ROCKAWAY MEDICAL ARTS COMPLEX

QUEENS, NEW YORK

Remedial Action Work Plan

OER Project Number 15EH-A503Q

NYC VCP Site Number: TBD

Prepared For:

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Envirotactics Project No. 4138

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REMEDIAL ACTION WORK PLAN

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LIST OF ACRONYMS

Acronym	Definition
AOC	Area of Concern
AS/SVE	Air Sparging/Soil Vapor Extraction
BOA	Brownfield Opportunity Area
CAMP	Community Air Monitoring Plan
C&D	Construction and Demolition
CEQR	City Environmental Quality Review
CFR	Code of Federal Regulations
CHASP	Construction Health and Safety Plan
COC	Certificate of Completion
CQAP	Construction Quality Assurance Plan
CSOP	Contractors Site Operation Plan
DCR	Declaration of Covenants and Restrictions
ECs/ICs	Engineering Controls and Institutional Controls
ELAP	Environmental Laboratory Accreditation Program
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations Emergency Response

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

PID	Photo Ionization Detector
QEP	Qualified Environmental Professional
QHHEA	Qualitative Human Health Exposure Assessment
RAOs	Remedial Action Objectives
RAR	Remedial Action Report
RAWP	Remedial Action Work Plan or Plan
RCA	Recycled Concrete Aggregate
RD	Remedial Design
RI	Remedial Investigation
RMZ	Residual Management Zone
SCOs	Soil Cleanup Objectives
SCG	Standards, Criteria and Guidance
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
SSDS	Sub-Slab Depressurization System
SVOC	Semi-Volatile Organic Compound
TAL	Target Analyte List
TCL	Target Compound List

USGS	United States Geological Survey
UST	Underground Storage Tank
VCA	Voluntary Cleanup Agreement
VOC	Volatile Organic Compound

CERTIFICATION

I, [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 Rockaway Medical Arts Building Site, (NYC OER Site No. 15EH-A503Q; NYC VCP Site No. TBD). I certify to the following:

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

_____

Name

_____

PE License Number

_____

Signature

PE Stamp

_____

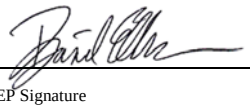
Date

I, Basil Ellmers, III, am a qualified Environmental Professional. I will have primary direct responsibility for implementation of the remedial program for the Rockaway Medical Arts Building Site, (NYC OER Site No. 15EH-A503Q; NYC VCP Site No. TBD). 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.

Basil Ellmers, III

QEP Name



QEP Signature

1/21/2016

Date

EXECUTIVE SUMMARY

105 Rockaway Realty LLC is working with the NYC Office of Environmental Remediation (OER) in the New York City Voluntary Cleanup Program to investigate and remediate an approximately 1.5-acre site located at 105-02 through 105-42 Rockaway Beach Boulevard (mailing address is 105-38 Rockaway Beach Boulevard) in the Rockaway Park section in Queens, New York. A remedial investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP). The remedial action described in this document provides for the protection of public health and the environment consistent with the intended property use, complies with applicable environmental standards, criteria and guidance and conforms with applicable laws and regulations.

SITE LOCATION AND BACKGROUND

The Site is located at 105-02 through 105-42 Rockaway Beach Boulevard (mailing address is 105-38 Rockaway Beach Boulevard) in the Rockaway Park section in Queens, New York and is identified as Block 16178 and Lot 80 on the New York City Tax Map. Figure 1 shows the Site location. The Site is 65,150-square feet and is bounded by Rockaway Freeway and an elevated portion of the MTA's "A" and "S" subway line to the north, Rockaway Beach Boulevard to the south, Beach 105th Street to the east, and Beach 106th Street to the west. A map of the Site boundary is shown in Figure 2. Currently, the Site is a vacant grocery store (following flooding from Superstorm Sandy in October 2012), and contains a one and two story building with two commercial spaces with the remainder of the property containing paved parking areas.

SUMMARY OF REDEVELOPMENT PLAN

The proposed future use of the Site will consist of a new four-story medical arts building with medical office spaces and an ambulatory surgical center. Layout of the proposed Site development is presented in Attachment 1. The current zoning designation is R5D, designed to serve as a transition between lower-density districts and moderate-density districts. The proposed use is consistent with existing zoning for the property.

The redevelopment project consists of a new medical arts building. The proposed building will be four (4) stories constructed above the existing open space, with 16,610 square feet (SF) of

building footprint. The new building will be located five feet from the property line along Rockaway Beach Boulevard and Beach 105th Street as per the setback requirement, and 30 feet away from the existing MTA railroad structure as per the required railroad setback. The 1st floor will consist of enclosed areas of lobby, utility rooms, and stairways at 2,372 SF and covered parking spaces at 14,239 SF. The 2nd and 3rd floors will be medical office spaces at total of 16,610 SF each and the 4th floor will be ambulatory surgical center at 15,036 SF.

The proposed development will be of slab on grade construction (supported by pilings driven approximately 30 feet below grade without excavation). The only area to be excavated during the development process is an elevator pit, which will be approximately 18'-8" wide by 8'-3" long by 4' deep. The area to be excavated for the elevator pit is not anticipated to be below the groundwater table. The estimated volume of excavated material is expected to be approximately 30 tons. The subsurface soils at the remaining portions of the Site will not be excavated.

The existing masonry building on the Site will be demolished and turned into an open space.

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

SUMMARY OF SURROUNDING PROPERTY

The Site is located in the Rockaway Park section of Queens in New York City, established on a thin strip of land that is bordered by Jamaica Bay to the north and the Atlantic Ocean to the south. The area is utilized primarily for residential and commercial purposes. The subject Site is bordered to the north by Rockaway Freeway and an elevated portion of the MTA railway, followed by the Rockaway Wastewater Treatment Plant. To the south, the subject Site is bound by Rockaway Beach Boulevard followed by multi-family residential buildings and associated parking lots and a pool. To the east the property is bordered by Beach 105th Street followed by commercial and office buildings. It is bound to the west by Beach 106th Street followed by vacant land. No sensitive receptors such as schools, hospitals, or day care facilities are located within a 250-foot radius.

SUMMARY OF PAST SITE USES AND AREAS OF CONCERN

In April 2015, a Phase I ESA was completed for the Site. Based on the information reviewed as part of the Phase I ESA, it appears that the property was utilized for residential purposes from at least 1894, the date of the earliest Sanborn map. The subject property remained similar in use, growing in density, through at least 1950, and appears similar in the 1951 aerial photograph. By 1961 the subject property was cleared, and remained that way until at least 1966 when it is depicted as being developed with one building. This building is believed to be the same one identified as being commercial in use on the 1981 Sanborn map. It is also believed to be the one currently occupying the property.

The findings of the Phase I ESA are identified below:

1. No on-site recognized environmental conditions (RECs) were identified;
2. No offsite RECs were identified;
3. The presence of an "E" Designation for Hazmat Phase I & Phase II testing protocol; exhaust stack limitations, and air quality. (This RIR addresses only the "E" Designation for Hazmat Phase I & Phase II testing protocol.)

The only AOC identified for this site is the presence of Historic Fill Material.

SUMMARY OF WORK PERFORMED UNDER THE REMEDIAL INVESTIGATION

Envirotactics, Inc. performed the following scope of work:

In August 2015:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Installed eight soil borings across the entire project Site, and collected 16 soil samples for chemical analysis from the soil borings to evaluate soil quality;
3. Installed two soil vapor probes at the Site and collected two samples for chemical analysis.

In October 2015:

4. Installed eight additional soil borings to delineate two hotspots with lead in soil that was previously identified at the project Site, and collected eight soil samples for chemical analysis from the soil borings to evaluate soil quality;

5. Installed three temporary groundwater monitoring wells throughout the Site to establish groundwater flow and collected three groundwater samples for chemical analysis to evaluate groundwater quality;

SUMMARY OF FINDINGS OF REMEDIAL INVESTIGATION

1. Elevation of the property ranges from approximately 5.75 to 7.25 feet.

2. Depth to groundwater ranges from 5.2 to 5.9 feet at the Site.

3. Groundwater flow is generally from west to east beneath the Site.

4. Bedrock was not encountered during the RI at the Site.

5. The stratigraphy of the Site, from the surface down, consists of two to six feet of historical urban fill material underlain by tan to brown fine to medium-grained sand.

6. The initial soil investigation (August 2015) results were compared to NYSDEC Unrestricted Use (Track 1) and Restricted Commercial Use (Track 2) Soil Cleanup Objectives (SCOs) as presented in NYSDEC Part 375-6.8 and CP51. Sampling results identified no PCBs above Unrestricted Use SCOs. One VOC (acetone) was detected above the Unrestricted Use SCO in three samples but below its Restricted Commercial Use SCO; acetone is a common laboratory contaminant and is therefore not considered a contaminant of concern. Seven SVOCs consisting of polycyclic-aromatic hydrocarbons (PAHs) were detected including benzo(a)anthracene (max. of 6.1 mg/kg), benzo(a)pyrene (max. of 4.5 mg/kg), and benzo(b)fluroanthene(max. of 5.8 mg/kg) exceeding Restricted Commercial Use SCOs; and benzo(k)fluoranthene (max. 2.3 of mg/kg), chrysene (max. of 6.6 mg/kg), and indeno(1,2,3-cd)pyrene (max. of 2.8 mg/kg) exceeding Unrestricted Use SCOs in several samples collected from within observed historical urban fill material. SVOCs were detected in only one native soil sample.

   Three pesticides including 4,4'-DDD (max. of 0.00804 mg/kg), 4,4'-DDE (max. of 0.0267 mg/kg), and 4,4'-DDT (max. of 0.0838 mg/kg) were detected above their

respective Unrestricted Use SCOs in several samples; however no samples were detected above their respective Commercial Restricted Use SCOs.

Four metals barium (max. of 1000 mg/kg), lead (max. of 3200 mg/kg), mercury (max. of 0.31 mg/kg), and zinc (max. of 780 mg/kg) were detected above their respective Unrestricted Use SCOs in several samples. Of those metals, barium and lead also exceeded Restricted Commercial Use SCOs.

7. Follow-up soil investigation (October 2015) results were compared to NYSDEC Unrestricted Use (Track 1) and Restricted Commercial Use (Track 2) Soil Cleanup Objectives (SCOs) as presented in NYSDEC Part 375-6.8 and CP51. Lead was the only analysis performed in order to delineate two previously identified lead hotspots. Soil/fill samples collected during the RI showed no exceedances of lead above the Track 1 Unrestricted Use SCOs.

   Data collected during the RI is sufficient to delineate the vertical and horizontal distribution of contaminants in soil/fill at the Site. Based on the concentrations and the compounds detected at the Site, the contaminants identified appear to be from the presence of historical urban fill on the property, consistent with results from sites throughout New York City with urban fill.

8. Groundwater samples collected during the RI showed no detection or exceedances of the NYSDEC 6NYCRR Part 703.5 Groundwater Quality Standards (GQS) for SVOCs, VOCs, or PCBs One pesticide, chlordane, was identified above the GQS of 0.05 µg/L in TW-2 (0.13 µg/L), TW-3 (0.134 µg/L), and the field blank (0.83 µg/L). Chlordane was not detected in TW-1. Because Chlordane was detected in the field blank, it is not believed to be representative of site conditions.

   The following dissolved metals were detected above the GQS in at least one of the temporary monitoring wells: dissolved iron (max. of 2,210 µg/L), dissolved magnesium (max. of 37,400 µg/L), dissolved manganese (max. of 1,226 µg/L), and dissolved sodium (max. of 711,000 µg/L). No dissolved metals were detected above the GQS in the field blank.

Data collected during the RI is sufficient to delineate the distribution of contaminants in groundwater at the Site. The dissolved metals that remained above the GQS are not linked to on-Site contamination. No additional investigation or remedial actions for groundwater are proposed.

9. Soil vapor results were compared to the compounds listed in Vapor Intrusion Matrices 1 and 2 in the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion dated October 2006. Soil vapor results identified petroleum-related compounds in both samples, as well as chlorinated hydrocarbons. The total concentration of petroleum-related VOCs (BTEX) ranged from 61.09 $\mu g/m^3$ to 77.46 $\mu g/m^3$. Three chlorinated VOCs, 1,1,1-trichloroethane (13.6 $\mu g/m^3$), tetrachloroethene (max of 9.15 $\mu g/m^3$), and trichloroethene (3.24 $\mu g/m^3$) were detected in two samples. Carbon tetrachloride was not detected in any soil vapor samples. The detected concentration of trichloroethene was within the monitoring range established by the NYSDOH.

   Data collected during the RI is sufficient to delineate the distribution of contaminants in soil vapor at the Site.

SUMMARY OF THE REMEDIAL ACTION

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. Approximately 38% of the Site (the eastern portion, where the new building is to be constructed) will be excavated to a depth of approximately 6 to 18 inches below grade for development purposes, and the area of the proposed elevator pit will be excavated to 6 feet below grade. A small portion of property will be excavated to the depths of six feet below grade for hotspot areas.

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 underground storage tanks (USTs) that are encountered during soil/fill removal actions. Registration of tanks and reporting of any petroleum spills associated with USTs 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 eight-inch reinforced concrete over the Grace Preprufe 300R pre-applied integrally bonded waterproofing membrane, over an approximately three-inch mud slab over an approximately six-inch porous fill sub-base beneath all building areas; bituminous pavement with a 1.5-inch wearing course, 4-inch reused bituminous over a 2-inch base course, and 4-inch sand and gravel sub-base; 4-inch poured concrete on a 4-inch clean-stone sub-base in sidewalk areas; and minimum of 1 foot of clean soil topped with either grass or a weed-blocking geofabric with mulch in all open spaces and landscaped areas.

15. Installation of a waterproofing/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 waterproofing/vapor barrier system will consist of a 20-mil Grace Waterproofing Systems Prepufe 300R membrane below the slab throughout the full building 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 waterproofing/vapor barrier system was designed and properly installed to mitigate soil vapor migration into the building.

16. Construction and operation of a grade-level parking garage with high volume air exchange in conformance with NYC Building Code.

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. Dewatering in compliance with city, state, and federal laws and regulations. Extracted groundwater will either be containerized for off-site licensed or permitted disposal or will be treated under a permit from New York City Department of Environmental Protection (NYCDEP) to meet pretreatment requirements prior to discharge to the sewer system.

20. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.

21. 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.

22. 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.

23. 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, shows the location of identified contamination at the site, and describes the plans to clean up the site to protect public health and the environment.

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

Project Information:

- Site Name: Rockaway Medical Arts Complex
- Site Address: 105-02 through 105-42 Rockaway Beach Boulevard (mailing address is 105-38 Rockaway Beach Boulevard)
  Rockaway Park, Queens
  Block 16178, Lot 80
- NYC Voluntary Cleanup Program Project Number: TBD

Project Contacts:

- OER Project Manager: Alysha Alfieri, 212-788-8841
- Site Project Manager: William Colgan, (973) 429-7900 - Ext. 217
- Site Safety Officer: William Colgan, (973) 429-7900 - Ext. 217
- Online Document Repository: http://www.nyc.gov/html/oer/html/document-repository/document-repository.shtml

REMEDIAL INVESTIGATION AND CLEANUP PLAN: Under the oversight of the NYC OER, a thorough study of this property (called a remedial investigation) has been performed to identify past property usage, to sample and test soils, groundwater and soil vapor,

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

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

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

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

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

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

COMMUNITY AIR MONITORING PLAN: Community air monitoring will be performed during this cleanup project to ensure that the community is properly protected from contaminants, dust and odors. Air samples will be tested in accordance with a detailed plan

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

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

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

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

HOURS OF OPERATION: The hours for operation of cleanup will comply with the NYC Department of Buildings construction code requirements or according to specific variances issued by that agency. For this cleanup project, the hours of operation will conform to requirements of the NYC Department of Buildings.

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

COMPLAINT MANAGEMENT: The contractor performing this cleanup is required to address all complaints. If you have any complaints, you can call the facility Project Manager or the NYC Office of Environmental Remediation Project Manager listed on the first page of this Community Protection Statement document, or call 311 and mention the Site is in the NYC Voluntary Cleanup Program.

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

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

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

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

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

IMPORTED MATERIAL: All fill materials proposed to be brought onto the Site will comply with rules outlined in this cleanup plan and will be inspected and approved by a qualified worker located on the Site. Waste materials will not be brought onto the Site. Trucks entering

the Site with imported clean materials will be covered in compliance with applicable laws and regulations.

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

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

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

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

LONG-TERM SITE MANAGEMENT: If long-term protection is needed after the cleanup is complete, the property owner will be required to comply with an ongoing Site Management Plan that calls for continued inspection of protective controls, such as Site covers. The Site Management Plan is evaluated and approved by the NYC Office of Environmental Remediation. Requirements that the property owner must comply with are 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

105 Rockaway Realty LLC is working with the NYC Office of Environmental Remediation (OER) in the New York City Voluntary Cleanup Program and/or in the "E" Designation Program to investigate and remediate a property located at 105-02 through 105-42 Rockaway Beach Boulevard (mailing address is 105-38 Rockaway Beach Boulevard) in the Rockaway Park section of Queens, New York (the "Site"). A Remedial Investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP) in a manner that will render the Site protective of public health and the environment consistent with the contemplated end use. This RAWP establishes remedial action objectives, provides a remedial alternatives' analysis that includes consideration of a permanent cleanup, and provides a description of the selected remedial action. The remedial action described in this document provides for the protection of public health and the environment, 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 105-02 through 105-42 Rockaway Beach Boulevard (mailing address is 105-38 Rockaway Beach Boulevard) in the Rockaway Park section in Queens, New York and is identified as Block 16178 and Lot 80 on the New York City Tax Map. Figure 1 shows the Site location. The Site is 65,150-square feet and is bounded by Rockaway Freeway and an elevated portion of the MTA's "A" and "S" subway line to the north, Rockaway Beach Boulevard to the south, Beach 105th Street to the east, and Beach 106th Street to the west. A map of the Site boundary is shown in Figure 2. Currently, the Site is a vacant grocery store (following flooding from Superstorm Sandy in October 2012), and contains a one and two story building with two commercial spaces with the remainder of the property containing paved parking areas.

1.2 Redevelopment Plan

The proposed future use of the Site will consist of a new four-story medical arts building with medical office spaces and an ambulatory surgical center. Layout of the proposed Site development is presented in Attachment 1. The current zoning designation is R5D, designed to

serve as a transition between lower-density districts and moderate-density districts. The proposed use is consistent with existing zoning for the property.

The redevelopment project consists of a new medical arts building. The proposed building will be four (4) stories constructed above the existing open space, with 16,610 square feet (SF) of building footprint. The new building will be located five feet from the property line along Rockaway Beach Boulevard and Beach 105th Street as per the setback requirement, and 30 feet away from the existing MTA railroad structure as per the required railroad setback. The 1st floor will consist of enclosed areas of lobby, utility rooms, and stairways at 2,372 SF and covered parking spaces at 14,239 SF. The 2nd and 3rd floors will be medical office spaces at total of 16,610 SF each and the 4th floor will be ambulatory surgical center at 15,036 SF.

The proposed development will be of slab on grade construction (supported by pilings driven approximately 30 feet below grade without excavation). The only area to be excavated during the development process is an elevator pit, which will be approximately 18'-8" wide by 8'-3" long by 4' deep. The area to be excavated for the elevator pit is not anticipated to be below the groundwater table. The estimated volume of excavated material is expected to be approximately 30 tons. The subsurface soils at the remaining portions of the Site will not be excavated.

The existing masonry building on the Site will be demolished and turned into an open space.

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

1.3 Description of Surrounding Property

The Site is located in the Rockaway Park section of Queens in New York City, established on a thin strip of land that is bordered by Jamaica Bay to the north and the Atlantic Ocean to the south. The area is utilized primarily for residential and commercial purposes. The subject Site is bordered to the north by Rockaway Freeway and an elevated portion of the MTA railway, followed by the Rockaway Wastewater Treatment Plant. To the south, the subject Site is bound by Rockaway Beach Boulevard followed by multi-family residential buildings and associated parking lots and a pool. To the east the property is bordered by Beach 105th Street followed by commercial and office buildings. It is bound to the west by Beach 106th Street followed by

vacant land. No sensitive receptors such as schools, hospitals, or day care facilities are located within a 250-foot radius. A Surrounding Land Use Map is provided as Figure 3.

1.4 Summary of Past Site Uses and Areas of Concern

In April 2015, a Phase I ESA was completed for the Site. Based on the information reviewed as part of the Phase I ESA, it appears that the property was utilized for residential purposes from at least 1894, the date of the earliest Sanborn map. The subject property remained similar in use, growing in density, through at least 1950, and appears similar in the 1951 aerial photograph. By 1961 the subject property was cleared, and remained that way until at least 1966 when it is depicted as being developed with one building. This building is believed to be the same one identified as being commercial in use on the 1981 Sanborn map. It is also believed to be the one currently occupying the property.

The findings of the Phase I ESA are identified below:

1. No on-site recognized environmental conditions (RECs) were identified;
2. No offsite RECs were identified;
3. The presence of an "E" Designation for Hazmat Phase I & Phase II testing protocol; exhaust stack limitations, and air quality. (This RIR addresses only the "E" Designation for Hazmat Phase I & Phase II testing protocol.)

The only AOC identified for this site is the presence of Historic Fill Material.

1.5 Summary of Work Performed under the Remedial Investigation

Envirotactics, Inc. performed the following scope of work on behalf of 105 Rockaway LLC:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Installed eight soil borings across the entire project Site in August 2015, and collected 16 soil samples for chemical analysis from the soil borings to evaluate soil quality;
3. Installed two soil vapor probes at the Site in August 2015 and collected two samples for chemical analysis.

4. Installed eight soil borings in October 2015 to delineate two hotspots with lead in soil that were previously identified at the project Site, and collected eight soil samples for chemical analysis from the soil borings to evaluate soil quality; and

5. Installed three temporary groundwater monitoring wells throughout the Site in October 2015 to establish groundwater flow and collected three groundwater samples for chemical analysis to evaluate groundwater quality.

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, Rockaway Medical Arts Complex," dated September 2015 (RIR) and "Remedial Investigation Report Addendum, Rockaway Medical Arts Complex," dated December 2015.

1. Elevation of the property ranges from approximately 5.75 to 7.25 feet.

2. Depth to groundwater ranges from 5.2 to 5.9 feet at the Site.

3. Groundwater flow is generally from west to east beneath the Site.

4. Bedrock was not encountered during the RI at the Site.

5. The stratigraphy of the Site, from the surface down, consists of two to six feet of historical urban fill material underlain by tan to brown fine to medium-grained sand.

6. The initial soil investigation (August 2015) results were compared to NYSDEC Unrestricted Use (Track 1) and Restricted Commercial Use (Track 2) Soil Cleanup Objectives (SCOs) as presented in NYSDEC Part 375-6.8 and CP51. Sampling results identified no PCBs above Unrestricted Use SCOs. One VOC (acetone) was detected above the Unrestricted Use SCO in three samples but below its Restricted Commercial Use SCO; acetone is a common laboratory contaminant and is therefore not considered a contaminant of concern. Seven SVOCs consisting of polycyclic-aromatic hydrocarbons (PAHs) were detected including benzo(a)anthracene (max. of 6.1 mg/kg), benzo(a)pyrene (max. of 4.5 mg/kg), and benzo(b)fluroanthene(max. of 5.8 mg/kg) exceeding Restricted Commercial Use SCOs; and benzo(k)fluoranthene (max. 2.3 of mg/kg), chrysene (max.

of 6.6 mg/kg), and indeno(1,2,3-cd)pyrene (max. of 2.8 mg/kg) exceeding Unrestricted Use SCOs in several samples collected from within observed historical urban fill material. SVOCs were detected in only one native soil sample.

Three pesticides including 4,4'-DDD (max. of 0.00804 mg/kg), 4,4'-DDE (max. of 0.0267 mg/kg), and 4,4'-DDT (max. of 0.0838 mg/kg) were detected above their respective Unrestricted Use SCOs in several samples; however no samples were detected above their respective Commercial Restricted Use SCOs.

Four metals barium (max. of 1000 mg/kg), lead (max. of 3200 mg/kg), mercury (max. of 0.31 mg/kg), and zinc (max. of 780 mg/kg) were detected above their respective Unrestricted Use SCOs in several samples. Of those metals, barium and lead also exceeded Restricted Commercial Use SCOs.

7. Follow-up soil investigation (October 2015) results were compared to NYSDEC Unrestricted Use (Track 1) and Restricted Commercial Use (Track 2) Soil Cleanup Objectives (SCOs) as presented in NYSDEC Part 375-6.8 and CP51. Lead was the only analysis performed in order to delineate two previously identified lead hotspots. Soil/fill samples collected during the RI showed no exceedances of lead above the Track 1 Unrestricted Use SCOs.

   Data collected during the RI is sufficient to delineate the vertical and horizontal distribution of contaminants in soil/fill at the Site. Based on the concentrations and the compounds detected at the Site, the contaminants identified appear to be from the presence of historical urban fill on the property, consistent with results from sites throughout New York City with urban fill.

8. Groundwater sampling results identified no VOCs, SVOCs, or PCBs above their respective AWQS (GA) in any sample collected. One pesticide, chlordane, was identified above the AWQS of 0.05 µg/L in TW-2 (0.13 µg/L), TW-3 (0.134 µg/L), and the field blank (0.83 µg/L). Chlordane was not detected in TW-1. Because Chlordane was detected in the field blank, it is not believed to be representative of site conditions.

   The following dissolved metals were detected above the GQS in at least one of the temporary monitoring wells: dissolved iron (max. of 2,210 µg/L, GQS 300 µg/L),

dissolved magnesium (max. of 37,400 µg/L, GQS 35,000 µg/L), dissolved manganese (max. of 1,226 µg/L, GQS 300 µg/L), and dissolved sodium (max. of 711,000 µg/L, GQS 20,000 µg/L). No dissolved metals were detected above the GQS in the field blank.

Data collected during the RI is sufficient to delineate the distribution of contaminants in groundwater at the Site. The dissolved metals that remained above the GQS are not linked to on-Site contamination. No additional investigation or remedial actions for groundwater are proposed.

9. Soil vapor results were compared to the compounds listed in Vapor Intrusion Matrices 1 and 2 in the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion dated October 2006. Soil vapor results identified petroleum-related compounds in both samples, as well as chlorinated hydrocarbons. The total concentration of petroleum-related VOCs (BTEX) ranged from 61.09 µg/m^3 to 77.46 µg/m^3. Three chlorinated VOCs, 1,1,1-trichloroethane (13.6 µg/m^3), tetrachloroethene (max of 9.15 µg/m^3), and trichloroethene (3.24 µg/m^3) were detected in two samples. Carbon tetrachloride was not detected in any soil vapor samples. The detected concentration of trichloroethene was within the monitoring range established by the NYSDOH. Data collected during the RI is sufficient to delineate the distribution of contaminants in soil vapor at the Site.

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

2.0 REMEDIAL ACTION OBJECTIVES

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

Soil

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

Groundwater

- Prevent direct exposure to 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 NYSDEC 6NYCRR Part 375 Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs).

- Removal of all soil/fill exceeding Track 1 Unrestricted Use SCOs throughout the Site and confirmation that Track 1 Unrestricted Use SCOs have been achieved with post-excavation endpoint sampling. Based on the results of the Remedial Investigation, it is expected that this alternative would be achieved by excavating to a depth greater than the water table (approximately six feet below grade). If soil/fill containing analytes at concentrations above Unrestricted Use SCOs is still present at the base of the excavation after removal of all soil required for construction of the new building's cellar level is complete, additional excavation would be performed to ensure complete removal of soil/ fill that does not meet Track 1 Unrestricted Use SCOs.

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

- Placement of a final cover over the entire Site as part of new construction.

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 this alternative would be achieved by excavating two hot spots (area of SB-1 and area of SB-5) to a depth of about 6 feet. As part of development, soil beneath most of the eastern portion of the site will be removed to a depth of between 6 inches and 18 inches for the construction of the building, and the proposed elevator pit area will be excavated to 6 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 waterproofing/vapor barrier system beneath the building slab and along foundation side walls to prevent potential exposures from soil vapor;
- 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 hotspots 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, vapor barrier system, and ventilated parking garage. The composite cover system would prevent direct contact with any remaining on-Site

soil/fill. 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 (CHASP), an approved Soil/Materials Management Plan, and Community Air Monitoring Plan (CAMP). Potential contact with contaminated groundwater would be prevented as its use is prohibited by city laws and regulations. Potential future migration of off-Site soil vapors into the new building would be prevented by installing a vapor barrier below the building slab and outside foundations walls below grade, as well as by installing a ventilated parking garage.

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 slab and continuing the vapor barrier outside of subgrade foundation walls, as part of development. In addition, the first floor of the building will contain a parking garage with high volume air exchange that conforms to the NYC Building Code.

