groundwater monitoring wells throughout the Site and collected 2 groundwater samples for chemical analysis to evaluate groundwater quality. MW3 was previously installed. EBC attempted several times to collect a sample from this well and was unsuccessful; and
4. Installed five sub slab soil gas implants and collected five soil gas samples for chemical analysis.

1.6 Summary of Findings of Remedial Investigation

A remedial investigation was performed and the results are documented in a companion document called “Remedial Investigation Report, 901 Myrtle Avenue Brooklyn NY”, dated October 2015 (RIR).

Summary of Environmental Findings

1. The elevation of the Site is approximately 35 feet.
2. Depth to groundwater is estimated to be approximately 31.32 to 33.10 feet below sidewalk grade.
3. Groundwater flow is generally north west.
4. Depth to bedrock at the Site is greater than 100 feet.
5. The stratigraphy of the Site surrounding the existing foundation slab from the surface down consists of historic fill material to depths as great as 3 feet, underlain by native brown fine-sand with gravel and pebbles.
6. Soil/fill samples results were compared to NYSDEC Unrestricted Use Soil Cleanup Objectives and Restricted Residential Soil Cleanup Objectives as presented in 6NYCRR



Part 375-6.8. No PCBs were detected in any of the soil samples. Two VOCs were detected at trace concentrations and below Unrestricted Use Soil Cleanup Objectives (UUSCOs) including acetone (at 16 µg/kg) and benzene (max of 1.5 µg/kg). Seven SVOCs including; benz(a)anthracene (max of 6,600 µg/kg), benzo(a)pyrene (max of 6,000 µg/kg), benzo(b)fluoranthene (max of 5,700 µg/kg), Benzo(k)fluoranthene (max of 5,400 µg/kg), chrysene (max of 6,900 µg/kg), dibenz(a,h)anthracene (at 660 µg/kg), indeno(1,2,3-cd)pyrene (max of 3,300 µg/kg) were detected above Restricted Residential Use SCOs. All SVOC exceedances were within one of the six shallow soil samples B-6, indicating a shallow hotspot. Several other SVOCs were detected in trace amounts below UUSCOs in the soil samples. Three pesticides; 4,4' -DDD (maximum concentration of 5.5 µg/kg), 4,4' -DDE (at 5.9 µg/kg) and 4,4' -DDT (max of 9.6 µg/kg) were detected in three of the shallow samples above UUSCOs. Four metals including arsenic (max of 71.8 mg/kg), barium (max of 497 mg/kg), lead (max of 1,210 mg/kg) and mercury (max of 9.96 mg/kg) exceeded RRSCOs in one of the shallow soil samples (B2), indicating a metals hotspot. Metals including copper (max of 128 mg/kg) and zinc (max of 933 mg/kg) also exceeded Unrestricted Use SCOs within soil samples. Overall, soil chemistry is unremarkable and consistent with historic fill sites in New York City.

7. Groundwater samples results were compared to New York State 6NYCRR Part 703.5 Class GA groundwater quality standards (GQS). Groundwater samples showed no PCBs or pesticides at detectable concentrations. Three VOCs including; cis-1,2-dichloroethene (maximum of 13 µg/L), tetrachloroethene (maximum of 210 µg/L) and trichloroethene (maximum of 6.3 µg/L) were above GQS. Several other VOCs were detected at trace amounts including acetone (at 3 µg/L), chloroform (maximum of 1.6 µg/L), chloromethane (max of 1.1 µg/L) and trans-1,2-dichloroethene (at 1.6 µg/L) all were below their respective GQSs. One SVOC, benz(a)anthracene (0.02 µg/L) was detected in one groundwater sample above GQS. Several metals were identified, and only magnesium (max of 36.9 mg/L), manganese (max of 1.04 mg/L) and sodium (max of 302 µg/L) exceeded their GQSs in dissolved samples.
8. Soil vapor results collected during the RI were compared to the compounds listed in Vapor Intrusion Matrices in the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion, dated October 2006. Total concentrations

of petroleum-related VOCs (BTEX) were detected at concentrations ranging from 27.75 to 36.23 $\mu\text{g}/\text{m}^3$. Highest concentrations were detected for acetone (max. of 10,600 $\mu\text{g}/\text{m}^3$) and ethanol at 802 $\mu\text{g}/\text{m}^3$. The Chlorinated VOC 1,1,1-trichloroethane were not detected in any of the soil vapor samples. Trichloroethylene (TCE) was detected in four samples ranging from 0.39 $\mu\text{g}/\text{m}^3$ to 15.3 $\mu\text{g}/\text{m}^3$. Tetrachloroethylene was detected in all five soil gas samples ranging in concentration from 1.42 $\mu\text{g}/\text{m}^3$ to 504 $\mu\text{g}/\text{m}^3$. Carbon Tetrachloride was detected within all five of the soil gas samples ranging from 0.29 to 14.5 $\mu\text{g}/\text{m}^3$. TCE, PCE and Carbon Tetrachloride were above 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 exposure to contaminants volatilizing from contaminated soil.

Groundwater

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

Soil Vapor

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

3.0 Remedial Alternatives Analysis

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

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

As required, a Track 1 Unrestricted Use scenario is evaluated for the remedial action. The following is a detailed description of the alternatives analyzed to address impacted media at the Site:

Alternative 1:

- Selection of Track 1 Unrestricted Use Soil Cleanup Objectives as defined in NYSDEC 6NYCRR Part 375-6.8.
- Removal of all soil/fill exceeding Track 1 Unrestricted Use SCOs throughout the Site and confirmation that Track 1 Unrestricted Use SCOs have been achieved with post-excavation endpoint sampling. If soil/fill containing analytes at concentrations above Unrestricted Use SCOs is still present at the base of the excavation after removal of all

soil required for construction of the new slab on grade area and the building's cellar level is complete, additional excavation would be performed to ensure complete removal of soil that does not meet Track 1 Unrestricted Use SCOs.

- No Engineering or Institutional Controls are required for a Track 1 cleanup. As part of development, a vapor barrier would be installed to prevent potential exposures from off-Site soil vapor in the future.

It should be noted that the site will be equipped with an active SSDS; which is not an allowable vapor mitigation strategy for a Track 1 Unrestricted Use Cleanup, since ongoing Site Management is required.

Alternative 2:

- Establishment of Site Specific Track 4 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 end point sampling. Based on the results of the Remedial Investigation, it is expected that SCO's would be achieved by excavating for construction of the new building's cellar level to a depth of approximately 2 feet for 50% of the lot. The cellar area on the central portion of the site will be excavated to a depth of 10-12 feet.. The elevator pit will be excavated to a depth of 5 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, additional excavation would be performed to meet Track 4 Site-Specific SCOs.
- Placement of a composite cover system over the entire Site to prevent exposure to remaining soil/fill;
- Installation of a vapor barrier system beneath the building slab and along foundation side walls to prevent potential exposures from soil vapor;
- Installation of an active Sub Slab Depressurization System (SSDS);
- Establishment of use restrictions including prohibitions on the use of groundwater from the Site; prohibitions of restricted Site uses, such as farming or vegetable gardening, to prevent future exposure pathways; and prohibition of a higher level of land use without OER approval;

- Establishment of an approved Site Management Plan (SMP) to ensure long-term management of these Engineering and Institutional Controls including the performance of periodic inspections and certification that the controls are performing as they were intended. The SMP will note that the property owner and property owner's successors and assigns must comply with the approved SMP; and
- The property will continue to be registered with an E-Designation at the NYC Buildings Department.

3.1 Threshold Criteria

Protection of Public Health and the Environment

This criterion is an evaluation of the remedy's ability to protect public health and the environment, and an assessment of how risks posed through each existing or potential pathway of exposure are eliminated, reduced or controlled through removal, treatment, and implementation of Engineering Controls or Institutional Controls. Protection of public health and the environment must be achieved for all approved remedial actions.

Alternative 1 would be protective of human health and the environment by removing all soil/fill exceeding Track 1 Unrestricted Use SCO's and groundwater protection standards, thus eliminating potential for direct contact with contaminated soil/fill once construction is complete and eliminating the risk of contaminants leaching into groundwater.

Alternative 2 would achieve comparable protections of human health and the environment by excavation and removal of most of the historic fill at the Site and by ensuring that remaining soil/fill on-Site meets Track 4 Site-Specific SCO's, as well as by placement of Institutional and Engineering Controls, including a composite cover system. The composite cover system would prevent direct contact with any remaining on-Site soil/fill. The active SSDS system and vapor barrier would mitigate any vapor issues. Implementing Institutional Controls including a Site Management Plan and continuing the E-designation on the property would ensure that the composite cover system remains intact and protective of public health. Establishment of Track 4 Site-Specific SCO's would minimize the risk of contamination leaching into groundwater.

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

3.2 Balancing Criteria

Compliance with Standards, Criteria and Guidance (SCGs)

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

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

Alternative 2 would achieve compliance with the remedial goals, chemical-specific SCG's and RAOs for soil through removal of soil to meet Track 4 Site-Specific SCO's. Compliance with SCG's for soil vapor would also be achieved by installing a waterproofing/vapor barrier system below the new building's basement slab and continuing the vapor barrier outside of subgrade foundation walls and installing an active SSDS system. 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) will 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 short term effects during the remedial action on public health and the environment during implementation of the remedial action, including protection of the community, protection of onsite workers and environmental impacts.

Both Alternative 1 and 2 have similar short-term effectiveness during their implementation, 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 could potentially be higher for Alternative 1 since excavation of greater amounts of historical fill material would take place. However, focused attention to means and methods during a Track 1 removal action, including community air monitoring and appropriate truck routing, would minimize the overall impact of these activities.

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

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

Long-term effectiveness and permanence

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

Alternative 1 would achieve long-term effectiveness and permanence related to on-Site contamination by permanently removing all impacted soil/fill above Track 1 Unrestricted Use SCO's. Removal of on-Site contaminant sources will also prevent future groundwater contamination.

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

Reduction of toxicity, mobility, or volume of contaminated material

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

the total mass of toxic contaminants, cause irreversible reduction in contaminants mobility, or reduce of total volume of contaminated media.

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

Alternative 2 would remove most of the historic fill at the Site, and all remaining on-Site soil/fill beneath the new building will meet Track 4 Site-Specific SCO's.

Alternative 1 would remove a greater total mass of contaminants from the Site. The removal of soil to 2 feet in 50% of the site, 10-12 feet in the cellar area and 5 feet in the area of the elevator pit for the new development in both scenarios would lessen the difference in contaminant mass removal between these two alternatives.

Implementability

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

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

Cost effectiveness

This evaluation criterion addresses the cost of alternatives, including capital costs (such as construction costs, equipment costs, and disposal costs, engineering expenses) and site

management costs (costs incurred after remedial construction is complete) necessary to ensure the continued effectiveness of a remedial action.

Since historic fill at the Site was only found to extend to a depth of up to 3 feet below grade during the RI, and the new building requires excavation of the entire Site to a depth of 2 feet in 50% of the site, 10-12 feet in the cellar area and 5 feet in the area of the elevator pit, the costs associated with both Alternative 1 and Alternative 2 will likely be not be comparable. Costs associated with Alternative 1 could potentially be higher than Alternative 2 if soil with analytes above Track 1 Unrestricted Use SCOs is encountered below the excavation depth required for development. Additional costs would include installation of additional shoring/underpinning, disposal of additional soil, and import of clean soil for backfill. However, long-term costs for Alternative 2 are likely higher than Alternative 1 based on implementation of a Site Management Plan as part of Alternative 2.

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

Community Acceptance

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

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

Land use

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

The current, intended, and reasonably anticipated future land use of the Site and its surroundings are compatible with the selected remedy of soil remediation. The proposed future use of the Site includes an a 7 story commercial and residential building with two retail units and 30 residential units. Following remediation, the Site will meet either Track 1 Unrestricted Use or Track 4 Site-Specific SCOs, both of which are protective of public health and the environment for its planned residential use. The proposed use is compliant with the property's zoning and is consistent with recent development patterns. The areas surrounding the site is urban and consists of predominantly mixed residential and commercial buildings in zoning districts designated for commercial and residential uses. The development would remediate the developed contaminated lot and provide a modern commercial and residential building. The proposed development would clean up the property and make it safer, create new employment opportunities, provide housing and retail space in the community and other economic benefits from land revitalization.

Temporary short-term project impacts are being mitigated through site management controls and truck traffic controls during remediation activities. Following remediation, the Site will meet either Track 1 Unrestricted Use SCOs or Track 4 Site-Specific SCOs, both of which are protective of public health and the environmental for its planned use.

The Site is not in close proximity to important cultural resources, including federal or state historic or heritage sites or Native American religious sites, natural resources, waterways, wildlife refuges, wetlands, or critical habitats of endangered or threatened species. The Site is located in an urban area and not in proximity to fish or wildlife and neither alternative would result in any potential exposure pathways of contaminant migration affecting fish or wildlife. The remedial action is also protective of groundwater natural resources. The Site does not lie in a Federal Emergency Management Agency (FEMA)-designated flood plain. Both alternatives are equally protective of natural resources and cultural resources. Improvements in the current environmental condition of the property achieved by both alternatives considered in this plan are consistent with the City's goals for cleanup of contaminated land.

Sustainability of the Remedial Action

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

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

SELECTION OF THE PREFERRED REMEDY

The preferred remedy for the site is Alternative 2, Site Specific Track 4 cleanup. Vapor management involving active SSDS is required which is not allowed in Track 1 remedies. The Alternative 2 remedy will remove all soil/fill exceeding Track 4 Site Specific SCOs throughout the Site, which will be confirmed with post-excavation sampling. If soil/fill containing analytes at concentrations above Track 4 Site Specific SCOs is still present at the base or walls of the excavation after removal of all soil required for construction of the new building's cellar level and slab are complete, additional excavation would be performed to ensure complete removal of soil/ fill that does not meet Track 4 Site Specific SCOs.

Engineering Controls are required for soil management for a Track 4 cleanup. A concrete slab covering the entire site and waterproofing membrane would be installed as part of standard building development and are considered part of the remedy. Additional soil vapor management would include an active SSDS beneath the new building to address soil vapor contamination. Use restrictions will be imposed on the site and the Site would continue to be encumbered with an E-designation for hazardous material.

4.0 Remedial Action

4.1 Summary of Preferred Remedial Action

The preferred remedial action alternative is Alternative 2, the Track 4 remedial action. The preferred remedial action achieves protection of public health and the environment for the intended use of the property. The preferred remedial action will achieve all of the remedial action objectives established for the project and addresses applicable SCGs. The preferred remedial action is effective in both the short-term and long-term and reduces mobility, toxicity and volume of contaminants. The preferred remedial action alternative is cost effective and implementable and uses standards methods that are well established in the industry.

The proposed remedial action will consist of:



1. Preparation of a Community Protection Statement and performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan.
2. Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
3. 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 dictated by disposal facility(s).
6. Excavation and removal of soil/fill exceeding Track 4 Site Specific SCOs. 50 % of the site will be excavated to a depth of 2 feet, the cellar area located in the center of the building will be excavated to a depth of 10-12 feet and the elevator pit will be excavated to a depth of 5 feet. In addition the areas of B2 and B5 will be excavated as hotspots (bottom and side wall samples will be collected for these areas). A total of 750 tons of soil will be excavated and removed from this Site.
7. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID. Appropriate segregation of excavated media on-Site.
8. Management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.
9. Removal of all UST's that are encountered during soil/fill removal actions. Registration of tanks and reporting of any petroleum spills associated with UST's and appropriate closure of these petroleum spills in compliance with applicable local, State and Federal laws and regulations.
10. Transportation and off-Site disposal of all soil/fill material at licensed or permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media on-Site.

11. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of SCOs.
12. Demarcation of residual soil/fill in landscaped areas.
13. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
14. Construction of an engineered composite cover consisting of a six-inch thick concrete building slab under the building, in the court yard and in the recreation space. A cross section of the composite cover is included in Appendix 1.
15. Installation of a vapor barrier system consisting of vapor barrier beneath the building slab and outside of sub-grade foundation sidewalls to mitigate soil vapor migration into the building. The vapor barrier will consist of the Raven Industries' VaporBlock 20 Plus or equivalent system. VaporBlock 20 Plus is a seven layer co-extruded barrier made from state-of-the-art polyethylene and EVOH resins; below the slab throughout the full building (slab on grade areas and cellar area) area and outside all sub-grade foundation sidewalls. All welds, seams and penetrations will be properly sealed to prevent preferential pathways for vapor migration. The vapor barrier system is an Engineering Control for the remedial action. The remedial engineer will certify in the RAR that the vapor barrier system was designed and properly installed to mitigate soil vapor migration into the building. Vapor barrier installation details are included in Appendix 6. Installation of an active sub-slab depressurization system (SSDS) consisting of three venting pipe loops installed within porous granular material: One beneath the basement foundation and two beneath the slab-on-grade portion. The SSDS loops will provide the correct coverage in accordance with USEPA sub-slab depressurization design specifications which recommend a separate vent loop for every 4,000 ft² of slab area. The loops will be outfitted with risers that will extend to the roof of the building and finished with blowers/fans. The pipes will finished at the roof line with a 6-inch goose neck pipe to prevent rain infiltration. The active SSDS will be hardwired and will include an RP-265 Radonaway blower installed above the roof line. Pressure gauges and alarms will be located in an accessible area in the basement and the first floor on each riser. The active sub-slab depressurization system is an Engineering Control for the remedial action. The remedial engineer will certify

- in the RAR that the active sub-slab depressurization system was designed and properly installed to establish a vacuum in the gas permeable layer and a negative (decreasing outward) pressure gradient across the building slab to prevent vapor migration into the building.
16. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
 17. Performance of all activities required for the remedial action, including acquisition of required permits and attainment of pretreatment requirements, in compliance with applicable laws and regulations.
 18. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
 19. Submission of a RAR that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, lists any changes from this RAWP, and describes all Engineering and Institutional Controls to be implemented at the Site.
 20. Submission of an approved Site Management Plan (SMP) in the Remedial Action Plan (RAR) for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.
 21. The property will continue to be registered with an E-Designation at the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls in this RAWP and a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

4.2 Soil Cleanup Objectives and Soil/ Fill Management

The following Track 4 Site-Specific SCO's will be utilized for this project:



| <u>Contaminant</u> | <u>Site-Specific SCO's</u> |
|--------------------|----------------------------|
| VOCs | 250 ppm |
| Lead | 1000 ppm |
| Mercury | 2.5 ppm |
| Arsenic | 23 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 Appendix 4. Discrete contaminant sources (such as hotspots) identified during the remedial action will be identified by GPS or surveyed. This information will be provided in the Remedial Action Report.

Soil/Fill Excavation and Removal

50% of the site will be excavated to 2 feet, the cellar area located in the center of the new building will be excavated to a depth of 10-12 feet and the elevator pit will be excavated to a depth of 5 feet. The location of planned excavations is shown in Figure 5. The total quantity of soil/fill expected to be excavated and disposed off-Site is 750 tons. For each disposal facilities to be used in the remedial action, a letter from the developer/QEP to the receiving facility requesting approval for disposal and a letter back to the developer/QEP providing approval for disposal will be submitted to OER prior to any transport and disposal of soil at a facility.

The areas of B5 and B2 will be excavated as hotspots (5x5 areas to a depth of 2 feet). Bottom and side wall samples will be collected for these areas.

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

End-point Sampling

End-point samples will be analyzed for compounds and elements as described below utilizing the following methodology:



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

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

Confirmation End-point Sampling

Removal actions for development purposes under this plan will be performed in conjunction with confirmation end-point soil sampling. 6 confirmation samples will be collected from the base of the excavation at locations to be determined by OER. To evaluate attainment of Track 4 Site-specific SCOs, analytes will include those for which SCOs have been developed, including VOCs, lead, mercury and arsenic according to analytical methods described above. If Track 1 Unrestricted Use SCOs are pursued, samples will be analyzed for VOCs, SVOCs, pesticides, PCBs and metals according to analytical methods described above.

Hotspot End-point Sampling

Endpoint samples will be collected from the sidewalls and base of excavation for **the B2 and B5** hotspot locations identified in the Remedial Investigation, according to the procedure listed below. Hotspots include B2 for mercury, lead and arsenic. End point samples will be analyzed for SCO trigger parameters.

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

1. For excavations less than 20 feet in total perimeter, at least one bottom sample and one sidewall sample biased in the direction of surface runoff.
2. For excavations 20 to 300 feet in perimeter:

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

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

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

Quality Assurance/Quality Control

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

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

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

Import of soils onto the property will be performed in conformance with the Soil/Materials Management Plan in Appendix 4. Imported soil will meet the lower of:

- Track 2 Restricted Residential or Commercial Use SCO's, and
- Groundwater Protection Standards in Part 375-6.8.

The estimated quantity of soil to be imported into the Site for backfill and cover soil is 50 tons. A map of soil backfill placement locations is shown in Figure 11.

Reuse of Onsite Soils

Soil reuse is not planned on this project.

4.3 Engineering Controls

This property will achieve Track 4 Site specific SCOs and Engineering Controls are required. Engineering Controls will be employed in the remedial action to address residual contamination remaining at the site. The Site has 3 primary Engineering Control Systems. These are:

- (1) Composite Cover System
- (2) Soil Vapor Barrier System
- (3) Active 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 be comprised of "6 inches of reinforced concrete slab within the slab on grade areas, the court yard and the recreation area.

Figure 5 shows the typical design for each remedial cover type used on this Site. 5 number shows the location of each cover type built at the Site.

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

Maintenance of this composite cover system will be described in the Site Management Plan in the Remedial Action Report.

Vapor Barrier System

Migration of soil vapor from onsite or offsite sources into the building will be mitigated with a combination of building slab and vapor barrier. The vapor barrier will consist of 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 and will be installed in accordance with manufacturer specifications.

A plan view showing the location of the proposed vapor barrier system is provided in Figure 7. Typical design sections for the vapor barrier on slab and sidewalls are provided in Figure 7. Product specification sheets are provided in Appendix 6. The Remedial Action Report will include as-built drawings and diagrams; manufacturer documentation; and photographs.

The Remedial Action Report will include a PE certified letter (on company letterhead) from primary contractor responsible for installation oversight and field inspections and a copy of the manufacturer's certificate of warranty.

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

Sub-Slab Depressurization System

Migration of soil vapor into the building will be mitigated with the construction of an active Sub-Slab Depressurization System (SSDS).

Installation of an active sub-slab depressurization system (SSDS) consisting of three venting pipe loops installed within porous granular material: One beneath the basement foundation and two beneath the slab-on-grade portion. The SSDS loops will provide the correct coverage in accordance with USEPA sub-slab depressurization design specifications which recommend a separate vent loop for every 4,000 ft² of slab area. The loops will be outfitted with risers that will extend to the roof of the building and finished with blowers/fans. The pipes will be finished at the roof line with a 6-inch goose neck pipe to prevent rain infiltration. The active SSDS will be hardwired and will include an RP-265 Radonaway blower installed above the roof line. Pressure gauges and alarms will be located in an accessible area in the basement and the first floor on each riser. The active sub-slab depressurization system is an Engineering Control for the remedial action. The remedial engineer will certify in the RAR that the active sub-slab depressurization system was designed and properly installed to establish a vacuum in the gas permeable layer and a negative (decreasing outward) pressure gradient across the building slab to prevent vapor migration into the building.

The SSDS is a permanent engineering control. The system will be inspected and its performance certified at specified intervals as required by this RAWP and the Site Management Plan. Maintenance of this SSDS will be described in the Site Management Plan in the Remedial Action Report. The location and layout of the SSDS is shown in Figure 8. A typical section of the system is shown in Figure 8. Details for the system are included in Figure 9.