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 slab and continuing the vapor barrier outside of subgrade foundation walls. In addition, the first floor of the building will contain a parking garage with high volume air exchange that conforms to the NYC Building Code and will mediate any

potential accumulation of soil vapors inside the building. 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 would 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; 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.

Both alternatives would result in removal of soil contamination exceeding the SCOs providing the highest level, most effective and permanent remedy over the long-term with

respect to a remedy for contaminated soil, which will eliminate any migration to groundwater. Soil vapor impacts would be prevented through installation of a vapor barrier under the new building slab, and installing a ventilated parking garage.

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 6 to 18 inches below grade 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.

Historic fill at the Site was found to extend to a depth of up to five feet below grade during the RI. The new building requires excavation of approximately 38% of the Site to a depth of 6 to 18 inches below grade for the building. Therefore, the initial costs associated with Alternative 1 would be significantly higher than Alternative 2 due to the additional soil/fill removal, 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 a four-story medical arts building, with parking on the first floor, medical offices on the second and third floors, and an ambulatory surgical center on the fourth floor. 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 use. The proposed use is compliant with the property's zoning and is consistent with recent development patterns. The areas surrounding the site are urban and consist of predominantly commercial and institutional buildings with some residential use, in zoning districts designated for commercial and residential uses. The development would remediate a vacant lot and provide a modern office building. The proposed development would clean up the property and make it safer, create new employment opportunities, and associated societal benefits to 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. The Site is located in an urban area 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 lies in a Federal Emergency Management Agency (FEMA)-designated flood plain, in the AE Zone. 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 included as Appendix 3.

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. Approximately 38% of the Site (the eastern portion, where the new building is to be constructed) will be excavated to a depth of approximately 6 to 18 inches below grade for development purposes, and the area of the proposed elevator pit will be excavated to 6 feet below grade. A small portion of property will be excavated to the depths of six feet below grade for hotspot soil removal.

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 underground storage tanks (USTs) that are encountered during soil/fill removal actions. Registration of tanks and reporting of any petroleum spills associated with USTs 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 eight-inch reinforced concrete over the Grace Preprufe 300R pre-applied integrally bonded waterproofing membrane, over an approximately three-inch mud slab over an approximately six-inch porous fill sub-base beneath all building areas; bituminous pavement with a 1.5-inch wearing course, 4-inch reused bituminous over a 2-inch base course, and 4-inch sand and gravel sub-base; 4-inch poured concrete on a 4-inch clean-stone sub-base in sidewalk areas; and minimum of 1-foot of clean soil topped with either grass or a weed-blocking geofabric with mulch in all open spaces and landscaped areas.

15. Installation of a waterproofing/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 waterproofing/vapor barrier system will consist of a 20-mil Grace Waterproofing Systems Prepufe 300R membrane below the slab throughout the full building 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 waterproofing/vapor barrier system was designed and properly installed to mitigate soil vapor migration into the building.

16. Construction and operation of a grade-level parking garage with high volume air exchange in conformance with NYC Building Code.

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. Dewatering in compliance with city, state, and federal laws and regulations. Extracted groundwater will either be containerized for off-site licensed or permitted disposal or will be treated under a permit from New York City Department of Environmental Protection (NYCDEP) to meet pretreatment requirements prior to discharge to the sewer system.

20. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.

21. 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.

22. 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.

23. 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:

Contaminant	**Site-Specific SCO's**
Total SVOCs	250 ppm
Lead	1,000 ppm

Others parameters may be added or substituted by OER, as appropriate. These SCOs were established during a RAWP scoping meeting with OER on October 5, 2015. Track 2 Restricted Commercial SCOs may also be achieved for this project and are defined in 6 NYCRR Part 375, Table 6.8 Track 2 Restricted Commercial Use.

Soil and materials management on-Site and off-Site, including excavation, handling and disposal, will be conducted in accordance with the Soil/Materials Management Plan in Appendix 4. Discrete contaminant sources (such as hotspots) identified during the remedial action will be identified by GPS or surveyed. This information will be provided in the Remedial Action Report.

Soil/Fill Excavation and Removal

Approximately 38% of the Site will be excavated to between 6 and 18 inches below grade for the new building. In addition, two hotspot areas will be excavated to six feet below grade. 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 50-60 tons for the hotspot areas; the remainder of the site is anticipated to be even cut-fill due to onsite reuse. For each disposal facility to be used in the remedial action, a letter from the developer/QEP to the receiving facility requesting approval for disposal and a letter back to the developer/QEP providing approval for disposal will be submitted to OER prior to any transport and disposal of soil at a facility.

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

End-point Sampling

End-point samples 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. Confirmation samples will be collected following materials removal from the base of the excavations at locations to be determined by OER. To

evaluate attainment of Track 2 or 4 Site-specific SCOs, analytes will include those for which SCOs have been developed, including SVOCs and lead 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

Two hotspots have been identified at the Site, consisting of soils with elevated lead results. The hotspot locations were identified in the Remedial Investigation and consist of borings SB-1 and SB-5. No sidewall endpoint sampling will be conducted due to existing sample data fully defining the lateral extent of the hotspots. All soils surrounding the hotspots will be removed to the extent of the samples collected during the Remedial Investigation. Endpoint samples will be collected from the base of excavation at each of the two hotspot locations, according to the procedures listed below. 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 hotspots are fully removed and end-point samples will be collected at the following frequency:

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

2. For excavations 20 to 300 feet in perimeter:

    - For surface removals, one sample from the top of each sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area.

    - For subsurface removals, one sample from each sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area.

3. For sampling of volatile organics, bottom samples should be taken within 24 hours of excavation, and should be taken from the zero to six-inch interval at the excavation floor. Samples taken after 24 hours should be taken at six to twelve inches.

4. For contaminated soil removal, post remediation soil samples for laboratory analysis should be taken immediately after contaminated soil removal. If the excavation is enlarged horizontally, additional soil samples will be taken pursuant to bullets 1-3 above.

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

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

Quality Assurance/Quality Control

The sampling procedures of this investigation will be performed in accordance with the NYSDEC Technical Guidance for Site Investigation and Remediation DER-10. Samples will be collected in accordance with the following

- Calibration of field equipment (including PID) on a daily basis, at a minimum;
- Recording of sample observations (field evidence of contamination, PID readings, soil classification, etc.) in field log book;
- Use of disposable/dedicated field sampling equipment to minimize cross-contamination between samples;
- Decontamination of non-disposable sampling equipment will consist of the following:
    - ✓ Tap or scrape to remove adhered solid material;
    - ✓ Rinse with distilled or deionized water;
    - ✓ Wash with Alconox ® or similar detergent solution;
    - ✓ Rinse with distilled or deionized water.

- Use of laboratory-supplied glassware, including glassware preservation associated with the analyses to be performed;
- Transportation of samples under property Chain of Custody protocol to the analytical laboratory, including the use of coolers and ice to maintain a sample temperature of 4º C. Samples will be transported by laboratory courier;
- One duplicate sample for every 20 samples collected will be submitted to the approved laboratory for analysis of the same parameters;
- Field blanks will be prepared by pouring distilled or deionized water over decontaminated equipment and collecting the water in laboratory provided containers.
- Trip blanks will be used when 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;
- Samples will be analyzed prior to the expiration of the respective holding time for each analytical parameter to ensure the integrity of the analytical results.
- Soil analytical results will be compared to the NYSDEC Part 375-6.8(a) Unrestricted Used Soil Cleanup Objectives and Part 375-6.8(b) Restricted Soil Cleanup Objectives.

Import of Soils

Soil import is not planned on this project.

Reuse of Onsite Soils

Reuse of onsite soils already onsite will be performed in conformance with the Soil/Materials Management Plan in Appendix 4. The estimated quantity of soil to be reused on this project is 2,000 to 5,800 tons, depending on final depths of excavation. Reuse soils will meet the SCO's established for this project. A map of soil backfill placement locations is shown in Figure 6.

4.3 Engineering Controls

Engineering Controls will be employed in the remedial action to address residual contamination remaining at the site. The Site has three primary Engineering Control Systems. These are:

(1) Composite Cover System

(2) Soil Vapor Barrier System

(3) At-grade ventilated garage

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 eight-inch reinforced concrete over the Grace Preprufe 300R pre-applied integrally bonded waterproofing membrane, over an approximately three-inch mud slab over an approximately six-inch porous fill sub-base beneath all building areas; bituminous pavement with a 1.5-inch wearing course, 2-inch base course, 4-inch reused bituminous, and 4-inch sand and gravel sub-base; 4-inch poured concrete on a 4-inch clean-stone sub-base in sidewalk areas; and minimum of 1 foot of clean soil topped with either grass or a weed-blocking geofabric with mulch in open space areas.

Figure 7 shows the location of each cover type built at the Site. Figure 8 shows the typical design for each remedial cover type used on this 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 waterproofing/vapor barrier. The vapor barrier will consist of Preprufe 300R, a product of Grace Waterproofing Systems. Below the building slabs, an integrally bonded waterproofing membrane will be applied to the underside of the structural slabs-on-grade. Preprufe 300R membranes are composite sheets comprised of a thick HDPE film, an aggressive pressure-sensitive adhesive, and a weather-resistant protective coating. The membranes are applied either horizontally below the slab or vertically on sidewalls and foundation walls. Concrete is then case directly against the adhesive side of the membranes. As the concrete cures, it forms an integral seal preventing water, moisture, and vapor transfer, essentially isolating the structure from the surrounding ground. Refer to Figure F-9A for the planned locations of the Preprufre 300R membranes, and Figure F-9B for slab and sidewall details.

The waterproofing/vapor barrier will extend throughout the area occupied by the footprint of the new building and up the foundation sidewalls and will be installed in accordance with manufacturer specifications. A plan view showing the location of the proposed vapor barrier system is provided in Figure F-9A. Typical design sections for the vapor barrier on slab and sidewalls are provided in Figure F-9B. Product specification sheets are provided in Appendix 5. The Remedial Action Report will include as-built drawings and diagrams; manufacturer documentation; and photographs.

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

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

Ventilated Parking Garage System

A parking garage will be constructed and ventilated in accordance with the NYC mechanical code. The operation of this ventilation system will prevent accumulation of potential soil vapor in the parking garage, and further prevent migration of soil vapor into the occupied above-grade spaces of the building.

4.4 Institutional Controls

A series of Institutional Controls (IC's) 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;

- Submittal of a SMP in the RAR for approval by OER that provides procedures for appropriate operation, maintenance, inspection, and certification of ECs and IC's. SMP will require that the property owner and property owner's successors and assigns will submit to OER a periodic written statement that certifies that: (1) controls employed at the Site are unchanged from the previous certification or that any changes to the controls were approved by OER; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. OER retains the right to enter the Site in order to evaluate the continued maintenance of any controls. This certification shall be submitted at a frequency to be determine by OER in the SMP and will comply with RCNY §43-1407(l)(3).

- Vegetable gardens and farming on the Site are prohibited in contact with residual soil materials;
- Use of groundwater underlying the Site is prohibited without treatment rendering it safe for its intended use;
- All future activities on the Site that will disturb residual material must be conducted pursuant to the soil management provisions in an approved SMP;
- The Site will be used for commercial/office 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: Three SVOCs consisting of polycyclic-aromatic hydrocarbons (PAHs) were detected including benzo(a)anthracene (max. of 6.1 mg/kg), benzo(a)pyrene (max. of 4.5 mg/kg), and benzo(b)fluroanthene(max. of 5.8 mg/kg) exceeding Track 2 Restricted Commercial Use SCOs. The metals barium and lead exceeded Track 2 Restricted Commercial Use SCOs during the initial RI in two hotspot locations.

Groundwater: dissolved metals iron, magnesium, manganese, and sodium identified above their respective NYS DEC Groundwater Quality Standards (GQS).

Soil Vapor: Petroleum-related VOCs (BTEX) and chlorinated VOCs including 1,1,1-trichloroethane, PCE, and TCE detected at low to moderate concentrations.

Nature, Extent, Fate and Transport of Contaminants

Soil: Semi-volatile organic compounds (SVOCs) were identified in shallow soils across the site above Track 2 Restricted Commercial Use SCOs. Two metals (barium and lead) were identified in two locations at the site above Track 2 Restricted Commercial Use SCOs in shallow soils; these locations have been delineated and will be remediated via hot spot excavation with offsite removal of affected soils. These SVOCs and metals were not identified in dissolved groundwater at the Site and are not anticipated to migrate into the groundwater or to volatilize into soil vapor.

Groundwater: The dissolved metals identified at the Site are not associated with contamination identified at the Site and are more representative of regional saline-intrusion impacts.

Soil Vapor: Based on the history of the site, contaminants found in soil vapor (BTEX and chlorinated VOCs) are likely emanating from an offsite source. The contaminants identified in the soil vapor samples were not detected in the soil samples or in the groundwater samples collected at the subject Site.

Receptor Populations

On-Site Receptors: The site is currently vacant, with a vacated former grocery store; access to the Site is restricted by a chained and locked perimeter fence around the property and the building is locked at all times. 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 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.

Potential Exposure Points

Current Conditions: The site is currently capped with asphalt therefore there are no potential exposure pathways from ingestion, inhalation, or dermal absorption of soil/ fill. Groundwater is not exposed at the site. The site is served by the public water supply and groundwater is not used at the site for potable supply and there is no potential for exposure. There is potential for soil vapor to accumulate in the existing building on site.

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

Proposed Future Conditions: Under future remediated conditions, all soils in excess of Track 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 and ventilated garage) 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 require mitigation during implementation of the remedy. There are no complete exposure pathways under future conditions after the site is developed. This assessment takes into consideration the reasonably anticipated use of the site, which includes a commercial/office structure, site-wide surface cover, ventilated parking garage, 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.

5.0 REMEDIAL ACTION MANAGEMENT

5.1 Project Organization and Oversight

Principal personnel who will participate in the remedial action include William Colgan (Project Manager). The Professional Engineer (PE) and Qualified Environmental Professionals (QEP) for this project are James Chai (Ronald Schmidt & Associates, P.A.) and Basil Ellmers, III (QEP, Envirotactics, Inc.).

5.2 Site Security

Site access will be controlled by a plywood barricade installed prior to existing building demolition and will remain around the site during new construction. The construction entrance barricade will be unlocked during working hours and locked during non-working hours. There will be an on-site construction superintendent and/or designated trade foreman to execute and/or monitor and report on all aspects of the on-site construction activities and the securing of the site.

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

All field personnel involved in remedial activities will participate in training required under 29 CFR 1910.120, such as 40-hour hazardous waste operator training and annual 8-hour

refresher training. Site Safety Officer will be responsible for maintaining workers training records.

Personnel entering any exclusion zone will be trained in the provisions of the HASP and will comply with all requirements of 29 CFR 1910.120. Site-specific training will be provided to field personnel. Additional safety training may be added depending on the tasks performed. Emergency telephone numbers will be posted at the site location before any remedial work begins. A safety meeting will be conducted before each shift begins. Topics to be discussed include task hazards and protective measures (physical, chemical, environmental); emergency procedures; PPE levels and other relevant safety topics. Meetings will be documented in a log book or specific form.

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

5.5 Community Air Monitoring Plan

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

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

of the Community Air Monitoring Plan (CAMP) will be reported to the OER Project Manager and included in the Daily Report.

VOC Monitoring, Response Levels, and Actions

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

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

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

Particulate Monitoring, Response Levels, and Actions

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

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m3 above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m3 above the upwind level, work will be stopped and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m3 of the upwind level and in preventing visible dust migration.

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

5.6 Agency Approvals

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

5.7 Site Preparation

Pre-Construction Meeting

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

Mobilization

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

Utility Marker Layouts, Easement Layouts

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

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

Dewatering

Dewatering is anticipated during remediation and construction.

Dewatering will be performed in order to excavate soil and fill material below the water table (expected to be five to six feet below grade). Dewatering for this site will utilize a pumping system, settling tanks, and a treatment system (for sediment only) prior to discharge into the city sewer system. All required permits will be obtained from NYCDEP prior to any discharge of groundwater into the sewer system.

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 al soil or fill disposal;
- Photographic documentation of remedial work performed under this remedy;
- Site Management Plan (if Track 1 remedial action is not achieved);
- Description of any changes in the remedial action from the elements provided in this RAWP and associated design documents;
- Tabular summary of all end point sampling results (including all soil test results from the remedial investigation for soil that will remain on site) and all soil/fill waste characterization results, QA/QC results for end-point sampling, and other sampling and chemical analysis performed as part of the remedial action;
- Test results or other evidence demonstrating that remedial systems are functioning properly;
- Account of the source area locations and characteristics of all soil or fill material removed from the Site including a map showing the location of these excavations and hotspots, tanks or other contaminant source areas;
- Full accounting of the disposal destination of all contaminated material removed from the Site. Documentation associated with disposal of all material will include transportation and disposal records, and letters approving receipt of the material;

- Account of the origin and required chemical quality testing for material imported onto the Site;
- Continue registration of the property with an E-Designation by the NYC Department of Buildings (if Track 1 remedial action is not achieved);
- The RAWP and Remedial Investigation Report will be included as appendices to the RAR;
- 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 Stamp

PE License Number

Signature

Date

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 three to four 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	2	1
Remedial Excavation	5	12
Demobilization	17	1
Submit Remedial Action Report	22	4

APPENDIX 1 – PROPOSED DEVELOPMENT PLANS

APPENDIX 2 – CITIZEN PARTICIPATION PLAN

The NYC Office of Environmental Remediation and 105 Rockaway Realty LLC have established this Citizen Participation Plan because the opportunity for citizen participation is an important component of the NYC Voluntary Cleanup Program. This Citizen Participation Plan describes how information about the project will be disseminated to the Community during the remedial process. As part of its obligations under the NYC VCP, 105 Rockaway Realty LLC will maintain a repository for project documents and provide public notice at specified times throughout the remedial program. This Plan also takes into account potential environmental justice concerns in the community that surrounds the project Site. Under this Citizen Participation Plan, project documents and work plans are made available to the public in a timely manner. Public comment on work plans is strongly encouraged during public comment periods. Work plans are not approved by the NYC Office of Environmental Remediation (OER) until public comment periods have expired and all comments are formally reviewed. An explanation of cleanup plans in the form of a public meeting or informational session is available upon request to OER's project manager assigned to this Site, Alysha Alfieri, 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:

Queens Library at Seaside

312 Beach 54th Street

(718) 634-1876

HOURS:

Monday – 12-8 pm
Tuesday – 1-6 pm
Wednesday – 10 am-6 pm
Thursday – 12-8 pm
Friday – 10 am – 6 pm
Saturday – 10 am – 5 pm
Sunday 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: The major issues of concern to the public will be potential impacts of nuisance odors and dust during the disturbance of historic fill soils at the Site. This work will be performed in accordance with procedures which will be specified under a detailed Remedial Program which considers and takes preventive measures for exposures to future residents of the property and those on adjacent properties during construction. Detailed plans to monitor the potential for exposure including a Construction Health and Safety Plan and a Community Air Monitoring Plan are required components of the remedial program. Implementation of these plans will be under the direct oversight of the New York City Office of Environmental Remediation (NYCOER).

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

- On-site air monitoring for worker protection;
- Perimeter air monitoring for community protection;
- Dust control as needed based on air monitoring.

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

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

CITIZEN PARTICIPATION MILESTONES: Public notice and public comment activities occur at several steps during a typical NYC VCP project. These steps include:

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

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

APPENDIX 3 – SUSTAINABILITY STATEMENT

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

REUSE OF CLEAN, RECYCLABLE MATERIALS AND REDUCED CONSUMPTION OF NON-RENEWABLE RESOURCES: Reuse of clean, locally-derived recyclable materials reduces consumption of non-renewable virgin resources and can provide energy savings and greenhouse gas reduction.

The enrollee plans to reuse clean, non-virgin materials in the selected remedial action and redevelopment, including the reuse and recycling of concrete aggregate, stone and clean soils derived from the Site.

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

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.

Natural gas will be utilized for fuel in the new building.

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.

On-Site controls that will provide protection against recontamination originating from currently unknown off-Site sources include a waterproofing/vapor barrier that can eliminate the risk of future migration of soil vapor contamination from off-Site. Site covers including bituminous asphalt driving and parking areas and concrete walkways on-Site will help to prevent the occurrence of new contamination.

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

STORMWATER RETENTION: Stormwater retention improves water quality by lowering the rate of combined 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: 105 Rockaway Realty LLC is participating in OER's Paperless Voluntary Cleanup Program. Under this program, submission

of electronic documents will replace submission of hard copies for the review of project documents, communications and milestone reports.

LOW-ENERGY PROJECT MANAGEMENT PROGRAM: 105 Rockaway Realty LLC is participating in OER's low-energy project management program. Under this program, whenever possible, meetings are held using remote communication technologies, such as videoconferencing and teleconferencing to reduce energy consumption and traffic congestion associated with personal transportation.

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

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

APPENDIX 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. 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 – MANUFACTURER SPECIFICATIONS FOR WATERPROOFING / VAPOR BARRIER

APPENDIX 6 – CONSTRUCTION HEALTH AND SAFETY PLAN

ROCKAWAY MEDICAL ARTS COMPLEX

QUEENS, NEW YORK

Remedial Action Work Plan

OER Project Number 15EH-A503Q

NYC VCP Site Number: TBD

Prepared For:

105 Rockaway Realty LLC

2 Broad Street, Suite 400

Bloomfield, NJ 07003

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(732) 449-0077

Envirotactics Project No. 4138

January 2016

REMEDIAL ACTION WORK PLAN

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FIGURES

APPENDICES

LIST OF ACRONYMS

Acronym	Definition
AOC	Area of Concern
AS/SVE	Air Sparging/Soil Vapor Extraction
BOA	Brownfield Opportunity Area
CAMP	Community Air Monitoring Plan
C&D	Construction and Demolition
CEQR	City Environmental Quality Review
CFR	Code of Federal Regulations
CHASP	Construction Health and Safety Plan
COC	Certificate of Completion
CQAP	Construction Quality Assurance Plan
CSOP	Contractors Site Operation Plan
DCR	Declaration of Covenants and Restrictions
ECs/ICs	Engineering Controls and Institutional Controls
ELAP	Environmental Laboratory Accreditation Program
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations Emergency Response

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

PID	Photo Ionization Detector
QEP	Qualified Environmental Professional
QHHEA	Qualitative Human Health Exposure Assessment
RAOs	Remedial Action Objectives
RAR	Remedial Action Report
RAWP	Remedial Action Work Plan or Plan
RCA	Recycled Concrete Aggregate
RD	Remedial Design
RI	Remedial Investigation
RMZ	Residual Management Zone
SCOs	Soil Cleanup Objectives
SCG	Standards, Criteria and Guidance
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
SSDS	Sub-Slab Depressurization System
SVOC	Semi-Volatile Organic Compound
TAL	Target Analyte List
TCL	Target Compound List

USGS	United States Geological Survey
UST	Underground Storage Tank
VCA	Voluntary Cleanup Agreement
VOC	Volatile Organic Compound

CERTIFICATION

I, Marc Bowen, 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 Rockaway Medical Arts Building Site, (NYC OER Site No. 15EH-A503Q; NYC VCP Site No. TBD). I certify to the following:

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

_____

Name

PE Stamp

_____

PE License Number

_____

Signature

_____

Date

I, Basil Ellmers, III, am a qualified Environmental Professional. I will have primary direct responsibility for implementation of the remedial program for the Rockaway Medical Arts Building Site, (NYC OER Site No. 15EH-A503Q; NYC VCP Site No. TBD). 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.

Basil Ellmers, III

QEP Name

QEP Signature

1/21/2016

Date

EXECUTIVE SUMMARY

105 Rockaway Realty LLC is working with the NYC Office of Environmental Remediation (OER) in the New York City Voluntary Cleanup Program to investigate and remediate an approximately 1.5-acre site located at 105-02 through 105-42 Rockaway Beach Boulevard (mailing address is 105-38 Rockaway Beach Boulevard) in the Rockaway Park section in Queens, New York. A remedial investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP). The remedial action described in this document provides for the protection of public health and the environment consistent with the intended property use, complies with applicable environmental standards, criteria and guidance and conforms with applicable laws and regulations.

SITE LOCATION AND BACKGROUND

The Site is located at 105-02 through 105-42 Rockaway Beach Boulevard (mailing address is 105-38 Rockaway Beach Boulevard) in the Rockaway Park section in Queens, New York and is identified as Block 16178 and Lot 80 on the New York City Tax Map. Figure 1 shows the Site location. The Site is 65,150-square feet and is bounded by Rockaway Freeway and an elevated portion of the MTA's "A" and "S" subway line to the north, Rockaway Beach Boulevard to the south, Beach 105th Street to the east, and Beach 106th Street to the west. A map of the Site boundary is shown in Figure 2. Currently, the Site is a vacant grocery store (following flooding from Superstorm Sandy in October 2012), and contains a one and two story building with two commercial spaces with the remainder of the property containing paved parking areas.

SUMMARY OF REDEVELOPMENT PLAN

The proposed future use of the Site will consist of a new four-story medical arts building with medical office spaces and an ambulatory surgical center. Layout of the proposed Site development is presented in Attachment 1. The current zoning designation is R5D, designed to serve as a transition between lower-density districts and moderate-density districts. The proposed use is consistent with existing zoning for the property.

The redevelopment project consists of a new medical arts building. The proposed building will be four (4) stories constructed above the existing open space, with 16,610 square feet (SF) of building footprint. The new building will be located five feet from the property line along

Rockaway Beach Boulevard and Beach 105th Street as per the setback requirement, and 30 feet away from the existing MTA railroad structure as per the required railroad setback. The 1st floor will consist of enclosed areas of lobby, utility rooms, and stairways at 2,372 SF and covered parking spaces at 14,239 SF. The 2nd and 3rd floors will be medical office spaces at total of 16,610 SF each and the 4th floor will be ambulatory surgical center at 15,036 SF.

The proposed development will be of slab on grade construction (supported by pilings driven approximately 30 feet below grade without excavation). The only area to be excavated during the development process is an elevator pit, which will be approximately 18'-8" wide by 8'-3" long by 4' deep. The area to be excavated for the elevator pit is not anticipated to be below the groundwater table. The estimated volume of excavated material is expected to be approximately 30 tons. The subsurface soils at the remaining portions of the Site will not be excavated.

The existing masonry building on the Site will be demolished and turned into an open space.

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

SUMMARY OF SURROUNDING PROPERTY

The Site is located in the Rockaway Park section of Queens in New York City, established on a thin strip of land that is bordered by Jamaica Bay to the north and the Atlantic Ocean to the south. The area is utilized primarily for residential and commercial purposes. The subject Site is bordered to the north by Rockaway Freeway and an elevated portion of the MTA railway, followed by the Rockaway Wastewater Treatment Plant. To the south, the subject Site is bound by Rockaway Beach Boulevard followed by multi-family residential buildings and associated parking lots and a pool. To the east the property is bordered by Beach 105th Street followed by commercial and office buildings. It is bound to the west by Beach 106th Street followed by vacant land. No sensitive receptors such as schools, hospitals, or day care facilities are located within a 250-foot radius.

SUMMARY OF PAST SITE USES AND AREAS OF CONCERN

In April 2015, a Phase I ESA was completed for the Site. Based on the information reviewed as part of the Phase I ESA, it appears that the property was utilized for residential purposes from at least 1894, the date of the earliest Sanborn map. The subject property remained

similar in use, growing in density, through at least 1950, and appears similar in the 1951 aerial photograph. By 1961 the subject property was cleared, and remained that way until at least 1966 when it is depicted as being developed with one building. This building is believed to be the same one identified as being commercial in use on the 1981 Sanborn map. It is also believed to be the one currently occupying the property.

The findings of the Phase I ESA are identified below:

1. No on-site recognized environmental conditions (RECs) were identified;
2. No offsite RECs were identified;
3. The presence of an "E" Designation for Hazmat Phase I & Phase II testing protocol; exhaust stack limitations, and air quality. (This RIR addresses only the "E" Designation for Hazmat Phase I & Phase II testing protocol.)

The only AOC identified for this site is the presence of Historic Fill Material.

SUMMARY OF WORK PERFORMED UNDER THE REMEDIAL INVESTIGATION

Envirotactics, Inc. performed the following scope of work:

In August 2015:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Installed eight soil borings across the entire project Site, and collected 16 soil samples for chemical analysis from the soil borings to evaluate soil quality;
3. Installed two soil vapor probes at the Site and collected two samples for chemical analysis.

In October 2015:

4. Installed eight additional soil borings to delineate two hotspots with lead in soil that was previously identified at the project Site, and collected eight soil samples for chemical analysis from the soil borings to evaluate soil quality;

5. Installed three temporary groundwater monitoring wells throughout the Site to establish groundwater flow and collected three groundwater samples for chemical analysis to evaluate groundwater quality;

SUMMARY OF FINDINGS OF REMEDIAL INVESTIGATION

1. Elevation of the property ranges from approximately 5.75 to 7.25 feet.
2. Depth to groundwater ranges from 5.2 to 5.9 feet at the Site.
3. Groundwater flow is generally from west to east beneath the Site.
4. Bedrock was not encountered during the RI at the Site.
5. The stratigraphy of the Site, from the surface down, consists of two to six feet of historical urban fill material underlain by tan to brown fine to medium-grained sand.
6. The initial soil investigation (August 2015) results were compared to NYSDEC Unrestricted Use (Track 1) and Restricted Commercial Use (Track 2) Soil Cleanup Objectives (SCOs) as presented in NYSDEC Part 375-6.8 and CP51. Sampling results identified no PCBs above Unrestricted Use SCOs. One VOC (acetone) was detected above the Unrestricted Use SCO in three samples but below its Restricted Commercial Use SCO; acetone is a common laboratory contaminant and is therefore not considered a contaminant of concern. Seven SVOCs consisting of polycyclic-aromatic hydrocarbons (PAHs) were detected including benzo(a)anthracene (max. of 6.1 mg/kg), benzo(a)pyrene (max. of 4.5 mg/kg), and benzo(b)fluroanthene(max. of 5.8 mg/kg) exceeding Restricted Commercial Use SCOs; and benzo(k)fluoranthene (max. 2.3 of mg/kg), chrysene (max. of 6.6 mg/kg), and indeno(1,2,3-cd)pyrene (max. of 2.8 mg/kg) exceeding Unrestricted Use SCOs in several samples collected from within observed historical urban fill material. SVOCs were detected in only one native soil sample.

   Three pesticides including 4,4'-DDD (max. of 0.00804 mg/kg), 4,4'-DDE (max. of 0.0267 mg/kg), and 4,4'-DDT (max. of 0.0838 mg/kg) were detected above their respective Unrestricted Use SCOs in several samples; however no samples were detected above their respective Commercial Restricted Use SCOs.

Four metals barium (max. of 1000 mg/kg), lead (max. of 3200 mg/kg), mercury (max. of 0.31 mg/kg), and zinc (max. of 780 mg/kg) were detected above their respective Unrestricted Use SCOs in several samples. Of those metals, barium and lead also exceeded Restricted Commercial Use SCOs.

7. Follow-up soil investigation (October 2015) results were compared to NYSDEC Unrestricted Use (Track 1) and Restricted Commercial Use (Track 2) Soil Cleanup Objectives (SCOs) as presented in NYSDEC Part 375-6.8 and CP51. Lead was the only analysis performed in order to delineate two previously identified lead hotspots. Soil/fill samples collected during the RI showed no exceedances of lead above the Track 1 Unrestricted Use SCOs.

   Data collected during the RI is sufficient to delineate the vertical and horizontal distribution of contaminants in soil/fill at the Site. Based on the concentrations and the compounds detected at the Site, the contaminants identified appear to be from the presence of historical urban fill on the property, consistent with results from sites throughout New York City with urban fill.

8. Groundwater sampling results identified no VOCs, SVOCs, or PCBs above their respective AWQS (GA) in any sample collected. One pesticide, chlordane, was identified above the AWQS of 0.05 ug/l in TW-2 (0.13 ug/l), TW-3 (0.134 ug/l), and the field blank (0.83). Chlordane was not detected in TW-1. Because Chlordane was detected in the field blank, it is not believed to be representative of site conditions.

   The following total metals were identified above the AWQS in at least one of the temporary monitoring wells: arsenic (max. of 37.2 ug/l, AWQS 25 ug/l), chromium (max. of 3,097 ug/l, AWQS 50 ug/l), copper (max. of 556.9 ug/l, AWQS 200 ug/l), iron (max. of 203,000 ug/l, AWQS 300 ug/l), lead (max. of 170.5 ug/l, AWQS 25 ug/l), magnesium (max. of 38,700 ug/l, AWQS 35,000 ug/l), manganese (max. of 2,038 ug/l, AWQS 300 ug/l), nickel (max. of 246 ug/l, AWQS 100 ug/l), selenium (max. of 11 ug/l, AWQS 10 ug/l), sodium (max. of 749,000 ug/l, AWQS 20,000 ug/l), and thallium (max. of 0.6 ug/l, AWQS 0.5 ug/l). No total metals were detected above the AWQS in the field blank.

   The following dissolved metals were detected above the AWQS in at least one of the temporary monitoring wells: dissolved iron (max. of 2,210 ug/l, AWQS 300 ug/l),

dissolved magnesium (max. of 37,400 ug/l, AWQS 35,000 ug/l), dissolved manganese (max. of 1,226 ug/l, AWQS 300 ug/l), and dissolved sodium (max. of 711,000 ug/l, AWQS 20,000 ug/l). No dissolved metals were detected above the AWQS in the field blank.

Data collected during the RI is sufficient to delineate the distribution of contaminants in groundwater at the Site. The concentration of metals was greatly reduced from the total metal samples to the filtered, dissolved metals samples, with several compounds being reduced to below the NYS DEC's AWQS (GA). The dissolved metals that remained above the AWQS are secondary contaminants, based on aesthetic considerations not health-based. No additional investigation or remedial actions for groundwater are proposed.

9. Soil vapor results were compared to the compounds listed in Vapor Intrusion Matrices 1 and 2 in the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion dated October 2006. Soil vapor results identified petroleum-related compounds in both samples, as well as chlorinated hydrocarbons. The total concentration of petroleum-related VOCs (BTEX) ranged from 61.09 ug/m^3 to 77.46 ug/m^3. Three chlorinated VOCs, 1,1,1-trichloroethane (13.6 ug/m^3), tetrachloroethene (max of 9.15 ug/m^3), and trichloroethene (3.24 ug/m^3) were detected in two samples. Carbon tetrachloride was not detected in any soil vapor samples. The detected concentration of trichloroethene was within the monitoring range established by the NYSDOH.

   Data collected during the RI is sufficient to delineate the distribution of contaminants in soil vapor at the Site.

SUMMARY OF THE REMEDIAL ACTION

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 2 Restricted Residential/ Commercial or 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 2 Restricted Residential or Track 2 Commercial. Approximately 38% of the Site (the eastern portion, where the new building is to be constructed) will be excavated to a depth of approximately six feet below grade for development purposes. A small portion of property will be excavated to the depths of six feet below grade for hotspot areas.

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 underground storage tanks (USTs) that are encountered during soil/fill removal actions. Registration of tanks and reporting of any petroleum spills associated with USTs 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 eight-inch reinforced concrete over the Grace Preprufe 300R pre-applied integrally bonded waterproofing membrane, over an approximately three-inch mud slab over an approximately six-inch porous fill sub-base beneath all building areas; bituminous pavement with a 1.5-inch wearing course, 4-inch reused bituminous over a 2-inch base course, and 4-inch sand and gravel sub-base; 4-inch poured concrete on a 4-inch clean-stone sub-base in sidewalk areas; and minimum of 4-inches of clean soil topped with either grass or a weed-blocking geofabric with mulch in all open spaces and landscaped areas.

15. Installation of a waterproofing/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 waterproofing/vapor barrier system will consist of a 20-mil Grace Waterproofing Systems Prepufe 300R membrane below the slab throughout the full building 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 waterproofing/vapor barrier system was designed and properly installed to mitigate soil vapor migration into the building.

16. Construction and operation of a grade-level parking garage with high volume air exchange in conformance with NYC Building Code.

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. Dewatering in compliance with city, state, and federal laws and regulations. Extracted groundwater will either be containerized for off-site licensed or permitted disposal or will be treated under a permit from New York City Department of Environmental Protection (NYCDEP) to meet pretreatment requirements prior to discharge to the sewer system.

20. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.

21. 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.

22. 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.

23. Recording of a Declaration of Covenants and Restrictions that includes a listing of Engineering Controls and Institutional Controls 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.

24. 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, shows the location of identified contamination at the site, and describes the plans to clean up the site to protect public health and the environment.

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

Project Information:

- Site Name: Rockaway Medical Arts Complex
- Site Address: 105-02 through 105-42 Rockaway Beach Boulevard (mailing address is 105-38 Rockaway Beach Boulevard)
  Rockaway Park, Queens
  Block 16178, Lot 80
- NYC Voluntary Cleanup Program Project Number: TBD

Project Contacts:

- OER Project Manager: Alysha Alfieri, 212-788-8841
- Site Project Manager: William Colgan, (973) 429-7900 - Ext. 217
- Site Safety Officer: William Colgan, (973) 429-7900 - Ext. 217
- Online Document Repository: http://www.nyc.gov/html/oer/html/document-repository/document-repository.shtml

REMEDIAL INVESTIGATION AND CLEANUP PLAN: Under the oversight of the NYC OER, a thorough study of this property (called a remedial investigation) has been performed to identify past property usage, to sample and test soils, groundwater and soil vapor,

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

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

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

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

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

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

COMMUNITY AIR MONITORING PLAN: Community air monitoring will be performed during this cleanup project to ensure that the community is properly protected from contaminants, dust and odors. Air samples will be tested in accordance with a detailed plan

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

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

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

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

HOURS OF OPERATION: The hours for operation of cleanup will comply with the NYC Department of Buildings construction code requirements or according to specific variances issued by that agency. For this cleanup project, the hours of operation will conform to requirements of the NYC Department of Buildings.

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

COMPLAINT MANAGEMENT: The contractor performing this cleanup is required to address all complaints. If you have any complaints, you can call the facility Project Manager or the NYC Office of Environmental Remediation Project Manager listed on the first page of this Community Protection Statement document, or call 311 and mention the Site is in the NYC Voluntary Cleanup Program.

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

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

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

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

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

IMPORTED MATERIAL: All fill materials proposed to be brought onto the Site will comply with rules outlined in this cleanup plan and will be inspected and approved by a qualified worker located on the Site. Waste materials will not be brought onto the Site. Trucks entering

the Site with imported clean materials will be covered in compliance with applicable laws and regulations.

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

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

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

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

LONG-TERM SITE MANAGEMENT: If long-term protection is needed after the cleanup is complete, the property owner will be required to comply with an ongoing Site Management Plan that calls for continued inspection of protective controls, such as Site covers. The Site Management Plan is evaluated and approved by the NYC Office of Environmental Remediation. Requirements that the property owner must comply with are 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

105 Rockaway Realty LLC is working with the NYC Office of Environmental Remediation (OER) in the New York City Voluntary Cleanup Program and/or in the "E" Designation Program to investigate and remediate a property located at 105-02 through 105-42 Rockaway Beach Boulevard (mailing address is 105-38 Rockaway Beach Boulevard) in the Rockaway Park section of Queens, New York (the "Site"). A Remedial Investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP) in a manner that will render the Site protective of public health and the environment consistent with the contemplated end use. This RAWP establishes remedial action objectives, provides a remedial alternatives' analysis that includes consideration of a permanent cleanup, and provides a description of the selected remedial action. The remedial action described in this document provides for the protection of public health and the environment, 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 105-02 through 105-42 Rockaway Beach Boulevard (mailing address is 105-38 Rockaway Beach Boulevard) in the Rockaway Park section in Queens, New York and is identified as Block 16178 and Lot 80 on the New York City Tax Map. Figure 1 shows the Site location. The Site is 65,150-square feet and is bounded by Rockaway Freeway and an elevated portion of the MTA's "A" and "S" subway line to the north, Rockaway Beach Boulevard to the south, Beach 105th Street to the east, and Beach 106th Street to the west. A map of the Site boundary is shown in Figure 2. Currently, the Site is a vacant grocery store (following flooding from Superstorm Sandy in October 2012), and contains a one and two story building with two commercial spaces with the remainder of the property containing paved parking areas.

1.2 Redevelopment Plan

The proposed future use of the Site will consist of a new four-story medical arts building with medical office spaces and an ambulatory surgical center. Layout of the proposed Site development is presented in Attachment 1. The current zoning designation is R5D, designed to

serve as a transition between lower-density districts and moderate-density districts. The proposed use is consistent with existing zoning for the property.

The redevelopment project consists of a new medical arts building. The proposed building will be four (4) stories constructed above the existing open space, with 16,610 square feet (SF) of building footprint. The new building will be located five feet from the property line along Rockaway Beach Boulevard and Beach 105th Street as per the setback requirement, and 30 feet away from the existing MTA railroad structure as per the required railroad setback. The 1st floor will consist of enclosed areas of lobby, utility rooms, and stairways at 2,372 SF and covered parking spaces at 14,239 SF. The 2nd and 3rd floors will be medical office spaces at total of 16,610 SF each and the 4th floor will be ambulatory surgical center at 15,036 SF.

The proposed development will be of slab on grade construction (supported by pilings driven approximately 30 feet below grade without excavation). The only area to be excavated during the development process is an elevator pit, which will be approximately 18'-8" wide by 8'-3" long by 4' deep. The area to be excavated for the elevator pit is not anticipated to be below the groundwater table. The estimated volume of excavated material is expected to be approximately 30 tons. The subsurface soils at the remaining portions of the Site will not be excavated.

The existing masonry building on the Site will be demolished and turned into an open space.

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

1.3 Description of Surrounding Property

The Site is located in the Rockaway Park section of Queens in New York City, established on a thin strip of land that is bordered by Jamaica Bay to the north and the Atlantic Ocean to the south. The area is utilized primarily for residential and commercial purposes. The subject Site is bordered to the north by Rockaway Freeway and an elevated portion of the MTA railway, followed by the Rockaway Wastewater Treatment Plant. To the south, the subject Site is bound by Rockaway Beach Boulevard followed by multi-family residential buildings and associated parking lots and a pool. To the east the property is bordered by Beach 105th Street followed by commercial and office buildings. It is bound to the west by Beach 106th Street followed by

vacant land. No sensitive receptors such as schools, hospitals, or day care facilities are located within a 250-foot radius. A Surrounding Land Use Map is provided as Figure 3.

1.4 Summary of Past Site Uses and Areas of Concern

In April 2015, a Phase I ESA was completed for the Site. Based on the information reviewed as part of the Phase I ESA, it appears that the property was utilized for residential purposes from at least 1894, the date of the earliest Sanborn map. The subject property remained similar in use, growing in density, through at least 1950, and appears similar in the 1951 aerial photograph. By 1961 the subject property was cleared, and remained that way until at least 1966 when it is depicted as being developed with one building. This building is believed to be the same one identified as being commercial in use on the 1981 Sanborn map. It is also believed to be the one currently occupying the property.

The findings of the Phase I ESA are identified below:

1. No on-site recognized environmental conditions (RECs) were identified;
2. No offsite RECs were identified;
3. The presence of an "E" Designation for Hazmat Phase I & Phase II testing protocol; exhaust stack limitations, and air quality. (This RIR addresses only the "E" Designation for Hazmat Phase I & Phase II testing protocol.)

The only AOC identified for this site is the presence of Historic Fill Material.

1.5 Summary of Work Performed under the Remedial Investigation

Envirotactics, Inc. performed the following scope of work on behalf of 105 Rockaway LLC:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Installed eight soil borings across the entire project Site in August 2015, and collected 16 soil samples for chemical analysis from the soil borings to evaluate soil quality;
3. Installed two soil vapor probes at the Site in August 2015 and collected two samples for chemical analysis.

4. Installed eight soil borings in October 2015 to delineate two hotspots with lead in soil that were previously identified at the project Site, and collected eight soil samples for chemical analysis from the soil borings to evaluate soil quality; and

5. Installed three temporary groundwater monitoring wells throughout the Site in October 2015 to establish groundwater flow and collected three groundwater samples for chemical analysis to evaluate groundwater quality.

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, Rockaway Medical Arts Complex," dated September 2015 (RIR) and "Remedial Investigation Report Addendum, Rockaway Medical Arts Complex," dated December 2015.

1. Elevation of the property ranges from approximately 5.75 to 7.25 feet.

2. Depth to groundwater ranges from 5.2 to 5.9 feet at the Site.

3. Groundwater flow is generally from west to east beneath the Site.

4. Bedrock was not encountered during the RI at the Site.

5. The stratigraphy of the Site, from the surface down, consists of two to six feet of historical urban fill material underlain by tan to brown fine to medium-grained sand.

6. The initial soil investigation (August 2015) results were compared to NYSDEC Unrestricted Use (Track 1) and Restricted Commercial Use (Track 2) Soil Cleanup Objectives (SCOs) as presented in NYSDEC Part 375-6.8 and CP51. Sampling results identified no PCBs above Unrestricted Use SCOs. One VOC (acetone) was detected above the Unrestricted Use SCO in three samples but below its Restricted Commercial Use SCO; acetone is a common laboratory contaminant and is therefore not considered a contaminant of concern. Seven SVOCs consisting of polycyclic-aromatic hydrocarbons (PAHs) were detected including benzo(a)anthracene (max. of 6.1 mg/kg), benzo(a)pyrene (max. of 4.5 mg/kg), and benzo(b)fluroanthene(max. of 5.8 mg/kg) exceeding Restricted Commercial Use SCOs; and benzo(k)fluoranthene (max. 2.3 of mg/kg), chrysene (max. of 6.6 mg/kg), and indeno(1,2,3-cd)pyrene (max. of 2.8 mg/kg) exceeding Unrestricted

Use SCOs in several samples collected from within observed historical urban fill material. SVOCs were detected in only one native soil sample.

Three pesticides including 4,4'-DDD (max. of 0.00804 mg/kg), 4,4'-DDE (max. of 0.0267 mg/kg), and 4,4'-DDT (max. of 0.0838 mg/kg) were detected above their respective Unrestricted Use SCOs in several samples; however no samples were detected above their respective Commercial Restricted Use SCOs.

Four metals barium (max. of 1000 mg/kg), lead (max. of 3200 mg/kg), mercury (max. of 0.31 mg/kg), and zinc (max. of 780 mg/kg) were detected above their respective Unrestricted Use SCOs in several samples. Of those metals, barium and lead also exceeded Restricted Commercial Use SCOs.

7. Follow-up soil investigation (October 2015) results were compared to NYSDEC Unrestricted Use (Track 1) and Restricted Commercial Use (Track 2) Soil Cleanup Objectives (SCOs) as presented in NYSDEC Part 375-6.8 and CP51. Lead was the only analysis performed in order to delineate two previously identified lead hotspots. Soil/fill samples collected during the RI showed no exceedances of lead above the Track 1 Unrestricted Use SCOs.

   Data collected during the RI is sufficient to delineate the vertical and horizontal distribution of contaminants in soil/fill at the Site. Based on the concentrations and the compounds detected at the Site, the contaminants identified appear to be from the presence of historical urban fill on the property, consistent with results from sites throughout New York City with urban fill.

8. Groundwater sampling results identified no VOCs, SVOCs, or PCBs above their respective AWQS (GA) in any sample collected. One pesticide, chlordane, was identified above the AWQS of 0.05 ug/l in TW-2 (0.13 ug/l), TW-3 (0.134 ug/l), and the field blank (0.83). Chlordane was not detected in TW-1. Because Chlordane was detected in the field blank, it is not believed to be representative of site conditions.

   The following total metals were identified above the AWQS in at least one of the temporary monitoring wells: arsenic (max. of 37.2 ug/l, AWQS 25 ug/l), chromium (max. of 3,097 ug/l, AWQS 50 ug/l), copper (max. of 556.9 ug/l, AWQS 200 ug/l), iron (max.

of 203,000 ug/l, AWQS 300 ug/l), lead (max. of 170.5 ug/l, AWQS 25 ug/l), magnesium (max. of 38,700 ug/l, AWQS 35,000 ug/l), manganese (max. of 2,038 ug/l, AWQS 300 ug/l), nickel (max. of 246 ug/l, AWQS 100 ug/l), selenium (max. of 11 ug/l, AWQS 10 ug/l), sodium (max. of 749,000 ug/l, AWQS 20,000 ug/l), and thallium (max. of 0.6 ug/l, AWQS 0.5 ug/l). No total metals were detected above the AWQS in the field blank.

The following dissolved metals were detected above the AWQS in at least one of the temporary monitoring wells: dissolved iron (max. of 2,210 ug/l, AWQS 300 ug/l), dissolved magnesium (max. of 37,400 ug/l, AWQS 35,000 ug/l), dissolved manganese (max. of 1,226 ug/l, AWQS 300 ug/l), and dissolved sodium (max. of 711,000 ug/l, AWQS 20,000 ug/l). No dissolved metals were detected above the AWQS in the field blank.

Data collected during the RI is sufficient to delineate the distribution of contaminants in groundwater at the Site. The concentration of metals was greatly reduced from the total metal samples to the filtered, dissolved metals samples, with several compounds being reduced to below the NYS DEC's AWQS (GA). The dissolved metals that remained above the AWQS are secondary contaminants, based on aesthetic considerations not health-based. No additional investigation or remedial actions for groundwater are proposed.

9. Soil vapor results were compared to the compounds listed in Vapor Intrusion Matrices 1 and 2 in the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion dated October 2006. Soil vapor results identified petroleum-related compounds in both samples, as well as chlorinated hydrocarbons. The total concentration of petroleum-related VOCs (BTEX) ranged from 61.09 ug/m^3 to 77.46 ug/m^3. Three chlorinated VOCs, 1,1,1-trichloroethane (13.6 ug/m^3), tetrachloroethene (max of 9.15 ug/m^3), and trichloroethene (3.24 ug/m^3) were detected in two samples. Carbon tetrachloride was not detected in any soil vapor samples. The detected concentration of trichloroethene was within the monitoring range established by the NYSDOH. Data collected during the RI is sufficient to delineate the distribution of contaminants in soil vapor at the Site.

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

2.0 REMEDIAL ACTION OBJECTIVES

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

Soil

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

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 NYSDEC 6NYCRR Part 375 Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs).
- Removal of all soil/fill exceeding Track 1 Unrestricted Use SCOs throughout the Site and confirmation that Track 1 Unrestricted Use SCOs have been achieved with post-

excavation endpoint sampling. Based on the results of the Remedial Investigation, it is expected that this alternative would be achieved by excavating to a depth greater than the water table (approximately six feet below grade). If soil/fill containing analytes at concentrations above Unrestricted Use SCOs is still present at the base of the excavation after removal of all soil required for construction of the new building's cellar level is complete, additional excavation would be performed to ensure complete removal of soil/ fill that does not meet Track 1 Unrestricted Use SCOs.

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

- Placement of a final cover over the entire Site as part of new construction.

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 this alternative would be achieved by excavating two hot spots (area of SB-1 and area of SB-5) to a depth of about 6 feet. As part of development, soil beneath most of the site will be removed to a depth of between 6 inches and 18 inches. 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 waterproofing/vapor barrier system beneath the building slab and along foundation side walls to prevent potential exposures from soil vapor;

- 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.

We set up Track 4 SCOs for this work plan. Based upon end point samples, Alternative 2 Restricted Residential or Restricted Commercial SCO's may be achieved.

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 hotspots 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. 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 (CHASP), an approved Soil/Materials Management Plan, and Community Air Monitoring Plan (CAMP). Potential contact with contaminated groundwater would be prevented as its use is prohibited by city laws and regulations. Potential future migration of off-Site soil vapors into the new building would be prevented by installing a vapor barrier below the building slab and outside foundations walls below grade.

3.2 Balancing Criteria

Compliance with Standards, Criteria and Guidance (SCGs)

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

Alternative 1 would achieve compliance with the remedial goals, chemical-specific SCGs and RAOs for soil through removal of soil to achieve Track 1 Unrestricted Use 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 slab and continuing the vapor barrier outside of subgrade foundation walls, as part of development. In addition, the first floor of the building will contain a parking garage with high volume air exchange that conforms to the NYC Building Code.

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 slab and continuing the vapor barrier outside of subgrade foundation walls. A Site Management Plan would ensure that these controls remained protective for the long term. In addition, the first floor of the building will contain a parking garage with high volume air exchange that conforms to the NYC Building Code and will mediate any potential accumulation of soil vapors inside the building.

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. Impact from potential offsite soil vapor will be address through the installation of a vapor barrier.

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; 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.

Both alternatives would result in removal of soil contamination exceeding the SCOs providing the highest level, most effective and permanent remedy over the long-term with respect to a remedy for contaminated soil, which will eliminate any migration to groundwater. Soil vapor impacts would be prevented through installation of a vapor barrier under the new building slab.

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 2 would provide engineering and institutional controls to ensure that there are no pathways for exposure to remaining materials.

Alternative 1 would remove a greater total mass of contaminants from the Site. The removal of soil to one to six feet below grade 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.

Historic fill at the Site was found to extend to a depth of up to five feet below grade during the RI. The new building requires excavation of approximately 38% of the Site to a depth of six feet for the building. Therefore, the initial costs associated with Alternative 1 would be significantly higher than Alternative 2 due to the additional soil/fill removal, 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 a four-story medical arts building, with parking on the first floor, medical offices on the second and third floors, and an ambulatory surgical center on the fourth floor. 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 use. The proposed use is compliant with the property's zoning and is consistent with recent development patterns. The areas surrounding the site are urban and consist of predominantly commercial and institutional buildings with some residential use, in zoning districts designated for commercial and residential uses. The development would remediate a vacant lot and provide a modern office building. The proposed development would clean up the property and make it safer, create new employment opportunities, and associated societal benefits to 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 lies in a Federal Emergency Management Agency (FEMA)-designated flood plain, in the AE Zone. 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 included as Appendix 3.

4.0 REMEDIAL ACTION

4.1 Summary of Preferred Remedial Action

The preferred remedial action alternative is Alternative 2, the Track 2 or 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 2 Restricted Residential/ Commercial or 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 2 Restricted Residential or Track 2 Commercial. Approximately 38% of the Site (the eastern portion, where the new building is to be constructed) will be excavated to a depth of approximately one to six feet below grade for development purposes. A small portion of property will be excavated to the depths of six feet below grade for hotspot soil removal.

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 underground storage tanks (USTs) that are encountered during soil/fill removal actions. Registration of tanks and reporting of any petroleum spills associated with USTs 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 eight-inch reinforced concrete over the Grace Preprufe 300R pre-applied integrally bonded waterproofing membrane, over an approximately three-inch mud slab over an approximately six-inch porous fill sub-base beneath all building areas; bituminous pavement with a 1.5-inch wearing course, 4-inch reused bituminous over a 2-inch base course, and 4-inch sand and gravel sub-base; 4-inch poured concrete on a 4-inch clean-stone sub-base in sidewalk areas; and minimum of 4-inches of clean soil topped with either grass or a weed-blocking geofabric with mulch in all open spaces and landscaped areas.

15. Installation of a waterproofing/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 waterproofing/vapor barrier system will consist of a 20-mil Grace Waterproofing Systems Prepufe 300R membrane below the slab throughout the full building 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 waterproofing/vapor barrier system was designed and properly installed to mitigate soil vapor migration into the building.

16. Construction and operation of a grade-level parking garage with high volume air exchange in conformance with NYC Building Code.

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. Dewatering in compliance with city, state, and federal laws and regulations. Extracted groundwater will either be containerized for off-site licensed or permitted disposal or will be treated under a permit from New York City Department of Environmental Protection (NYCDEP) to meet pretreatment requirements prior to discharge to the sewer system.

20. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.

21. 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.

22. 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.

23. Recording of a Declaration of Covenants and Restrictions that includes a listing of Engineering Controls and Institutional Controls 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.

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

4.2 Soil Cleanup Objectives and Soil/ Fill Management

Track 2 Restricted Commercial SCOs are proposed for this project and SCO's are defined in 6 NYCRR Part 375, Table 6.8 Track 2 Restricted Commercial Use. If these Track 2 SCO's are not achieved, the following site-specific SCO's will be utilized:

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

Contaminant	**Site-Specific SCO's**
Total SVOCs	250 ppm
Lead	1,000 ppm

Others parameters may be added or substituted by OER, as appropriate. These SCOs were established during a RAWP scoping meeting with OER on October 5, 2015.

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

Approximately 30% of the Site will be excavated to between one and six feet below grade for the new building. In addition, two hotspot areas will be excavated to six feet below grade. 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 50-60 tons for the hotspot areas; the remainder of the site is anticipated to be even cut-fill due to onsite reuse. For each disposal facility to be used in the remedial action, a letter from the developer/QEP to the receiving facility requesting approval for disposal and a letter back to the developer/QEP providing approval for disposal will be submitted to OER prior to any transport and disposal of soil at a facility.

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

End-point Sampling

End-point samples 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. Confirmation samples will be collected following materials removal from the base of the excavations at locations to be determined by OER. To evaluate attainment of Track 2 or 4 Site-specific SCOs, analytes will include those for which SCOs have been developed, including SVOCs and lead 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

Two hotspots have been identified at the Site, consisting of soils with elevated lead results. The hotspot locations were identified in the Remedial Investigation and consist of borings SB-1 and SB-5. No sidewall endpoint sampling will be conducted due to existing sample data fully defining the lateral extent of the hotspots. All soils surrounding the hotspots will be removed to the extent of the samples collected during the Remedial Investigation. Endpoint samples will be collected from the base of excavation at each of the two hotspot locations, according to the procedures listed below. 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 hotspots are fully removed and end-point samples will be collected at the following frequency:

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

2. For excavations 20 to 300 feet in perimeter:

    - For surface removals, one sample from the top of each sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area.