4.4 Institutional Controls

This property will achieve Track 4 Site specific SCOs and Institutional Controls are required under this Remedial Action to assure permanent protection of public health by elimination of exposure to residual materials. These IC's define the program to operate, maintain, inspect and certify the performance of Engineering Controls and Institutional Controls on this property.

Institutional Controls would be implemented in accordance with a Site Management Plan included in the final Remedial Action Report (RAR). Institutional Controls would be:

- Continued registration of the E-Designation for the property. This RAWP includes a description of all ECs and ICs and summarizes the requirements of the SMP which will note that the property owner and property owner's successors and assigns must comply with the approved SMP;
-
- Vegetable gardens and farming on the Site are prohibited in contact with residual soil materials;
- Use of groundwater underlying the Site is prohibited without treatment rendering it safe for its intended use;
- All future activities on the Site that will disturb residual material must be conducted pursuant to the soil management provisions in an approved SMP;
- The Site will be used for residential and commercial use and will not be used for a higher level of use without prior approval by OER.

4.5 Site Management Plan

Site Management is the last phase of remediation and begins with the approval of the Remedial Action Report and issuance of the Notice of Completion (NOC) for the Remedial Action. The Site Management Plan (SMP) describes appropriate methods and procedures to ensure implementation of all ECs and ICs that are required by this RAWP. The Site Management Plan is submitted as part of the RAR but will be written in a manner that allows its use as an independent document. Site Management continues until terminated in writing by OER. The property owner is responsible to ensure that all Site Management responsibilities defined in the Site Management Plan are implemented.

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



Site management activities and EC/IC certification will be scheduled by OER on a periodic basis to be established in the RAR and the SMP and will be subject to review and modification by OER. The Site Management Plan will be based on a calendar year and certification reports will be due for submission to OER by July 30 of the year following the reporting period.

4.6 Qualitative Human Health Exposure Assessment

The objective of the qualitative exposure assessment is to identify potential receptors and pathways for human exposure to the contaminants of concern (COC) that are present at, or migrating from, the Site. The identification of exposure pathways describes the route that the COC takes to travel from the source to the receptor. An identified pathway indicates that the potential for exposure exists; it does not imply that exposures actually occur.

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

Known and Potential Contaminant Sources

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

Soil:

- SVOCs including; benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene exceeded RRSCOs.

- Pesticides including 4,4' –DDE and 4,4' –DDT exceeded UUSCOs; but did not exceed RRSCO.
- Metals including arsenic, barium, lead and mercury exceeded Restricted residential Use SCOs.

Groundwater: The following VOCs; cis-1,2-Dichloroethene, tetrachloroethene and trichloroethene their respective GQSs. The following SVOC; benz(a)anthracene was above its respective GQSs. The following metals; magnesium, manganese and sodium were above their respective GQSs.

Soil Vapor: TCE, PCE and Carbon Tetrachloride were above the monitoring level ranges established within the NYSDOH Final Guidance on Soil Vapor Intrusion.

Nature, Extent, Fate and Transport of Contaminants

Soil: SVOCs, pesticides and metals were identified in the historical fill material on site.

Historical fill is roughly 3 feet across the site.

Groundwater: VOCs, SVOCs and dissolved metals were detected in the groundwater samples at concentrations above their respective GQSs. VOCs were not detected in the soil; which may indicate an off-site source.

Soil Vapor: Chlorinated VOC; carbon tetrachloride, TCE and PCE were above the guidance issued by New York State DOH. Based on the soil and groundwater results; contaminants are migrating onto the site from offsite source.

Receptor Populations

On-Site Receptors: The site is currently developed with a mixed use commercial and residential building. The building is currently vacant. Onsite receptors are limited to trespassers, site representatives and visitors granted access to the property. During construction, potential on-site receptors include construction workers, site representatives, and visitors. Under proposed future conditions, potential on-site receptors include adult and child building residents, workers and visitors.



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

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

Potential Routes of Exposure

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

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

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

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

The work performed at the Site will include excavation of soil/fill material, and general construction activities. The construction and remediation work at the Site will expose the contaminants to the on-Site workers in a variety of ways listed above. These exposures will be limited to short durations through the intrusive work. A Construction Health and Safety Plan

(CHASP) will be implemented during remediation work for the safety of on-Site workers and off-Site local population. Upon completion of the remedial activities, the Site will achieve Track 1 Unrestricted Use SCOs and the Site will be covered by the engineered composite cover (i.e., building slab and vapor/moisture barrier). This will prevent direct exposure to humans from any off-Site contamination.

Potential Exposure Points

Current Conditions: Exposure to historical fill can occur through ingestion, inhalation, or dermal absorption of soil/ fill routes of exposure because the entire site is not capped. Groundwater is not exposed at the site. The site is served by the public water supply and groundwater is not used at the site for potable supply and there is no potential for exposure. The site is currently developed and is vacant, the exposure route for vapor intrusion is inhalation.

Construction/ Remediation Conditions: During the remedial action, onsite workers will come into direct contact with surface and subsurface soils as a result of on-Site construction and excavation activities. On-Site construction workers potentially could ingest, inhale or have dermal contact with exposed impacted soil and fill. Similarly, off-Site receptors could be exposed to dust and vapors from on-Site activities. Due to the depth of groundwater, direct contact with groundwater is not expected. During construction, on-Site and off-Site exposures to contaminated dust from on-Site will be addressed through the Soil/Materials Management Plan, dust controls, and through the implementation of the Community Air-Monitoring Program and a Construction Health and Safety Plan.

Proposed Future Conditions: Under future remediated conditions, all soils in excess of Track 4 SCOs will be removed. The site will be fully capped, preventing potential direct exposure to soil and groundwater remaining in place, and engineering controls (vapor barrier/ active SSDS) will prevent any potential exposure due to inhalation by preventing soil vapor intrusion. The site is served by the public water supply, and groundwater is not used at the site. There are no plausible off-site pathways for oral, inhalation, or dermal exposure to contaminants derived from the site.

Overall Human Health Exposure Assessment

There are potential complete exposure pathways for the current site condition. There are potential complete exposure pathways that requires mitigation during implementation of the remedy. There are no complete exposure pathways under future conditions after the site is developed. This assessment takes into consideration the reasonably anticipated use of the site, which includes a residential structure, site-wide surface cover, and a subsurface vapor barrier system for the building. Under current conditions, on-Site exposure pathways exist for those with access to the Site and trespassers. During remedial construction, on-Site and off-Site exposures to contaminated dust from historic fill material will be addressed through dust controls, and through the implementation of the Community Air Monitoring Program, the Soil/Materials Management Plan, and a Construction Health and Safety Plan. Potential post-construction use of groundwater is not considered an option because groundwater in this area of New York City is not used as a potable water source. There are no surface waters in close proximity to the Site that could be impacted or threatened.

| Environmental Media & Exposure Route | Human Exposure Assessment for Proposed Remedial Action |
|--|--|
| Direct contact with surface and subsurface soils | <ul style="list-style-type: none"> • There is no direct contact with soil because the site will be completely covered with an engineered composite cover. Future contact with soil will be prevented by the implementation of a Site Management Plan and Soil and Materials Management Plan for any future ground intrusive work • |
| Ingestion of groundwater | <ul style="list-style-type: none"> • The area is served by an upstate water supply and groundwater is not being used for potable water supply. |

| | |
|---------------------------------|--|
| | Groundwater use for potable supply onsite is prohibited by municipal law. |
| Direct contact with groundwater | <ul style="list-style-type: none"> • There is no direct contact with groundwater because the site will be completely covered with an engineered composite cover. Future contact with groundwater will be prevented by the implementation of a Site Management Plan and Soil and Materials Management Plan for any future ground intrusive work • |
| Direct contact with soil vapor | <ul style="list-style-type: none"> • Contact with soil vapor will be prevented with a soil vapor barrier and an active sub slab depressurization system. • |

5.0 Remedial Action Management

5.1 Project Organization and Oversight

Principal personnel who will participate in the remedial action include Chawinie Reilly, Project Manager-EBC and Kevin Waters, Field Operations Officer-EBC. The Professional Engineer (PE) and Qualified Environmental Professionals (QEP) for this project are Ariel Czemerinski P.E., AMC Engineering and Charles Sosik P.G. EBC.

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 cleanup will comply with the NYC Department of Buildings construction code requirements or according to specific variances issued by that agency. The hours of operation will be conveyed to OER during the pre-construction meeting.

5.4 Construction Health and Safety Plan

The Health and Safety Plan is included in Appendix 5. The Site Safety Coordinator will be Kevin Waters. Remedial work performed under this RAWP will be in full compliance with applicable health and safety laws and regulations, including Site and OSHA worker safety requirements and HAZWOPER requirements. Confined space entry, if any, will comply with OSHA requirements and industry standards and will address potential risks. The parties performing the remedial construction work will ensure that performance of work is in compliance with the HASP and applicable laws and regulations. The HASP pertains to remedial and invasive work performed at the Site until the issuance of the Notice of Completion.

All field personnel involved in remedial activities will participate in training required under 29 CFR 1910.120, such as 40-hour hazardous waste operator training and annual 8-hour refresher training. Site Safety Officer will be responsible for maintaining workers training records. Personnel entering any exclusion zone will be trained in the provisions of the HASP and will comply with all requirements of 29 CFR 1910.120. Site-specific training will be provided to field personnel. Additional safety training may be added depending on the tasks performed. Emergency telephone numbers will be posted at the site location before any remedial work begins. A safety meeting will be conducted before each shift begins. Topics to be discussed include task hazards and protective measures (physical, chemical, environmental); emergency procedures; PPE levels and other relevant safety topics. Meetings will be documented in a log book or specific form.

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

5.5 Community Air Monitoring Plan

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

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

VOC Monitoring, Response Levels, and Actions

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

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the

15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.

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

All 15-minute readings must be recorded and be available for OER personnel to review.

Instantaneous readings, if any, used for decision purposes will also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m³) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m³ above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m³ above the upwind level, work will be stopped and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m³ of the upwind level and in preventing visible dust migration.

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

5.6 Agency Approvals

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

5.7 Site Preparation

Pre-Construction Meeting

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

Mobilization

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

Utility Marker Layouts, Easement Layouts

The presence of utilities and easements on the Site will be fully investigated prior to the performance of invasive work such as excavation or drilling under this plan by using, at a minimum, the One-Call System (811). Underground utilities may pose an electrocution, explosion, or other hazard during excavation or drilling activities. All invasive activities will be performed in compliance with applicable laws and regulations including NYC Building Code to

assure safety. Utility companies and other responsible authorities will be contacted to locate and mark the locations, and a copy of the Mark-Out Ticket will be retained by the contractor prior to the start of drilling, excavation or other invasive subsurface operations. Overhead utilities may also be present within the anticipated work zones. Electrical hazards associated with drilling in the vicinity of overhead utilities will be prevented by maintaining a safe distance between overhead power lines and drill rig masts.

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

Dewatering

Dewatering is not anticipated during remediation and construction.

Equipment and Material Staging

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

Stabilized Construction Entrance

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

Measures will be taken to ensure that adjacent roadways will be kept clean of project related soils, fill and debris.

Truck Inspection Station

An outbound-truck inspection station will be set up close to the Site exit. Before exiting the Site, trucks will be required to stop at the truck inspection station and will be examined for evidence of contaminated soil on the undercarriage, body, and wheels. Soil and debris will be removed.

Brooms, shovels and clean water will be utilized for the removal of soil from vehicles and equipment, as necessary.

Extreme Storm Preparedness and Response Contingency Plan

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

Storm Preparedness

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

Storm Response

At the conclusion of an extreme storm event, as soon as it is safe to access the property, a complete inspection of the property will be performed. A site inspection report will be submitted to OER at the completion of site inspection and after the site security is assessed. Site conditions will be compared to the inventory of site conditions and material performed prior to the storm event and significant differences will be noted. Damage from storm conditions that result in

acute public safety threats, such as downed power lines or imminent collapse of buildings, structures or equipment will be reported to public safety authorities via appropriate means such as calling 911. Petroleum spills will be reported to NYS DEC within 2 hours of identification and consistent with State regulations. Emergency and spill conditions will also be reported to OER. Public safety structures, such as construction security fences will be repaired promptly to eliminate public safety threats. Debris will be collected and removed. Dewatering will be performed in compliance with existing laws and regulations and consistent with emergency notifications, if any, from proper authorities. Eroded areas of soil including unsafe slopes will be stabilized and fortified. Dislocated materials will be collected and appropriately managed. Support of excavation structure will be inspected and fortified as necessary. Impacted stockpiles will be contained and damaged stockpile covers will be replaced. Stormwater control systems and structures will be inspected and maintained as necessary. If soil or fill materials are discharged off site to adjacent properties, property owners and OER will be notified and corrective measure plan designed to remove and clean dislocated material will be submitted to OER and implemented following approval by OER and granting of site access by the property owner. Impacted offsite areas may require characterization based on site conditions, at the discretion of OER. If onsite petroleum spills are identified, a qualified environmental professional will determine the nature and extent of the spill and report to NYS DEC's spill hotline at DEC 800-457-7362 within statutory defined timelines. If the source of the spill is ongoing and can be identified, it should be stopped if this can be done safely. Potential hazards will be addressed immediately, consistent with guidance issued by NYS DEC.

Storm Response Reporting

A site inspection report will be submitted to OER at the completion of site inspection. An inspection report established by OER is available on OER's website (www.nyc.gov/oer) and will be used for this purpose. Site conditions will be compared to the inventory of site conditions and material performed prior to the storm event and significant differences will be noted. The site inspection report will be sent to the OER project manager and will include the site name, address, tax block and lot, site primary and alternate contact name and phone number. Damage and soil release assessment will include: whether the project had stockpiles; whether stockpiles were damaged; photographs of damage and notice of plan for repair; report of whether soil from

the site was dislocated and whether any of the soil left the site; estimates of the volume of soil that left the site, nature of impact, and photographs; description of erosion damage; description of equipment damage; description of damage to the remedial program or the construction program, such as damage to the support of excavation; presence of onsite or offsite exposure pathways caused by the storm; presence of petroleum or other spills and status of spill reporting to NYS DEC; description of corrective actions; schedule for corrective actions. This report should be completed and submitted to OER project manager with photographs within 24 hours of the time of safe entry to the property after the storm event.

5.8 Traffic Control

Drivers of trucks leaving the Site with soil/fill will be instructed to proceed without stopping in the vicinity of the Site to prevent neighborhood impacts. The planned route on local roads for trucks leaving the site is shown on Figure 10.

5.9 Demobilization

Demobilization will include:

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

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

5.10 Reporting and Record Keeping

Daily reports

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

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

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

Record Keeping and Photo Documentation

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

5.11 Complaint Management

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

5.12 Deviations From The Remedial Action Work Plan

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

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

6.0 Remedial Action Report

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

- Information required by this RAWP;
- Text description with thorough detail of all engineering and institutional controls (if Track 1 remedial action is not achieved)
- As-built drawings for all constructed remedial elements;
- Manifests for all soil or fill disposal;
- Photographic documentation of remedial work performed under this remedy;
- Site Management Plan (if Track 1 remedial action is not achieved);
- Description of any changes in the remedial action from the elements provided in this RAWP and associated design documents;

- Tabular summary of all end point sampling results (including all soil test results from the remedial investigation for soil that will remain on site) and all soil/fill waste characterization results, QA/QC results for end-point sampling, and other sampling and chemical analysis performed as part of the remedial action;
- Test results or other evidence demonstrating that remedial systems are functioning properly;
- Account of the source area locations and characteristics of all soil or fill material removed from the Site including a map showing the location of these excavations and hotspots, tanks or other contaminant source areas;
- Full accounting of the disposal destination of all contaminated material removed from the Site. Documentation associated with disposal of all material will include transportation and disposal records, and letters approving receipt of the material;
- Account of the origin and required chemical quality testing for material imported onto the Site;
- Continue registration of the property with an E-Designation by the NYC Department of Buildings (if Track 1 remedial action is not achieved);
-
- The RAWP and Remedial Investigation Report will be included as appendices to the RAR;
- Reports and supporting material will be submitted in digital form and final PDF's will include bookmarks for each appendix.

Remedial Action Report Certification

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

- I have reviewed this document, to which my signature and seal are affixed.
- Engineering Controls implemented during this remedial action were designed by me or a person under my direct supervision and achieve the goals established in the Remedial Action Work Plan for this site.
- The Engineering Controls constructed during this remedial action were professionally observed by me or by a person under my direct supervision and (1) are consistent with the Engineering Control design established in the Remedial action Work Plan and (2) are accurately reflected in the text and drawings for as-built design reported in this Remedial Action Report.
- The OER-approved Remedial Action Work Plan dated [date] and Stipulations in a letter dated [date] were implemented and that all requirements in those documents have been substantively complied with. I certify that contaminated soil, fill, liquids or other material from the property were taken to facilities licensed to accept this material in full compliance with applicable laws and regulations.



Name

PE License Number

Signature

Date

PE Stamp

I, [name], am a Qualified Environmental Professional. I had primary direct responsibility for implementation of the remedial program for the [site name (address)] site, site number [VCP site number]. I certify to the following:

- The OER-approved Remedial Action Work Plan dated August 15, 2012 and Stipulations in a letter dated September 10, 2014 were implemented and that all requirements in those documents have been substantively complied with. I certify that contaminated soil, fill, liquids or other material from the property were taken to facilities licensed to accept this material in full compliance with applicable laws and regulations.

QEP Name

QEP Signature

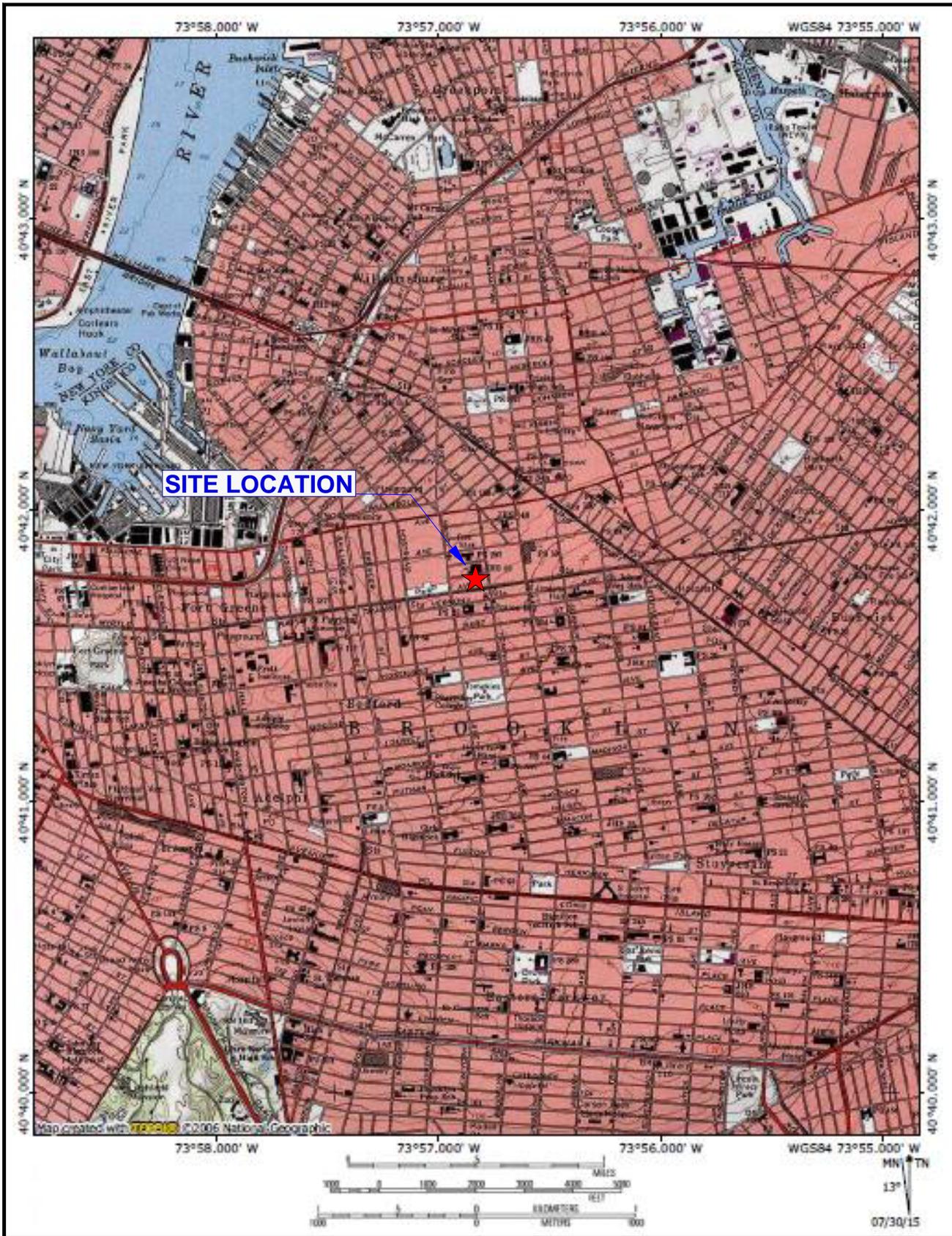
Date

7.0 Schedule

The table below presents a schedule for the proposed remedial action and reporting. If the schedule for remediation and development activities changes, it will be updated and submitted to OER. Currently, a 6 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 | 2 | 8 |
| Demobilization | 10 | 1 |
| Submit Remedial Action Report | 20 | - |

FIGURES



USGS Central Park, NY Quadrangle 1995, Contour Interval = 10 feet



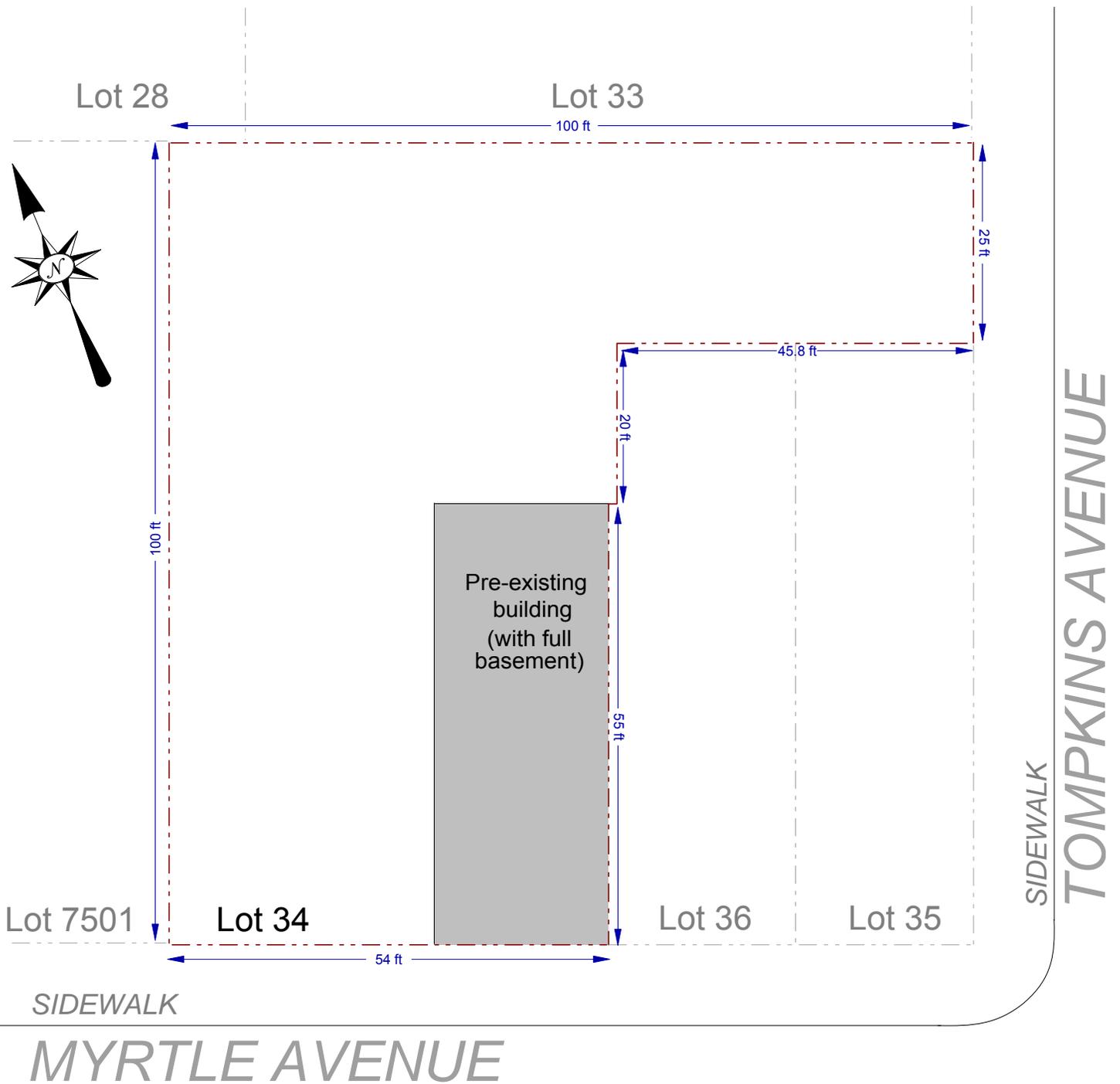
Environmental Business Consultants

Phone 631.504.6000
 Fax 631.924.2870

901 Myrtle Avenue, Brooklyn, NY

FIGURE 1

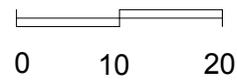
Site Location Map



KEY:

 Property Boundary

SCALE:

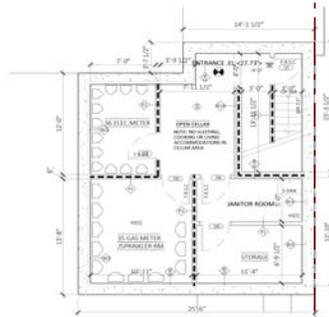


Scale: 1 inch = 20 feet

Lot 28

Lot 33

100 ft



Lot 7501

Lot 34

Lot 36

Lot 35

SIDEWALK

TOMPKINS AVENUE

SIDEWALK

MYRTLE AVENUE

KEY:



Property Boundary

SCALE:



0 10 20

Scale: 1 inch = 20 feet



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Fax 631.924.2870

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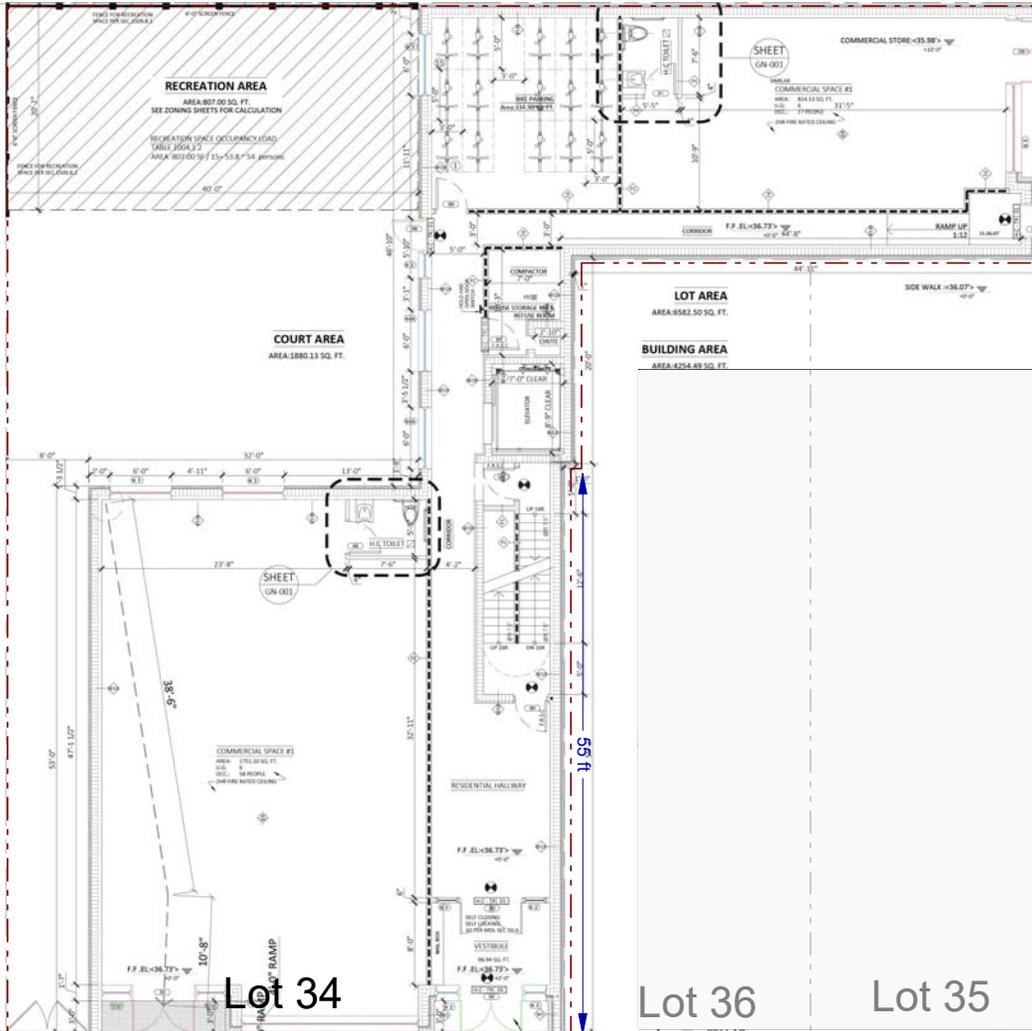
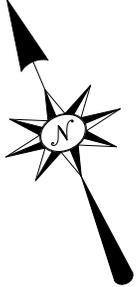
Figure No.
3a

Site Name: **REDEVELOPMENT PROJECT**
Site Address: **901 MYRTLE AVENUE, BROOKLYN, NY**
Drawing Title: **REDEVELOPMENT PLAN - CELLAR**

Lot 28

Lot 33

100 ft



Lot 7501

Lot 34

Lot 36

Lot 35

SIDEWALK
TOMPKINS AVENUE

SIDEWALK

MYRTLE AVENUE

KEY:

 Property Boundary

SCALE:


0 10 20

Scale: 1 inch = 20 feet

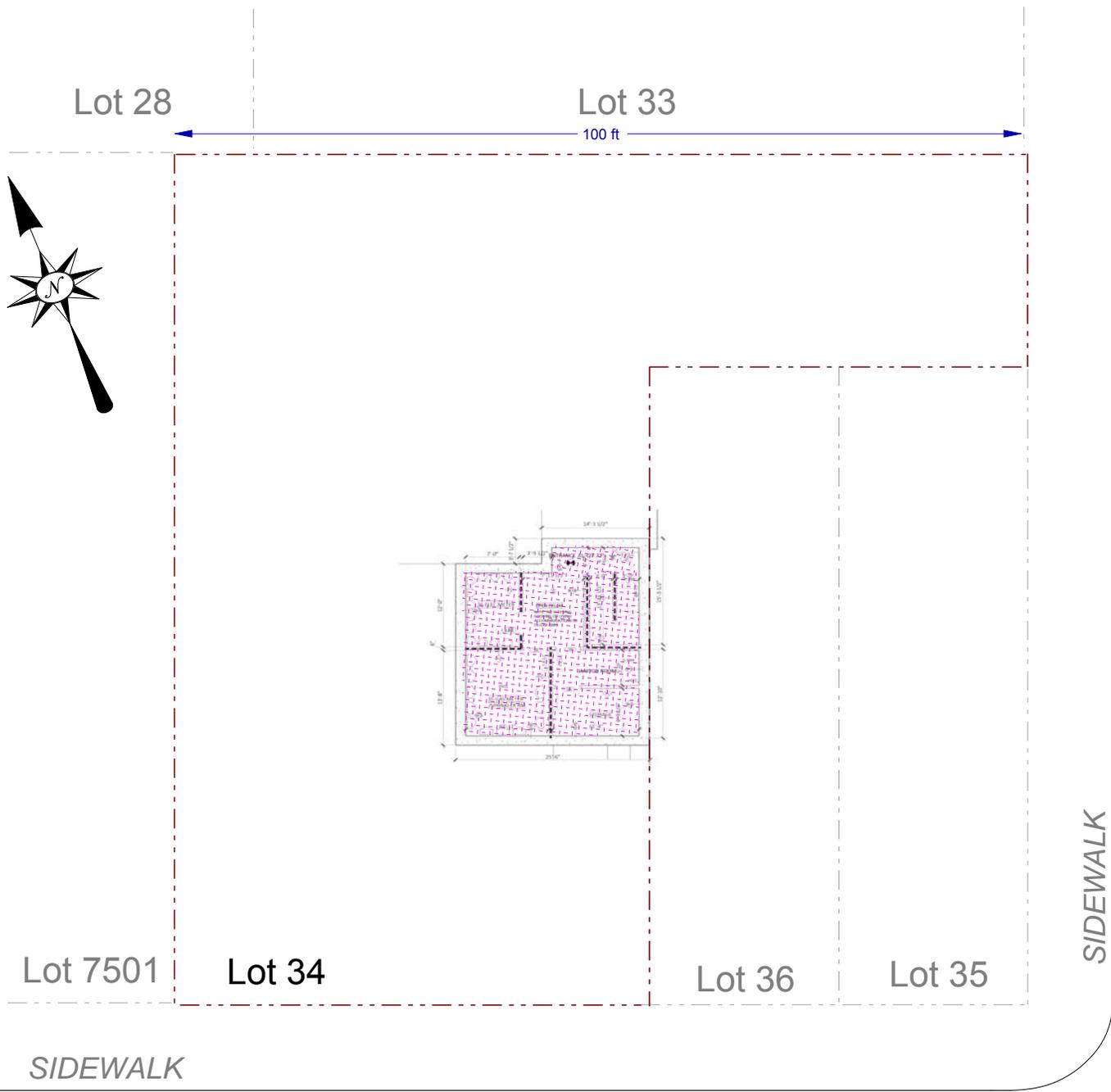


FIGURE 4
SURROUNDING LAND USE MAP

901 MYRTLE AVENUE, BROOKLYN NY 11206
 HAZARDOUS MATERIALS REMEDIAL INVESTIGATION REPORT



ENVIRONMENTAL BUSINESS CONSULTANTS
 1808 MIDDLE COUNTRY ROAD, RIDGE, NEW YORK 11961
 PHONE: (631) 504-6000 FAX: (631) 924-2870



SIDEWALK

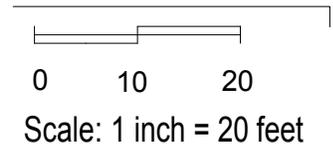
MYRTLE AVENUE

SIDEWALK
TOMPKINS AVENUE

KEY:

-  Property Boundary
-  Excavate Cellar 10-12'

SCALE:



Lot 28

Lot 33

100 ft



**Concrete Capped
Court Yard Area
(6 in Concrete Cap)**

COURT AREA

Cellar Area

100 ft

Lot 7501

Lot 34

Lot 36

Lot 35

SIDEWALK
TOMPKINS AVENUE

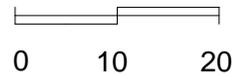
SIDEWALK

MYRTLE AVENUE

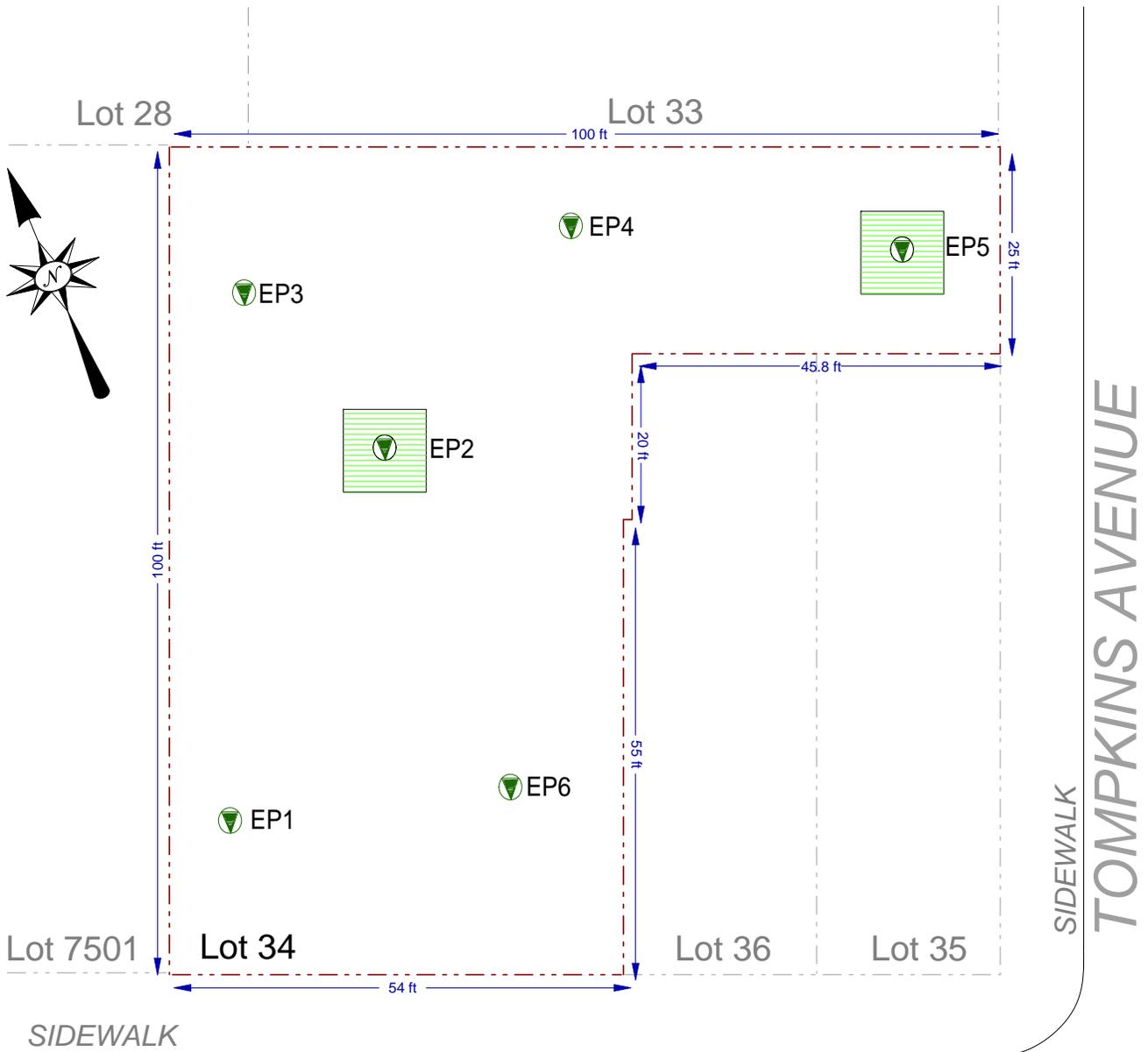
KEY:

-  Property Boundary
-  Unexcavated; 10' from adjacent properties with 6" Concrete slab
-  Excavate to 2' with 6" Concrete Slab
-  Unexcavated; concrete capped court yard
-  Excavate; elevator pit to 5'
-  B2 & B5 Hotspot: 5x5 area Excavate to 2'

SCALE:



Scale: 1 inch = 20 feet



MYRTLE AVENUE

Each EP sample tested for:

- Lead
- Mercury
- Arsenic

KEY:

-  Property Boundary
-  Endpoint Sample Location
-  B2 & B5 Hotspot: Sample 4 side walls and base

SCALE:

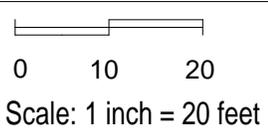
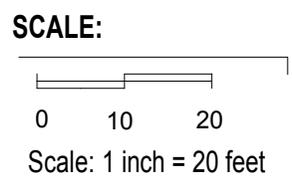
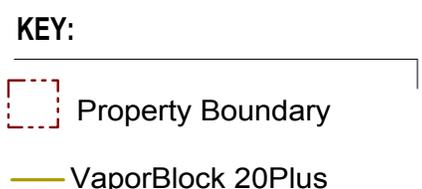
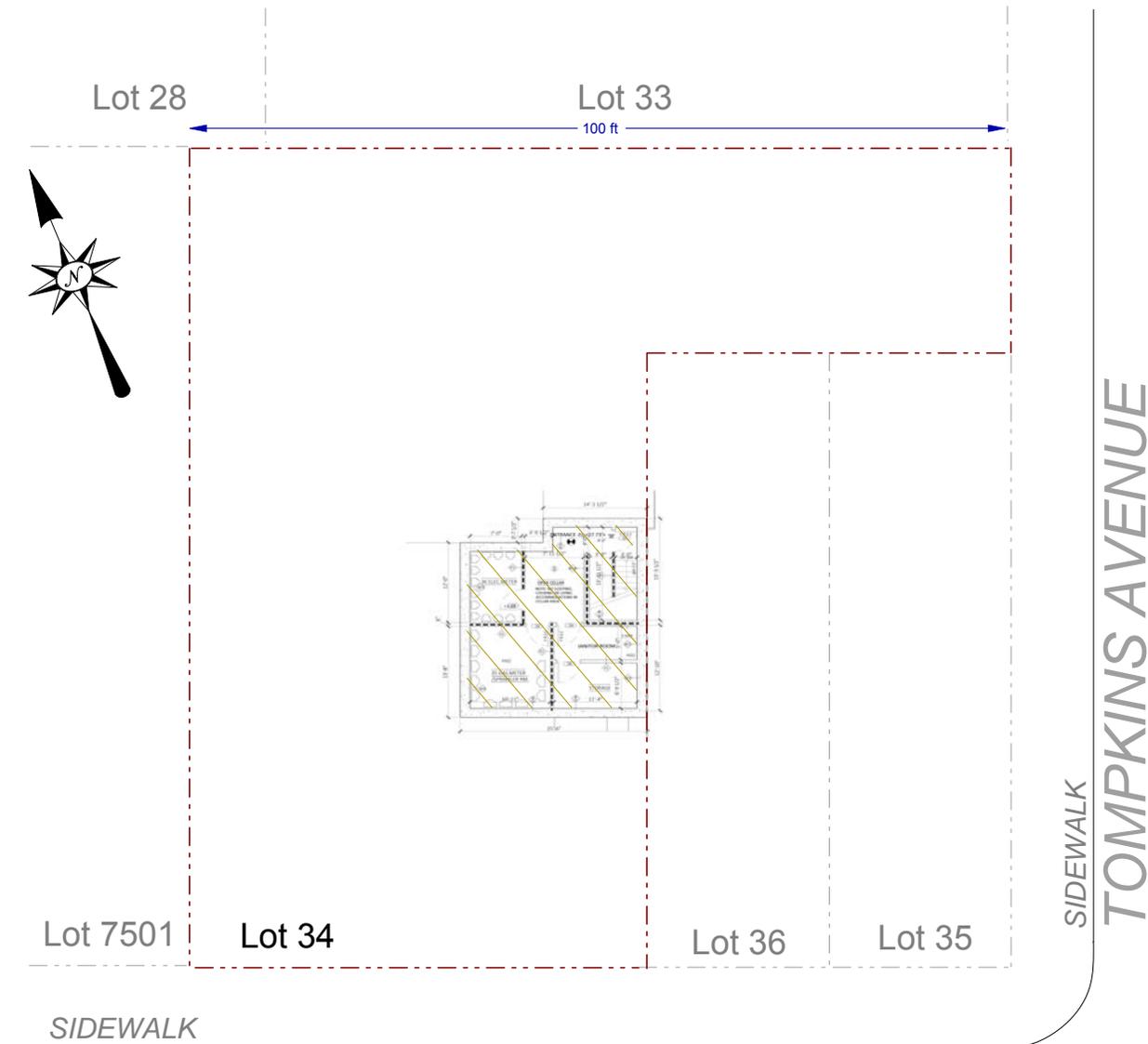
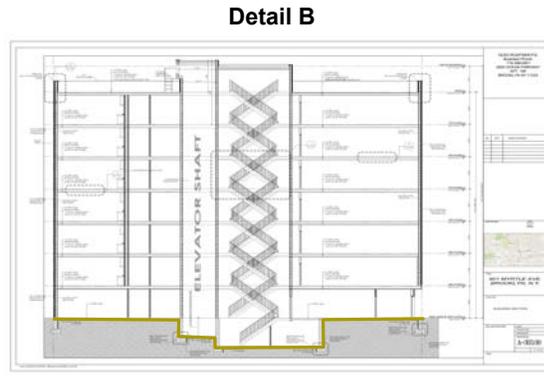
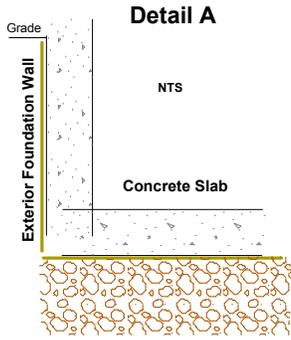
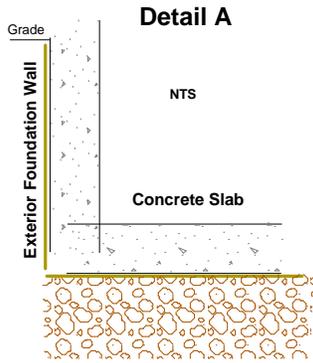