- For subsurface removals, one sample from each sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area.

3. For sampling of volatile organics, bottom samples should be taken within 24 hours of excavation, and should be taken from the zero to six-inch interval at the excavation floor. Samples taken after 24 hours should be taken at six to twelve inches.

4. For contaminated soil removal, post remediation soil samples for laboratory analysis should be taken immediately after contaminated soil removal. If the excavation is enlarged horizontally, additional soil samples will be taken pursuant to bullets 1-3 above.

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

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

Quality Assurance/Quality Control

The sampling procedures of this investigation will be performed in accordance with the NYSDEC Technical Guidance for Site Investigation and Remediation DER-10. Samples will be collected in accordance with the following

- Calibration of field equipment (including PID) on a daily basis, at a minimum;

- Recording of sample observations (field evidence of contamination, PID readings, soil classification, etc.) in field log book;

- Use of disposable/dedicated field sampling equipment to minimize cross-contamination between samples;

- Decontamination of non-disposable sampling equipment will consist of the following:
    - ✓ Tap or scrape to remove adhered solid material;
    - ✓ Rinse with distilled or deionized water;
    - ✓ Wash with Alconox ® or similar detergent solution;
    - ✓ Rinse with distilled or deionized water.
- Use of laboratory-supplied glassware, including glassware preservation associated with the analyses to be performed;
- Transportation of samples under property Chain of Custody protocol to the analytical laboratory, including the use of coolers and ice to maintain a sample temperature of 4º C. Samples will be transported by laboratory courier;
- One duplicate sample for every 20 samples collected will be submitted to the approved laboratory for analysis of the same parameters;
- Field blanks will be prepared by pouring distilled or deionized water over decontaminated equipment and collecting the water in laboratory provided containers.
- Trip blanks will be used when 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;
- Samples will be analyzed prior to the expiration of the respective holding time for each analytical parameter to ensure the integrity of the analytical results.
- Soil analytical results will be compared to the NYSDEC Part 375-6.8(a) Unrestricted Used Soil Cleanup Objectives and Part 375-6.8(b) Restricted Soil Cleanup Objectives.

Import of Soils

Soil import is not planned on this project.

Reuse of Onsite Soils

Reuse of onsite soils already onsite will be performed in conformance with the Soil/Materials Management Plan in Appendix 4. The estimated quantity of soil to be reused on this project is 2,000 to 5,800 tons, depending on final depths of excavation. Reuse soils will meet the SCO's established for this project. A map of soil backfill placement locations is shown in Figure 6.

4.3 Engineering Controls

Engineering Controls will be employed in the remedial action to address residual contamination remaining at the site. The Site has three primary Engineering Control Systems. These are:

(1) Composite Cover System

(2) Soil Vapor Barrier System

(3) Sub-grade ventilated garage

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 eight-inch reinforced concrete over the Grace Preprufe 300R pre-applied integrally bonded waterproofing membrane, over an approximately three-inch mud slab over an approximately six-inch porous fill sub-base beneath all building areas; bituminous pavement with a 1.5-inch wearing course, 2-inch base course, 4-inch reused bituminous, and 4-inch sand and gravel sub-base; 4-inch poured concrete on a 4-inch clean-stone sub-base in sidewalk areas; and minimum of 4-inches of clean soil topped with either grass or a weed-blocking geofabric with mulch in open space areas.

Figure 7 shows the location of each cover type built at the Site. Figure 8 shows the typical design for each remedial cover type used on this 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 waterproofing/vapor barrier. The vapor barrier will consist of Preprufe 300R, a product of Grace Waterproofing Systems. Below the building slabs, an integrally bonded waterproofing membrane will be applied to the underside of the structural slabs-on-grade. Preprufe 300R membranes are composite sheets comprised of a thick HDPE film, an aggressive pressure-sensitive adhesive, and a weather-resistant protective coating. The membranes are applied either horizontally below the slab or vertically on sidewalls and foundation walls. Concrete is then case directly against the adhesive side of the membranes. As the concrete cures, it forms an integral seal preventing water, moisture, and vapor transfer, essentially isolating the structure from the surrounding ground. Refer to Figure F-9A for the planned locations of the Preprufre 300R membranes, and Figure F-9B for slab and sidewall details.

The waterproofing/vapor barrier will extend throughout the area occupied by the footprint of the new building and up the foundation sidewalls and will be installed in accordance with manufacturer specifications. A plan view showing the location of the proposed vapor barrier system is provided in Figure F-9A. Typical design sections for the vapor barrier on slab and sidewalls are provided in Figure F-9B. Product specification sheets are provided in Appendix 5. The Remedial Action Report will include as-built drawings and diagrams; manufacturer documentation; and photographs.

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

The Vapor Barrier System is a permanent engineering control and will be inspected and its performance certified at specified intervals as required by this RAWP and the Site Management Plan. A Soil and Materials Management Plan will be included in the Site Management Plan and

will outline the procedures to be followed in the event that the composite cover system and underlying vapor barrier system is disturbed after the remedial action is complete. Maintenance of these systems will be described in the Site Management Plan in the Remedial Action Report.

4.4 Institutional Controls

A series of Institutional Controls (IC's) 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;
- Submittal of a SMP in the RAR for approval by OER that provides procedures for appropriate operation, maintenance, inspection, and certification of ECs and IC's. SMP will require that the property owner and property owner's successors and assigns will submit to OER a periodic written statement that certifies that: (1) controls employed at the Site are unchanged from the previous certification or that any changes to the controls were approved by OER; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. OER retains the right to enter the Site in order to evaluate the continued maintenance of any controls. This certification shall be submitted at a frequency to be determine by OER in the SMP and will comply with RCNY §43-1407(l)(3).
- Vegetable gardens and farming on the Site are prohibited in contact with residual soil materials;
- Use of groundwater underlying the Site is prohibited without treatment rendering it safe for its intended use;

- All future activities on the Site that will disturb residual material must be conducted pursuant to the soil management provisions in an approved SMP;
- The Site will be used for commercial/office 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: Three SVOCs consisting of polycyclic-aromatic hydrocarbons (PAHs) were detected including benzo(a)anthracene (max. of 6.1 mg/kg), benzo(a)pyrene (max. of 4.5 mg/kg), and benzo(b)fluroanthene(max. of 5.8 mg/kg) exceeding Track 2 Restricted Commercial Use SCOs. The metals barium and lead exceeded Track 2 Restricted Commercial Use SCOs during the initial RI in two hotspot locations.

Groundwater: No VOCs, SVOCs, PCBs, or pesticides were identified in the groundwater samples. Several total metals were identified above their respective NYS DEC Ambient Water Quality Standards (AWQS) (GA). However, the concentration of metals was greatly reduced from the total metal samples to the filtered, dissolved metals samples, with several compounds being reduced to below the AWQS (GA). The dissolved metals that remained above the AWQS are secondary contaminants, based on aesthetic considerations not health-based. Therefore there are no groundwater contaminants of concern at the site.

Soil Vapor: Soil vapor results identified petroleum-related compounds in both samples, as well as chlorinated hydrocarbons. The total concentration of petroleum-related VOCs (BTEX) ranged from 61.09 ug/m^3 to 77.46 ug/m^3. Three chlorinated VOCs, 1,1,1-trichloroethane (13.6 ug/m^3), tetrachloroethene ("PCE," max of 9.15 ug/m^3), and trichloroethene ("TCE," one sample at 3.24 ug/m^3) were detected in two samples. Carbon tetrachloride was not detected in any soil

vapor samples. The detected concentration of trichloroethene was within the monitoring range established by the NYSDOH.

Nature, Extent, Fate and Transport of Contaminants

Soil: Semi-volatile organic compounds (SVOCs) were identified in shallow soils across the site above Track 1 Unrestricted SCOs but below Track 2 Restricted Commercial Use SCOs. Two metals (barium and lead) were identified in two locations at the site above Track 2 Restricted Commercial Use SCOs in shallow soils; these locations have been delineated and will be remediated via hot spot excavation with offsite removal of affected soils. Both SVOCs and metals have low mobility and are not anticipated to migrate into the groundwater or to volatilize into soil vapor.

Groundwater: No VOCs, SVOCs, PCBs, or pesticides were identified in the groundwater samples. Several total metals were identified above their respective NYS DEC Ambient Water Quality Standards (AWQS) (GA). However, the concentration of metals was greatly reduced from the total metal samples to the filtered, dissolved metals samples, with several compounds being reduced to below the AWQS (GA). The dissolved metals that remained above the AWQS are secondary contaminants, based on aesthetic considerations not health-based. Therefore there are no groundwater contaminants of concern at the site.

Soil Vapor: Soil vapor results identified petroleum-related compounds in both samples collected, as well as chlorinated hydrocarbons. The total concentration of petroleum-related VOCs (BTEX) ranged from 61.09 ug/m^3 to 77.46 ug/m^3. Three chlorinated VOCs, 1,1,1-trichloroethane (in one sample), PCE (both samples), and TCE (one sample) were detected. Carbon tetrachloride was not detected in any soil vapor samples. The detected concentration of trichloroethene was within the monitoring range established by the NYSDOH. Based on the history of the site, it is believe all contaminants (BTEX and chlorinated VOCs) are emanating from an offsite source. The contaminants identified in the soil vapor samples were not detected in the soil samples or in the groundwater samples collected at the subject Site.

Receptor Populations

On-Site Receptors: The site is currently vacant, with a vacated former grocery store; access to the Site is restricted by a chained and locked perimeter fence around the property and the

building is locked at all times. 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 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.

Potential Exposure Points

Current Conditions: The site is currently capped with asphalt therefore there are no potential exposure pathways from ingestion, inhalation, or dermal absorption of soil/ fill. Groundwater is not exposed at the site. The site is served by the public water supply and groundwater is not used at the site for potable supply and there is no potential for exposure. Although the site is developed, the current site building is vacant and is planned to be demolished; therefore, there is no potential for soil vapor to accumulate on site.

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

Proposed Future Conditions: Under future remediated conditions, all soils in excess of Track 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) 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 require mitigation during implementation of the remedy. There are no complete exposure pathways under future conditions after the site is developed. This assessment takes into consideration the reasonably anticipated use of the site, which includes a commercial/office 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.

5.0 REMEDIAL ACTION MANAGEMENT

5.1 Project Organization and Oversight

Principal personnel who will participate in the remedial action include William Colgan (Project Manager). The Professional Engineer (PE) and Qualified Environmental Professionals (QEP) for this project are Marc Bowen (PE, Reuther + Bowen) and Basil Ellmers, III (QEP, Envirotactics, Inc.).

5.2 Site Security

Site access will be controlled by a plywood barricade installed prior to existing building demolition and will remain around the site during new construction. The construction entrance barricade will be unlocked during working hours and locked during non-working hours. There will be an on-site construction superintendent and/or designated trade foreman to execute and/or monitor and report on all aspects of the on-site construction activities and the securing of the site.

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

All field personnel involved in remedial activities will participate in training required under 29 CFR 1910.120, such as 40-hour hazardous waste operator training and annual 8-hour

refresher training. Site Safety Officer will be responsible for maintaining workers training records.

Personnel entering any exclusion zone will be trained in the provisions of the HASP and will comply with all requirements of 29 CFR 1910.120. Site-specific training will be provided to field personnel. Additional safety training may be added depending on the tasks performed. Emergency telephone numbers will be posted at the site location before any remedial work begins. A safety meeting will be conducted before each shift begins. Topics to be discussed include task hazards and protective measures (physical, chemical, environmental); emergency procedures; PPE levels and other relevant safety topics. Meetings will be documented in a log book or specific form.

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

5.5 Community Air Monitoring Plan

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

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

VOC Monitoring, Response Levels, and Actions

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

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

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

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate

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

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m3 above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m3 above the upwind level, work will be stopped and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m3 of the upwind level and in preventing visible dust migration.

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

5.6 Agency Approvals

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

5.7 Site Preparation

Pre-Construction Meeting

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

Mobilization

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

Utility Marker Layouts, Easement Layouts

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

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

Dewatering

Dewatering is anticipated during remediation and construction.

Dewatering will be performed in order to excavate soil and fill material below the water table (expected to be five to six feet below grade). Dewatering for this site will utilize a pumping system, settling tanks, and a treatment system (for sediment only) prior to discharge into the city sewer system. All required permits will be obtained from NYCDEP prior to any discharge of groundwater into the sewer system.

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 al soil or fill disposal;
- Photographic documentation of remedial work performed under this remedy;
- Site Management Plan (if Track 1 remedial action is not achieved);
- Description of any changes in the remedial action from the elements provided in this RAWP and associated design documents;
- Tabular summary of all end point sampling results (including all soil test results from the remedial investigation for soil that will remain on site) and all soil/fill waste characterization results, QA/QC results for end-point sampling, and other sampling and chemical analysis performed as part of the remedial action;
- Test results or other evidence demonstrating that remedial systems are functioning properly;
- Account of the source area locations and characteristics of all soil or fill material removed from the Site including a map showing the location of these excavations and hotspots, tanks or other contaminant source areas;
- Full accounting of the disposal destination of all contaminated material removed from the Site. Documentation associated with disposal of all material will include transportation and disposal records, and letters approving receipt of the material;

- Account of the origin and required chemical quality testing for material imported onto the Site;
- Continue registration of the property with an E-Designation by the NYC Department of Buildings (if Track 1 remedial action is not achieved);
- The RAWP and Remedial Investigation Report will be included as appendices to the RAR;
- 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 Stamp

PE License Number

Signature

Date

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 three to four 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	2	1
Remedial Excavation	5	12
Demobilization	17	1
Submit Remedial Action Report	22	4

Figure 1 - Site Location Map

Sources: Esri, DeLorme, HERE, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom

LEGEND

Subject Property

1 inch = 1,000 feet

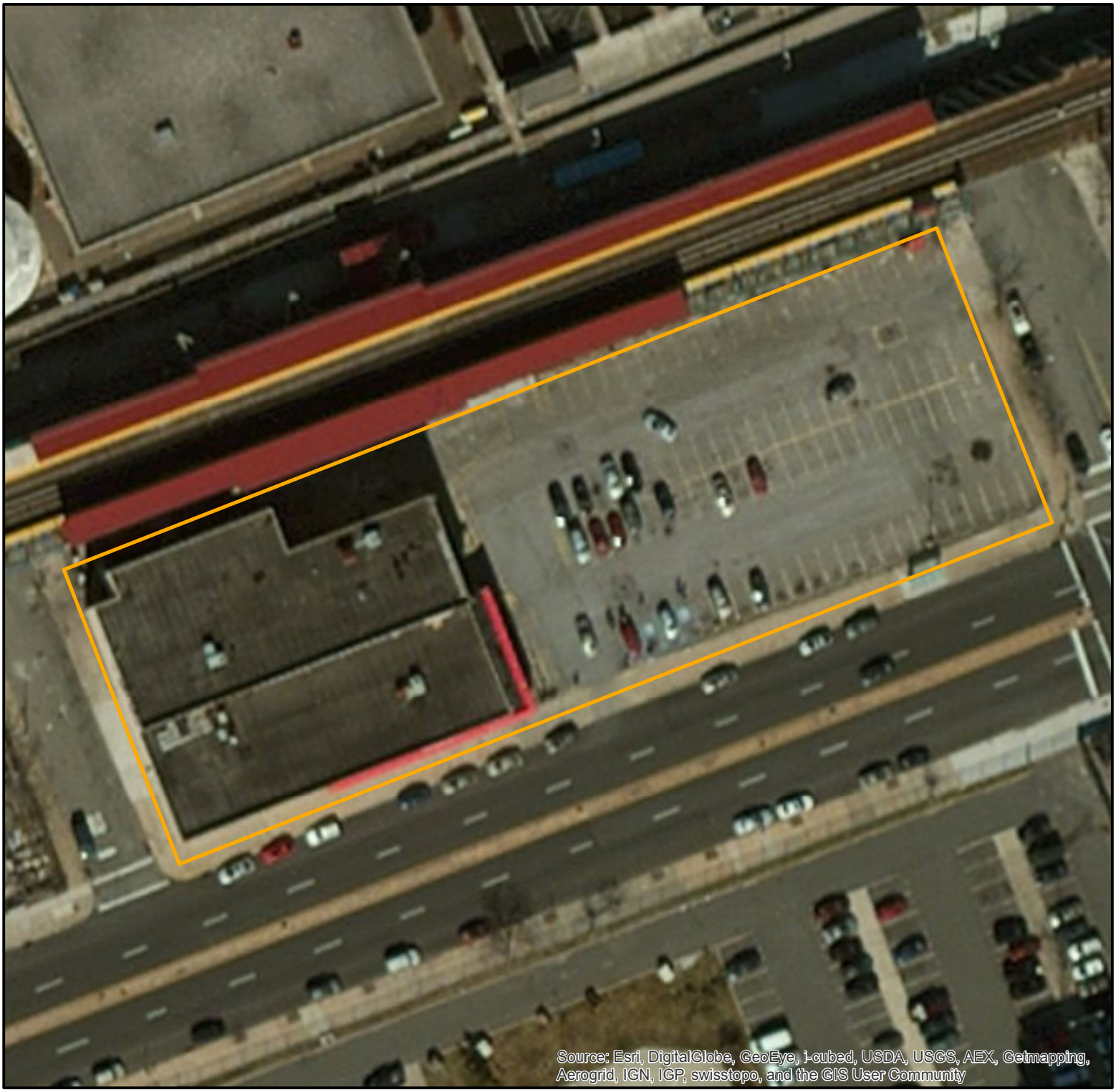
0 500 1,000 2,000 Feet

Project: 4138 **Date:** 8/18/15

Proposed Rockaway Medical Arts Complex
105-02 - 105-42 Rockaway Beach Blvd.
Block 16178, Lot 80
Queens, New York 11694

enviroTACTICS
Your Environmental Resource
1625 Highway 71, Wall, NJ 07719
Phone: 732.449.0077 Fax: 732.449.5810
www.envirotactics.com

Figure 2 - Site Map



LEGEND

Subject Property

Note: No areas of concern were identified by Phase I ESA prepared in April 2015.

1 inch = 60 feet

0 30 60 120 Feet

Project: 4138 **Date:** 8/18/15

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Figure □ - □□rr□□□d □□□□Land Use Map

LEGEND

Subject Property

- One & Two Family Residence
- Multi-Family Residence (Walkup)
- Multi-Family Residence (Elevator)
- Mixed Residential & Commercial
- Commercial Use
- Industrial / Manufacturing
- Transportation / Utility
- Public Facilities and Institutions
- Open Space & Recreation
- Parking
- Vacant Land

Project: 4138 Date: 8/18/15

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Figure 4 - Location of End-Point Samples

LEGEND

- Delineation Sample Locations
- Proposed End-Point Sample
- Subject Property

1 inch = 60 feet

0 30 60 120 Feet

Project: 4138 Date: 01/20/16

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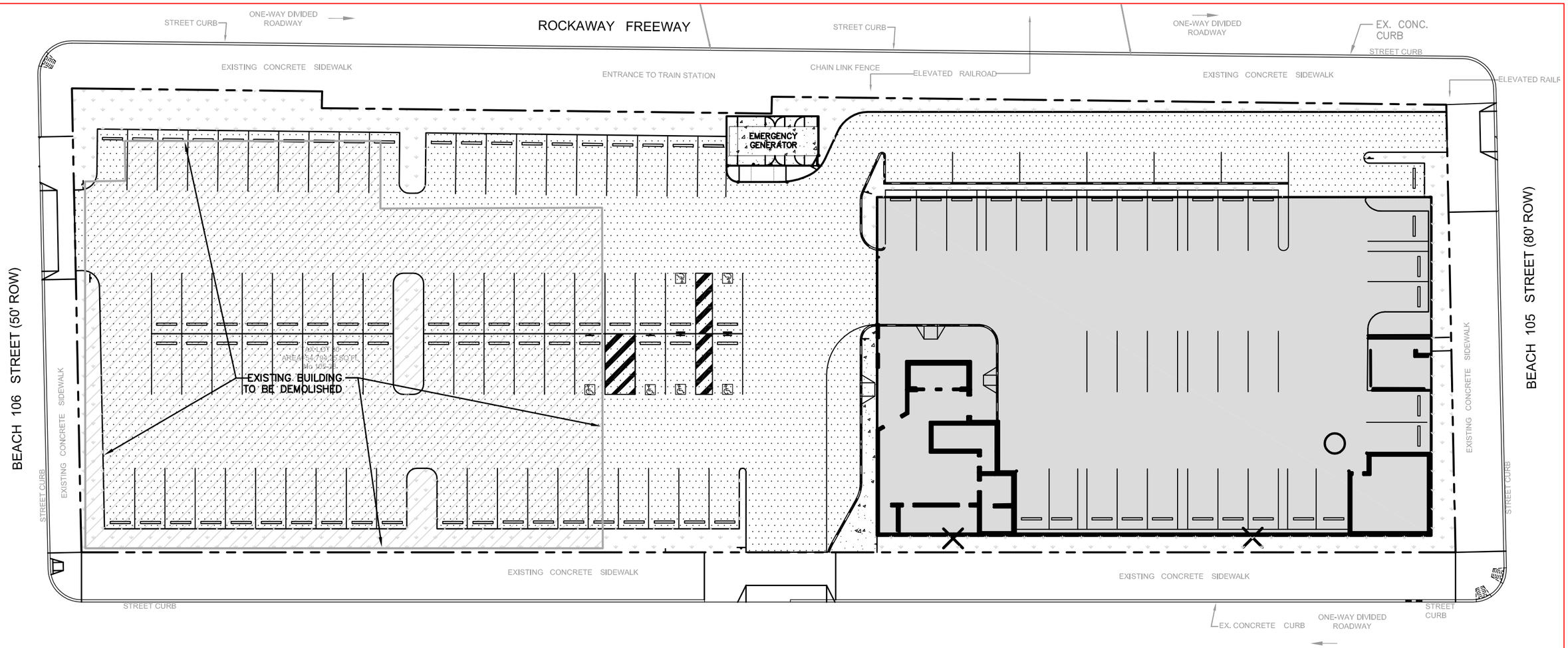


LEGEND
SITE IMPROVEMENTS

SYMBOL	DESCRIPTON
	BITUMINOUS PAVEMENT
	CONCRETE SIDEWALK / DRIVEWAY
	LANDSCAPING / TOPSOIL & SEED
	PROPOSED BUILDING
	EXISTING BUILDING TO BE DEMOLISHED

NOTES REGARDING SOIL / FILL REUSE AND BACKFILL PLACEMENT LOCATIONS

- THE INTENT OF THIS PROJECT IS TO REUSE ALL EXISTING SOIL FOR BACKFILL.
- NO SOIL WILL BE REMOVED FROM THE SITE.
- NO SOIL WILL BE BROUGHT INTO THE SITE FOR BACKFILL.
- ADDITIONAL BACKFILL THAT IS REQUIRED WILL BE EITHER ENGINEERED CLEAN STONE OR SUBBASE MATERIAL AS DIRECTED BY THE GEOTECHNICAL ENGINEER. THIS MATERIAL WILL BE REQUIRED UNDER STRUCTURES, PAVEMENT SURFACES, UTILITY BACKFILL, ETC.
- CLEAN TOPSOIL WILL BE BROUGHT TO THE SITE FOR LANDSCAPE AREAS.

PREPARED BY:
reuther+bowen
Engineering, Design, Construction Services
326 WARD ST. SCRANTON, PA 18512-2424
PHONE (570) 496-7020 FAX (570) 496-7021

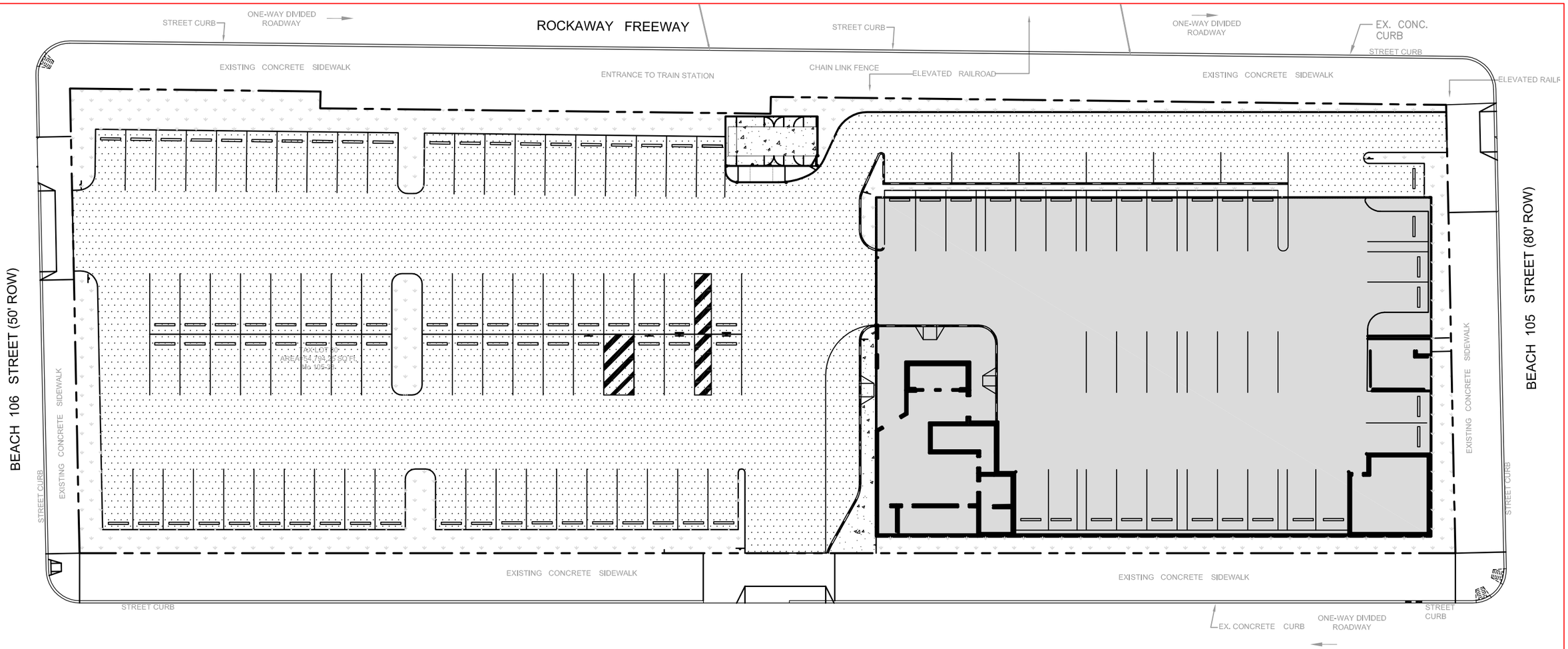
RONALD SCHMIDT & ASSOCIATES, P.A.
ARCHITECTURE · INTERIOR DESIGN
PLANNING · PROJECT MANAGEMENT
222 Grand Ave, Englewood, NJ 07631
Tel 201-567-5005 Fax 201-567-5773

PROJECT TITLE:
ROCKAWAY MEDICAL OFFICE BUILDING
105-38 ROCKAWAY BEACH BLVD., QUEENS, NY 11694

OWNER:
105 ROCKAWAY REALTY LLC

TITLE: SOIL/FILL REUSE AND BACKFILL PLACEMENT LOCATIONS

DATE ISSUED:	DRAWN BY:	SKETCH NO.
12/29/15	PM	F-6
SCALE: AS SHOWN	PROJECT NO: 3615.15	



LEGEND
SITE IMPROVEMENTS

SYMBOL	DESCRIPTON
	BITUMINOUS PAVEMENT
	CONCRETE SIDEWALK / DRIVEWAY
	LANDSCAPING / TOPSOIL & SEED
	PROPOSED BUILDING
	EXISTING BUILDING TO BE DEMOLISHED

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PROJECT TITLE:

ROCKAWAY MEDICAL OFFICE BUILDING

105-38 ROCKAWAY BEACH BLVD., QUEENS, NY 11694

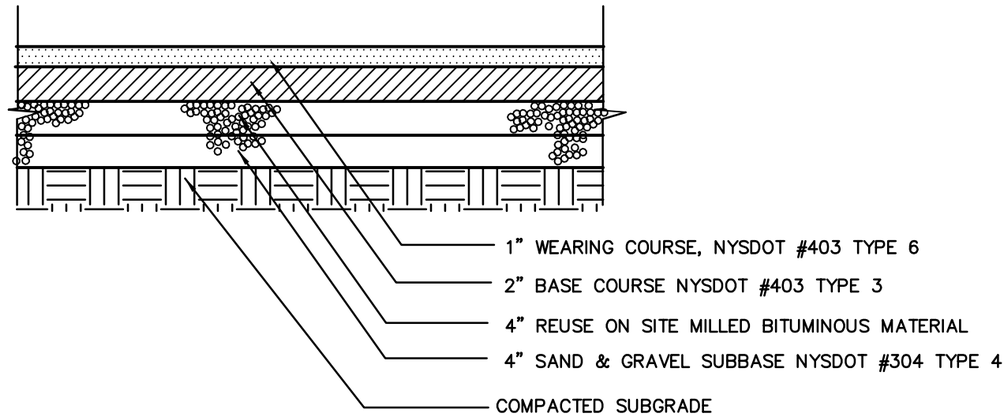
OWNER:

105 ROCKAWAY REALTY LLC

TITLE:

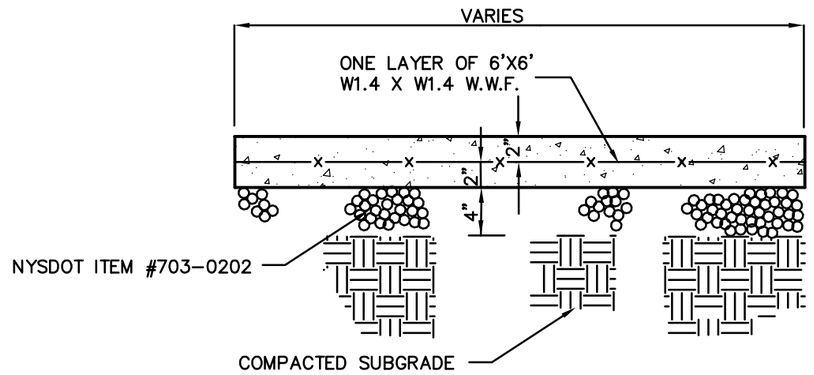
SITE-WIDE COVER SYSTEM PLAN

DATE ISSUED:	DRAWN BY:	SKETCH NO.
12/29/15	PM	F-7
SCALE: AS SHOWN	PROJECT NO: 3615.15	



BITUMINOUS PAVING SECTION

NOT TO SCALE

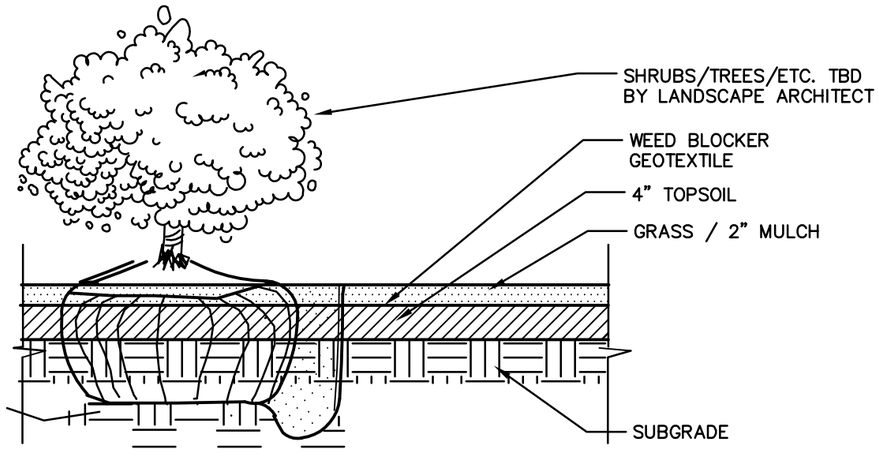


SIDEWALK NOTES

- NEW CONCRETE WALK TO HAVE 2 1/2" TROWELED EDGES, SCORE JOINTS APPROXIMATELY 5' O.C.
- PROVIDE A 1/2" THICK PREFORMED EXPANSION JOINT W\ 1/2" DEEP SEALANT APPROXIMATELY 50' O.C. OR WHERE WALK CHANGES OR ABUTS A STRUCTURE
- FLOAT WALKS AND PROVIDE A LIGHT BROOM FINISH

SECTION THROUGH CONCRETE SIDEWALK

NOT TO SCALE



LANDSCAPE SECTION

NOT TO SCALE

NOTES REGARDING COVER TYPES

- FOR BUILDING COVERAGE DETAILS & SECTIONS REFER TO ARCHITECTURAL PLANS
- AREAS UNDER BUILDING WILL HAVE BITUMINOUS PAVING OR CONCRETE SIDEWALK

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OWNER:
105 ROCKAWAY REALTY LLC

TITLE:
TYPICAL COVER DETAILS

DATE ISSUED:	DRAWN BY:	SKETCH NO.
12/29/15	PM	F-8
SCALE: AS SHOWN	PROJECT NO: 3615.15	

TO TRAIN STATION

PROPERTY LINE

PROPERTY LINE

LEGEND
SITE VAPOR BARRIERS

SYMBOL	DESCRIPTON
	PREPRUFE 300R PLUS INTEGRALLY BONDED WATER-PROOFING MEMBRANE

23'-9"

℄ PILE CAP

8'-8"

℄ PILE CAP

LINE INDICATES EXTENTS OF EXCAVATION FOR FOUNDATION SUPPORT OF EMERGENCY GENERATOR.

SEE SOE-100A & SOE-100B FOR OVERALL SITE PLAN AND ADJACENT TUNNEL CONSTRUCTION

EXISTING LINE OF ELEVATED MTA TRAIN. STRUCTURE TO REMAIN.

NO NEW UTILITIES ARE TO BE LOCATED ON OR ENTER FROM ROCKAWAY FREEWAY OR MTA SIDE OF BUILDING

SEE SOE-100A & SOE-100B FOR OVERALL SITE PLAN AND ADJACENT TUNNEL CONSTRUCTION

TO ROCKAWAY FREEWAY

1 2 3 4 5 6 7

19'-1" 29'-8" 30'-0" 30'-0" 30'-0" 26'-0" 16'-8"

162'-4"

TO BEACH 105TH STREET

℄ PILE CAP

13'-2"

PILE CAP AND GRADE BEAM SUPPORT FOR GENERATOR.

℄ PILE CAP

A

SEE SOE-100A & SOE-100B FOR OVERALL SITE PLAN

LINE INDICATES MAXIMUM EXTENTS OF EXCAVATION FOR MAIN BUILDING FOUNDATION.

PAVEMENT; SEE CIVIL

B

240' TO BEACH 106TH STREET

NO NEW UTILITIES ARE TO BE LOCATED ON OR ENTER FROM ROCKAWAY FREEWAY OR MTA SIDE OF BUILDING

50' MTA LIMIT LINE

50' MTA LIMIT LINE

ALL UTILITIES ARE TO ENTER FROM BEECH ST

26'-1"

0.5

24'-6"

B.8

8'-0"

C

98'-0"

8'-0"

C.3

9'-10"

C.5

4'-3"

C.6

12'-0"

D

16'-8"

+0"

+0"

+0"

PAVEMENT; SEE CIVIL

GROUND FLOOR CONSTRUCTION, TYP. COORD. WITH PLAN NOTES.

GROUND FLOOR CONSTRUCTION, TYP. COORD. WITH PLAN NOTES.

PROPERTY LINE

SEE SOE-100A & SOE-100B FOR OVERALL SITE PLAN

E

TO ROCKAWAY BEACH BOULEVARD

PROPERTY LINE

PROPERTY LINE

PREPARED BY:

reuther+bowen
Engineering, Design, Construction Services

326 WARD ST. SCRANTON, PA 18512-2424
PHONE (570) 496-7020 FAX (570) 496-7021

RONALD SCHMIDT & ASSOCIATES, P.A.
ARCHITECTURE · INTERIOR DESIGN
PLANNING · PROJECT MANAGEMENT

222 Grand Ave, Englewood, NJ 07631
Tel 201-567-5005 Fax 201-567-5773

PROJECT TITLE:

ROCKAWAY MEDICAL OFFICE BUILDING

105-38 ROCKAWAY BEACH BLVD., QUEENS, NY 11694

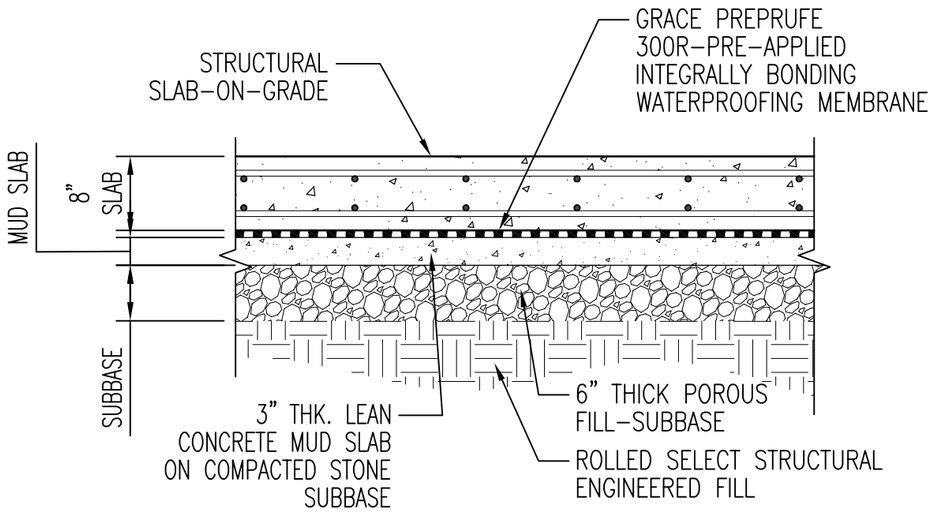
OWNER:

105 ROCKAWAY REALTY LLC

TITLE:

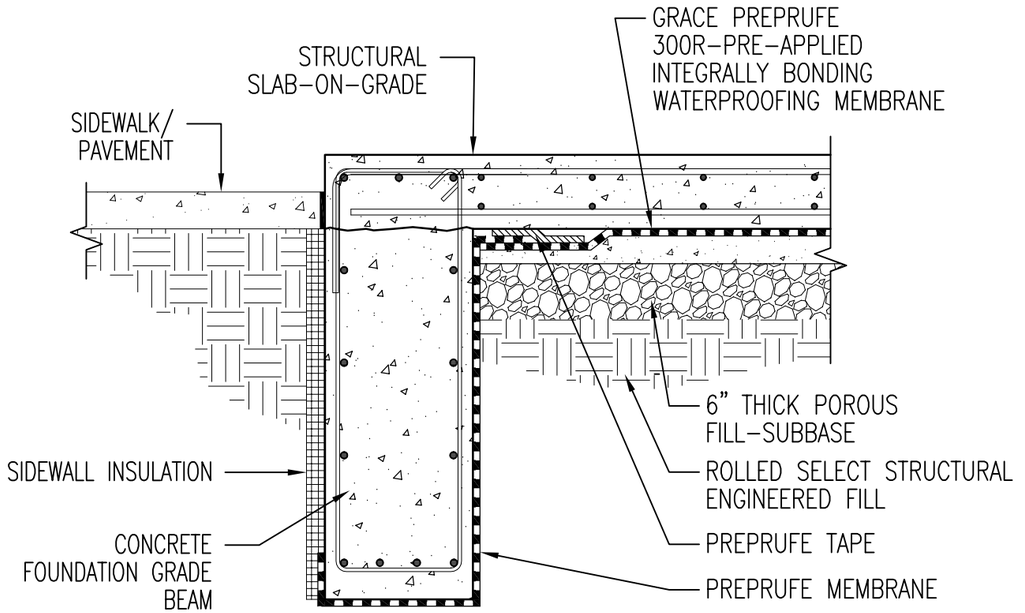
VAPOR BARRIER LAYOUT PLAN

DATE ISSUED:	DRAWN BY:	SKETCH NO.
1/8/16	DH	F-9A
SCALE: AS SHOWN	PROJECT NO: 3615.15	



WATERPROOFING/VAPOR BARRIER SLAB DETAIL

SCALE: 3/4" = 1'–0"



WATERPROOFING/VAPOR BARRIER FOUNDATION SIDEWALL DETAIL

SCALE: 3/4" = 1'–0"

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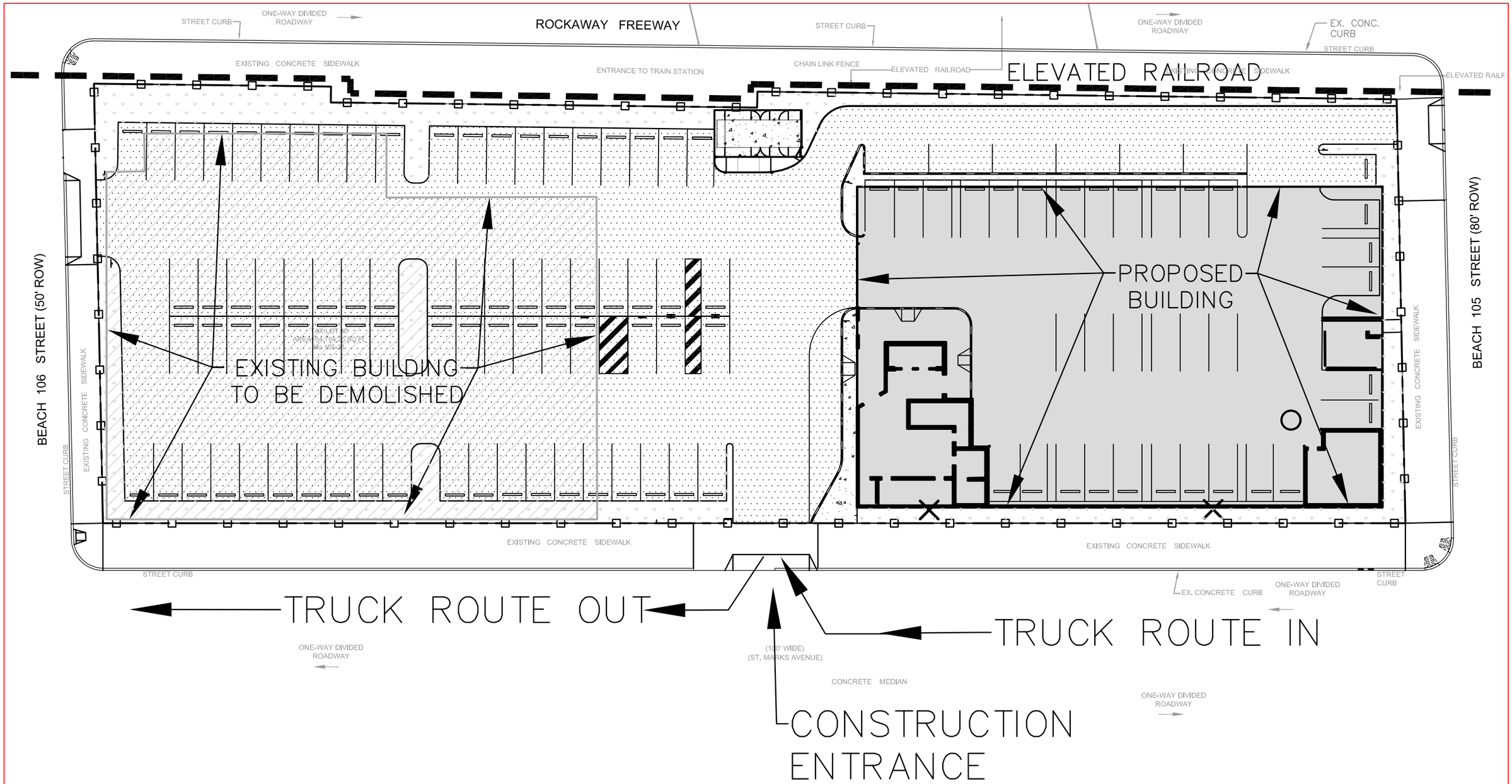
PROJECT TITLE:
ROCKAWAY MEDICAL OFFICE BUILDING
105-38 ROCKAWAY BEACH BLVD., QUEENS, NY 11694

OWNER:
105 ROCKAWAY REALTY LLC

TITLE:
VAPOR BARRIER INSTALLATION DETAILS

DATE ISSUED:	DRAWN BY:	SKETCH NO.
1/8/16	DH	F–9B
SCALE: AS SHOWN	PROJECT NO: 3615.15	



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PROJECT TITLE:

ROCKAWAY MEDICAL OFFICE BUILDING

105-38 ROCKAWAY BEACH BLVD., QUEENS, NY 11694

OWNER:

105 ROCKAWAY REALTY LLC

TITLE: TRUCK ROUTE

DATE ISSUED:	DRAWN BY:	SKETCH NO.
12/29/15	PM	F-10
SCALE: AS SHOWN	PROJECT NO: 3615.15	

APPENDIX 1 – PROPOSED DEVELOPMENT PLANS

ROCKAWAY MEDICAL ARTS COMPLEX

105 ROCKAWAY REALTY LLC

105-38 ROCKAWAY BEACH BLVD., QUEENS, NEW YORK 11694
BLOCK 16178 LOT 80 ZONE R5D (C2-3 OVERLAY)

PROJECT TEAM

ARCHITECT

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SYMBOLS

B	COLUMN REF. GRID
B A-4	SECTION REF. DWG. NO.
2 A-4	ELEVATION REF. DWG. NO.
	ELEVATION DESIGNATION
ROOM1 ###	ROOM NAME ROOM NUMBER
101	DOOR NUMBER
D1	DEMOLITION NOTES
	ELEVATION OR FLOOR LINE
△	REVISION
2A	PARTITION TYPE
A	WINDOWS TYPE
	EXIST. DOOR AND FRAME TO REMAIN
	NEW DOOR (SEE DOOR SCHEDULE)
═	EXIST. WALL TO REMAIN
- - -	WALL TO BE REMOVED
▬	NEW WALL (SEE PARTITION TYPES)

ABBREVIATIONS

A. F. F.	ABOVE FINISH FLOOR
A. D.	ACCESS DOOR
A. P.	ACCESS PANEL
A.C.T., A.T.	ACOUSTIC CEILING TILE
ALUM.	ALUMINUM
APPROX.	APPROXIMATE
A. D.	AREA DRAIN
@	AT
BLK.	BLOCK OR BLOCKING
BD.	BOARD
BOT./BTM.	BOTTOM
BRK.	BRICK
BLDG.	BUILDING
B. U. R.	BUILT UP ROOFING
CPT.	CARPET
C. I.	CAST IRON
CLG.	CEILING
CEM.	CEMENT
C. L. OR <	CENTER LINE
C. C.	CENTER TO CENTER
C.T.	CERAMIC TILE
CHKD. PL.	CHECKERED PLATE
CLOS./CL.	CLOSET
COL.	COLUMN
CONC.	CONCRETE
C. M. U.	CONCRETE MASONRY
CONST.	CONSTRUCTION
CONT.	CONTINUOUS
CJ	CONTROL JOINT
C. G.	CORNER GUARD
CU.	CUBIC
DET.	DETAIL
DIAM.	DIAMETER
DIM.	DIMENSION
DO.	DITTO
DN.	DOWN
DR.	DRAIN
DWG.	DRAWING
D.P.	DUST PROOFING
E.	EXISTING
ELEC.	ELECTRIC
ELEC. CAB.	ELECTRIC CABINET
EL.	ELEVATION
ELEV.	ELEVATOR
EQUIP.	EQUIPMENT
E. W. C.	ELECTRIC WATER COOLER
EXH.	EXHAUST
E.T.R	EXISTING TO REMAIN
EXP.	EXPOSED
EXT.	EXTERIOR
E.J.	EXPANSION JOINT
FAB.	FABRICATE
F. A. I.	FRESH AIR INTAKE
FBO	FURNISHED BY OTHERS
F. D.	FLOOR DRAIN
FDN.	FOUNDATION
F. G.	FINISH GRADE
F. E.	FIRE EXTINGUISHER
F. E. C.	FIRE EXTINGUISHER CABINET
F. P.	FIREPROOFING
FIN.	FINISH
FL.	FLOOR
FLOUR.	FLUORESCENT
FNDU	FEMININE NAPKIN DISPENSER UNIT
F. S.	FLOOR SINK
FT.	FEET
FTG.	FOOTING
GALV.	GALVANIZED
GA.	GAUGE
GL.	GLASS
GYP.	GYPSUM
GYP. BD.	GYPSUM BOARD
H.R.	HAND RAIL
HDWR.	HARDWARE
HDWD.	HARDWOOD
HT.	HEIGHT
H. P.	HIGH POINT
H. M.	HOLLOW METAL
HORIZ.	HORIZONTAL
HR.	HOUR
I. D.	INSIDE DIAMETER
INSUL.	INSULATION
INT.	INTERIOR
INV.	INVERT
JAN.CL./J.C.	JANITOR'S CLOSET
JT.	JOINT
K. P.	KICK PLATE
KIT.	KITCHEN
LAM.	LAMINATE
LAV.	LAVATORY
LB.	POUNDS
LT. WT.	LIGHT WEIGHT
L. P.	LOW POINT
MACH.	MACHINE
MH.	MANHOLE
M. O.	MASONRY OPENING
MAT'L.	MATERIAL
MAX.	MAXIMUM
MECH.	MECHANICAL
MEMB.	MEMBRANE
MET.	METAL
MFD.	METAL FLOOR DECK
MRD.	METAL ROOF DECK
MIN.	MINIMUM

MIR.	MIRROR
MISC.	MISCELLANEOUS
MLDG.	MOLDING
MDO	MEDIUM DENSITY OVERLAID
MDF	MEDIUM DENSITY FIBERBOARD
N.	NORTH
NAT.	NATURAL
N. I. C.	NOT IN CONTRACT
NO.	NUMBER
NOM.	NOMINAL
N. T. S.	NOT TO SCALE
OA.	OVERALL
O. C.	ON CENTER
OFF.	OFFICE
O.H.	OVERHEAD
OPNG.	OPENING
OPP.	OPPOSITE
PART.	PARTITION
PASS.	PASSENGER
PLAS.	PLASTER
PL. LAM.	PLASTIC LAMINATE
PL. OR >	PLATE
PLYWD.	PLYWOOD
POL.	POLISHED
PTD.	PAINTED
PTD	PAPER TOWEL DISPENSER
P. V. C.	POLYVINYL CHLORIDE
P. S. I.	POUNDS PER SQUARE INCH
P. B.	PUSH BUTTON
P.T.	PRESSURE TREATED
Q. T.	QUARRY TILE
RAD.	RADIUS
REINF.	REINFORCING
REF.	REFRIGERATOR
REQ'D.	REQUIRED
REV.	REVISION
R. D.	ROOF DRAIN
RM.	ROOM
R. O.	ROUGH OPENING
SECT.	SECTION
SERV.	SERVICE
S. S.	SERVICE SINK
SIM.	SIMILAR
SD	SOAP DISPENSER
SPECS.	SPECIFICATION
SF-INS.	SPRAY FIREPROOF -INSULATION
SQ.	SQUARE
SQ.FT.	SQUARE FEET
ST.STL.	STAINLESS STEEL
STD.	STANDARD
STL.	STEEL
STRUCT.	STRUCTURAL
SUSP.	SUSPENDED
S.J.	SCORE JOINT
T	TREAD
TEL.	TELEPHONE
TERR.	TERRAZZO
TEMP.	TEMPERED
TH.	THICKNESS
T.O.	TRIMMED OPENING
T.O.C.	TOP OF CURB
T.O.SL.	TOP OF SLAB
T.O.S.	TOP OF STEEL
TYP.	TYPICAL
U. L.	UNDERWRITER'S LABORATORY
UNF.	UNFINISHED
UR.	URINAL
UTIL.	UTILITY
UTL. S.	UTILITY SHELF
U.O.N.	UNLESS OTHERWISE NOTED
W. D.	WINDOW DIMENSION
W. GL.	WIRE GLASS
W/	WITH
WD.	WOOD
W.F.D.	WOOD FOLDING DOOR
VERT.	VERTICAL
VEST	VESTIBULE
V.	VINYL
V. C. T.	VINYL COMPOSITION TILE
V. B.	VINYL BASE
VOL.	VOLUME
W. C.	WATER CLOSET
W. C.	WALL COVERING
W. F.	WALL FABRIC
W. P.	WATERPROOF
WWF	WELDED WIRE FABRIC
WWM	WELDED WIRE MESH

PROJECT DATA & CODE REVIEW

BUILDING CODE CHECKLIST
Client: ROCKAWAY REALTY LLC
Proj. Title: ROCKAWAY MEDICAL ARTS COMPLEX
Proj.Address: 105-38 ROCKAWAY BEACH BLVD., QUEENS, NY 11694
Zoning: B - BUSINESS
Project Number: 15004

APPLICABLE CODE STANDARDS:
BUILDING CODE OF NEW YORK STATE (THE 2010 BCNYS),
PLUMBING CODE OF NEW YORK STATE (THE 2010 PCNYS),
MECHANICAL CODE OF NEW YORK STATE (THE 2010 MCNYS),
FUEL GAS CODE OF NEW YORK STATE (THE 2010 FGCNYS),
FIRE CODE OF NEW YORK STATE (THE 2010 FCNYS),
PROPERTY MAINTENANCE CODE OF NEW YORK STATE (THE 2010 PMCNYS)
EXISTING BUILDING CODE OF NEW YORK STATE (THE 2010 EBCNYS)
BARRIER FREE: 2003 ICC / ANSI A117.1

2008 NYC CONST. CODES - BUILDING, PLUMBING, MECHANICAL & FUEL GAS
2008 NYC FIRE CODE
2011 NYC ELECTRICAL CODE
2011 NYC ENERGY CONSERVATION CODE

Project Areas:
Proposed Construction: 62,593 sf

Number of Stories: 4 story

Chapter 3 Use Group:
Proposed: B Nonseparated Uses

Chapter 4 Special Use Group n/a

Chapter 6 TYPES OF CONSTRUCTION
Table 601 Bldg Construction Class IIB (NYC CODE)

Table 601 Fire resistance ratings of elements: Type	IIB	
Structural frame		
(columns, girders & trusses)	0	hr.
Bearing Walls		
exterior	0	hr.
interior	0	hr.
Non-bearing Walls Fire Separation Distance :		
interior	0	hr.
Floor construction	0	hr.
Roof construction	0	hr.
Smoke Compartment Barrier	1	hr.
Exit Stair	2	hrs.
Shaft connecting 3 or less	1	hr.
Shaft connecting 4 or less	2	hrs.
Separation between Ambulatory Health Care Occupancy & Other Bldg Occupancies	1	hr.

Chapter 7 FIRE RESISTANCE RATED CONSTRUCTION

Table 705.4 Firewall Rating 2 hr.
Note: Firewall can terminate at the underside of deck for Construction Type "IIB" as long as the roof is Class "B". Otherwise shall continue 30" (parapet) above the adjacent roofs.

Table 704.8

Max. area of Wall Openings	% protected
0 to 3'	0%
3' to 5'	0%
5' to 1'	10%
10' to 15'	15%
15' to 20'	25%
20' to 25'	45%
25' to 30'	70%
>30'	no limit

Chapter 10 MEANS OF EGRESS
Table 1016.1 Occupancy B
Length of travel 200 without sprinkler system
250 with sprinkler system

Sect. 1003.2.3 Capacity of exits:

Without Sprinklers		With Sprinklers	
Stairs	Others	Stairs	Others
.3 in.	.2 in.	.2 in.	.15 in.

Stair	44" wide min.
Corridor	44" wide min.
Single Door	3'-0" (34")
Double Door	6'-0" (70")

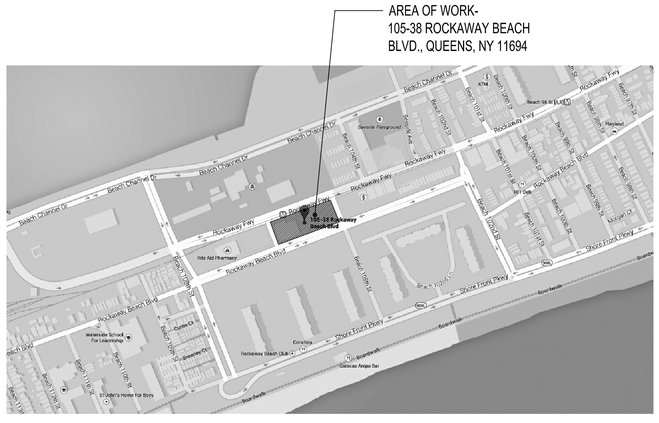
Table 1019.2	Bldg w/ 1 exit qualify?	no	
Sect. 1004.3.2.3	Dead end corridor max length	20 ft.	
Sect. 1003.3.3	Stair requirements meet?	yes	
Table 1018.1	Corridor Wall Fire rating:	0 hr	Sprinklered IIB building type
Sect. 1020.1	Stair wall enclosures	2 hr.	
	75 ft above egress grade?	no	
	Mech. ventilation?	no	
	Ramp Requirements meet?	NA	

Chapter 15 ROOF & ROOF STRUCTURES

Sect. 1505.1	Required Fire class for roof	C
	Provided Fire Class	
Sect. 1507	Min roof slope	2%
	Max roof slope	n/a

Chapter 26 PLASTICS

Table 2607.4	Size - individual panels	n/a
Sect. 2607.3	Ht. not > 75' above grade n/a	



KEY PLAN
NOT TO SCALE

GENERAL NOTES

1. ALL WORK PERFORMED SHALL BE IN ACCORDANCE WITH THE UNIFORM CONSTRUCTION CODE OF THE STATE OF NEW YORK AND THE RULES AND REGULATIONS OF ALL AGENCIES, DEPARTMENTS AND COMMISSIONS HAVING JURISDICTION.

2. WHERE DISCREPANCIES OCCUR AND/OR WHERE THERE ARE CONFLICTS OR OMISSIONS IN THE DRAWINGS AND APPLICATIONS, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT IMMEDIATELY AND REFRAIN FROM STARTING AND COMPLETING SUCH WORK, OR DEPENDENT WORK,.

3. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS IN THE FIELD PRIOR TO COMMENCING WORK.

4. MINOR DETAILS NOT USUALLY SHOWN OR SPECIFIED, BUT NECESSARY FOR PROPER CONSTRUCTION OF ANY PART OF THE WORK, SHALL BE INCLUDED AS IF THEY WERE INDICATED IN THE DRAWINGS.

5. CROSS-REFERENCING OF DRAWINGS IS FOR CONVENIENCE ONLY AND DOES NOT LIMIT APPLICATION OF ANY DRAWING.

6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL CONDITIONS AND MATERIALS WITHIN THE PROPOSED CONSTRUCTION AREAS. THE CONTRACTOR SHALL DESIGN AND INSTALL ADEQUATE SHORING AND BRACING FOR ALL STRUCTURAL OR REMOVAL TASKS. THE CONTRACTOR SHALL HAVE SOLE RESPONSIBILITY FOR ANY DAMAGE OR INJURIES CAUSED BY OR DURING THE EXECUTION OF THE WORK.

7. PROTECT ADJACENT EXISTING SURFACES, ETC. & SHALL REPAIR TO THE RESPECTIVE OWNER'S SATISFACTION ALL SUCH FEATURES DAMAGED DURING THE CONSTRUCTION OPERATION. ERECT TEMPORARY, DUST PARTITIONS, AND EROSION CONTROL AS REQUIRED.

8. REFER TO STRUCTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR ADDITIONAL GENERAL NOTES, ABBREVIATIONS AND SYMBOLS, AND LEGENDS. ALL NOTES ARE TO BE REVIEWED AND APPLIED TO RELATED BUILDING COMPONENTS

9. NOTES APPEAR ON VARIOUS SHEETS FOR VARIOUS SYSTEMS AND MATERIALS. SHEETS ARE TO BE REVIEWED AND NOTES ON ANY ONE SHEET ARE TO BE APPLIED TO RELATED SYSTEMS AND MATERIALS DEPICTED ON OTHER DRAWINGS. SPECIFICALLY EACH TRADE SHALL REVIEW AND COORDINATE WITH THE DOCUMENTS OF OTHER TRADES, IF WORK CAN BE REASONABLY INFERRED FROM OTHER TRADES DRAWINGS IT SHALL BE DEEMED INCLUDED.

10. DETAILS NOT SHOWN ARE SIMILAR IN CHARACTER TO THOSE THAT ARE SHOWN. WHERE SPECIFIC DIMENSIONS, DETAILS, OR DESIGN INTENT CANNOT BE DETERMINED, CONSULT THE ARCHITECT BEFORE PROCEEDING WITH THE WORK.

11. THE CONTRACTOR SHALL LAY OUT HIS OWN WORK, AND SHALL PROVIDE ALL DIMENSIONS REQUIRED FOR OTHER TRADES.

12. THE CONTRACTOR SHALL DO ALL CUTTING, PATCHING, AND REPAIRING AS REQUIRED TO PERFORM ALL OF THE WORK INDICATED ON THE DRAWINGS, AND ALL OTHER WORK THAT MAY BE REQUIRED TO COMPLETE THE JOB.

13. THE TERM "FINISHED FLOOR" WHERE INDICATED ON THE DRAWINGS REFERS TO THE NORMAL FINISHED FLOOR LEVEL OF THAT FLOOR.

14. UNLESS OTHERWISE INDICATED, HEIGHTS NOTED IN SCHEDULES ARE HEIGHTS ABOVE FINISHED FLOOR.

15. EXCEPT WHERE OTHERWISE INDICATED ALL INTERIOR DIMENSIONS ARE TO THE FINISHED SURFACE.

16. EXCEPT WHERE OTHERWISE INDICATED, ALL WALLS AND PARTITIONS ARE DIMENSIONED TO THEIR "NOMINAL" SIZES.

17. WHERE PIPES ARE TO BE CONCEALED, THE HUNG OR FURRED CEILINGS ARE NOT TO BE BUILT UNTIL THOSE PIPES HAVE BEEN TESTED.

18. CONSTRUCTION OF INTERIOR PARTITIONS SHALL BE COORDINATED TO PERMIT THE INSTALLATION OF DUCTS, PIPES, ETC. PRIOR THE FINAL ERECTION OF THESE WALLS.

19. FOR THE LOCATION OF ADDITIONAL CLEAN-OUT DOORS AND ACCESS DOORS IN PARTITIONS AND HUNG CEILINGS NOT SHOWN ON THE PLANS, REFER TO THE MECHANICAL AND PLUMBING PLANS AND PROVIDE ACCESS DOORS AT LOCATIONS REQUIRING ACCESS TO MECHANICAL EQUIPMENT, VALVES, ETC. THE ARCHITECT SHALL BE CONSULTED FOR FINAL LOCATIONS AND ACCESS DOOR SIZES. FIRE RATED ASSEMBLIES SHALL BE MAINTAINED.

20. PROVIDE METAL CLIPS OR ANCHORS AS REQUIRED FOR THE SUPPORT OF ALL FIREPROOFING/ FIRE STOPPING.

21. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL LINTELS, STRUTS, BRACKETS, HANGERS, ETC. WHEREVER NECESSARY TO SUPPORT OR BRACE ALL FINISHES, EQUIPMENT RECESSES, HEADS OVER OPENINGS, FURNITURE, ETC.

22. ALL EXTERIOR CORNERS AT GYPSUM WALLBOARD CONSTRUCTION SHALL HAVE METAL CORNER BEADS INSTALLED EXCEPT WHERE OTHERWISE DETAILED OR NOTED.

23. EXCEPT AS OTHERWISE INDICATED, DOOR SADDLES OR DIVIDING STRIPS ARE REQUIRED AT INTERIOR DOOR OPENINGS WHERE DIFFERENT TYPES OF FLOOR FINISHES OCCUR IN IMMEDIATELY ADJOINING ROOMS. WHERE ADJOINING ROOMS OR SPACES HAVE THE SAME KIND OF FLOOR COVERING OF A DIFFERENT COLOR, EXTEND THE FLOOR COVERING THROUGH THE DOOR OPENING AND FINISH AT TRANSITION POINT POSITION ON LINE OF CENTER DOOR WHEN DOOR IS CLOSED.

24. NOT USED

25. AT ALL LOUVERS, AREA NOT REQUIRED TO BE USED SHALL BE BLANKED OFF WITH 16-GA. METAL INSULATED BLANK-OFF PANEL, PAINTED COLOR TO MATCH LOUVERS. SCREENS SHALL BE PROVIDED AT ALL LOUVERS.

26. ALL EQUIPMENT SECURED TO INTERIOR GYPSUM WALL BOARD PARTITIONS SHALL BE SCREWED DIRECTLY TO METAL STUDS AND SOLID BLOCKING INSTALLED IN PARTITION.

27. NOT USED

28. ALL OPENINGS AT GYPSUM WALLBOARD PARTITIONS FOR DUCTS, ELECTRIC PANEL BOARD, ETC. ARE TO BE STEEL STUD FRAMED OPENINGS.

29. ALL ITEMS RECESSED INTO RATED PARTITIONS (SUCH AS OUTLET BOXES, PANEL BOXES, ETC.) SHALL HAVE THOSE OPENINGS PROTECTED WITH BACK-UP MATERIALS SO AS TO RETAIN THE INTEGRITY OF THE PARTITION RATING THROUGHOUT. PROTECTION OF THESE OPENINGS SHALL BE IN STRICT CONFORMITY WITH THE UNIFORM CONSTRUCTION CODE OF THE STATE OF NEW YORK.

30. CONTRACTOR SHALL MAINTAIN COMPLETE AND UP TO DATE DRAWINGS INCLUDING ALL ADDENDA AND PERMITS ON SITE AT ALL TIMES.

31. INSTALLATION OF LOOSE FURNISHINGS NOT INCLUDED IN THE CONTRACT MAY NEED TO BE COORDINATED WITH THE CONSTRUCTION WORK. CONTRACTOR SHALL PLAN FOR THIS EVENTUALITY & INCLUDE IN HIS PRICE.

32. NOT USED

LIST OF DRAWINGS

T-001.00 TITLE SHEET

ARCHITECTURAL

ELECTRICAL & FIRE ALARM
SEE ENGINEERING DWGS

PLUMBING
SEE ENGINEERING DWGS

MECHANICAL
SEE ENGINEERING DWGS

FIRE SPRINKLER
SEE ENGINEERING DWGS

REV	DATE	DESCRIPTION	BY
1	07/13/15	70 PERCENT CD SUBMISSION	JHC

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MECHANICAL ENGINEER

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STRUCTURAL ENGINEER

LIC.NO. 21AI00474500

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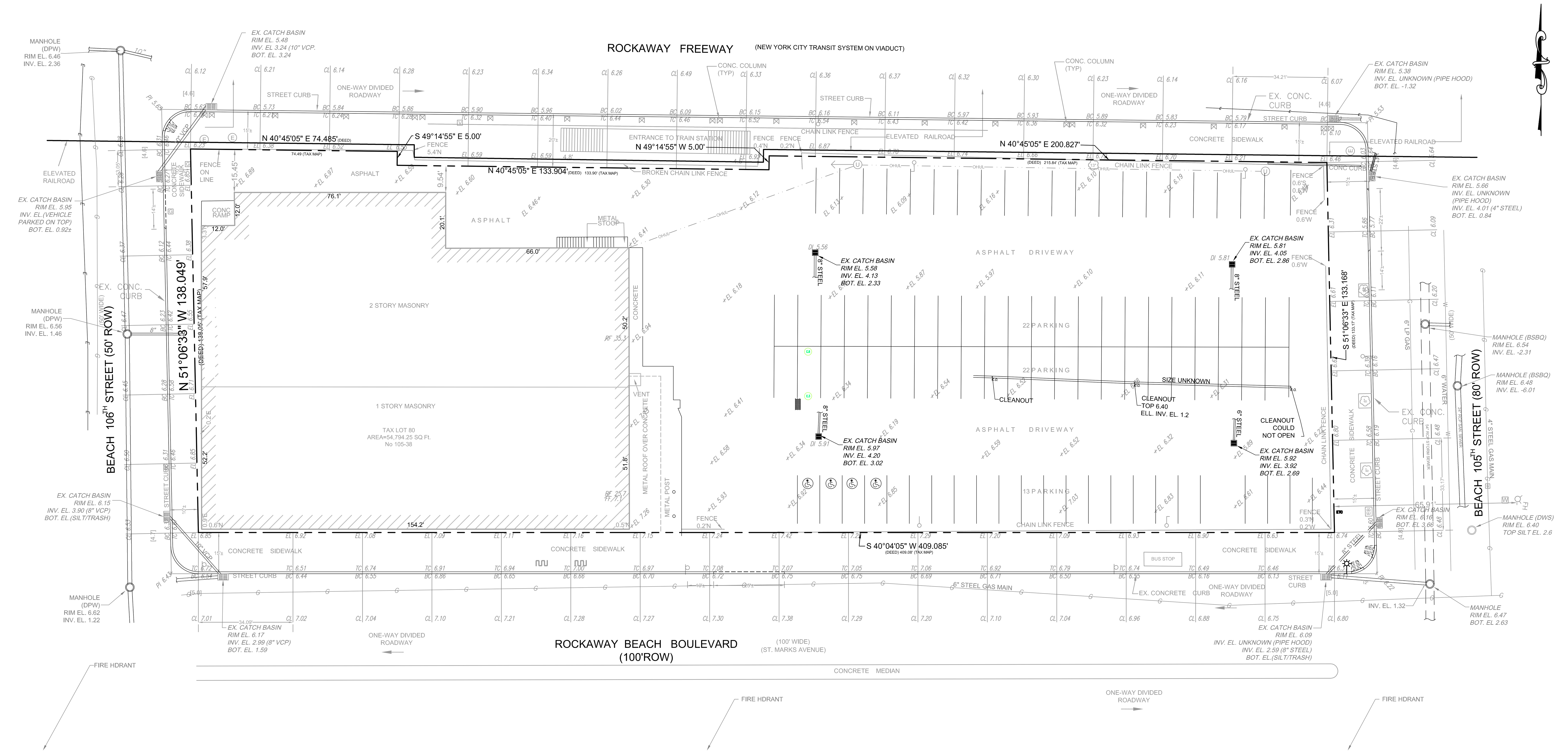
105 ROCKAWAY REALTY LLC
ROCKAWAY MEDICAL OFFICE BUILDING
105-38 ROCKAWAY BEACH BLVD., QUEENS, NY 11694

TITLE SHEET

JOB NO. 15004
SCALE SEE DWG
DRAWN BY JHC
CHECKED
DATE 06/04/15
DRAWING NO.
T-001.00
1 OF XX



GRAPHIC SCALE

(IN FEET)
1 inch = 20 ft.

LEGEND
EXISTING CONDITIONS

SYMBOL	DESCRIPTON
	PROPERTY LINE
	EXISTING CURB
EL 6.85	SPOT ELEVATION
	CATCH BASIN
	LIGHT POLE
OHUL	OVERHEAD UTILITY LINE
	CONCRETE COLUMNS
E	ELECTRIC MANHOLE
	EDGE OF ELEVATED RAILROAD
	FENCE LINE (VARIABLE SIZE)
	TRAFFIC LIGHT
	HANDICAP PARKING SPACE
G	GAS LINE
	GAS VALVE
E	UNDERGROUND ELECTRIC

OWNER / DEVELOPER: 105 ROCKAWAY REALTY, LLC
2 Broad St, Suite 400
Bloomfield, NJ 07003-2547
CONTACT: William T. Colgan
PHONE NO: 973-429-7900 x 217
wtcolgan@cha-properties.com

BLOCK: 16178
LOT: 80
ZONING MAP: 30a
ZONING (PRIMARY) R5D
ZONING (COMM. OVERLAY) C2-3
NOTE: ZONING NORTH OF ROCKAWAY FREEWAY IS M-1, WHICH IS A MINIMUM OF 50' AWAY FROM THIS PROPERTY.
FEMA FLOODMAP: 3604970379F
NO. OF PROPOSED STORIES: 3
THERE ARE NO WETLANDS LOCATED ON OR NEAR THIS PROPERTY
COASTAL EROSION HAZARD AREA MAP: QUEENS COUNTY, NEW YORK, SHEET 7 OF 10
LITTLE E DESIGNATION:
AIR QUALITY - #2 FUEL OIL OR NATURAL GAS HEAT AND HOT WATER
EXHAUST STACK LOCATION LIMITATIONS
HAZARDOUS MATERIALS PHASE I AND PHASE II TESTING PROTOCOL
LANDMARKS ON OR NEAR SITE: N/A
HISTORIC DISTRICTS ON OR NEAR SITE: N/A

MECHANICAL ENGINEER

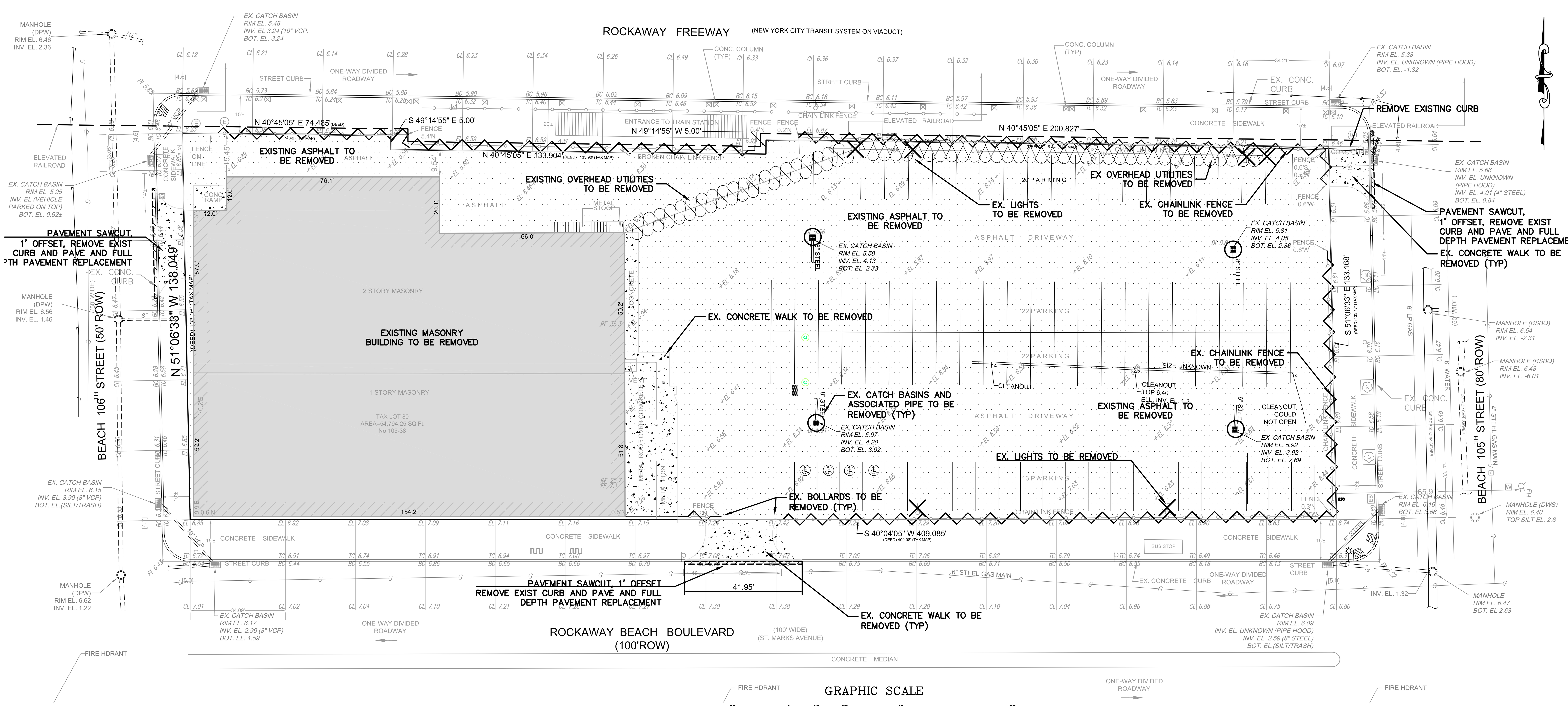
CIVIL & STRUCTURAL ENGINEER

RONALD SCHMIDT & ASSOCIATES, P.A.
ARCHITECTURE · INTERIOR DESIGN
PLANNING · PROJECT MANAGEMENT

105 ROCKAWAY REALTY LLC
ROCKAWAY MEDICAL OFFICE BUILDING
105-38 ROCKAWAY BEACH BLVD., QUEENS, NY 11694

EXISTING CONDITION PLAN

JOB NO. 15004
SCALE 1" = 20'
DRAWN BY DPL
CHECKED MB
DATE 05/19/15
DRAWING NO.
E-1



GRAPHIC SCALE

(IN FEET)
1 inch = 20 ft.

LEGEND
SITE DEMOLITION

SYMBOL	DESCRIPTON
	BUILDING TO BE REMOVED
	CONCRETE WALK TO BE REMOVED
	FENCE TO BE REMOVED
	ASPHALT TO BE REMOVED
	OVERHEAD UTILITY LINE TO BE REMOVED
	LIGHT & UTILITY POLE TO BE REMOVED
	STORM WATER CATCH BASINS AND ASSOCIATED PIPE TO BE REMOVED
	SOIL RESTORATION

GENERAL DEMOLITION AND EARTHWORK NOTES:

1. ALL DEMOLITION ACTIVITIES ARE TO BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AS WELL AS ALL FEDERAL, STATE AND LOCAL REGULATIONS. ANY DISCREPANCIES OR DEVIATIONS IDENTIFIED BY THE CONTRACTOR SHALL BE REPORTED TO THE ENGINEER IN WRITING FOR RESOLUTION PRIOR TO INITIATION OF ACTIVITY.

2. THE FIRM OR ENGINEER OF RECORD IS NOT RESPONSIBLE FOR JOB SITE SAFETY OR SUPERVISION. CONTRACTOR IS TO PROCEED WITH THE DEMOLITION IN A SYSTEMATIC AND SAFE MANNER, FOLLOWING ALL THE OSHA REQUIREMENTS AND OTHER FEDERAL, STATE, AND LOCAL REGULATIONS, TO ENSURE THE PUBLIC AND CONTRACTOR SAFETY.

3. PRIOR TO STARTING ANY DEMOLITION CONTRACTOR IS RESPONSIBLE FOR/TO:

   A. ENSURE COPIES OF ALL PERMITS AND APPROVALS ARE ON SITE FOR REVIEW.

   B. ALL EXISTING UTILITIES AND SERVICES, INCLUDING BUT NOT LIMITED TO GAS, WATER, ELECTRIC, SANITARY AND STORM SEWER, TELEPHONE, CABLE, FIBER OPTIC CABLE, ETC. WITHIN THE LIMITS OF DISTURBANCE, SHALL BE VERTICALLY AND HORIZONTALLY LOCATED. THE CONTRACTOR SHALL USE AND COMPLY WITH THE REQUIREMENTS OF THE APPLICABLE UTILITY NOTIFICATION SYSTEM TO LOCATE ALL THE UNDERGROUND UTILITIES.

   C. THE REQUIRED SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN PLACE PRIOR TO SITE DISTURBANCE.

   D. PROTECT AND MAINTAIN IN OPERATION, ALL ACTIVE SYSTEMS THAT ARE NOT BEING REMOVED DURING DEMOLITION ACTIVITIES.

   E. FAMILIARIZE THEMSELVES WITH THE APPLICABLE UTILITY SERVICE PROVIDER REQUIREMENTS AND IS RESPONSIBLE FOR ALL COORDINATION REGARDING UTILITY DEMOLITION AND RELOCATION AS IDENTIFIED OR REQUIRED FOR THE PROJECT. THE CONTRACTOR SHALL PROVIDE THE OWNER WRITTEN NOTIFICATION THAT THE EXISTING UTILITIES AND SERVICES HAVE BEEN TERMINATED AND ABANDONED IN ACCORDANCE WITH JURISDICTION AND UTILITY COMPANY REQUIREMENTS.

   F. COORDINATE WITH UTILITY COMPANIES REGARDING WORKING "OFF-PEAK" HOURS OR ON WEEKENDS AS MAY BE REQUIRED TO MINIMIZE THE IMPACT OF THE AFFECTED PARTIES

   G. A COMPLETE INSPECTION FOR CONTAMINANTS, BY A LICENSED ENVIRONMENTAL TESTING AGENCY, OF ALL BUILDINGS AND/OR STRUCTURES TO BE REMOVED SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL ENVIRONMENTAL REGULATIONS. ALL CONTAMINANTS SHALL BE REMOVED AND DISPOSED OF BY A FEDERALLY LICENSED CONTRACTOR IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS. ALL ENVIRONMENTAL WORK INCLUDING HAZARDOUS MATERIAL, SOILS, ASBESTOS, OR OTHER REFERENCED OR IMPLIED HEREIN IS SOLELY THE RESPONSIBILITY OF THE OWNERS'S ENVIRONMENTAL CONSULTANT.

4. THE CONTRACTOR SHALL PROVIDE AL THE "MEANS AND METHODS" NECESSARY TO PREVENT MOVEMENT, SETTLEMENT, OR COLLAPSE OF EXISTING STRUCTURES AND ANY OTHER IMPROVEMENTS TO REMAIN ON OR OFF SITE.

5. IN ABSENCE OF SPECIFIC SPECIFICATION, THE CONTRACTOR SHALL PERFORM EARTHMOVING ACTIVITIES, DEMOLITION AND REMOVAL OF ALL FOUNDATION WALLS, FOOTINGS, AND OTHER MATERIALS WITHIN THE LIMITS OF DISTURBANCE IN ACCORDANCE WITH DIRECTION BY OWNER'S ENGINEER.

6. EXPLOSIVES SHALL NOT BE USED WITHOUT PRIOR WRITTEN CONSENT OF BOTH THE OWNER AND APPLICABLE GOVERNMENTAL AUTHORITIES. ALL THE REQUIRED PERMITS AND EXPLOSIVE CONTROL MEASURES THAT ARE REQUIRED BY THE FEDERAL, STATE, AND LOCAL GOVERNMENTS SHALL BE IN PLACE PRIOR TO STARTING AN EXPLOSIVE PROGRAM. THE CONTRACTOR IS ALSO RESPONSIBLE FOR ALL INSPECTION AND SEISMIC VIBRATION TESTING THAT IS REQUIRED TO MONITOR THE EFFECTS ON ALL LOCAL STRUCTURES.

7. CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL AND GENERALLY ACCEPTED SAFE PRACTICES IN CONFORMANCE WITH: THE "MANUAL ON UNIFORM TRAFFIC CONTROL", AS WELL AS FEDERAL, STATE AND LOCAL REGULATIONS WHEN DEMOLITION RELATED ACTIVITIES IMPACT ROADWAYS AND ROADWAY RIGHT-OF-WAYS.

GENERAL DEMOLITION AND EARTHWORK NOTES (CON'T)

8. CONDUCT DEMOLITION ACTIVITIES IN SUCH A MANNER TO ENSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, SIDEWALKS, WALKWAYS, AND OTHER ADJACENT FACILITIES. STREET CLOSURE PERMITS MUST BE RECEIVED FROM THE APPROPRIATE GOVERNMENTAL AGENCY.

9. DEMOLITION ACTIVITIES AND EQUIPMENT SHALL NOT USE AREAS OUTSIDE THE DEFINED PROPERTY LINES, WITHOUT WRITTEN PERMISSION OF THE OWNER, AND/OR APPROPRIATE GOVERNMENT AGENCY.

10. USE DUST CONTROL MEASURES TO LIMIT THE AMOUNT OF AIRBORNE DUST AND DIRT RISING AND SCATTERING IN THE AIR TO WITHIN FEDERAL, STATE, AND/OR LOCAL STANDARDS. AFTER THE DEMOTION IS COMPLETE, ADJACENT STRUCTURES AND IMPROVEMENTS SHALL BE CLEANED OF ALL DUST AND DEBRIS CAUSED BY THE DEMOLITION OPERATIONS. THE CONTRACTOR IS RESPONSIBLE FOR RETURNING ALL ADJACENT AREAS TO THEIR "PRE-DEMOLITION" CONDITION.

11. CONTRACTOR IS RESPONSIBLE TO SAFEGUARD THE SITE AS NECESSARY TO PERFORM THE DEMOLITION IN SUCH A MANNER AS TO PREVENT THE UNAUTHORIZED ENTRY OF PERSONS AT ANY TIME.

12. THE DEMOLITION PLAN IS INTENDED TO IDENTIFY THOSE EXISTING ITEMS/CONDITIONS WHICH ARE TO BE REMOVED. IT IS NOT INTENDED TO PROVIDE DIRECTION OTHER THAN THAT ALL METHODS AND MEANS ARE TO BE IN ACCORDANCE WITH FEDERAL, STATE, LOCAL AND JURISDICTIONAL REQUIREMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL OSHA AND OTHER SAFETY PRECAUTIONS NECESSARY TO PROVIDE A SAFE WORK SITE.

13. THE DEMOLITION CONTRACTOR IS RESPONSIBLE FOR ALL REPAIRS OF DAMAGE TO ALL ITEMS THAT ARE TO REMAIN AS A RESULT OF HIS ACTIVITIES. ALL REPAIRS SHALL USE NEW MATERIAL. THE REPAIR SHALL RESTORE THE ITEM TO PRE-DEMOLITION CONDITION.

14. DEBRIS SHALL NOT BE BURIED ON THE SUBJECT SITE. ALL EXCAVATED MATERIAL AND DEBRIS (SOLID WASTE) SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL MUNICIPAL, COUNTY, STATE AND FEDERAL LAWS AND APPLICABLE CODES. CONTRACTOR SHALL PROPERLY REMOVE AND DISPOSE OF HAZARDOUS/UNSUITABLE MATERIAL OFFSITE IN ACCORDANCE WITH ALL APPLICABLE CODES, ORDINANCES, AND LAWS.

15. THE CONTRACTOR SHALL COORDINATE SERVICE SHUTOFF AND DISCONNECT / REMOVAL PROCEDURES WITH EACH RESPECTIVE UTILITY COMPANY FOR THE EXISTING UTILITIES SHOWN TO BE REMOVED.