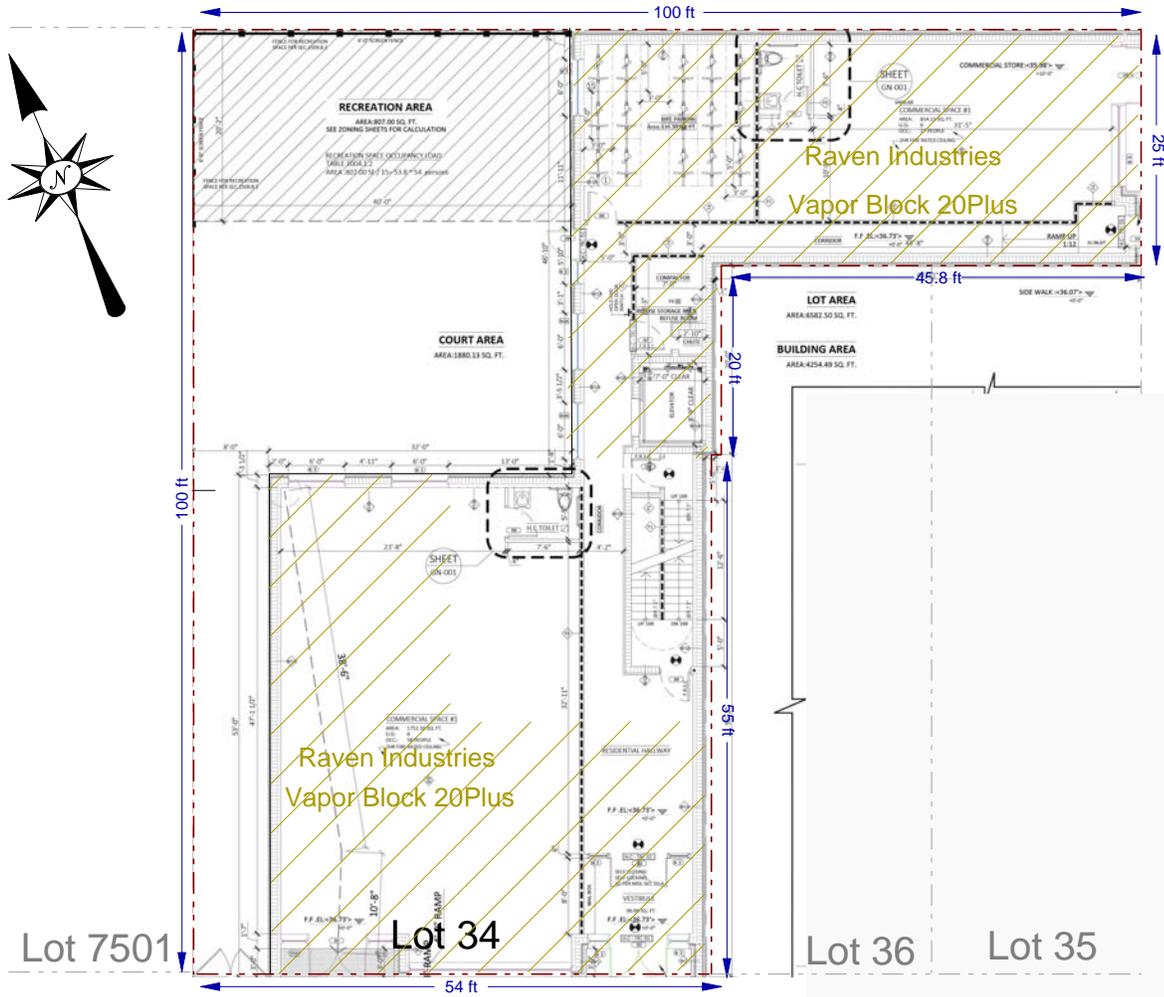
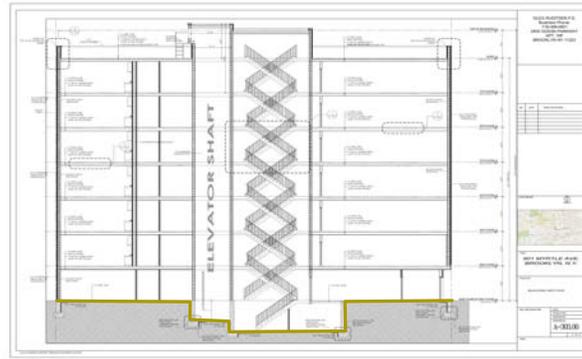
Figure No.
6

Site Name: **REDEVELOPMENT PROJECT**
 Site Address: **901 MYRTLE AVENUE, BROOKLYN, NY**
 Drawing Title: **ENDPOINT SAMPLING PLAN**





Detail B



SIDEWALK
TOMPKINS AVENUE

SIDEWALK

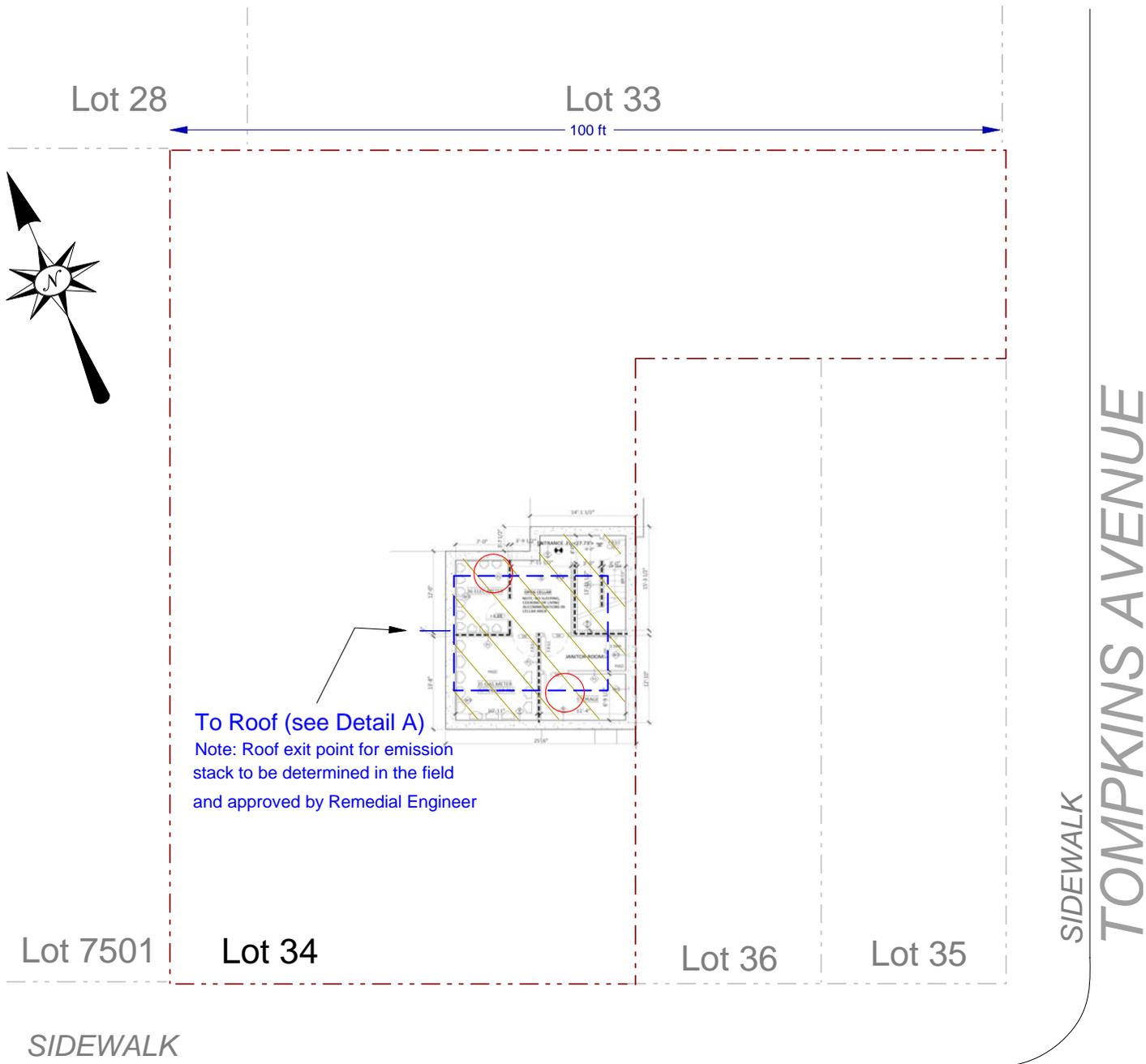
MYRTLE AVENUE

KEY:

- Property Boundary
- VaporBlock 20Plus

SCALE:





To Roof (see Detail A)
 Note: Roof exit point for emission stack to be determined in the field and approved by Remedial Engineer

SIDEWALK

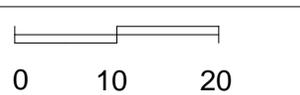
MYRTLE AVENUE

SIDEWALK
 TOMPKINS AVENUE

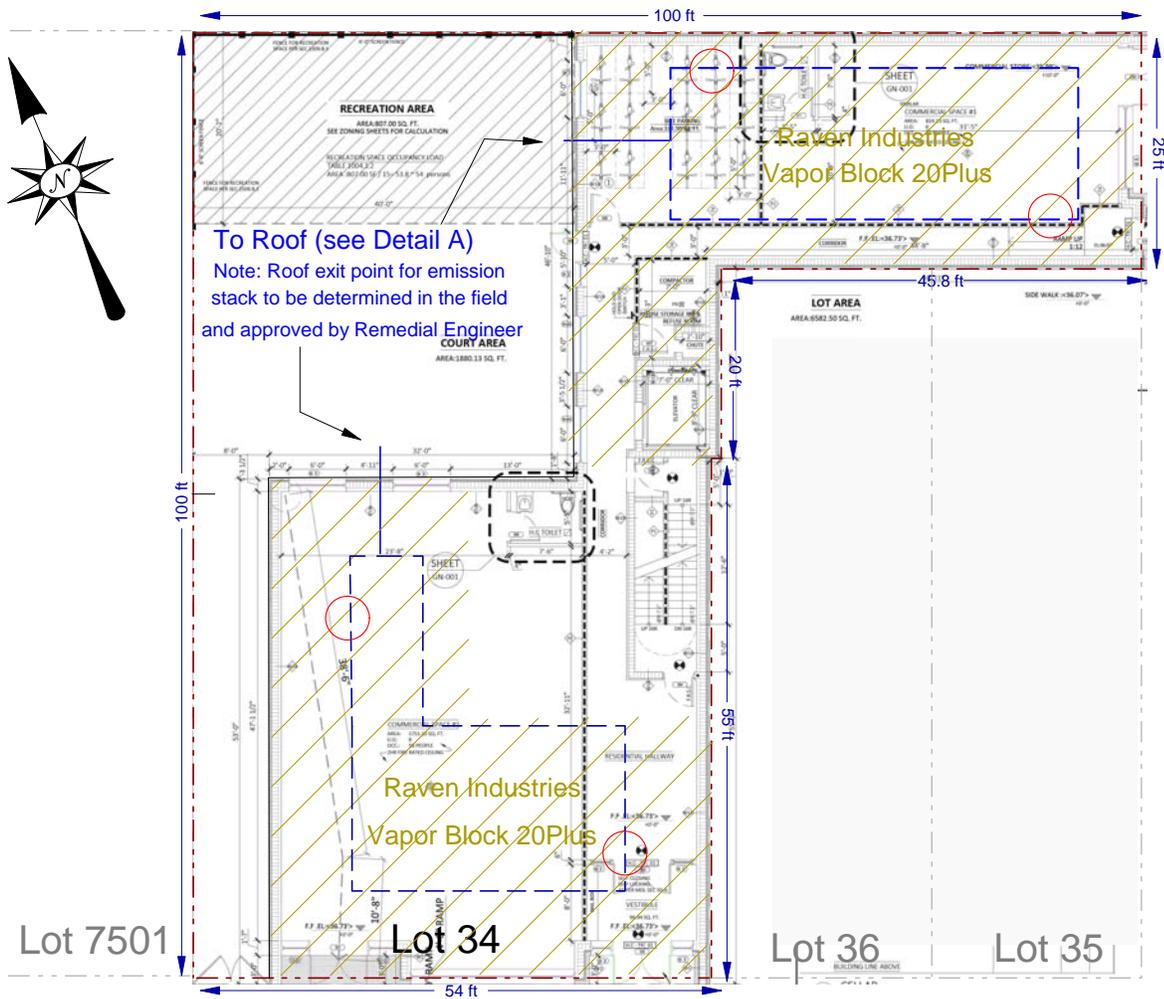
KEY:

-  Property Boundary
-  4" HDPE Perforated Drain Line
-  Monitoring Points
-  20 Mil Vapor Bloc20 or Approved Equal

SCALE:



Scale: 1 inch = 20 feet



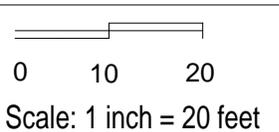
SIDEWALK

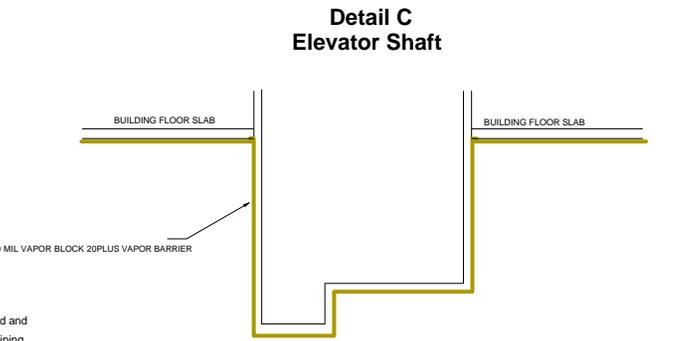
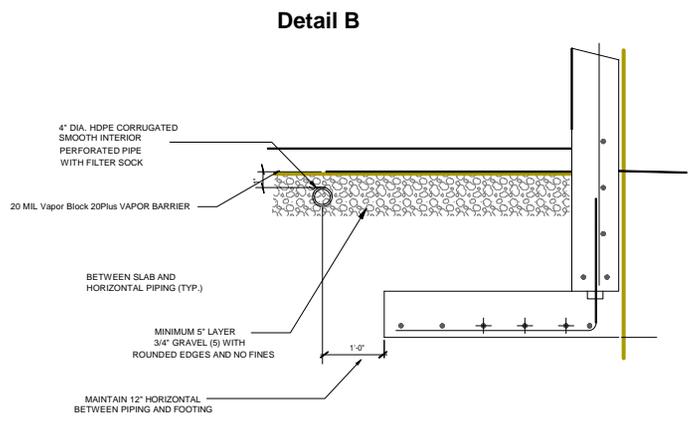
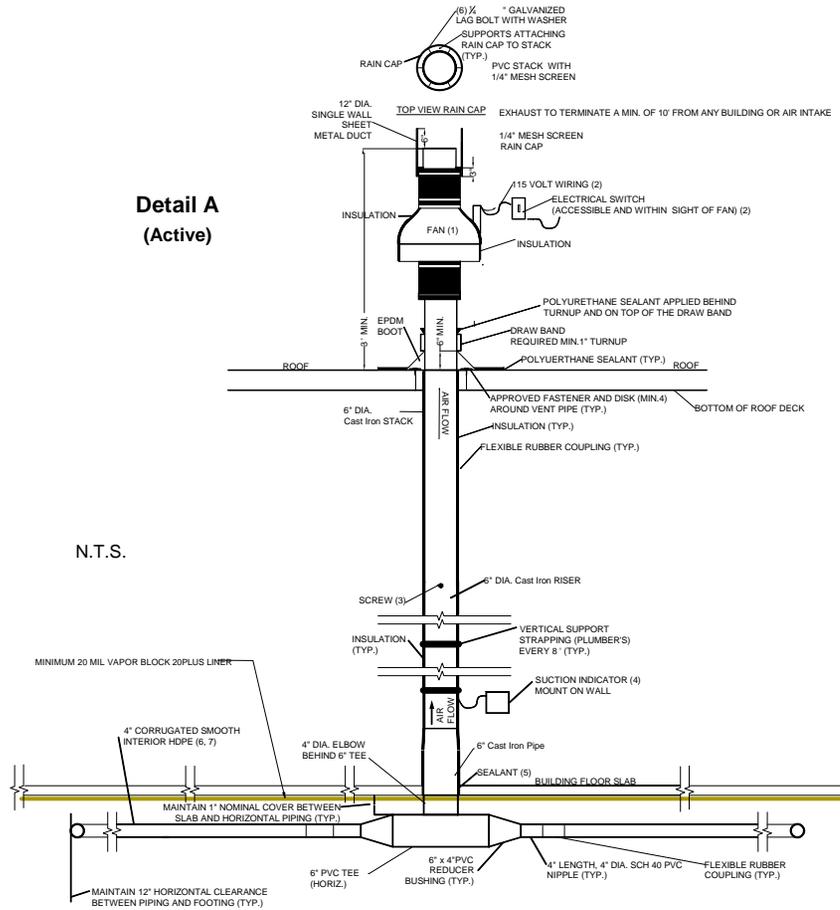
MYRTLE AVENUE

KEY:

-  Property Boundary
-  4" HDPE Perforated Drain Line
-  Monitoring Points
-  20 Mil Vapor Bloc20 or Approved Equal

SCALE:





- NOTES:**
1. FAN TO BE RADONAWAY HIGH-FLOW IN-LINE FAN, MODEL RP 265, OR APPROVED EQUAL.
 2. FAN AND ON/OFF SWITCH TO BE HARD-WIRED TOGETHER TO 115 VOLT CIRCUIT.
 3. SECURE RUBBER COUPLING WITH SCREW TO PREVENT FAN ASSEMBLY FROM SLIPPING DOWN VERTICAL PIPE.
 4. DWYER MAGNAHELIC DIAL TYPE VACUUM GAUGE MODEL 2002-M OR APPROVED EQUAL.
 5. SEAL OPENING WITH ELASTOMERIC JOINT SEALANT AS DEFINED IN ASTM D320.
 6. HIGH DENSITY POLYETHYLENE CORRUGATED PERFORATED PIPE ADS N-12 OR APPROVED EQUAL.
 7. WRAP 4 HDPE PIPE WITH GEOTEXTILE FABRIC, GSE NW4 OR APPROVED EQUAL.
 8. EBC MUST PRE-APPROVE ALL FILLMATERIAL BEFORE DELIVERY TO SITE.
 9. EBC MUST INSPECT, PHOTO DOCUMENT AND APPROVE OF SUB-SLAB PIPING AND VAPOR BARRIER INSTALLATION BEFORE COVERING

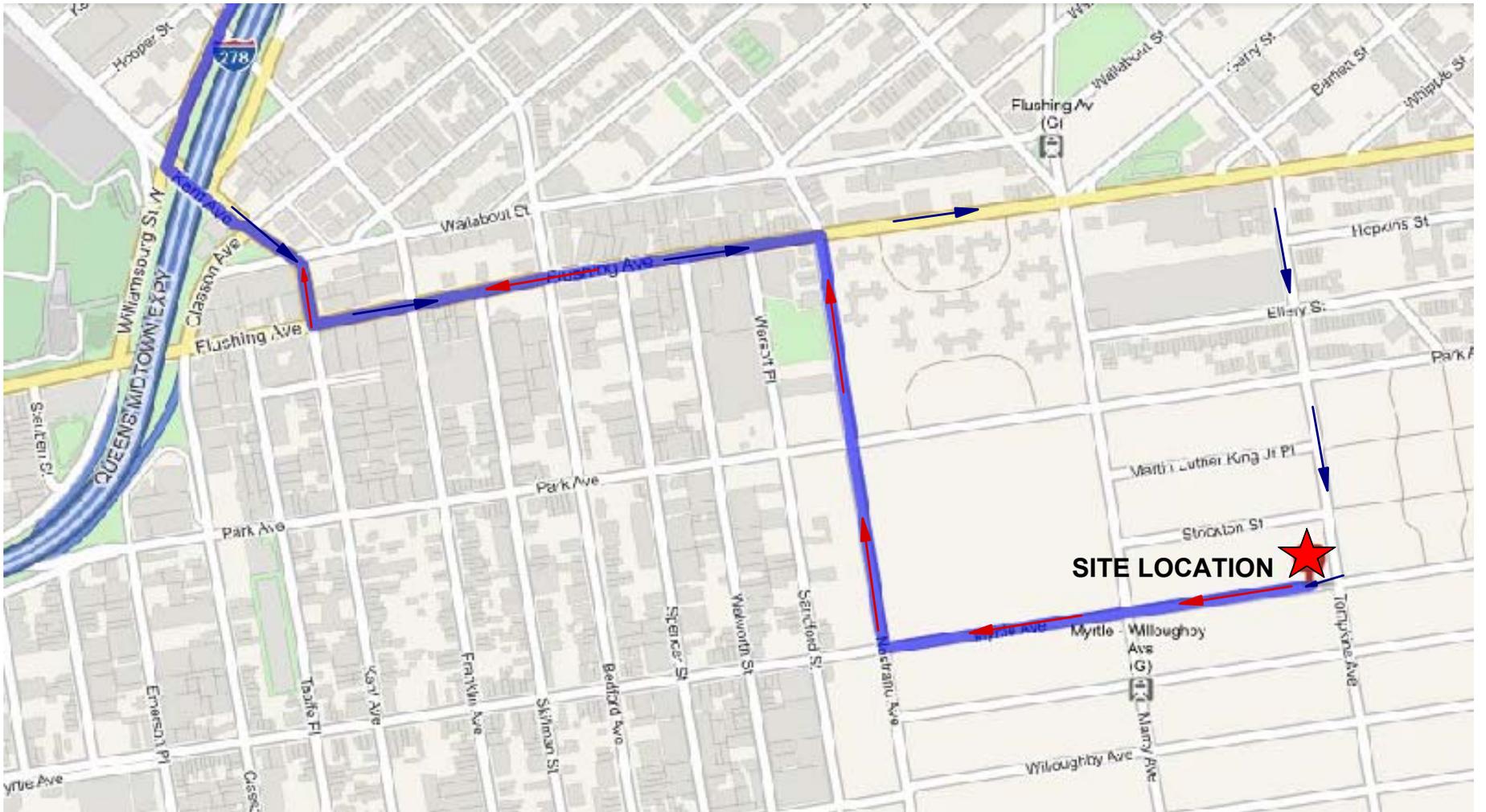
- NOTES: MC 512 SUBSLAB SOIL EXHAUST SYSTEMS**
- 512.1 General. When a subslab soil exhaust system is provided, the duct shall conform to the requirements of this section.
 - 512.2 Materials. Subslab soil exhaust system duct material shall be air duct material listed and labeled to the requirements of UL 181 for Class 0 air ducts, or any of the following piping materials that comply with the New York City Plumbing Code as building sanitary drainage and vent pipe: cast iron; galvanized steel; brass or copper pipe; copper tube of a weight not less than that of copper drainage tube, Type DWV; and plastic piping.
 - 512.3 Grade. Exhaust system ducts shall not be trapped and shall have a minimum slope of one-eighth unit vertical in 12 units horizontal (1-percent slope).
 - 512.4 Termination. Subslab soil exhaust system ducts shall extend through the roof and terminate at least 6 inches (152 mm) above the roof and at least 10 feet (3048 mm) from any operable openings or air intake.
 - 512.5 Identification. Subslab soil exhaust ducts shall be permanently identified within each floor level by means of a tag, stencil or other approved marking.

EBC
ENVIRONMENTAL BUSINESS CONSULTANTS

Phone 631.504.6000
 Fax 631.924.2870

Figure No.
9

| | |
|----------------|--|
| Site Name: | REDEVELOPMENT PROJECT |
| Site Address: | 901 MYRTLE AVENUE, BROOKLYN, NY |
| Drawing Title: | SSDS DETAILS |



Key

-  Truck Route to the Site
-  Truck Route from the Site

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 ENVIRONMENTAL BUSINESS CONSULTANTS
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 Fax 631.924.2870

Figure No.
10

Site Name: **REDEVELOPMENT PROJECT**
 Site Address: **901 MYRTLE AVENUE, BROOKLYN, NY**
 Drawing Title: **TRUCK ROUTE MAP**

TABLES

TABLE 1
Soil Cleanup Objectives

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

TABLE 1
Soil Cleanup Objectives

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

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.

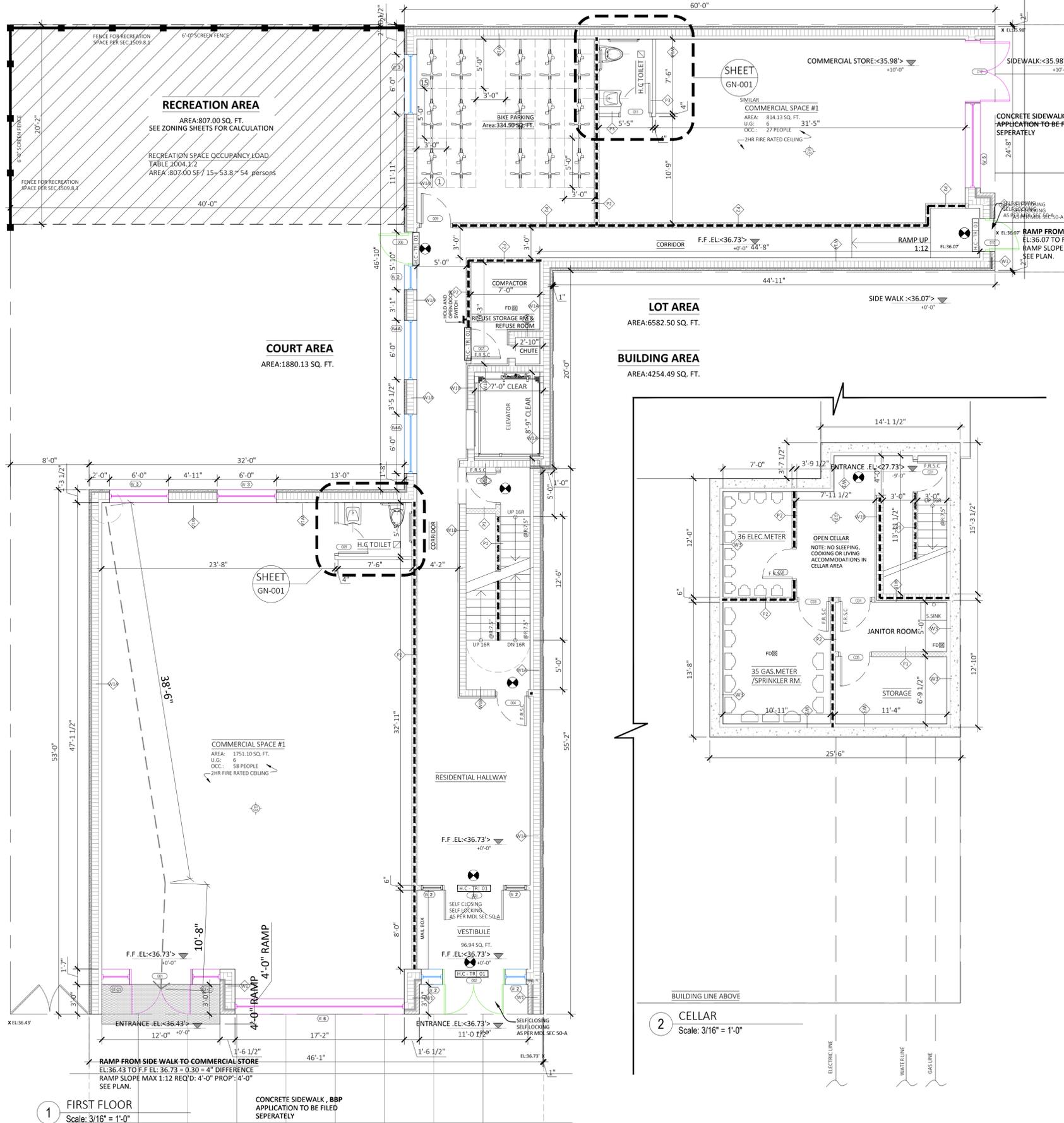
b The SCOs for commercial use were capped at a maximum value of 500 ppm. See TSD section 9.3.

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.

APPENDIX 1
PROPOSED DEVELOPMENT
PLANS



LEGEND

- NEW 4" BRICK VENEER
- NEW 8" CMU BLOCK WALL
- BATT INSULATION
- NEW INTERIOR PARTITION = 3-5/8" METAL STUDS @ 16" O.C., (1) LAYER 5/8" THK. SHEETROCK ON BOTH SIDES, NON-FIRE RATED.
- NEW INTERIOR PARTITION = 3-5/8" METAL STUDS @ 16" O.C., (2) LAYERS FC #60 5/8" THK. SHEETROCK ON BOTH SIDES, WITH 24 GA. SHEET METAL PLATE (2) HR. FIRE RATED, MASONRY EQUIVALENT WALL.
- NEW INTERIOR PARTITION BETWEEN APARTMENTS = 3-5/8" METAL STUDS @ 16" O.C., (1) LAYER FC #60 5/8" THK. SHEETROCK ON BOTH SIDES, (1) HR. FIRE RATED.
- NEW FOUNDATION WALL, SEE STRUCTURAL FOR CONC. TYPE AND FOR MORE DETAIL
- SMOKE DETECTOR
CARBON MONOXIDE DETECTOR
HARDWIRED AND TO BE INTERCONNECTED
- (FD) FLOOR DRAIN
(AD) AREA DRAIN
(RD) ROOF DRAIN
- F.P.S.C. FIRE PROOF SELF CLOSE DOOR
- EXIT SIGN & EMERGENCY LIGHTING
- 75 CFM BATHROOM EXHAUST FAN
150 CFM KITCHEN EXHAUST FAN
- WALL TAG
- DOOR TAG
- WINDOW TAG
- EXTERIOR LIGHT
- HVAC SPLIT UNIT

NOTE TO CONTRACTOR:
 PROVIDE Sound Transmission Class (STC) RATING OF MIN 50 TO MEET REQUIREMNT OF BC 1207 STANDARDS WHERE BOILER ROOM WALLS, SHAFTS, PUBLIC HALLS, CORRIDORS, ADJOINING TO DWELLING UNIT.
 REQUIRED TEST: Sound Test: USG-840817

- 28-38-32**
 Standards for Recreation Space
- All recreation space shall be accessible to the residents of the #building#. In a mixed use #building#, the recreation space shall be accessible only from the #residential# portion of the #building#.
 - *RECREATION SPACE ACCESSIBLE FOR RESIDENTIAL PORTION
 The minimum dimension of any recreation space shall be 15 feet. The minimum size of any outdoor recreation space shall be 225 square feet, and the minimum size of any indoor Recreation space shall be 300 square feet.
 - *OUTDOOR RECREATION SPACE PROP'D 807.00 SF smallest dimension is 20'-2" (see plan on this sheet)
 - Outdoor recreation space shall be open to the sky except that #building# projections, not to exceed seven feet in depth, may cover up to ten percent of the outdoor recreation space, provided that the lowest level of the projection is at least ten feet above the level of the outdoor recreation space.
 - *BALCONY PROP'D ABOVE 30'-4"
 - Any indoor recreation room located in a #story# shall have at least one exterior wall with windows that measure not less than 9.5 percent of the total floor space of the room and such windows shall meet the applicable requirements of Section 24-60 (COURT REGULATIONS AND MINIMUM DISTANCE BETWEEN WINDOWS AND WALLS OR LOT LINES).
 - *RECREATION SPACE IS PROVIDED OUTDOOR SPACE

| RESIDENTIAL EXTERIOR GLASS DOORS AND WINDOWS | | |
|--|-------------------------------------|-------------|
| COLOR SYMBOL | DISCRIPTION | ITCC RATING |
| | RESIDENTIAL EXTERIOR WINDOWS | 30 dBA |
| | RESIDENTIAL EXTERIOR DOORS | 29 dBA |
| | COMMERCIAL EXTERIOR WINDOWS & DOORS | 28 dBA |

| NO. | DATE | ISSUE OR REVISION |
|-----|------|-------------------|
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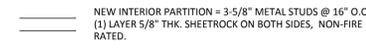
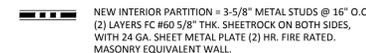
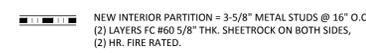
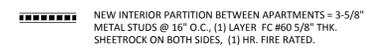


Project:
**901 MYRTLE AVE.
 BROOKLYN, N. Y.**

Drawing Title:
CELLAR & FIRST FLOOR PLAN

| | |
|-----------------------------|--------------|
| SEAL AND SIGNATURE | DATE: |
| | PROJECT NO.: |
| DRAWING BY: DRAWING No.: | A-100.00 |
| | 6 OF 22 |

LEGEND

-  NEW 4" BRICK VENEER
-  NEW 8" CMU BLOCK WALL
-  BATT INSULATION
-  NEW INTERIOR PARTITION = 3-5/8" METAL STUDS @ 16" O.C., (1) LAYER 5/8" THK. SHEETROCK ON BOTH SIDES, NON-FIRE RATED.
-  NEW INTERIOR PARTITION = 3-5/8" METAL STUDS @ 16" O.C., (2) LAYERS FC #60 5/8" THK. SHEETROCK ON BOTH SIDES, WITH 24 GA. SHEET METAL PLATE (2) HR. FIRE RATED. MASONRY EQUIVALENT WALL.
-  NEW INTERIOR PARTITION = 3-5/8" METAL STUDS @ 16" O.C., (2) LAYERS FC #60 5/8" THK. SHEETROCK ON BOTH SIDES, (2) HR. FIRE RATED.
-  NEW INTERIOR PARTITION BETWEEN APARTMENTS = 3-5/8" METAL STUDS @ 16" O.C., (1) LAYER FC #60 5/8" THK. SHEETROCK ON BOTH SIDES, (1) HR. FIRE RATED.
-  NEW FOUNDATION WALL, SEE STRUCTURAL FOR CONC. TYPE AND FOR MORE DETAIL
-  SMOKE DETECTOR
CARBON MONOXIDE DETECTOR
HARDWIRED AND TO BE INTERCONNECTED
-  (FD) FLOOR DRAIN
(AD) AREA DRAIN
(RD) ROOF DRAIN
-  F.P.S.C. FIRE PROOF SELF CLOSE DOOR
-  EXIT SIGN & EMERGENCY LIGHTING
-  ES & L
-  75 CFM BATHROOM EXHAUST FAN
150 CFM KITCHEN EXHAUST FAN
-  WALL TAG
-  DOOR TAG
-  WINDOW TAG
-  EXTERIOR LIGHT
-  HVAC SPLIT UNIT

| RESIDENTIAL EXTERIOR GLASS DOORS AND WINDOWS | | |
|---|-------------------------------------|-------------|
| COLOR SYMBOL | DESCRIPTION | QTC. RATING |
|  | RESIDENTIAL EXTERIOR WINDOWS | 30 dBA |
|  | RESIDENTIAL EXTERIOR DOORS | 29 dBA |
|  | COMMERCIAL EXTERIOR WINDOWS & DOORS | 28 dBA |

| NO. | DATE | ISSUE OR REVISION |
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LOCATION MAP

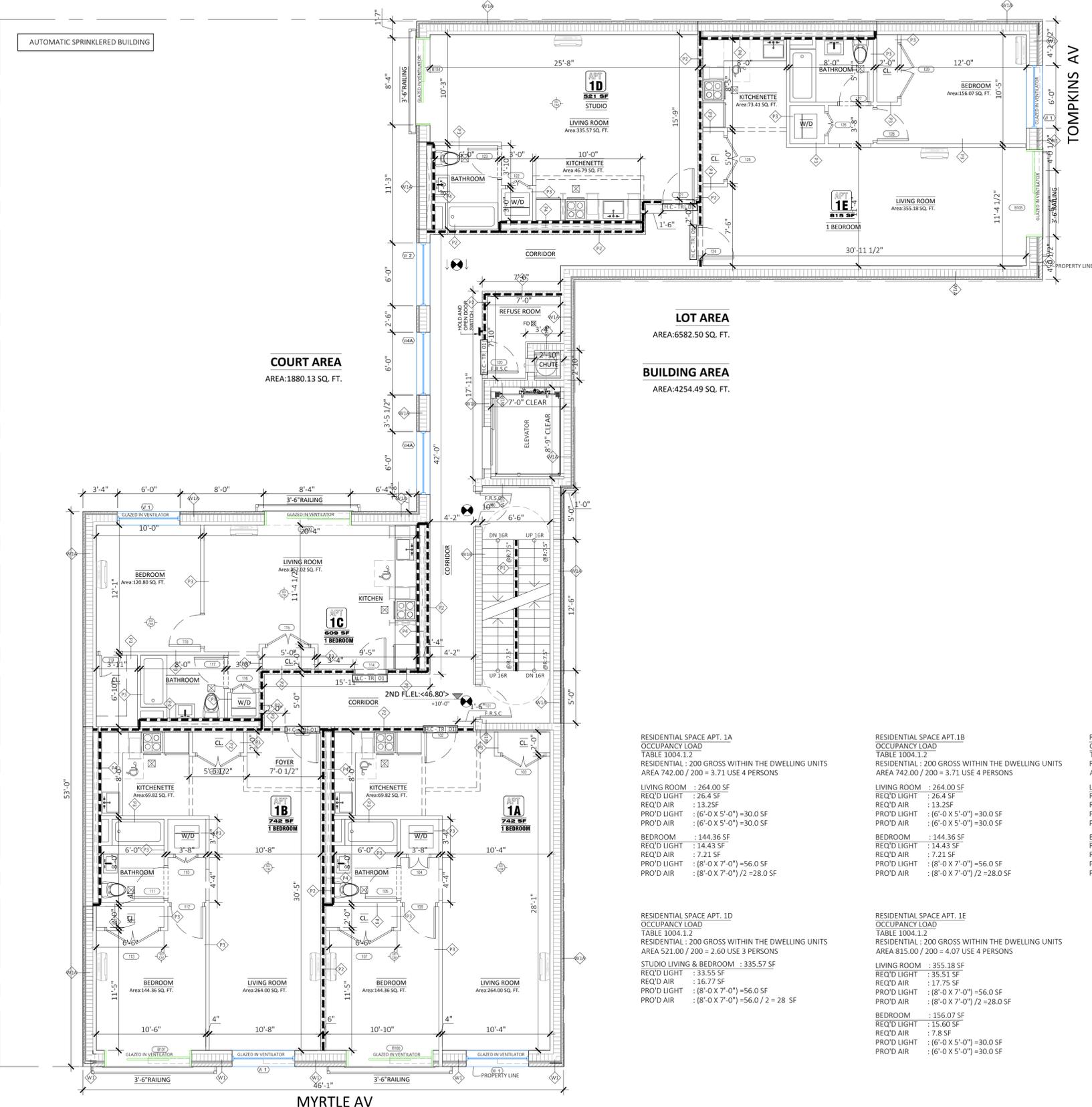



Project:
**901 MYRTLE AVE.
 BROOKLYN, N. Y.**

Drawing Title:
SECOND FLOOR PLAN

| | |
|---|--------------|
| SEAL AND SIGNATURE  | DATE: |
| | PROJECT NO.: |
| | DRAWING BY: |
| DRAWING No.: | |
| A-101.00 | |
| 7 OF 22 | |

NOTE TO CONTRACTOR:
 PROVIDE Sound Transmission Class (STC) RATING OF MIN 50 TO MEET REQUIREMENT OF BC 1207 STANDARDS WHERE BOILER ROOM WALLS, SHAFTS, PUBLIC HALLS, CORRIDORS, ADJOINING TO DWELLING UNIT.
 REQUIRED TEST: Sound Test - Usg-840817



RESIDENTIAL SPACE APT. 1A
 OCCUPANCY LOAD
 TABLE 1004.1.2
 RESIDENTIAL : 200 GROSS WITHIN THE DWELLING UNITS
 AREA 742.00 / 200 = 3.71 USE 4 PERSONS

LIVING ROOM : 264.00 SF
 REQ'D LIGHT : 26.4 SF
 REQ'D AIR : 13.25F
 PRO'D LIGHT : (6'-0 X 5'-0") =30.0 SF
 PRO'D AIR : (6'-0 X 5'-0") =30.0 SF

BEDROOM : 144.36 SF
 REQ'D LIGHT : 14.43 SF
 REQ'D AIR : 7.21 SF
 PRO'D LIGHT : (8'-0 X 7'-0") =56.0 SF
 PRO'D AIR : (8'-0 X 7'-0") / 2 =28.0 SF

RESIDENTIAL SPACE APT. 1B
 OCCUPANCY LOAD
 TABLE 1004.1.2
 RESIDENTIAL : 200 GROSS WITHIN THE DWELLING UNITS
 AREA 742.00 / 200 = 3.71 USE 4 PERSONS

LIVING ROOM : 264.00 SF
 REQ'D LIGHT : 26.4 SF
 REQ'D AIR : 13.25F
 PRO'D LIGHT : (6'-0 X 5'-0") =30.0 SF
 PRO'D AIR : (6'-0 X 5'-0") =30.0 SF

BEDROOM : 144.36 SF
 REQ'D LIGHT : 14.43 SF
 REQ'D AIR : 7.21 SF
 PRO'D LIGHT : (8'-0 X 7'-0") =56.0 SF
 PRO'D AIR : (8'-0 X 7'-0") / 2 =28.0 SF

RESIDENTIAL SPACE APT. 1C
 OCCUPANCY LOAD
 TABLE 1004.1.2
 RESIDENTIAL : 200 GROSS WITHIN THE DWELLING UNITS
 AREA 609.00 / 200 = 3.04 USE 3 PERSONS

LIVING ROOM : 252.00 SF
 REQ'D LIGHT : 25.2 SF
 REQ'D AIR : 12.65F
 PRO'D LIGHT : (8'-0 X 7'-0") =56.0 SF
 PRO'D AIR : (6'-0 X 5'-0") =28.0 SF

BEDROOM : 120.80 SF
 REQ'D LIGHT : 12.08 SF
 REQ'D AIR : 6.04 SF
 PRO'D LIGHT : (6'-0 X 5'-0") =35.0 SF
 PRO'D AIR : (6'-0 X 5'-0") =35.0 SF

RESIDENTIAL SPACE APT. 1D
 OCCUPANCY LOAD
 TABLE 1004.1.2
 RESIDENTIAL : 200 GROSS WITHIN THE DWELLING UNITS
 AREA 521.00 / 200 = 2.60 USE 3 PERSONS

STUDIO LIVING & BEDROOM : 335.57 SF
 REQ'D LIGHT : 33.55 SF
 REQ'D AIR : 16.77 SF
 PRO'D LIGHT : (8'-0 X 7'-0") =56.0 SF
 PRO'D AIR : (8'-0 X 7'-0") =56.0 / 2 = 28 SF

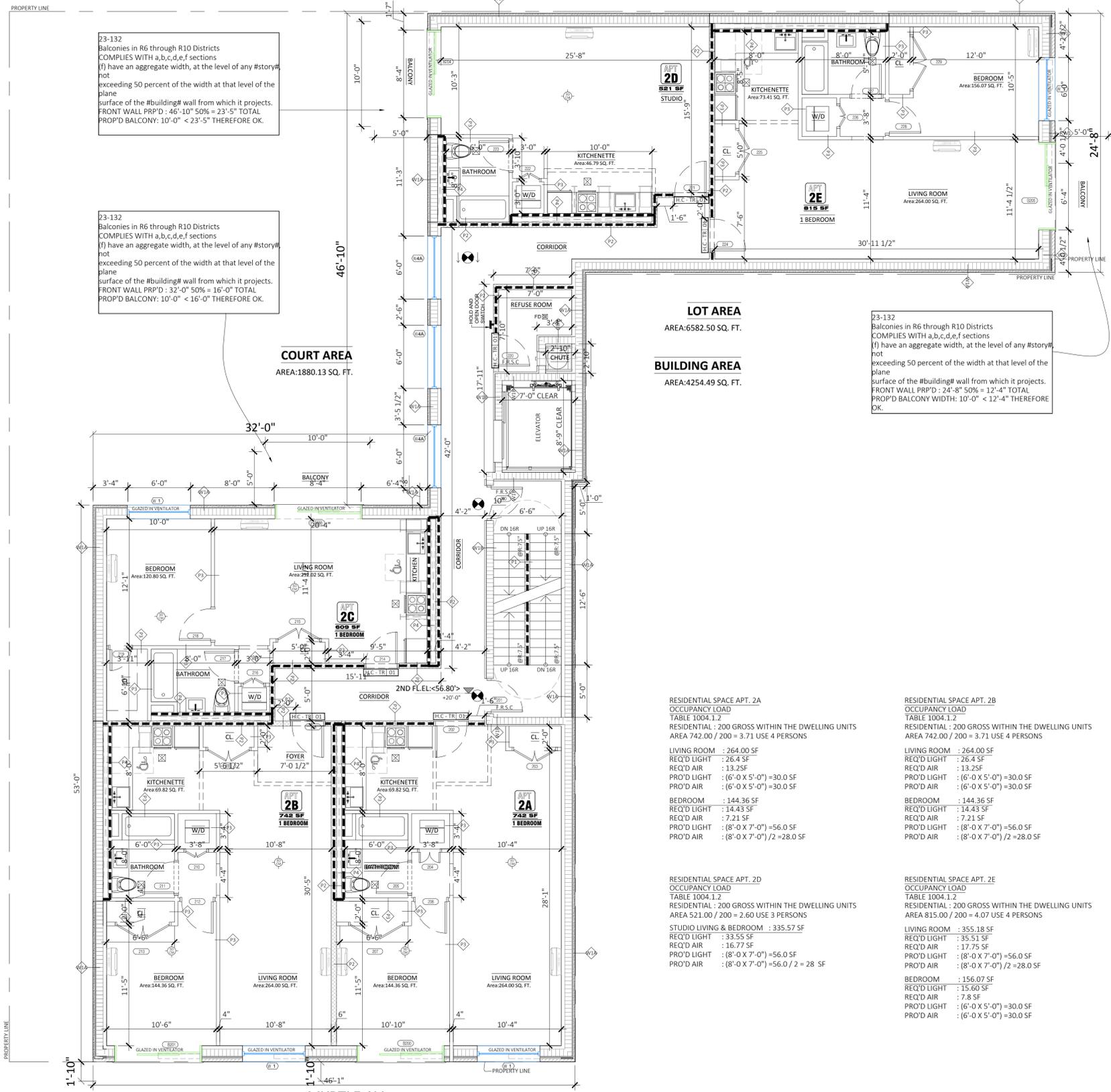
RESIDENTIAL SPACE APT. 1E
 OCCUPANCY LOAD
 TABLE 1004.1.2
 RESIDENTIAL : 200 GROSS WITHIN THE DWELLING UNITS
 AREA 815.00 / 200 = 4.07 USE 4 PERSONS

LIVING ROOM : 355.18 SF
 REQ'D LIGHT : 35.51 SF
 REQ'D AIR : 17.75 SF
 PRO'D LIGHT : (8'-0 X 7'-0") =56.0 SF
 PRO'D AIR : (8'-0 X 7'-0") / 2 =28.0 SF

BEDROOM : 156.07 SF
 REQ'D LIGHT : 15.60 SF
 REQ'D AIR : 7.8 SF
 PRO'D LIGHT : (6'-0 X 5'-0") =30.0 SF
 PRO'D AIR : (6'-0 X 5'-0") =30.0 SF

1 SECOND FLOOR PLAN
 Scale: 3/16" = 1'-0"

AUTOMATIC SPRINKLERED BUILDING



23-132
Balconies in R6 through R10 Districts
COMPLIES WITH a,b,c,d,e,f sections
(f) have an aggregate width, at the level of any #story#
not
exceeding 50 percent of the width at that level of the
plane
surface of the #building# wall from which it projects.
FRONT WALL PRP'D : 46'-10" 50% = 23'-5" TOTAL
PROP'D BALCONY: 10'-0" < 23'-5" THEREFORE OK.

23-132
Balconies in R6 through R10 Districts
COMPLIES WITH a,b,c,d,e,f sections
(f) have an aggregate width, at the level of any #story#
not
exceeding 50 percent of the width at that level of the
plane
surface of the #building# wall from which it projects.
FRONT WALL PRP'D : 32'-0" 50% = 16'-0" TOTAL
PROP'D BALCONY: 10'-0" < 16'-0" THEREFORE OK.

23-132
Balconies in R6 through R10 Districts
COMPLIES WITH a,b,c,d,e,f sections
(f) have an aggregate width, at the level of any #story#
not
exceeding 50 percent of the width at that level of the
plane
surface of the #building# wall from which it projects.
FRONT WALL PRP'D : 24'-8" 50% = 12'-4" TOTAL
PROP'D BALCONY WIDTH: 10'-0" < 12'-4" THEREFORE
OK.

LOT AREA
AREA: 6582.50 SQ. FT.

BUILDING AREA
AREA: 4254.49 SQ. FT.

COURT AREA
AREA: 1880.13 SQ. FT.