16. THE DEMOLITION PLAN IS NOT INTENDED TO SHOW EROSION CONTROL MEASURES. FOR SUCH GUIDELINES AND DETAILS, SEE THE EROSION AND SEDIMENT CONTROL PLAN AND DETAILS.

17. SEE SITE LAYOUT PLAN FOR ADDITIONAL NOTES.

REV	DATE	DESCRIPTION	BY

MECHANICAL ENGINEER

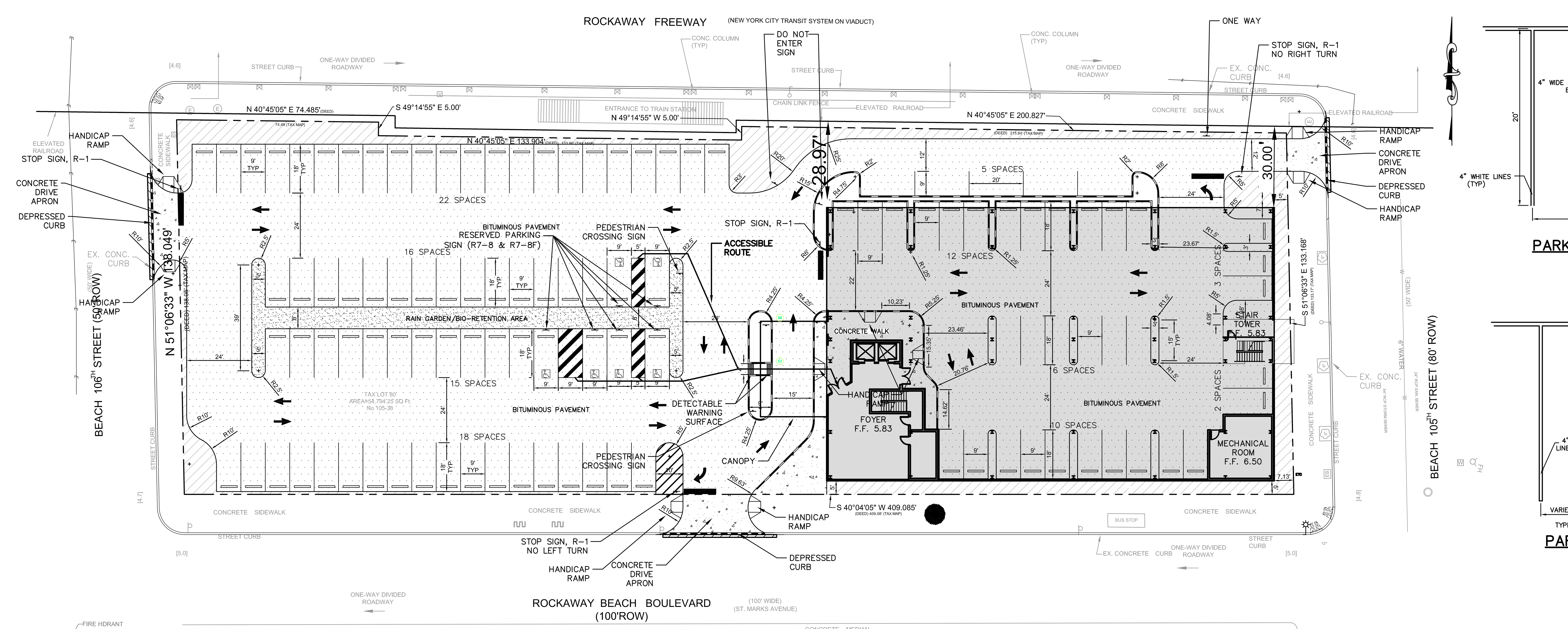
CIVIL & STRUCTURAL ENGINEER
reuther+bowen Engineering, Design, Construction Services

RONALD SCHMIDT & ASSOCIATES, P.A.
ARCHITECTURE · INTERIOR DESIGN
PLANNING · PROJECT MANAGEMENT
222 Grand Ave, Englewood, NJ 07631

105 ROCKAWAY REALTY LLC
ROCKAWAY MEDICAL OFFICE BUILDING
105-38 ROCKAWAY BEACH BLVD., QUEENS, NY 11694

SITE DEMOLITION PLAN

JOB NO.	15004
SCALE	1" = 20'
DRAWN BY	DPL
CHECKED	MB
DATE	06/04/15
DRAWING NO.	DE-1
OF	



GENERAL NOTES

1. STORM FLOW OF ____CFS WILL BE RESTRICTED TO ____CFS BY MEANS OF DETENTION FACTILITIES AND FLOW CONTROL DEVICES.

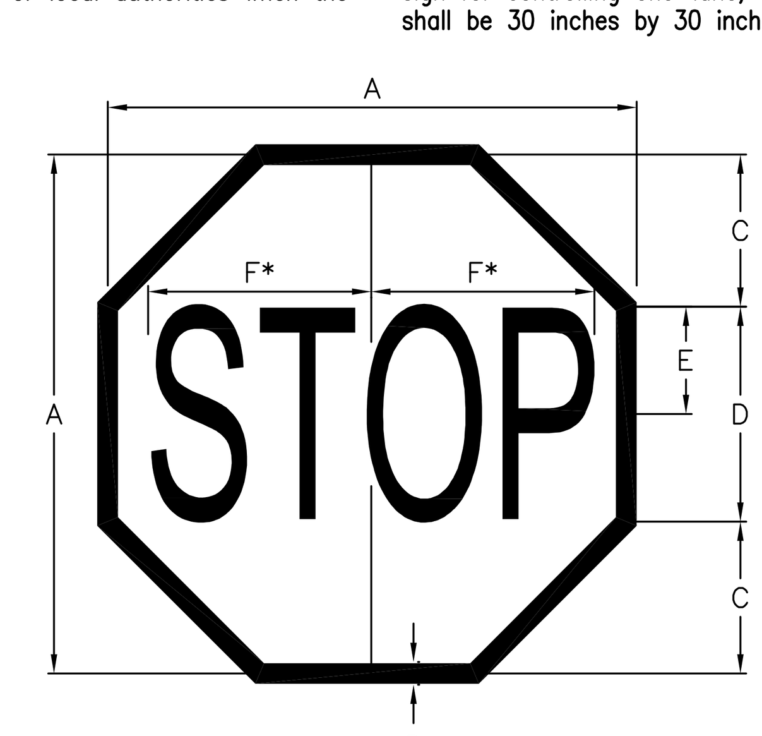
STOP SIGN, R1–1

(a) Justification. The Stop Sign, R1–1, is authorized for use on those streets or highways which intersect with a through highway or at a stop intersection so designated by the Department with reference to State–designated highways or local authorities with reference to highways under their jurisdiction. The R1–1 sign is also authorized for use in work zones involving one–lane, two–way roadways in accordance with Chapter 203 (relating to work zone traffic control).

(b) Authorization. Before local authorities designate any highwayas as a through highway or stop intersection which will intersect or affect a State designated highway, approval of such designation shall first be obtained from the Department. Approval to install R1–1 signs in work areas shall not require the approval of the Department or local authorities when the conditions stipulated in Chapter 203 (relating to work zone traffic control) are satisfied.

(c) Placement. The R1–1 sign shall be placed as provided in 211.51 (relating to location of stop and yield signs), or in accordance with Chapter 203 (relating to work zone traffic control). When the number of stop approaches to an intersection is three or more, or two or more at an intersection involving two one–way streets, the Multiway Stop Sign R1–3, shall be placed below each Stop Sign.

(d) Size. The standard size R1–1 sign shall be 30 inches; however, at intersections on minor roads and secondary streets, a 24–inch by 24–inch sign may be used. In work zones, the standard R1–1 sign for controlling one–lane, two–way traffic shall be 30 inches by 30 inches.



COLOR: LEGEND AND BORDER — WHITE (REFLECTORIZED)
BACKGROUND — RED (REFLECTORIZED)

A	B	C	D	E	F
18	.375	6	6 C	3	7.75
24	.625	8	8 C	4	10
30	.75	10	10 C	5	12.5
36	.875	12	12 C	6	15
48	1.25	16	16 C	8	20

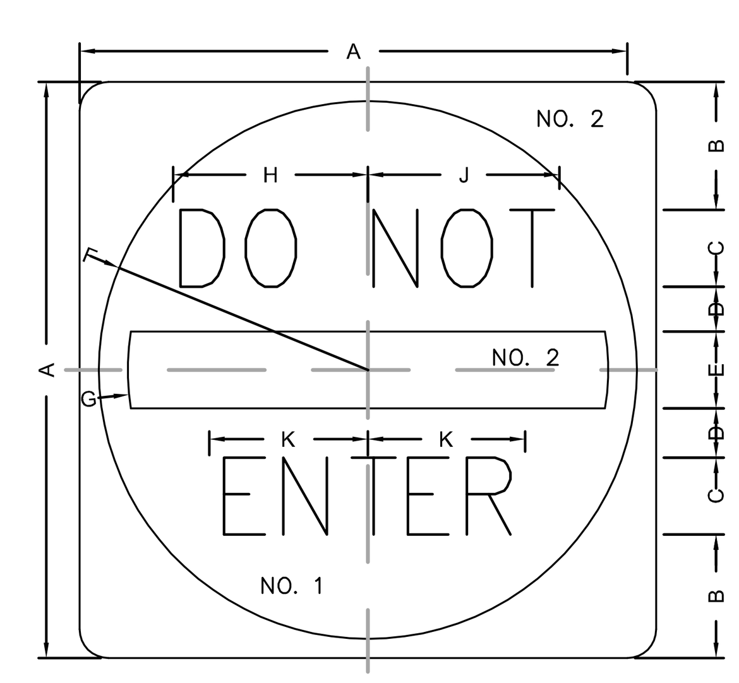
* REDUCE SPACING 40%

STOP SIGN (R1–1)

NOT TO SCALE

Do Not Enter Sign (R5–1)

(a) Justification. The Do Not Enter Sign (R5–1) shall be authorized for use to prohibit traffic from entering a restricted road section.
(b) Placement. The R5–1 sign should normally be mounted on the right–hand side of the roadway, facing traffic entering the roadway or ramp in the wrong direction. However, a second sign on the left–hand side of the roadway may be justified, particularly where traffic may be approaching in a turn.
(c) Size. The standard size of R5–1 shall be 30 inches by 30 inches. The standard size for expressways shall be 36 inches by 36 inches.

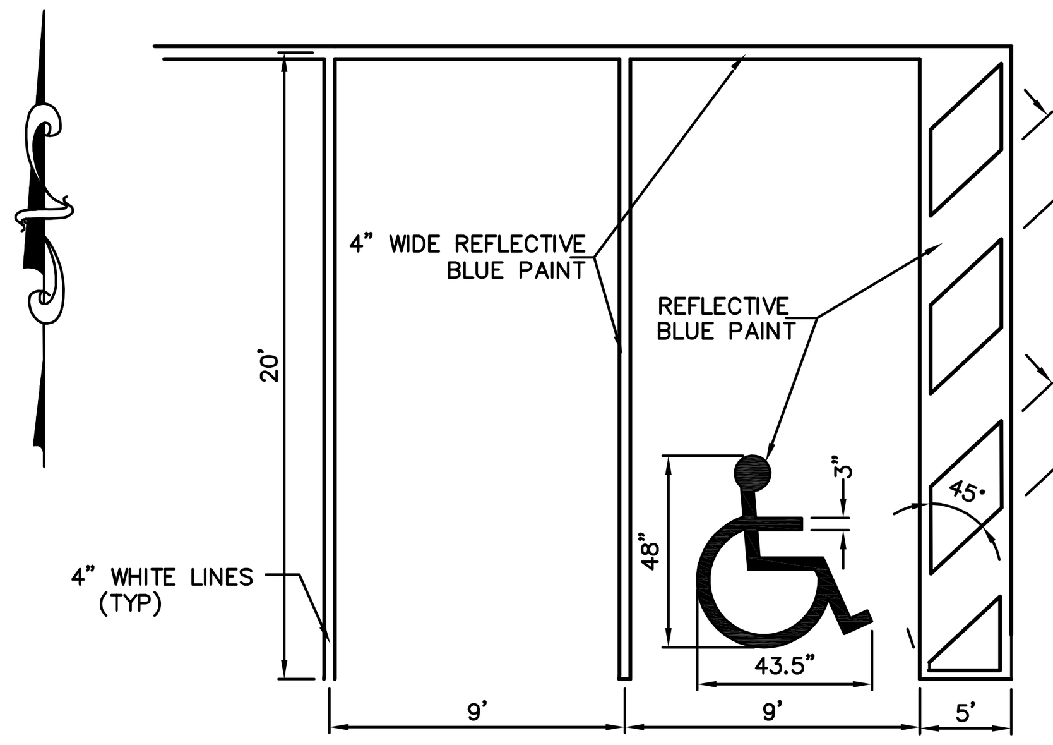


COLOR : NO. 1 LEGEND — WHITE(REFLECTORIZED
BACKGROUND — WHITE(REFLECTORIZED
NO. 2 BACKGROUND — WHITE(REFLECTORIZED

SIGN SIZE	DIMENSIONS										SERIES LINES		BLANK STD
	A	B	C	D	E	F	G	H	J	K	1	2	
30X30	30	6 ½	4	2	5	14 ½	12 ½	9 ¾	10	7⅞	D	D	83–30
36X36	36	7 ½	5	2 ½	6	17 ½	15	12	12⅜	9 13/16	D	D	83–36
48X48	48	11	6	3	8	23 ½	20	14½	15	11¾	D	D	83–48

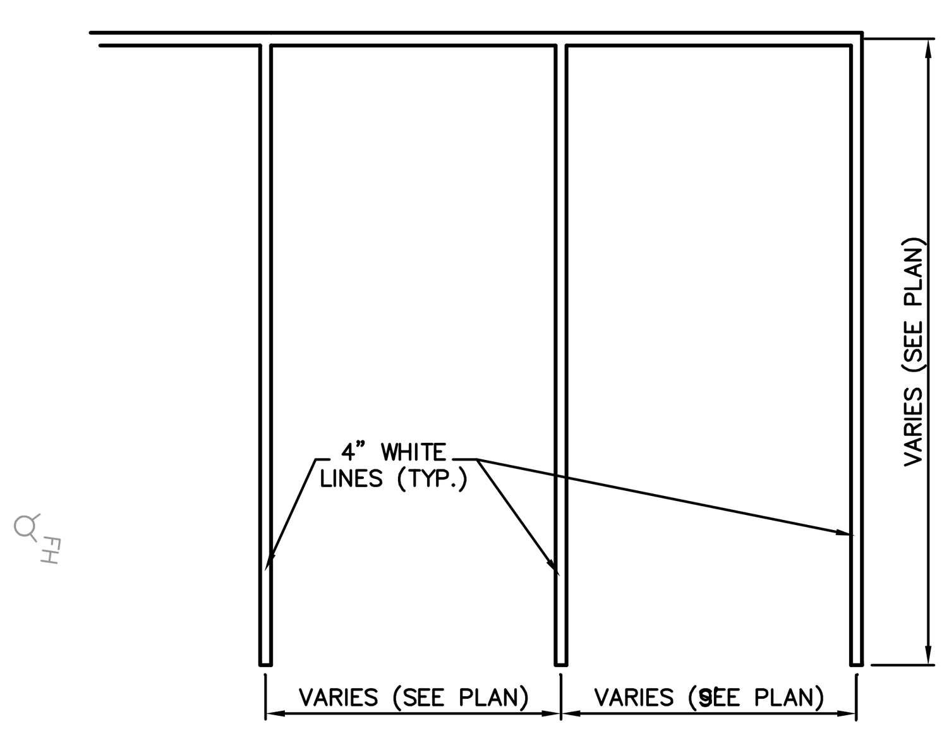
DO NOT ENTER (R5–1)

N.T.S.



PARKING STALLS STRIPING DETAIL TYPICAL

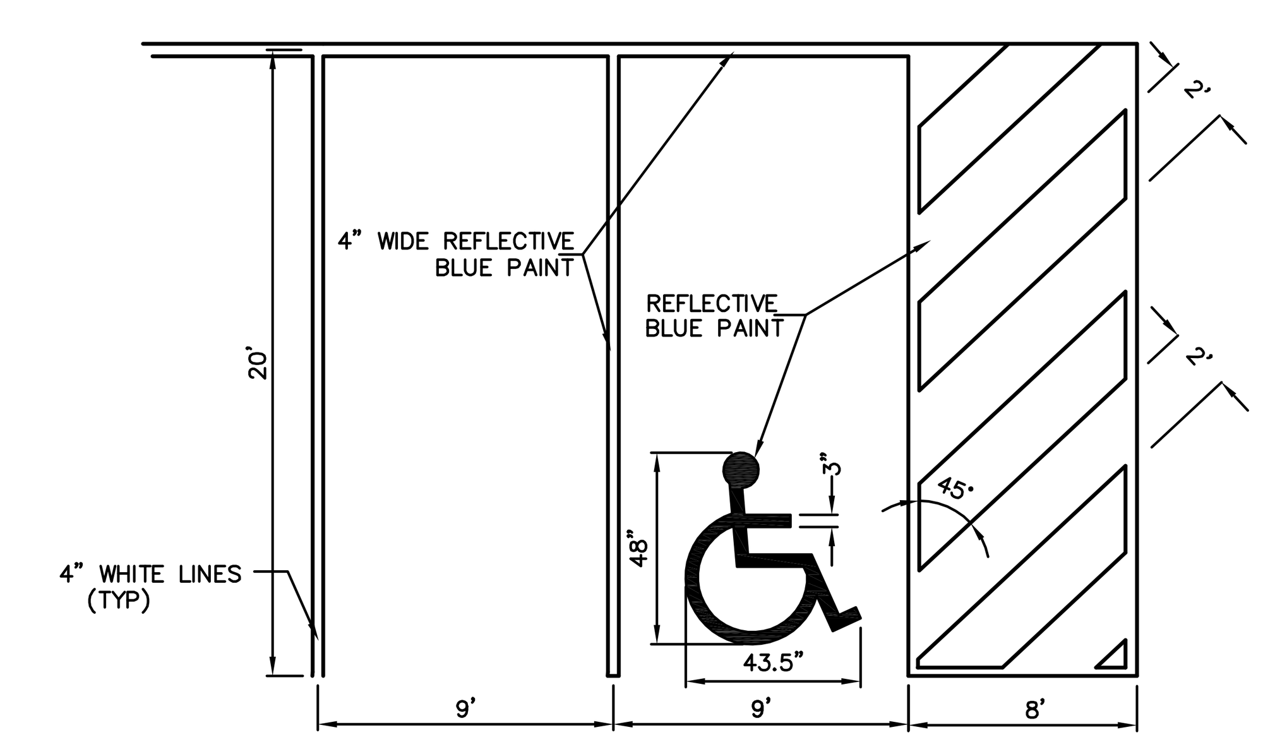
NOT TO SCALE



TYPICAL SIZE: 10'W x 18'L, 9'W x 20'L

PARKING STALL STRIPING DETAIL

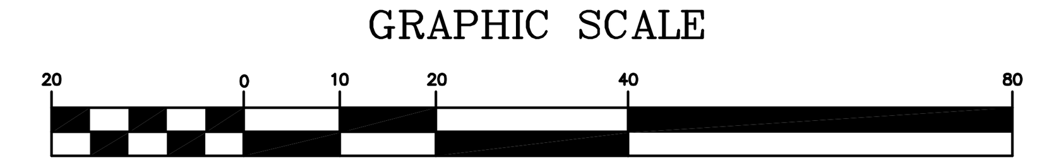
NOT TO SCALE



VAN ACCESSIBLE PARKING STALLS STRIPING DETAIL TYPICAL

NOT TO SCALE

GRAPHIC SCALE



(IN FEET)
1 inch = 20 ft.

REV	DATE	DESCRIPTION	BY

MECHANICAL ENGINEER
630 NINTH AVENUE, SUITE 1102
NEW YORK, NY 10036

CIVIL & STRUCTURAL ENGINEER
reutherbowen — Engineering · Design · Construction Services
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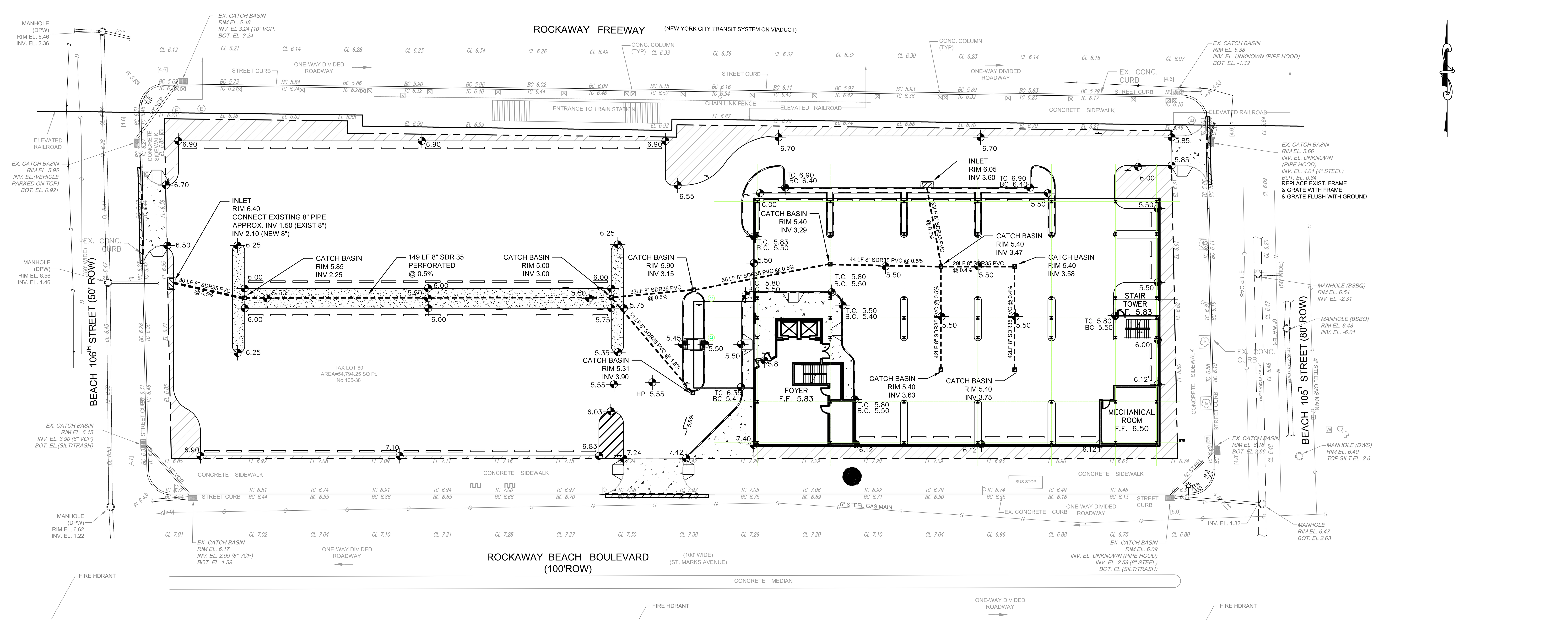
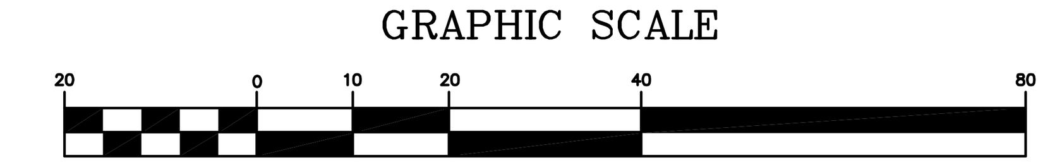
Tel 201-567-5005 Fax 201-567-5773

105 ROCKAWAY REALTY LLC
ROCKAWAY MEDICAL OFFICE BUILDING
105-38 ROCKAWAY BEACH BLVD., QUEENS, NY 11694

SITE LAYOUT PLAN

JOB NO. 15004
SCALE 1" = 20'
DRAWN BY DPL
CHECKED MB
DATE 06/04/15
DRAWING NO. C-1
OF





REV	DATE	DESCRIPTION	BY

MECHANICAL ENGINEER

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T. 212.680.8945
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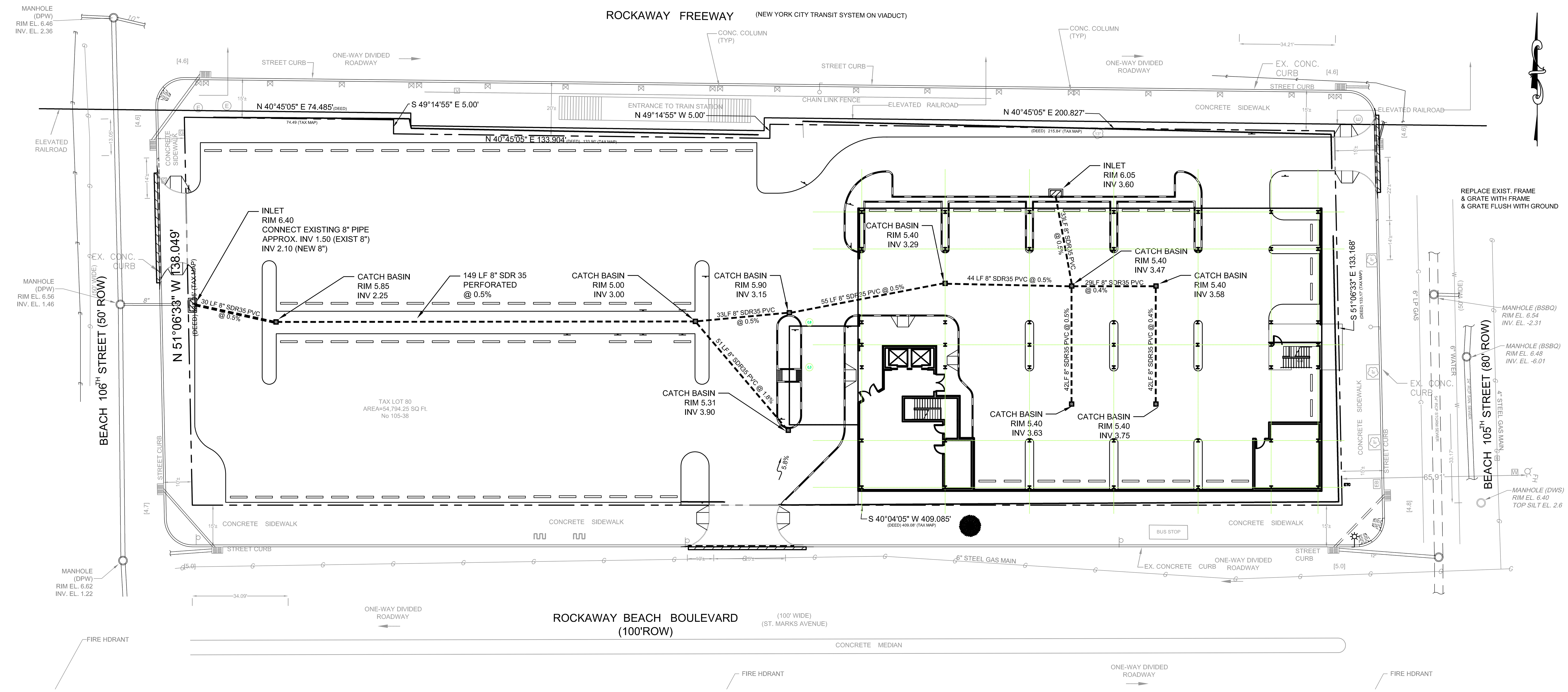
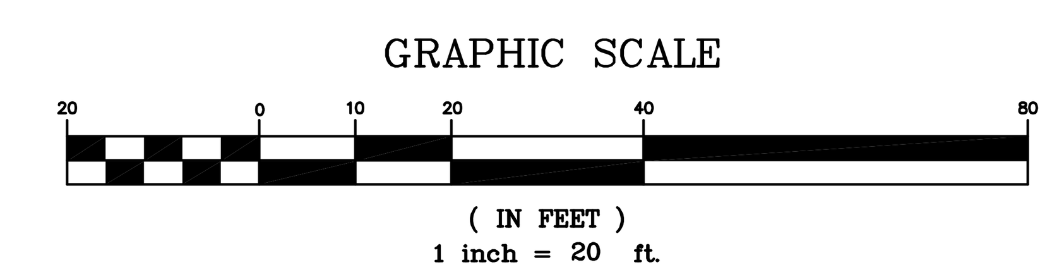
105 ROCKAWAY REALTY LLC
ROCKAWAY MEDICAL OFFICE BUILDING
105-38 ROCKAWAY BEACH BLVD., QUEENS, NY 11694

SITE GRADING AND DRAINAGE PLAN

JOB NO. 15004
SCALE 1" = 20'
DRAWN BY DPL
CHECKED MB
DATE 06/04/15

DRAWING NO.
C-2
OF





New York 811 Know what's below. Call before you dig.