LEGEND

- NEW 4" BRICK VENEER
- NEW 8" CMU BLOCK WALL
- BATT INSULATION
- NEW INTERIOR PARTITION = 3-5/8" METAL STUDS @ 16" O.C., (1) LAYER 5/8" THK. SHEETROCK ON BOTH SIDES, NON-FIRE RATED.
- NEW INTERIOR PARTITION = 3-5/8" METAL STUDS @ 16" O.C., (2) LAYERS FC #60 5/8" THK. SHEETROCK ON BOTH SIDES, WITH 24 GA. SHEET METAL PLATE (2) HR. FIRE RATED. MASONRY EQUIVALENT WALL.
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- NEW INTERIOR PARTITION BETWEEN APARTMENTS = 3-5/8" METAL STUDS @ 16" O.C., (1) LAYER FC #60 5/8" THK. SHEETROCK ON BOTH SIDES, (1) HR. FIRE RATED.
- NEW FOUNDATION WALL SEE STRUCTURAL FOR CONC. TYPE AND FOR MORE DETAIL.
- SMOKE DETECTOR
CARBON MONOXIDE DETECTOR
HARDWIRED AND TO BE INTERCONNECTED
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(RD) ROOF DRAIN
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150 CFM KITCHEN EXHAUST FAN
- WALL TAG
- DOOR TAG
- WINDOW TAG
- EXTERIOR LIGHT
- HVAC SPLIT UNIT

| RESIDENTIAL EXTERIOR GLASS DOORS AND WINDOWS | | |
|--|------------------------------|-------------|
| COLOR SYMBOL | DESCRIPTION | DTIC RATING |
| | RESIDENTIAL EXTERIOR WINDOWS | 30 dBA |
| | RESIDENTIAL EXTERIOR DOORS | 29 dBA |

RESIDENTIAL SPACE APT. 2A
OCCUPANCY LOAD
TABLE 1004.1.2
RESIDENTIAL : 200 GROSS WITHIN THE DWELLING UNITS
AREA 742.00 / 200 = 3.71 USE 4 PERSONS

LIVING ROOM : 264.00 SF
REQ'D LIGHT : 26.4 SF
REQ'D AIR : 13.2SF
PRO'D LIGHT : (6'-0 X 5'-0") = 30.0 SF
PRO'D AIR : (6'-0 X 5'-0") = 30.0 SF

BEDROOM : 144.36 SF
REQ'D LIGHT : 14.43 SF
REQ'D AIR : 7.21 SF
PRO'D LIGHT : (8'-0 X 7'-0") = 56.0 SF
PRO'D AIR : (8'-0 X 7'-0") / 2 = 28.0 SF

RESIDENTIAL SPACE APT. 2B
OCCUPANCY LOAD
TABLE 1004.1.2
RESIDENTIAL : 200 GROSS WITHIN THE DWELLING UNITS
AREA 742.00 / 200 = 3.71 USE 4 PERSONS

LIVING ROOM : 264.00 SF
REQ'D LIGHT : 26.4 SF
REQ'D AIR : 13.2SF
PRO'D LIGHT : (6'-0 X 5'-0") = 30.0 SF
PRO'D AIR : (6'-0 X 5'-0") = 30.0 SF

BEDROOM : 144.36 SF
REQ'D LIGHT : 14.43 SF
REQ'D AIR : 7.21 SF
PRO'D LIGHT : (8'-0 X 7'-0") = 56.0 SF
PRO'D AIR : (8'-0 X 7'-0") / 2 = 28.0 SF

RESIDENTIAL SPACE APT. 2C
OCCUPANCY LOAD
TABLE 1004.1.2
RESIDENTIAL : 200 GROSS WITHIN THE DWELLING UNITS
AREA 609.00 / 200 = 3.04 USE 3 PERSONS

LIVING ROOM : 252.00 SF
REQ'D LIGHT : 25.2 SF
REQ'D AIR : 12.6SF
PRO'D LIGHT : (8'-0 X 7'-0") = 56.0 SF
PRO'D AIR : (8'-0 X 7'-0") = 28.0 SF

BEDROOM : 120.80 SF
REQ'D LIGHT : 12.08 SF
REQ'D AIR : 6.04 SF
PRO'D LIGHT : (6'-0 X 5'-0") = 35.0 SF
PRO'D AIR : (6'-0 X 5'-0") = 35.0 SF

RESIDENTIAL SPACE APT. 2D
OCCUPANCY LOAD
TABLE 1004.1.2
RESIDENTIAL : 200 GROSS WITHIN THE DWELLING UNITS
AREA 521.00 / 200 = 2.60 USE 3 PERSONS

STUDIO LIVING & BEDROOM : 335.57 SF
REQ'D LIGHT : 33.55 SF
REQ'D AIR : 16.77 SF
PRO'D LIGHT : (8'-0 X 7'-0") = 56.0 SF
PRO'D AIR : (8'-0 X 7'-0") = 56.0 / 2 = 28 SF

RESIDENTIAL SPACE APT. 2E
OCCUPANCY LOAD
TABLE 1004.1.2
RESIDENTIAL : 200 GROSS WITHIN THE DWELLING UNITS
AREA 815.00 / 200 = 4.07 USE 4 PERSONS

LIVING ROOM : 355.18 SF
REQ'D LIGHT : 35.51 SF
REQ'D AIR : 17.75 SF
PRO'D LIGHT : (8'-0 X 7'-0") = 56.0 SF
PRO'D AIR : (8'-0 X 7'-0") / 2 = 28.0 SF

BEDROOM : 156.07 SF
REQ'D LIGHT : 15.60 SF
REQ'D AIR : 7.8 SF
PRO'D LIGHT : (6'-0 X 5'-0") = 30.0 SF
PRO'D AIR : (6'-0 X 5'-0") = 30.0 SF

1 THIRD THRU SEVENTH FLOOR PLAN ' TYPICAL ' MYRTLE AV
Scale: 3/16" = 1'-0"

OLEG RUDITSER, P.E.
Business Phone:
718-368-0601
2820 OCEAN PARKWAY
APT. 16F
BROOKLYN NY 11223

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Project:
**901 MYRTLE AVE.
BROOKLYN, N. Y.**

Drawing Title:
**THIRD THRU SEVENTH
FLOOR PLAN(TYPICAL)**

SEAL AND SIGNATURE

DATE:
PROJECT NO.:
DRAWING BY:
DRAWING NO.:
A-102.00

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 2820 OCEAN PARKWAY
 APT. 16F
 BROOKLYN NY 11223

LEGEND

-  NEW 4" BRICK VENEER
-  NEW 8" CMU BLOCK WALL
-  BATT INSULATION
-  NEW INTERIOR PARTITION = 3-5/8" METAL STUDS @ 16" O.C., (1) LAYER 5/8" THK. SHEETROCK ON BOTH SIDES, NON-FIRE RATED.
-  NEW INTERIOR PARTITION = 3-5/8" METAL STUDS @ 16" O.C., (2) LAYERS FC #60 5/8" THK. SHEETROCK ON BOTH SIDES, WITH 24 GA. SHEET METAL PLATE (2) HR. FIRE RATED. MASONRY EQUIVALENT WALL.
-  NEW INTERIOR PARTITION = 3-5/8" METAL STUDS @ 16" O.C., (2) LAYERS FC #60 5/8" THK. SHEETROCK ON BOTH SIDES, (2) HR. FIRE RATED.
-  NEW INTERIOR PARTITION BETWEEN APARTMENTS = 3-5/8" METAL STUDS @ 16" O.C., (1) LAYER FC #60 5/8" THK. SHEETROCK ON BOTH SIDES, (1) HR. FIRE RATED.
-  NEW FOUNDATION WALL, SEE STRUCTURAL FOR CONC. TYPE AND FOR MORE DETAIL.
-  SMOKE DETECTOR
CARBON MONOXIDE DETECTOR
HARDWIRED AND TO BE
INTERCONNECTED
-  (FD) FLOOR DRAIN
(AD) AREA DRAIN
(RD) ROOF DRAIN
-  F.P.S.C. FIRE PROOF SELF CLOSE DOOR
-  EXIT SIGN & EMERGENCY LIGHTING
ES & L
-  75 CFM BATHROOM EXHAUST FAN
150 CFM KITCHEN EXHAUST FAN
-  WALL TAG
-  DOOR TAG
-  WINDOW TAG
-  EXTERIOR LIGHT
-  HVAC SPLIT UNIT

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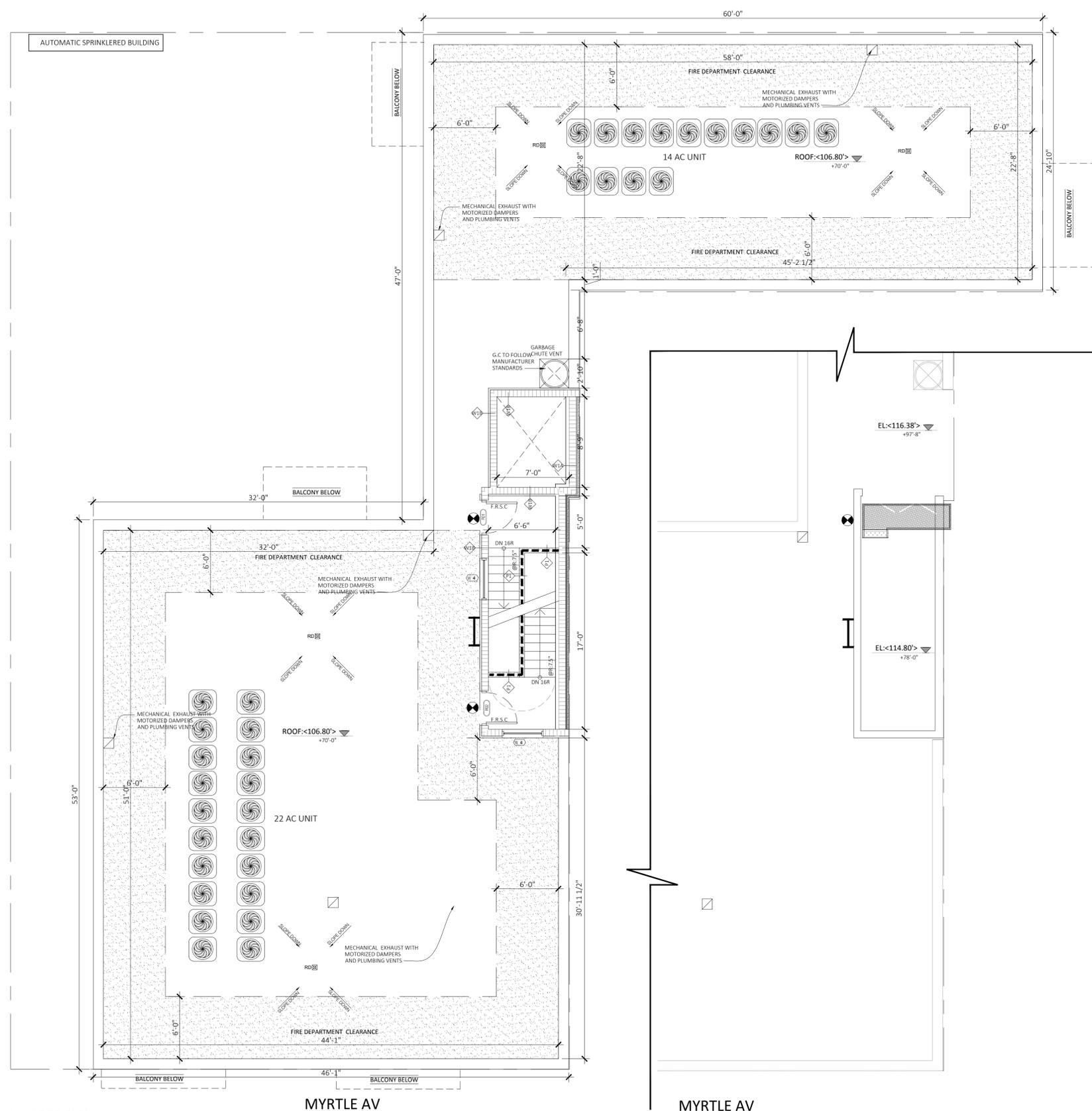
Project:
**901 MYRTLE AVE.
 BROOKLYN, N. Y.**

Drawing Title:
SECOND FLOOR PLAN

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|  | DATE: |
| | PROJECT NO.: |
| | DRAWING BY: |
| | DRAWING No.: |

A-103.00

NOTE TO CONTRACTOR:
 PROVIDE Sound Transmission Class (STC) RATING OF MIN 50 TO MEET REQUIREMENT OF BC 1207 STANDARDS WHERE BOILER ROOM WALLS, SHAFTS, PUBLIC HALLS, CORRIDORS, ADJOINING TO DWELLING UNIT.
 REQUIRED TEST: Sound Test: USG-840817



1 ROOF PLAN
 Scale: 3/16" = 1'-0"

54'-2" LOT

| RESIDENTIAL EXTERIOR GLASS DOORS AND WINDOWS | | |
|--|-------------------------------------|-------------|
| COLOR SYMBOL | DESCRIPTION | OITC RATING |
| ■ | RESIDENTIAL EXTERIOR WINDOWS | 30 dBA |
| ■ | RESIDENTIAL EXTERIOR DOORS | 29 dBA |
| ■ | COMMERCIAL EXTERIOR WINDOWS & DOORS | 28 dBA |



1 FRONT ELEVATION
Scale: 1/4" = 1'-0"

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BROOKLYN NY 11223

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Project:
**901 MYRTLE AVE.
BROOKLYN, N. Y.**

Drawing Title:
MRYTLE AVE ELEVATION



DATE:
PROJECT NO.:
DRAWING BY:
DRAWING No.:
A-200.00

100'-0" TAX LOT : 34 BEHIND

25'-0" TAX LOT :34

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 Business Phone:
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 APT. 16F
 BROOKLYN NY 11223

STONE CAP,
 TYPE TO BE SELECTED BY OWNER

STAIR BULKHEAD BEHIND

ELEVATOR BULKHEAD BEHIND

TOP OF BULKHEAD
 [114.80'] 78'-0"

ROOF
 [106.80'] 70'-0"

7TH FLOOR
 [96.80'] 60'-0"

6TH FLOOR
 [86.80'] 50'-0"

5TH FLOOR
 [76.80'] 40'-0"

4TH FLOOR
 [66.80'] 30'-0"

3RD FLOOR
 [56.80'] 20'-0"

2ND FLOOR
 [46.80'] 10'-0"

FIRST FLOOR RESIDENTIAL
 [36.30'] 0'-0"

78'-9" BUILDING HEIGHT
 70'-9" FRONT WALL

| NO. | DATE | ISSUE OR REVISION |
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Project:
**901 MYRTLE AVE.
 BROOKLYN, N. Y.**

Drawing Title:
**TOMPKINS AVENUE
 ELEVATION**



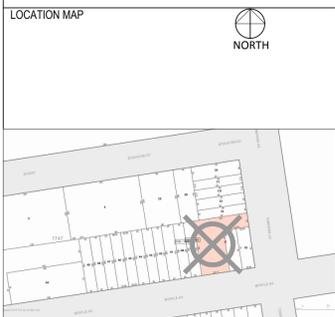
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 DRAWING BY:
 DRAWING No.:
A-201.00

1 TOMPKINS AVENUE ELEVATION
 Scale: 1/4" = 1'-0"

| RESIDENTIAL EXTERIOR GLASS DOORS AND WINDOWS | | |
|--|-------------------------------------|-------------|
| COLOR SYMBOL | DESCRIPTION | QIRC RATING |
| Blue | RESIDENTIAL EXTERIOR WINDOWS | 30 dBA |
| Green | RESIDENTIAL EXTERIOR DOORS | 29 dBA |
| Pink | COMMERCIAL EXTERIOR WINDOWS & DOORS | 28 dBA |

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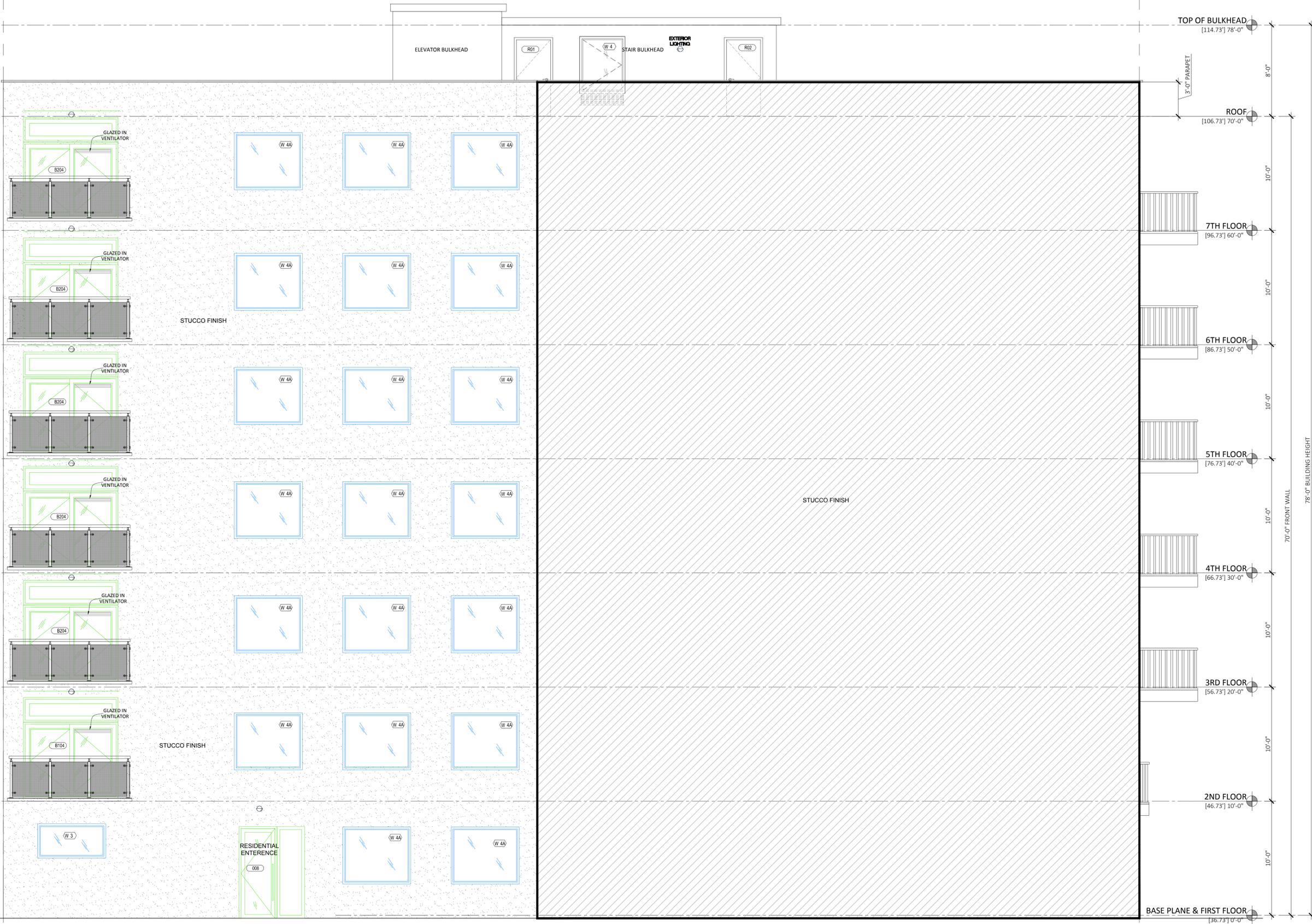
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Project:
**901 MYRTLE AVE.
 BROOKLYN, N. Y.**

Drawing Title:
SIDE ELEVATION

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| SEAL AND SIGNATURE | DATE: |
| | PROJECT NO.: |
| | DRAWING BY: |
| | DRAWING No.: |
| A-202.00 | |
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1 SIDE ELEVATION
 Scale: 1/4" = 1'-0"

| RESIDENTIAL EXTERIOR GLASS DOORS AND WINDOWS | | |
|--|-------------------------------------|-------------|
| COLOR SYMBOL | DESCRIPTION | OITC RATING |
| ■ | RESIDENTIAL EXTERIOR WINDOWS | 30 dBA |
| ■ | RESIDENTIAL EXTERIOR DOORS | 29 dBA |
| ■ | COMMERCIAL EXTERIOR WINDOWS & DOORS | 28 dBA |

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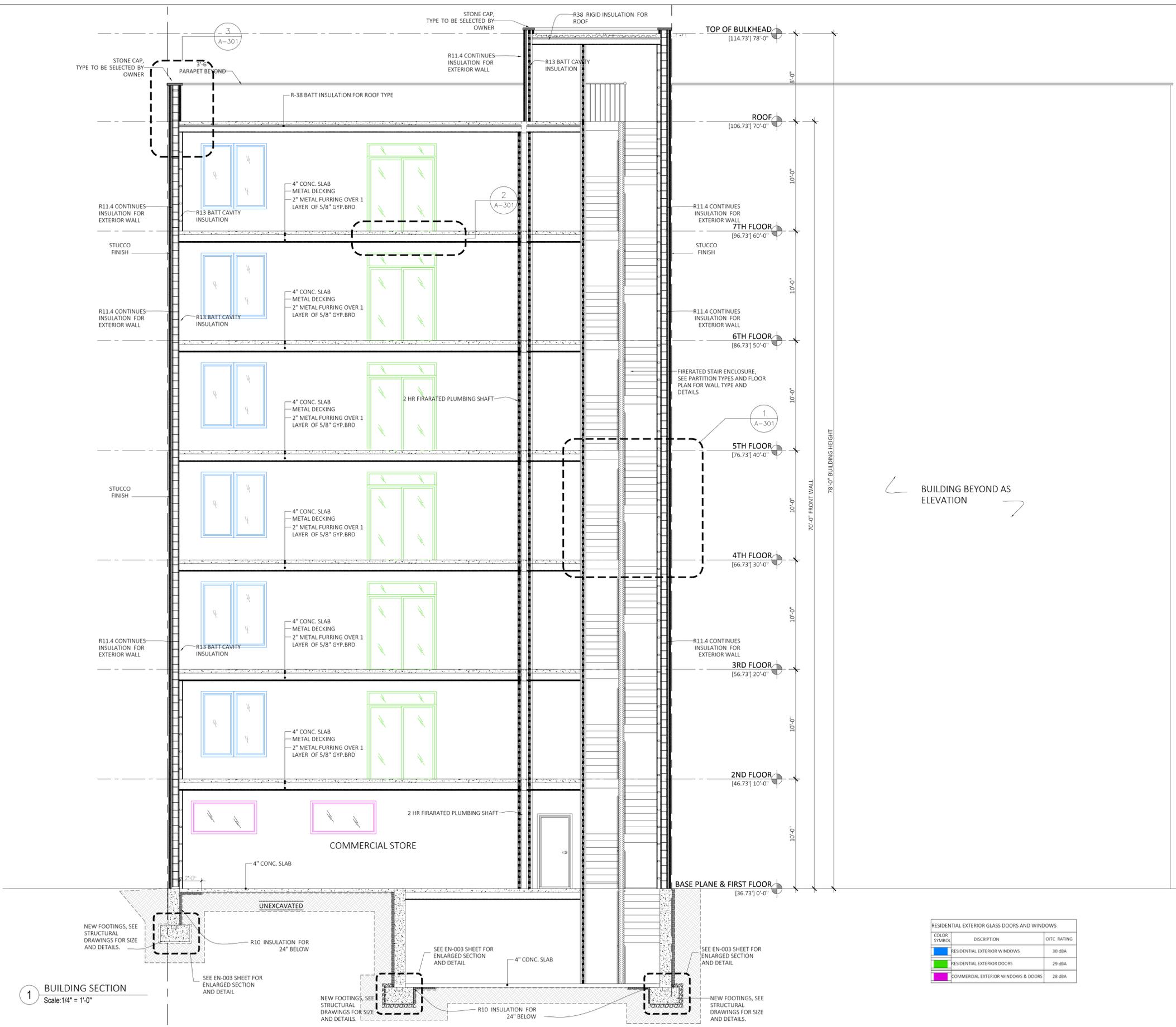
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Project:
**901 MYRTLE AVE.
 BROOKLYN, N. Y.**

Drawing Title:
BUILDING SECTION

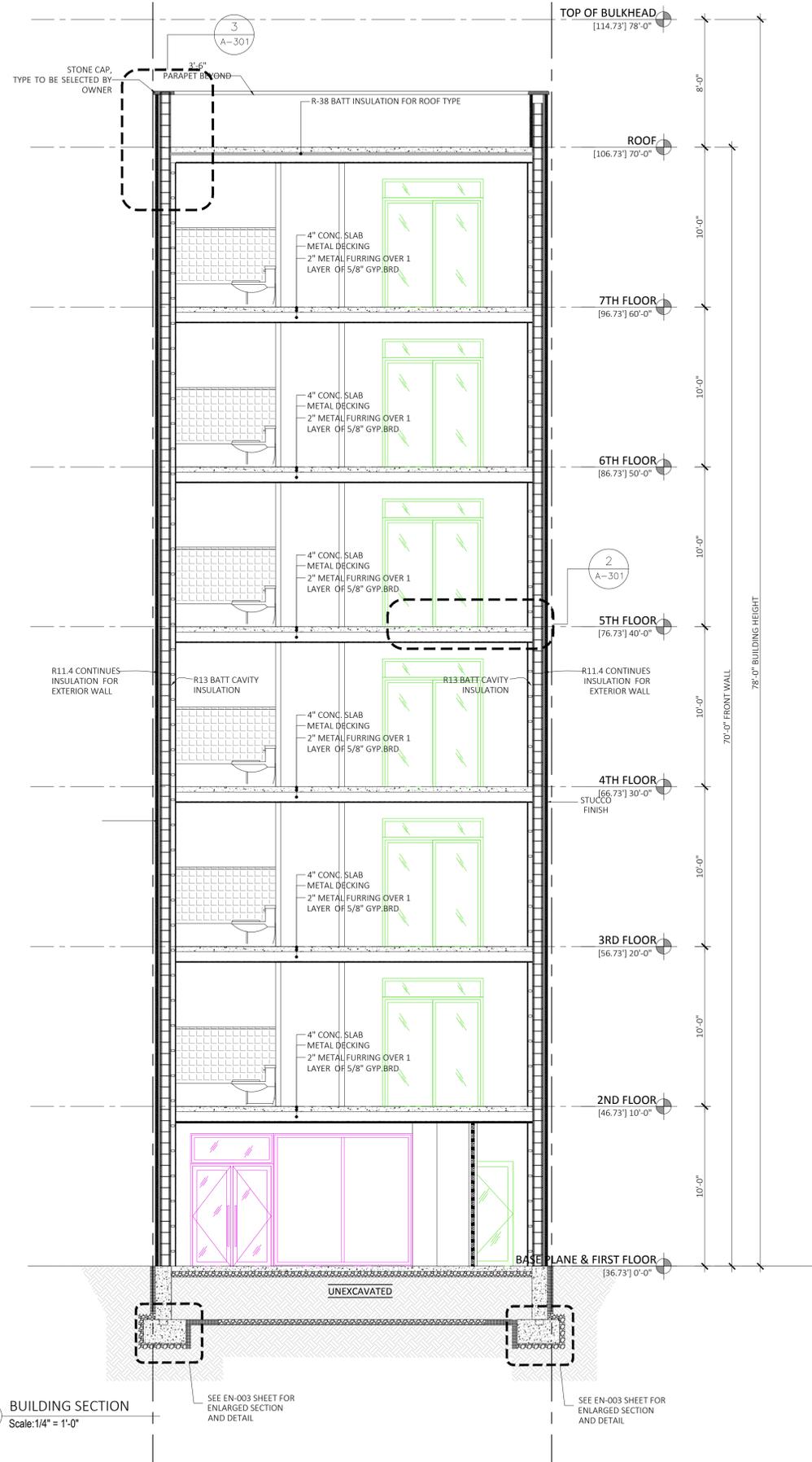
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| | PROJECT NO.: |
| | DRAWING BY: |
| DRAWING No.: | |
| A-300.00 | |



| RESIDENTIAL EXTERIOR GLASS DOORS AND WINDOWS | | |
|--|-------------------------------------|-------------|
| COLOR SYMBOL | DESCRIPTION | QTC. RATING |
| Blue | RESIDENTIAL EXTERIOR WINDOWS | 30 dBA |
| Green | RESIDENTIAL EXTERIOR DOORS | 29 dBA |
| Pink | COMMERCIAL EXTERIOR WINDOWS & DOORS | 28 dBA |

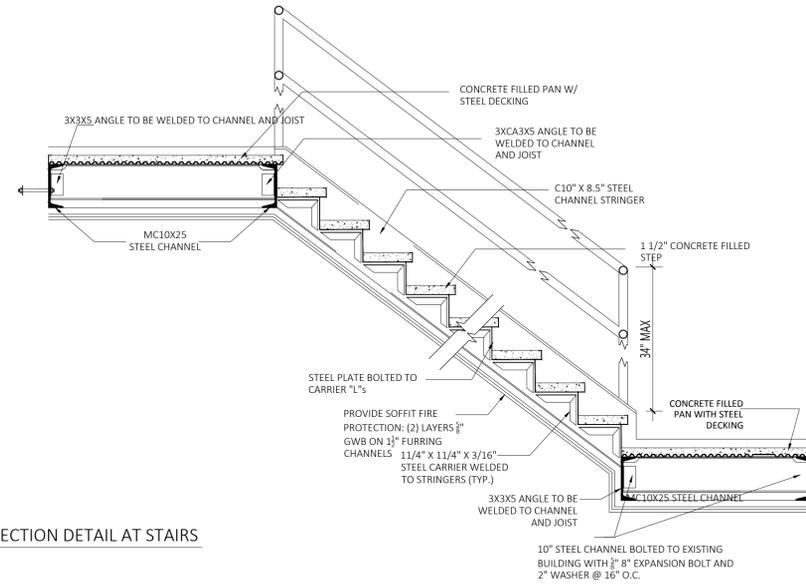
1 BUILDING SECTION
 Scale: 1/4" = 1'-0"

OLEG RUDITSER, P.E.
 Business Phone:
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 2820 OCEAN PARKWAY
 APT. 16F
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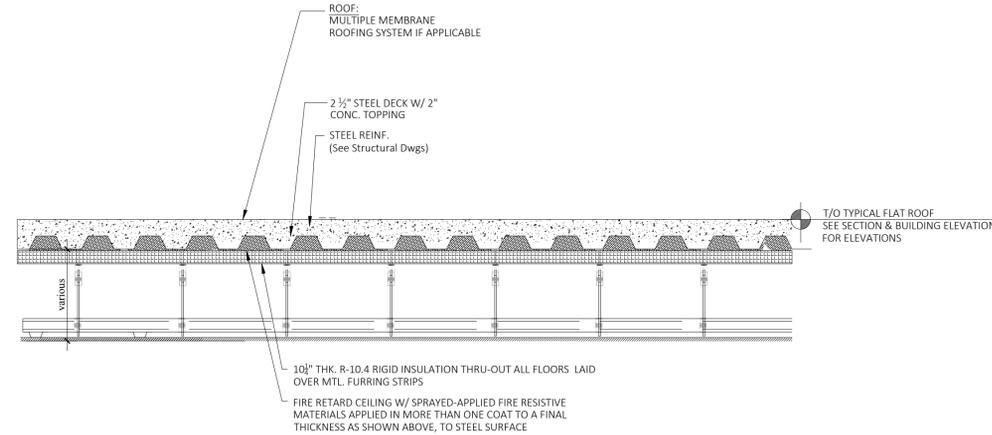


| RESIDENTIAL EXTERIOR GLASS DOORS AND WINDOWS | | |
|--|-------------------------------------|-------------|
| COLOR SYMBOL | DESCRIPTION | DTIC RATING |
| Blue | RESIDENTIAL EXTERIOR WINDOWS | 30 dBA |
| Green | RESIDENTIAL EXTERIOR DOORS | 29 dBA |
| Purple | COMMERCIAL EXTERIOR WINDOWS & DOORS | 28 dBA |

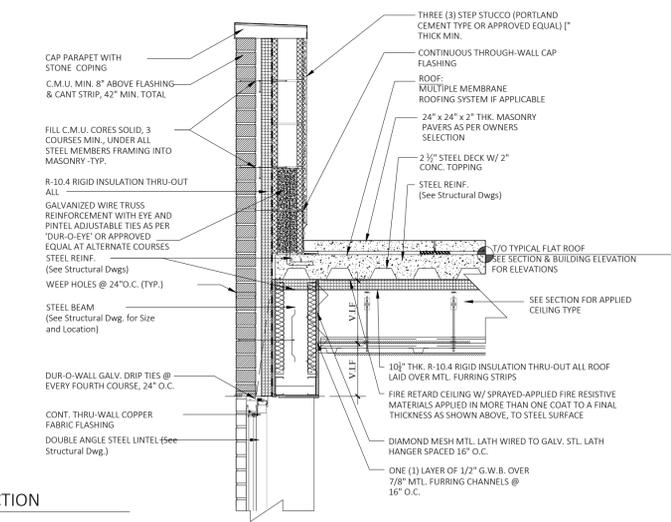
1 SECTION DETAIL AT STAIRS



2 SECTION DETAIL AT FLOOR, CEILING



3 ROOF PARAPET SECTION



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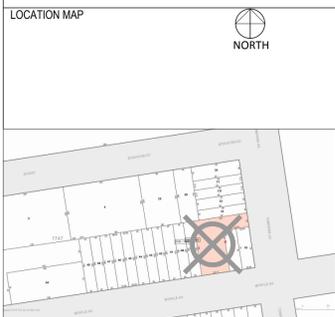
Project:
**901 MYRTLE AVE.
 BROOKLYN, N. Y.**

Drawing Title:
**BUILDING SECTION AND
 DETAIL SECTIONS**

SEAL AND SIGNATURE: [Signature]
 DATE: _____
 PROJECT NO.: _____
 DRAWING BY: _____
 DRAWING No.: **A-301.00**
 14 OF 22

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Project:
**901 MYRTLE AVE.
 BROOKLYN, N. Y.**

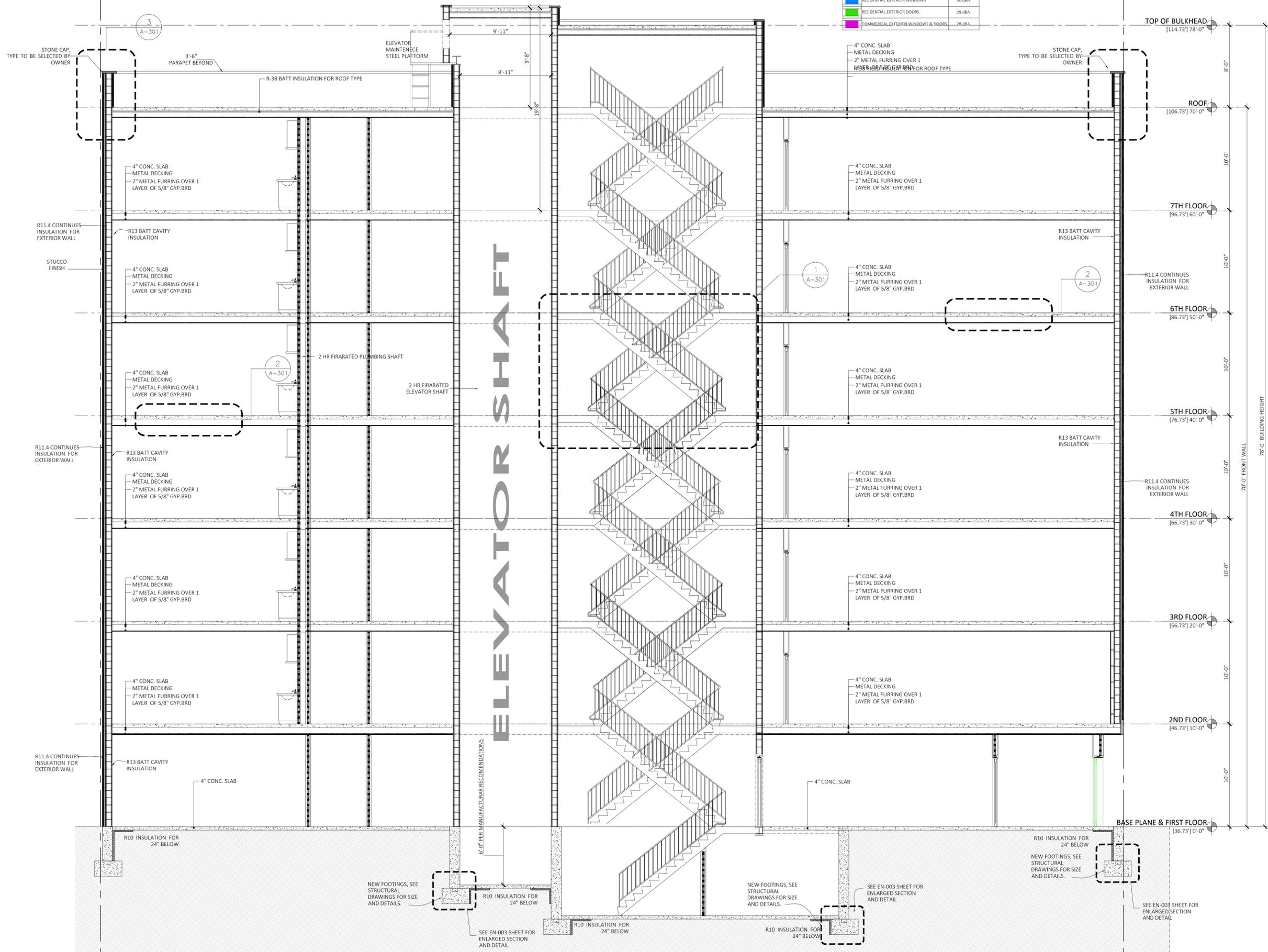
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BUILDING SECTION

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| | DRAWING No.: |
| A-302.00 | |



OLEG RUDITSER, P.E.
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 718-368-0601
 2820 OCEAN PARKWAY
 APT. 16F
 BROOKLYN NY 11223

| RESIDENTIAL EXTERIOR GLASS DOORS AND WINDOWS | | |
|--|-------------------------------------|-------------|
| COLOR SYMBOL | DESCRIPTION | QIRC RATING |
| Blue | RESIDENTIAL EXTERIOR WINDOWS | 30 JBA |
| Green | RESIDENTIAL EXTERIOR DOORS | 29 JBA |
| Purple | COMMERCIAL EXTERIOR WINDOWS & DOORS | 28 JBA |



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Project:
**901 MYRTLE AVE.
 BROOKLYN, N. Y.**

Drawing Title:
BUILDING SECTION

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| SEAL AND SIGNATURE | DATE: |
| | PROJECT NO.: |
| | DRAWING BY: |
| DRAWING No.: | |
| A-303.00 | |

OLEG RUDITSER, P.E.
 Business Phone:
 718-368-0601
 2820 OCEAN PARKWAY
 APT. 16F
 BROOKLYN NY 11223

EXTERIOR WINDOW SHEDULE

| MARK | TYPE | QTY. | SIZE | | MANUF. | MODEL | OITC | TEST REPORT NUMBER | GLAZING | NOTES |
|------|--|------|---------|---------|----------|------------------|--------|--------------------|--|--------------------------|
| | | | WIDTH | HEIGHT | | | | | | |
| W1 | PELLA DESIGNER SERIES CASEMENT WINDOWS | 18 | 6' - 0" | 6' - 0" | PELLA | DESIGNER, 2-WIDE | 30 dBA | ESP-012098-pella-1 | 5/8" PRIMARY IG (1/4" exterior glass, 1/4" air space, 1/8" interior glass) SECONDARY PANEL: 1/8" interior glass, 1 1/8" air space | TITON VENTILATOR:GV12305 |
| W2 | REYNAERS CS68 STOREFRONT | 2 | 2' - 6" | 6' - 8" | REYNAERS | CS68 | 28 dBA | D1170.02G | 1 1/2" IG (1/4" annealed, 3/8" air space, 1/4" tempered, 3/8" air space, 1/4" tempered) | COMMERCIAL ENTRANCE |
| W2 | PELLA DESIGNER SERIES CASEMENT WINDOWS | 2 | 2' - 6" | 6' - 8" | PELLA | DESIGNER, 2-WIDE | 30 dBA | ESP-012098-pella-1 | 5/8" PRIMARY IG (1/4" exterior glass, 1/4" air space, 1/8" interior glass) SECONDARY PANEL: 1/8" interior glass, 1 1/8" air space | RESIDENTIAL ENTRANCE |
| W3 | PELLA DESIGNER SERIES CASEMENT WINDOWS | 1 | 6' - 0" | 3' - 0" | PELLA | DESIGNER, 2-WIDE | 30 dBA | ESP-012098-pella-1 | 5/8" PRIMARY IG (1/4" exterior glass, 1/4" air space, 1/8" interior glass) SECONDARY PANEL: 1/8" interior glass, 1 1/8" air space | COMMERCIAL ENTRANCE |
| W3 | REYNAERS CS68 STOREFRONT | 2 | 6' - 0" | 3' - 0" | REYNAERS | CS68 | 28 dBA | D1170.02G | 1 1/2" IG (1/4" annealed, 3/8" air space, 1/4" tempered, 3/8" air space, 1/4" tempered) | RESIDENTIAL ENTRANCE |
| W4A | PELLA DESIGNER SERIES CASEMENT WINDOWS | 20 | 6' - 0" | 5' - 0" | PELLA | DESIGNER, 2-WIDE | 30 dBA | ESP-012098-pella-1 | 5/8" PRIMARY IG (1/4" exterior glass, 1/4" air space, 1/8" interior glass) SECONDARY PANEL: 1/8" interior glass, 1 1/8" air space | |
| W5 | REYNAERS CS68 STOREFRONT | 1 | 9' - 0" | 8' - 0" | REYNAERS | CS68 | 28 dBA | D1170.02G | 1 1/2" IG (1/4" annealed, 3/8" air space, 1/4" tempered, 3/8" air space, 1/4" tempered) | |
| W6 | REYNAERS CS68 STOREFRONT | 1 | 9' - 0" | 8' - 0" | REYNAERS | CS68 | 28 dBA | D1170.02G | 1 1/2" IG (1/4" annealed, 3/8" air space, 1/4" tempered, 3/8" air space, 1/4" tempered) | |

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EXTERIOR GLASS DOORS SHEDULE

| MARK | TYPE | SIZE | | MANUF. | MODEL | OITC | TEST REPORT NUMBER | GLAZING | NOTES |
|---|---|---------|---------|----------|---|--------|--------------------|--|--------------------------|
| | | WIDTH | HEIGHT | | | | | | |
| 001,012 | REYNAERS CS68 STOREFRONT | 6' - 0" | 6' - 8" | REYNAERS | CS68 | 28 dBA | D1170.02G | 1 1/2" IG (1/4" annealed, 3/8" air space, 1/4" tempered, 3/8" air space, 1/4" tempered) | |
| B101,B201 B100,B200 B103,B203 B104,B204 B105,B205 | PELLA TYPE II ARCHITECT SERIES SLIDING PATIO DOOR | 8' - 0" | 6' - 8" | PELLA | ARCHITECT SREIES SLIDING DOOR, FRENCH, FIXED/VENT LEFT, 59.25x95.5 | 29 dBA | 30160-06-72360-1 | 23/32" IG (1/8" glass, 9/32" air space, 5/16" laminated glass) | TITON VENTILATOR:GV12305 |
| 008,010 | PELLA IN-SWING PATIO DOOR | 3' - 0" | 6' - 8" | PELLA | 2 SSIII | 29 dBA | C7575.01 | 5/8" primary IG (1/8" tempered, 3/8" air space, 1/8" tempered) interior access panel (1/8" tempered, 1" glass-to-glass air space) | |
| 002 | PELLA DOUBLE IN-SWING PATIO DOOR | 6' - 0" | 6' - 8" | PELLA | 2 SSIII | 29 dBA | C7575.01 | 5/8" primary IG (1/8" tempered, 3/8" air space, 1/8" tempered) interior access panel (1/8" tempered, 1" glass-to-glass air space) | |

LOCATION MAP 



Project:
**901 MYRTLE AVE.
 BROOKLYN, N. Y.**

Drawing Title:
**EXTERIOR WINDOWS &
 DOORS SCHEDULES**

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|  | DATE: |
| | PROJECT NO.: |
| | DRAWING BY: |
| | DRAWING No.: |

A-401.00

APPENDIX 2
CITIZEN PARTICIPATION PLAN

APPENDIX 2

CITIZEN PARTICIPATION PLAN

The NYC Office of Environmental Remediation and Metropolitan Realty Exemptions Inc 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, Metropolitan Realty Exemptions Inc 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, Kate Glass, who can be contacted about these issues or any others questions, comments or concerns that arise during the remedial process at (212) 788-8841.

Project Contact List: OER has established a Site Contact List for this project to provide public notices in the form of fact sheets to interested members of the Community.

Communications will include updates on important information relating to the progress of the cleanup program at the Site as well as to request public comments on the cleanup plan. The Project Contact List includes owners and occupants of adjacent buildings and homes, principal administrators of nearby schools, hospitals and day care centers, the public water supplier that serves the area, established document repositories, the representative Community Board, City Council members, other elected representatives and any local Brownfield Opportunity Area (BOA) grantee organizations. Any member of the public or organization will be added to the

Site Contact List on request. A copy of the Site Contact List is maintained by OER's project manager. If you would like to be added to the Project Contact List, contact NYC OER at (212) 788-8841 or by email at brownfields@cityhall.nyc.gov.

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

DeKalb Library

790 Bushwick Avenue Brooklyn NY 11221

718-455-3898

| | |
|------------|---------------------------|
| Mon | 10:00 am - 6:00 pm |
| Tue | 10:00 am - 8:00 pm |
| Wed | 1:00 pm - 8:00 pm |
| Thu | 10:00 am - 6:00 pm |
| Fri | 10:00 am - 6:00 pm |
| Sat | 10:00 am - 5:00 pm |
| Sun | closed |

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

Issues of Public Concern: None identified.

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

Citizen Participation Milestones: Public notice and public comment activities occur at several steps during a typical NYC VCP project. These steps include:

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

List announcing the completion of remediation, providing a list of all Institutional and Engineering Controls implemented for to the Site and announcing the issuance of the Notice of Completion.

APPENDIX 3
SUSTAINABILITY STATEMENT

APPENDIX 3

SUSTAINABILITY STATEMENT

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

Reuse of Clean, Recyclable Materials and Reduced Consumption of Non-

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

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

Reduced Energy Consumption and Promotion of Greater Energy Efficiency:

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

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

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

Electricity will only be used in the new building. No natural gas or heating oil will be used.

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

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

An estimate of the area of the Site that utilizes recontamination controls under this plan will be reported in the RAR in square feet.

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

An estimate of the enhanced stormwater retention capability of the redevelopment project will be included in the RAR.

Linkage with Green Building: Green buildings provide a multitude of benefits to the city across a broad range of areas, such as reduction of energy consumption, conservation of resources, and reduction in toxic materials use.

The number of Green Buildings that are associated with this brownfield redevelopment property will be reported in the RAR. The total square footage of green building space created as a function of this brownfield redevelopment will be quantified for residential, commercial and industrial/manufacturing uses.

Paperless Voluntary Cleanup Program: Metropolitan Realty Exemption Inc 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: Metropolitan Realty Exemption Inc is participating in OER's low-energy project management program. Under this program, whenever possible, meetings are held using remote communication technologies, such as videoconferencing and teleconferencing to reduce energy consumption and traffic congestion associated with personal transportation.

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

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

APPENDIX 4
SOIL / MATERIALS
MANAGEMENT PLAN

APPENDIX 4

SOIL/MATERIALS MANAGEMENT PLAN

1.1 Soil Screening Methods

Visual, olfactory and PID soil screening and assessment will be performed under the supervision of a Qualified Environmental Professional and will be reported in the final remedial report. Soil screening will be performed during invasive work performed during the remedy and development phases prior to issuance of final signoff by OER.

1.2 Stockpile Methods

Excavated soil from suspected areas of contamination (e.g., hot spots, USTs, drains, etc.) will be stockpiled separately and will be segregated from clean soil and construction materials.

Stockpiles will be used only when necessary and will be removed as soon as practicable. While stockpiles are in place, they will be inspected daily, and before and after every storm event.

Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by OER. Excavated soils will be stockpiled on, at minimum, double layers of 8-mil minimum sheeting, will be kept covered at all times with appropriately anchored plastic tarps, and will be routinely inspected. Broken or ripped tarps will be promptly replaced.

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

1.3 Characterization of Excavated Materials

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



1.4 Materials Excavation, Load-Out, and Departure

The PE/QEP overseeing the remedial action will:

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

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

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

1.5 Off-Site Materials Transport

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

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

1.6 Materials Disposal Off-Site

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

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

All impacted soil/fill or other waste excavated and removed from the Site will be managed as regulated material and will be disposed in accordance with applicable laws and regulations. Historic fill and contaminated soils taken off-Site will be handled as solid waste and will not be disposed at a Part 360-16 Registration Facility (also known as a Soil Recycling Facility). Waste characterization will be performed for off-Site disposal in a manner required by the receiving facility and in conformance with its applicable permits. Waste characterization sampling and analytical methods, sampling frequency, analytical results and QA/QC will be

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

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

1.7 Materials Reuse On-Site

Soil and fill that is derived from the property that meets the Soil Cleanup Objectives (SCOs) established in this plan may be reused on-Site. The SCOs for on-Site reuse are listed in Section 4.2 of this cleanup plan. 'Reuse on-Site' means material that is excavated during the remedy or development, does not leave the property, and is relocated within the same property and on land with comparable levels of contaminants in soil/fill material, compliant with applicable laws and regulations, and addressed pursuant to the NYC VCP agreement subject to Engineering and Institutional Controls. The PE/QEP will ensure that reused materials are segregated from other materials to be exported from the Site and that procedures defined for material reuse in this remedial plan are followed. The expected location for placement of reused material is shown in Section 4.2.

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 Section 4.2. Imported soils will not exceed groundwater protection standards established in Part 375. Imported soils for Track 1 remedial action projects will not exceed Track 1 SCO's. A process will be established to evaluate sources of backfill and cover soil to be imported to the Site, and will include an examination of source location, current and historical use(s), and any applicable documentation. Material from industrial sites, spill sites, environmental remediation sites or other potentially contaminated sites will not be imported to the Site.

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

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

- All materials received for import to the Site will be approved by a PE/QEP and will be in compliance with provisions in this remedial plan. The final remedial report will report the source of the fill, evidence that an inspection was performed on the source, chemical sampling results, frequency of testing, and a Site map indicating the locations where backfill or soil cover was placed.
- All material will be subject to source screening and chemical testing.
- Inspection of imported fill material will include visual, olfactory and PID screening for evidence of contamination. Materials imported to the Site will be subject to inspection, as follows:
 - Trucks with imported fill material will be in compliance with applicable laws and regulations and will enter the Site at designated locations;
 - The PE/QEP is responsible to ensure that every truck load of imported material is inspected for evidence of contamination; and
 - Fill material will be free of solid waste including pavement materials, debris, stumps, roots, and other organic matter, as well as ashes, oil, perishables or foreign matter.

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

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

1.10 Fluids Management

All liquids to be removed from the Site, including dewatering fluids, will be handled, transported and disposed in accordance with applicable laws and regulations. Liquids discharged into the



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

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

1.11 Stormwater Pollution Prevention

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

1.12 Contingency Plan for Unknown Contamination Sources

This contingency plan is developed for the remedial construction to address the discovery of unknown structures or contaminated media during excavation. Identification of unknown contamination source areas during invasive Site work will be promptly communicated to OER's Project Manager. Petroleum spills will be reported to the NYS DEC Spill Hotline. These findings

will be included in the daily report. If previously unidentified contaminant sources are found during on-Site remedial excavation or development-related excavation, sampling will be performed on contaminated source material and surrounding soils and reported to OER. Chemical analytical testing will be performed for TAL metals, TCL volatiles and semi-volatiles, TCL pesticides and PCBs, as appropriate.

1.13 Odor, Dust, and Nuisance Control

Odor Control

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

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

Dust Control

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

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

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

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

Other Nuisances

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

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

APPENDIX 5
CONSTRUCTION HEALTH AND
SAFETY PLAN

APPENDIX 6
VAPOR BARRIER
SPECIFICATIONS

VaporBlock®

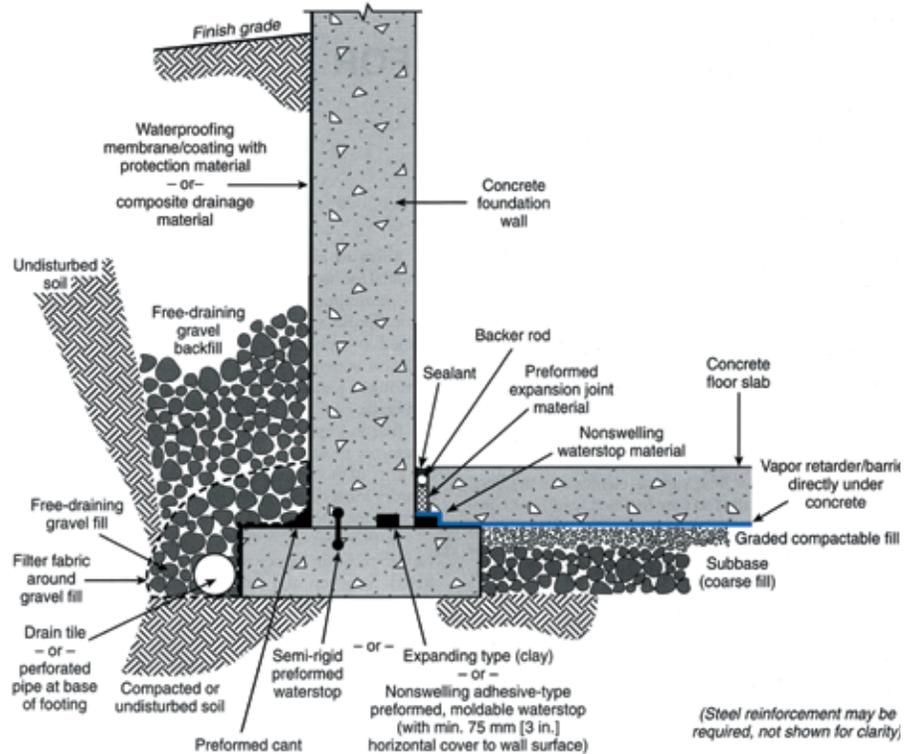
UNDERSLAB VAPOR RETARDER

INSTALLATION GUIDELINES

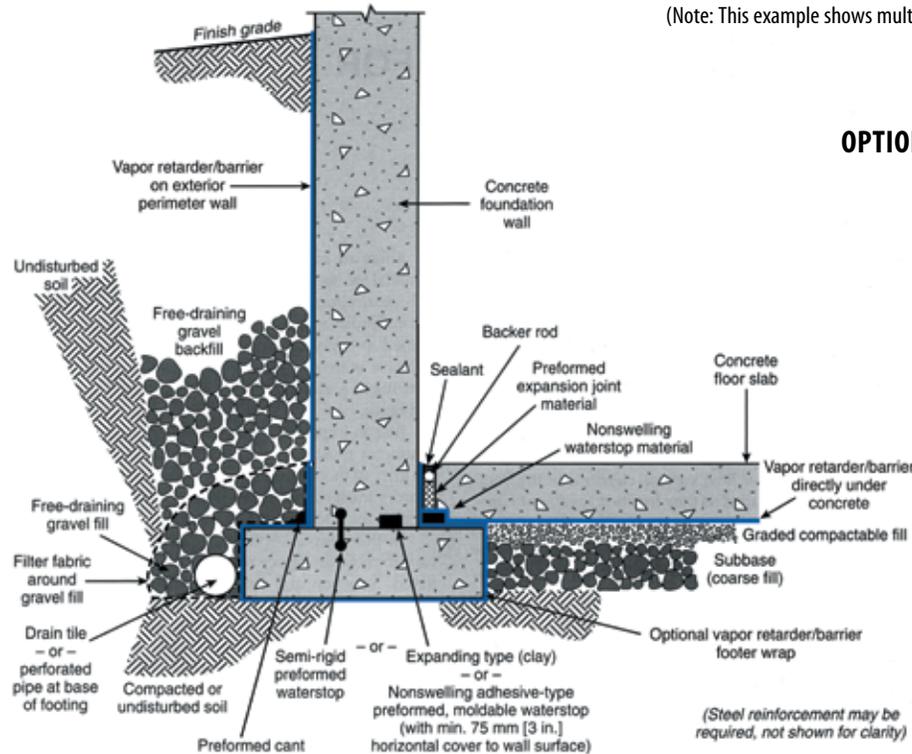
Please Note: Read these instructions thoroughly before installation to ensure proper use of VaporBlock®. ASTM E 1643 can also provide valuable information regarding the installation of vapor retarders. When installing this product, contractors shall conform to all applicable local, state and federal regulations and laws pertaining to residential and commercial building construction.

Materials List:

VaporBlock® Vapor Retarder (Barrier)
 VaporBond 4" Seaming Tape
 Butyl Seal 2-Sided Tape
 VaporBoot Pipe Boot System 25/Tube plus Tape
 VaporBoot Tape (optional)



Elements of a moisture-resistant floor system. General illustration only.
 (Note: This example shows multiple options for waterstop placement.)



Elements of a moisture-resistant floor system. General illustration only.
 (Note: This example shows multiple options for waterstop placement.)

OPTIONAL PERIMETER WALL & FOOTER METHODS

An optional perimeter wall class "A" vapor retarder can be installed with or without a bituminous coating applied to the concrete.

Raven VaporBlock® 10 or 15 mil (Class A) vapor retarders can be sealed to the perimeter wall with Raven Butyl Seal Tape. An optional footer wrap may also be applied.

Original diagrams on this page were reprinted with permission by the Portland Cement Association. Reference: Kanare, Howard M., Concrete Floors and Moisture, EB119, Portland Cement Association, Skokie, Illinois, and National Ready Mixed Concrete Association, Silver Spring, Maryland, USA, 2008, 176 pages.

VAPORBLOCK® PLACEMENT

- 1.1. Level and tamp or roll granular base as specified by your architectural or structural drawings. If sharp crushed rock is used, a 1/2" layer of fine grade compactable fill is required between the base and the vapor retarder.
- 1.2. Unroll **VaporBlock®** running the longest dimension parallel with the direction of the pour and pull open all folds to full width. (Fig. 1)
- 1.3. Lap **VaporBlock®** over the footings and seal with Raven 2-sided Butyl Seal tape. Prime concrete surfaces and assure they are dry and clean prior to applying Raven Butyl Seal Tape. Apply even and firm pressure with a rubber roller.

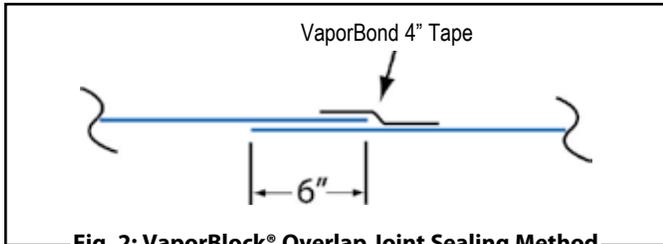


Fig. 2: VaporBlock® Overlap Joint Sealing Method

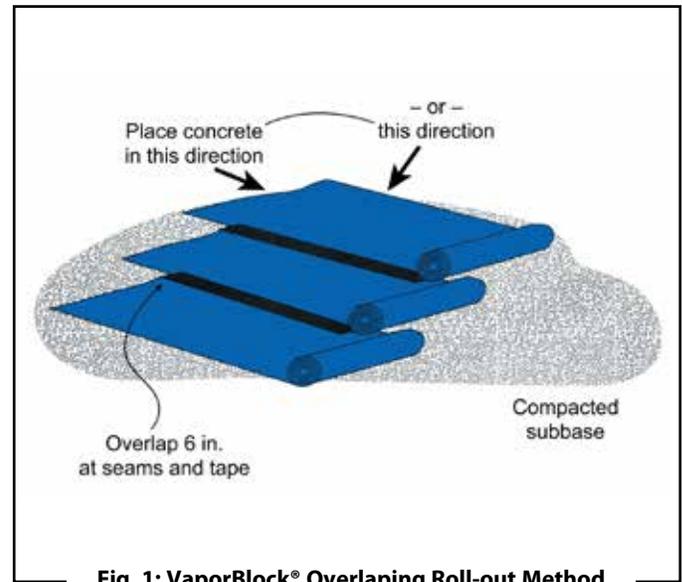


Fig. 1: VaporBlock® Overlapping Roll-out Method

SINGLE PENETRATION PIPE BOOT INSTALLATION

Overlap joints a minimum of 6" and seal overlap with Raven VaporBond Tape.

- 1.4. Seal around all plumbing, conduit, support columns or other penetrations that come through the **VaporBlock®** membrane. The Raven VaporBoot Pipe Boot System is the recommended sealing method. (Includes 25 pre-cut VaporBlock® pipe boots along with 1 roll of VaporBoot Tape). (Fig. 3 & 4)

Pipe boots may also be fabricated from excess **VaporBlock®** membrane (Fig. 3 & 4) and sealed with VaporBoot Tape or VaporBond Tape (sold separately).

Reminder Note: All holes or penetrations through the membrane will need a patch cut to a minimum of 6" from the opening in all directions.

To fabricate pipe boots from **VaporBlock®** excess material (see Fig. 3 & 4 for A-E):

- A) Cut a square large enough to overlap 6" in all directions.
- B) Mark where to cut opening on the center of the square and cut four to eight slices about 3/8" less than the diameter of the pipe.

- C) Force the square over the pipe leaving the tightly stretched cut area around the bottom of the pipe with approximately a 1/2" of the boot material running vertically up the pipe. *(no more than a 1/2" of stretched boot material is recommended)*

- D) Use VaporBoot Tape or VaporBond Tape to secure the boot to the pipe.

VaporBoot Tape (option) – fold tape in half lengthwise, remove half of the release liner and wrap around the pipe allowing 1" extra for overlap sealing. Peel off the second half of the release liner and work the tape outward gradually forming a complete seal.

VaporBond Tape (option) - Tape completely around the pipe overlapping the to get a tight seal against the pipe.

- E) Complete the process by taping over the boot perimeter edge with VaporBond Tape to create a monolithic membrane between the surface of the slab and moisture sources below and at the slab perimeter. (Fig. 3 & 4)

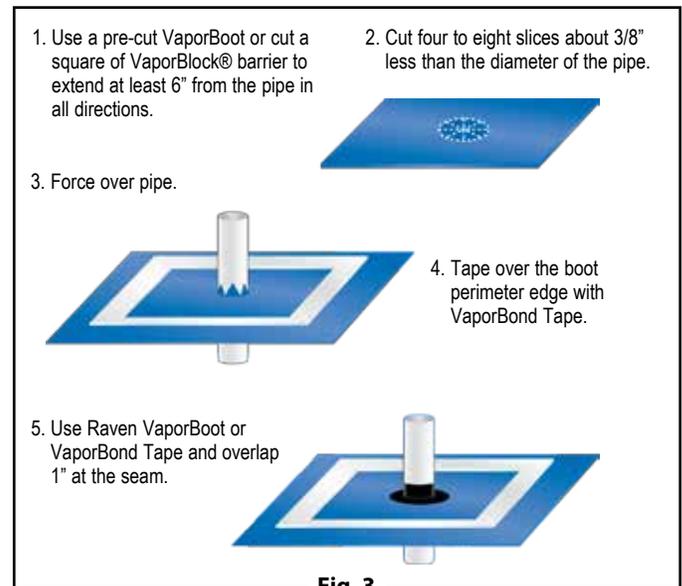


Fig. 3

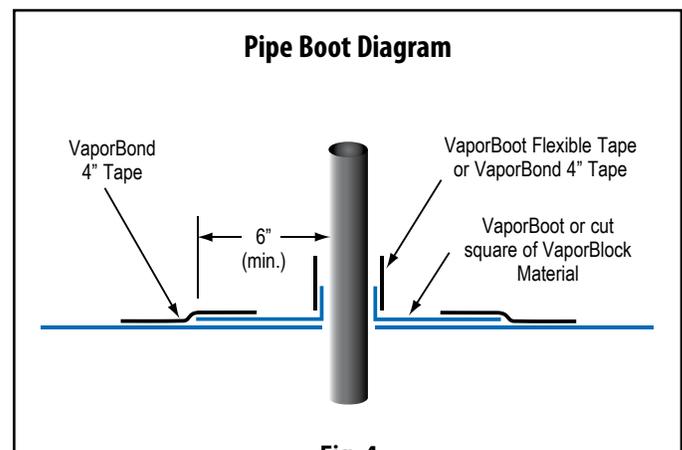


Fig. 4

MULTIPLE PENETRATION PIPE BOOT INSTALLATION

1.5. For side-by-side multiple penetrations;

- A) Cut a patch large enough to overlap 6" in all directions (Fig. 6) of penetrations.
- B) Mark where to cut openings and cut four to eight slices about 3/8" less than the diameter of the penetration for each.
- C) Slide patch material over penetration to achieve a tight fit.
- D) Tape around each of the penetrations and the patch with VaporBond 4" Tape. (Fig. 7) For additional protection apply an acceptable polyurethane elastomeric sealant around the penetrations. (Fig. 8)

1.6. Holes or openings through **VaporBlock®** are to be repaired by cutting a piece of **VaporBlock®** 6" larger in all directions from the opening. Seal the edges of the patch with VaporBond Tape.

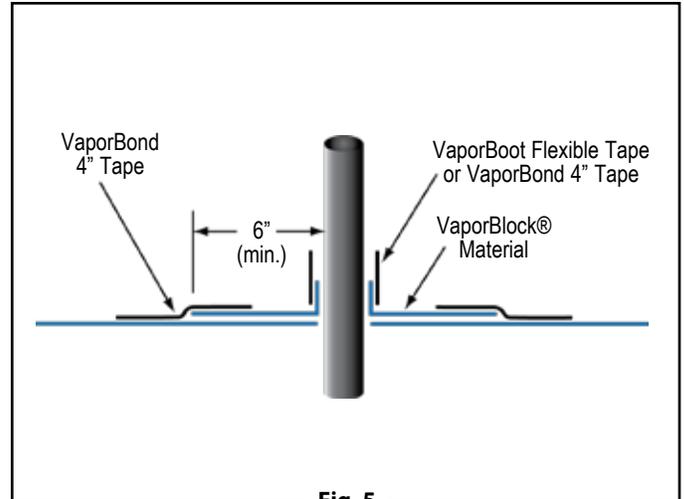


Fig. 5

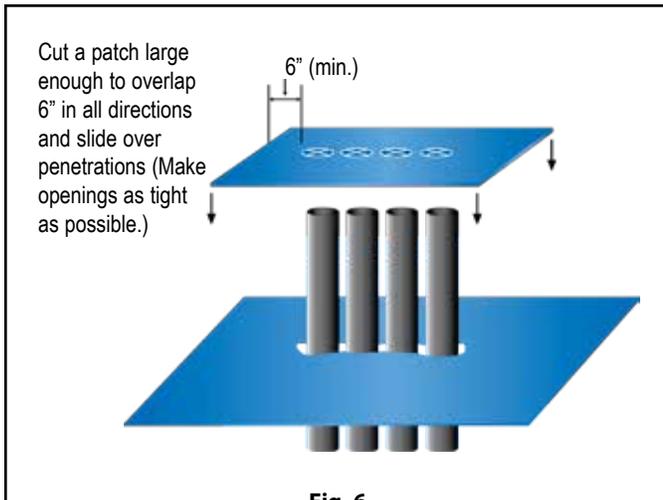


Fig. 6

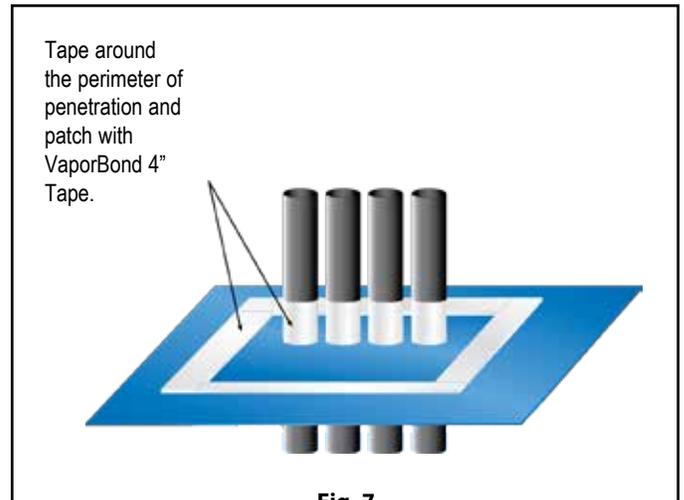


Fig. 7

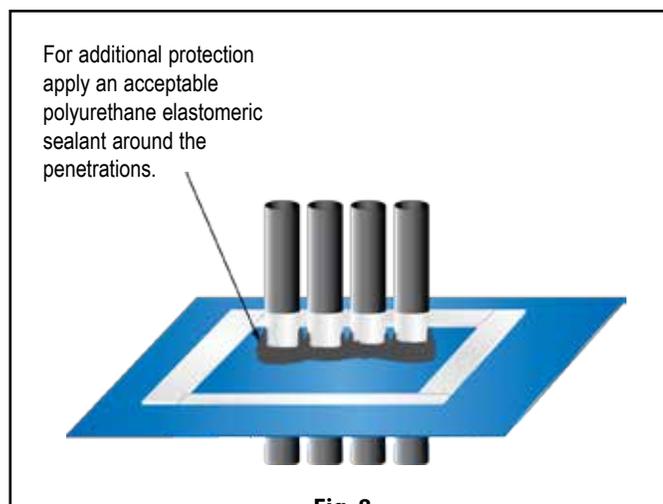


Fig. 8

VAPORBLOCK® PROTECTION

- 2.1. When installing reinforcing steel and utilities, in addition to the placement of concrete, take precaution to protect **VaporBlock®**. Carelessness during installation can damage the most puncture-resistant membrane. Sheets of plywood cushioned with geotextile fabric temporarily placed on **VaporBlock®** provide for additional protection in high traffic areas including concrete buggies.
- 2.2. Use only brick-type or chair-type reinforcing bar supports to protect **VaporBlock®** from puncture.
- 2.3. Avoid driving stakes through **VaporBlock®**. If this cannot be avoided, each individual hole must be repaired.
- 2.4. If a cushion or blotter layer is required in the design between **VaporBlock®** and the slab, additional care should be given if sharp crushed rock is used. Washed rock will provide less chance of damage during placement. Care must be taken to protect blotter layer from precipitation before concrete is placed.



VaporBlock® Vapor Barrier can be identified on site as blue in color printed in black ink with the following logo and classification listing:



Note: To the best of our knowledge, these are typical installation procedures and are intended as guidelines only. Architectural or structural drawings must be reviewed and followed as well as on a project basis. NO WARRANTIES ARE MADE AS TO THE FITNESS FOR A SPECIFIC USE OR MERCHANTABILITY OF PRODUCTS OR GUIDELINES REFERRED TO, no guarantee of satisfactory results from reliance upon contained information or recommendations and we disclaim all liability for resulting loss or damage.



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2/14 EFD 1156

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

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