REV	DATE	DESCRIPTION	BY

MECHANICAL ENGINEER
630 NINTH AVENUE, SUITE 1012 NEW YORK, NY 10036 T. 212.680.8945 F. 212.680.8946

reuther+bowen Engineering, Design, Construction Services
CIVIL & STRUCTURAL ENGINEER

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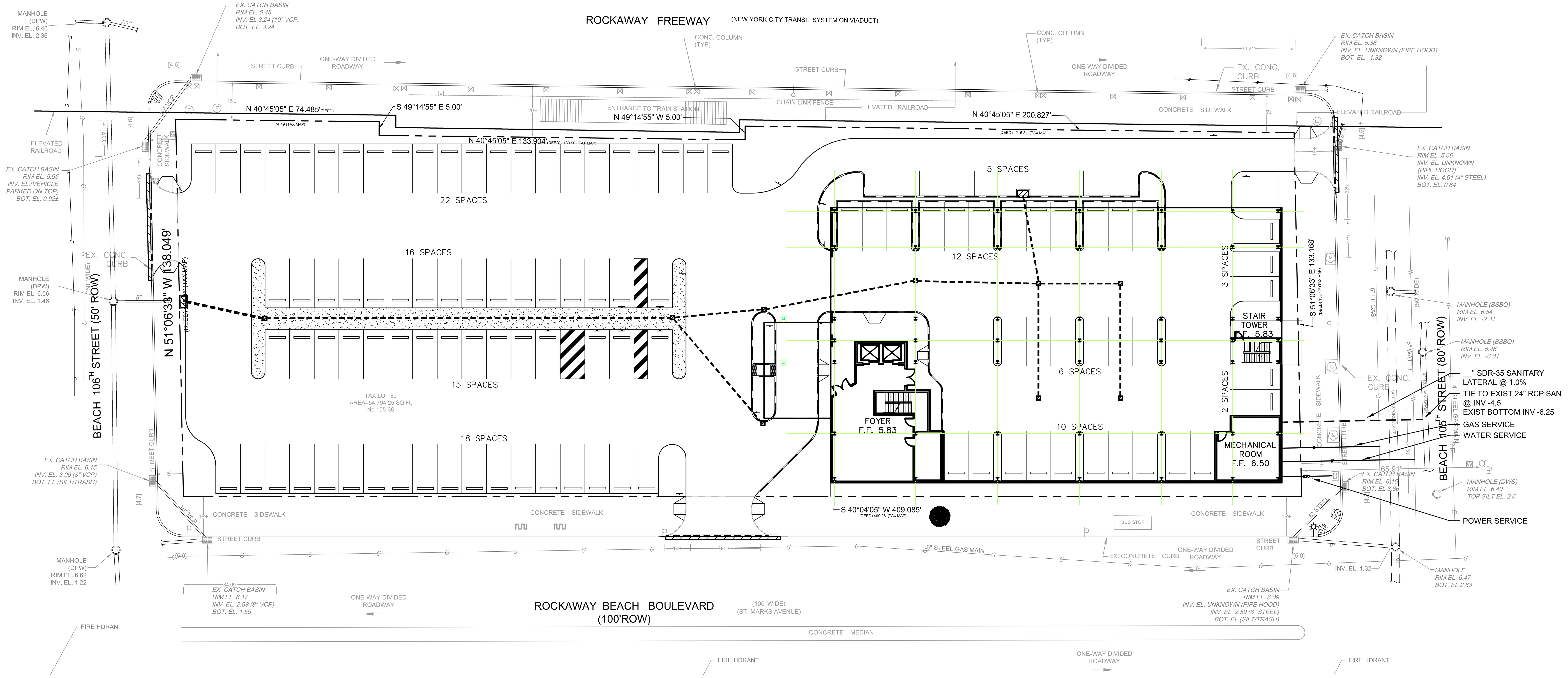
105 ROCKAWAY REALTY LLC
ROCKAWAY MEDICAL OFFICE BUILDING
105-38 ROCKAWAY BEACH BLVD., QUEENS, NY 11694

EROSION & SEDIMENT CONTROL PLAN

JOB NO. 15004
SCALE 1" = 20'
DRAWN BY DPL
CHECKED MB
DATE 06/04/15
DRAWING NO. C-3
OF



GRAPHIC SCALE

(IN FEET)
1 inch = 20 ft.

REV	DATE
DESCRIPTION	BY

MECHANICAL ENGINEER
630 NINTH AVENUE, SUITE 802
NEW YORK, NY 10036

CIVIL & STRUCTURAL ENGINEER
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105 ROCKAWAY REALTY LLC
ROCKAWAY MEDICAL OFFICE BUILDING
105-38 ROCKAWAY BEACH BLVD., QUEENS, NY 11694

SITE UTILITY PLAN

JOB NO.	15004
SCALE	1" = 20'
DRAWN BY	DPL
CHECKED	MB
DATE	06/04/15
DRAWING NO.	C-4
OF	

GROUND FLOOR / FOUNDATION PLAN

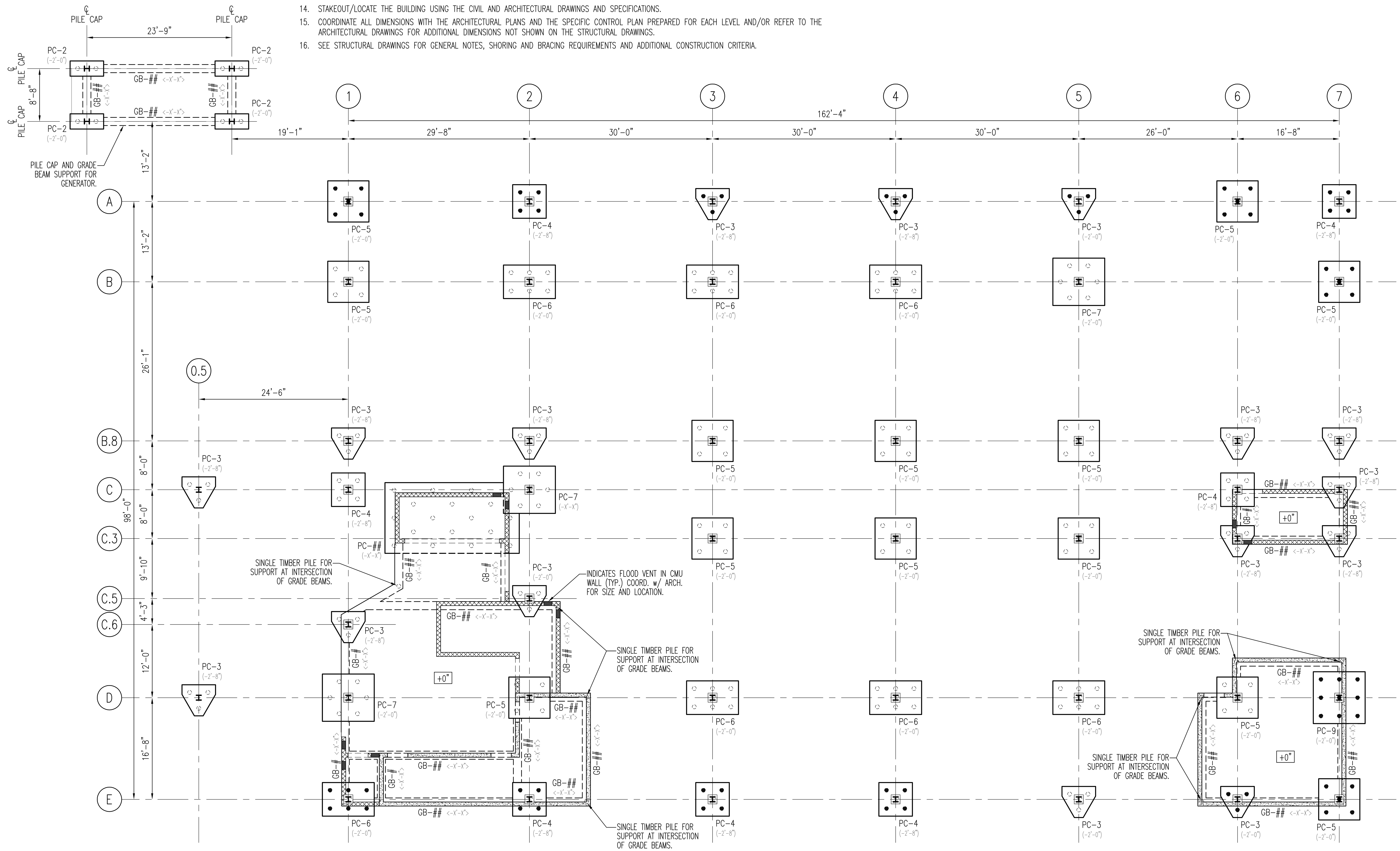
SCALE: 1/8" = 1'-0"

1. GROUND FLOOR TOP OF <u>SLAB</u> ELEVATION +5'-10" (DATUM) UNLESS OTHERWISE NOTED. ALL ELEVATIONS SHOWN THUS (±X'-X") ARE ABOVE OR BELOW THE DATUM ELEVATION.
2. [±X'-X"] INDICATES TOP OF SLAB ELEVATION ABOVE OR BELOW THE DATUM ELEVATION.
3. ALL ELEVATIONS SHOWN THUS (±X'-X") ARE TO THE <u>TOP</u> OF PILE CAP ABOVE OR BELOW THE DATUM ELEVATION.
4. ALL ELEVATIONS SHOWN THUS <±X'-X"> ARE TO THE <u>BOTTOM</u> OF GRADE BEAM ABOVE OR BELOW THE DATUM ELEVATION.
5. <u>GROUND FLOOR CONSTRUCTION</u>: 8" THICK, 2-WAY STRUCTURAL CONCRETE SLAB (MIN. f'c = 4,000 PSI @ 28 DAYS). PROVIDE A REINFORCING MAT CONSISTING OF #X BARS @ ##" O.C. TOP AND BOTTOM BARS. ANY REINFORCING SHOWN ON PLANS IS IN ADDITION TO TYPICAL MAT REINFORCING.
6. ○ – INDICATES 8" TIP TREATED TIMBER PILE. COORDINATE w/ GENERAL NOTES AND GEOTECHNICAL REPORT.
7. ● – INDICATES 8" TIP TREATED TIMBER PILE SUBJECT TO UPLIFT FORCES. COORDINATE WITH TYPICAL TENSION PILE CAP DETAIL ON DRAWING S-302.
8. BASED ON THE REQUIREMENTS OF THE GEOTECHNICAL ENGINEERING REPORT THE ESTIMATED PILE LENGTHS WILL RANGE FROM APPROXIMATELY 30 TO 35 FEET BELOW THE GROUND SURFACE. COORDINATE WITH FOUNDATION DESIGN AND CONSTRUCTION CRITERIA NOTES ON DRAWING S-001.
9. GB-# INDICATES CAST-IN-PLACE CONCRETE GRADE BEAM; COORDINATE WITH GRADE BEAM SCHEDULE FOR REQUIRED SIZE AND REINFORCING.
10. PC-# INDICATES CAST-IN-PLACE CONCRETE PILE CAP; COORDINATE WITH PILE CAP SCHEDULE FOR SIZE, REINFORCING, AND PILE REQUIREMENTS.
11. ALL COLUMNS ARE CENTERED ON PILE CAPS/PIERS UNLESS OTHERWISE NOTED.
12. CONTROL SURFACE OR SUB-SURFACE WATER TO ALLOW FOUNDATION WORK TO BE PERFORMED/DONE IN DRY UNDISTURBED CONDITIONS).
13. PIPE SLEEVES FOR UTILITIES ARE TO BE TWO PIPE SIZES LARGER THAN THE PIPE SHOWN ON THE MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS. VERIFY AND COORDINATE WITH THE INDIVIDUAL TRADE CONTRACTOR AS REQUIRED. COORDINATE WITH MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR REQUIRED LOCATIONS AND INVERT ELEVATIONS.
14. STAKEOUT/LOCATE THE BUILDING USING THE CIVIL AND ARCHITECTURAL DRAWINGS AND SPECIFICATIONS.
15. COORDINATE ALL DIMENSIONS WITH THE ARCHITECTURAL PLANS AND THE SPECIFIC CONTROL PLAN PREPARED FOR EACH LEVEL AND/OR REFER TO THE ARCHITECTURAL DRAWINGS FOR ADDITIONAL DIMENSIONS NOT SHOWN ON THE STRUCTURAL DRAWINGS.
16. SEE STRUCTURAL DRAWINGS FOR GENERAL NOTES, SHORING AND BRACING REQUIREMENTS AND ADDITIONAL CONSTRUCTION CRITERIA.

PILE CAP SCHEDULE

CONCRETE f'c = 4,000 PSI @ 28 DAYS
REINFORCING GRADE 60

MARK	WIDTH	LENGTH	DEPTH	SHORT BARS	LONG BARS	# OF 8"ø TIMBER PILES (30-TON CAPACITY)	REMARKS
PC-2	2'-6"	5'-6"	34"	(5) #4 (HOOKED ENDS)	(8) #5 (HOOKED ENDS)	2	–
PC-3	5'-2" 1'-7"	5'-6" 1'-6"	31"	SEE REMARKS	(4) #7 (HOOKED ENDS)	3	PROVIDE DESIGNATED LONG BARS IN ALL 3 DIRECTIONS
PC-4	5'-6"	5'-6"	31"	(11) #6 (HOOKED ENDS)	(11) #6 (HOOKED ENDS)	4	–
PC-5	6'-9"	6'-9"	35"	(14) #6 (HOOKED ENDS)	(14) #6 (HOOKED ENDS)	5	–
PC-6	5'-6"	8'-6"	44"	(18) #6 (HOOKED ENDS)	(14) #6 (HOOKED ENDS)	6	–
PC-7	7'-9"	8'-6"	38"	(16) #6 (HOOKED ENDS)	(16) #6 (HOOKED ENDS)	7	–
PC-8	7'-9"	8'-6"	39"	(22) #6 (HOOKED ENDS)	(22) #6 (HOOKED ENDS)	8	–
PC-9	8'-6"	8'-6"	43"	(22) #6 (HOOKED ENDS)	(22) #6 (HOOKED ENDS)	9	–



70% CD
07-13-2015

REV	DATE	DESCRIPTION	BY
1	07/13/15	70% CD	DJH

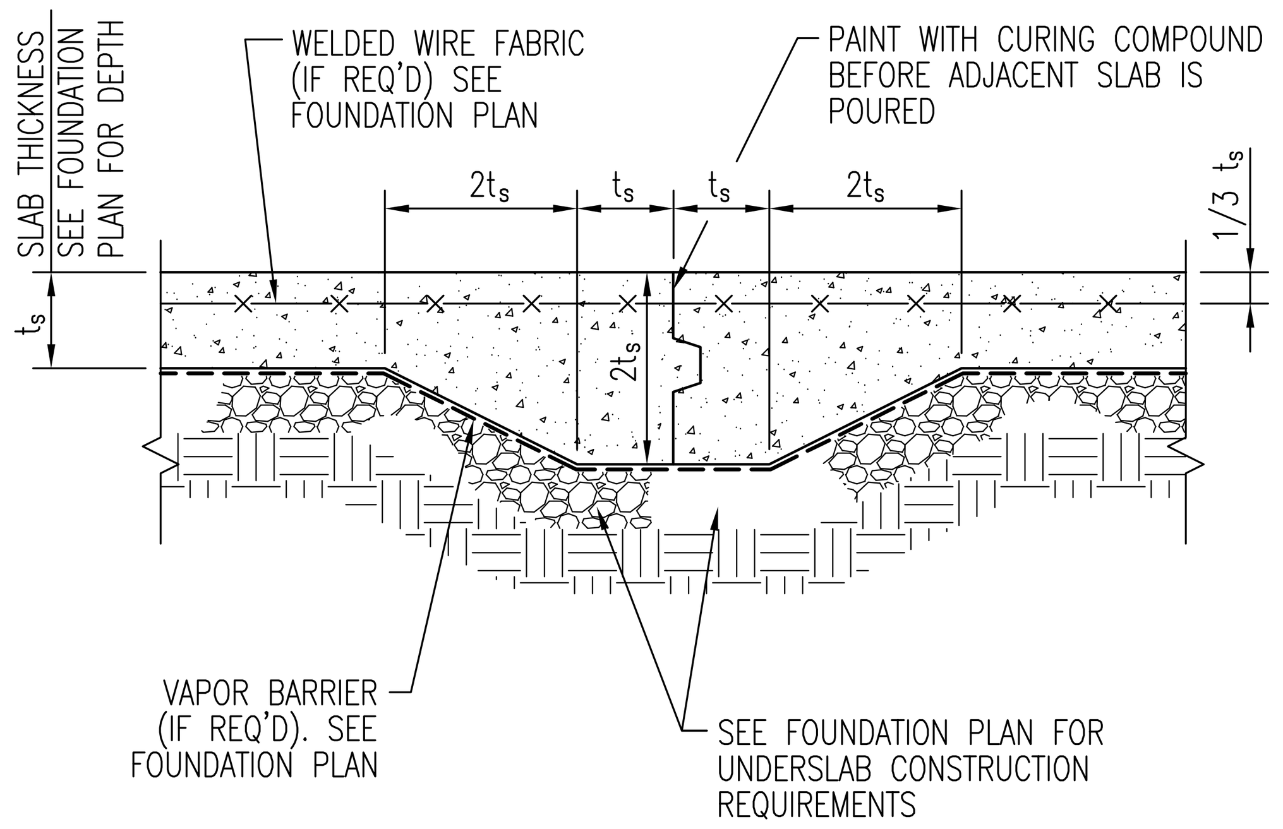
MECHANICAL ENGINEER: IAQ SYSTEMS INC. Consulting Engineers

STRUCTURAL ENGINEER: reuther+bowen Engineering, Design, Construction Services

RONALD SCHMIDT & ASSOCIATES, P.A.
ARCHITECTURE · INTERIOR DESIGN
PLANNING · PROJECT MANAGEMENT

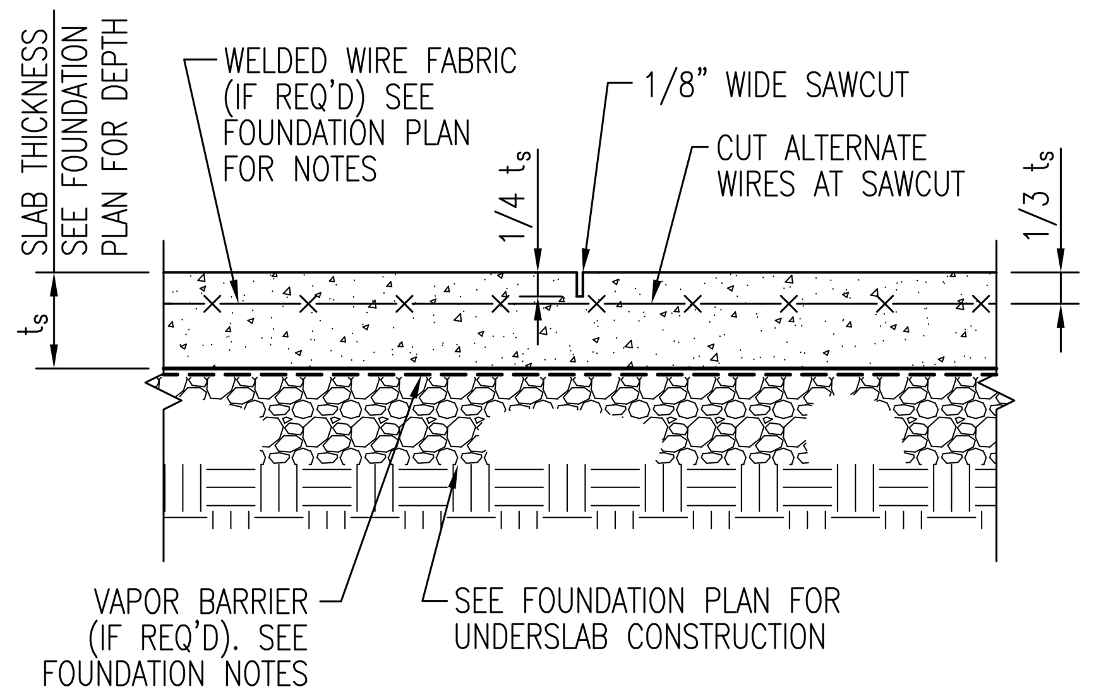
105 ROCKAWAY REALTY LLC
ROCKAWAY MEDICAL OFFICE BUILDING
105-38 ROCKAWAY BEACH BLVD. QUEENS, NY 11694
FOUNDATION PLAN

JOB NO. 15004
SCALE AS SHOWN
DRAWN BY DJH
CHECKED MB
DATE 4/27/2015
DRAWING NO. S-100.00
XX OF XX



TYPICAL CONSTRUCTION JOINT DETAIL

SCALE: N.T.S.

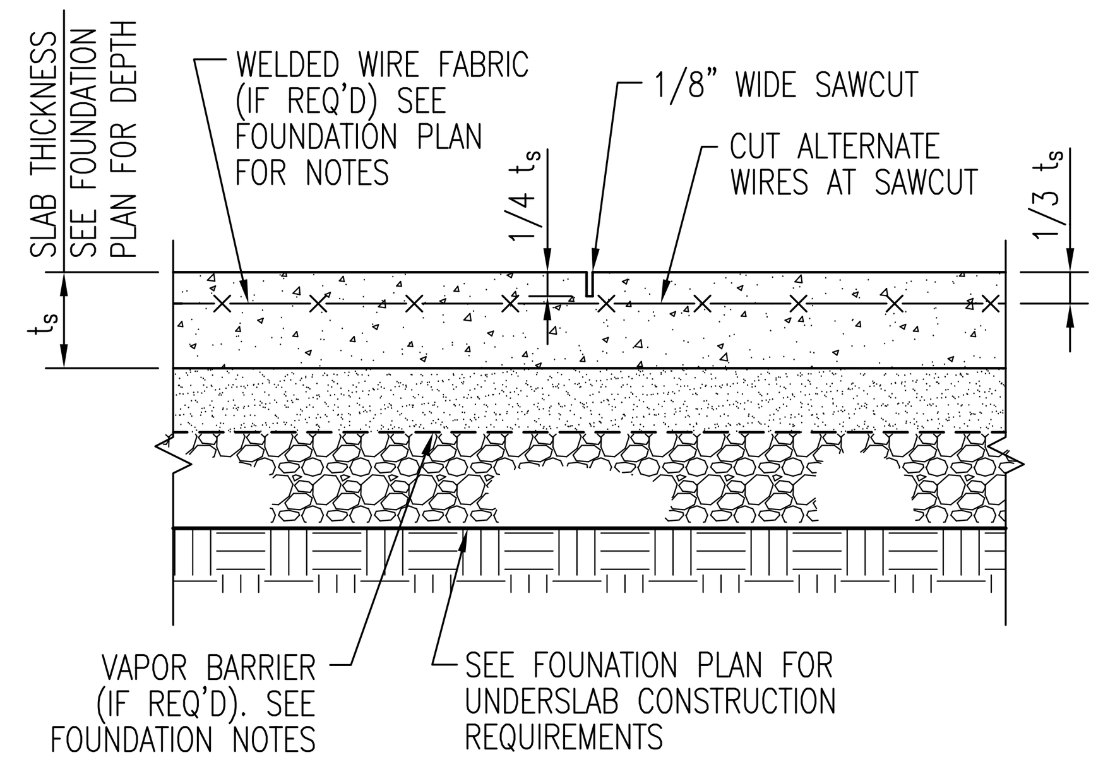


GENERAL NOTE:

1. FILL SAWCUT WITH JOINT FILLER 120 DAYS (MINIMUM) AFTER CUTTING (SEE SPECS).

TYPICAL CONTROL JOINT DETAIL

SCALE: N.T.S.

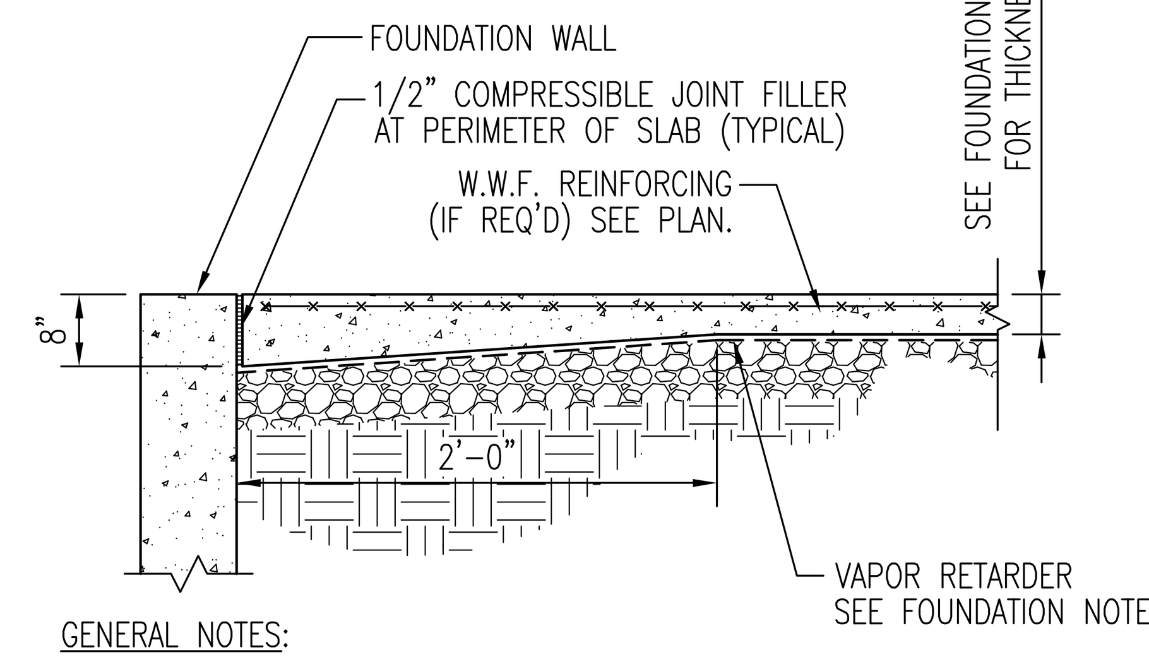


GENERAL NOTES:

1. FILL SAWCUT WITH JOINT FILLER 120 DAYS (MINIMUM) AFTER CUTTING (SEE SPECS).

TYPICAL CONTRACTION JOINT DETAIL

SCALE: N.T.S.

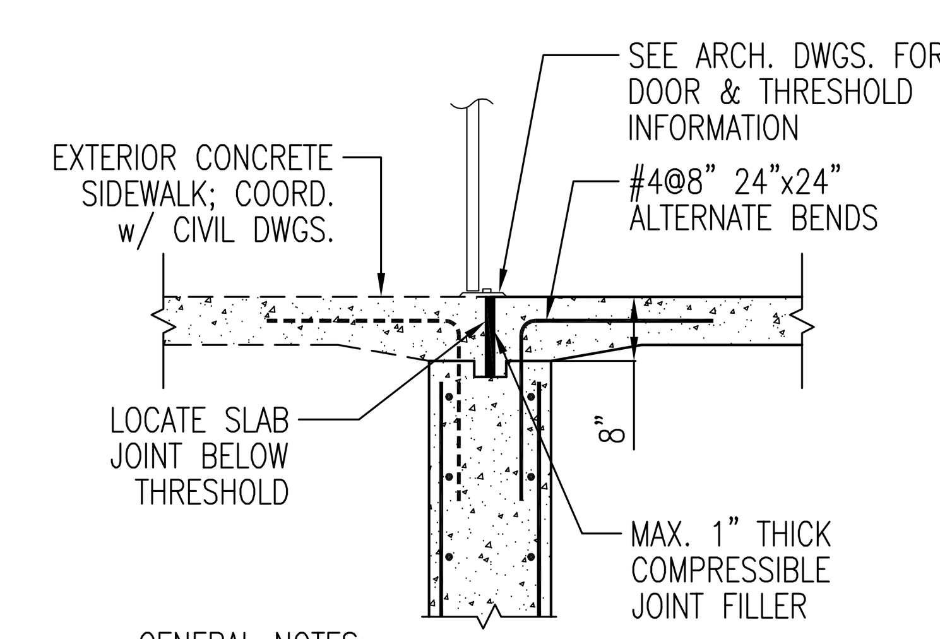


GENERAL NOTES:

1. SEE FOUNDATION NOTES FOR SLAB CONSTRUCTION AND UNDERSLAB CONSTRUCTION REQUIREMENTS.
2. COORDINATE WITH PLAN FOR FOUNDATION WALL DESIGN & REINFORCING.

TYPICAL THICKENED SLAB EDGE DETAIL

SCALE: N.T.S.

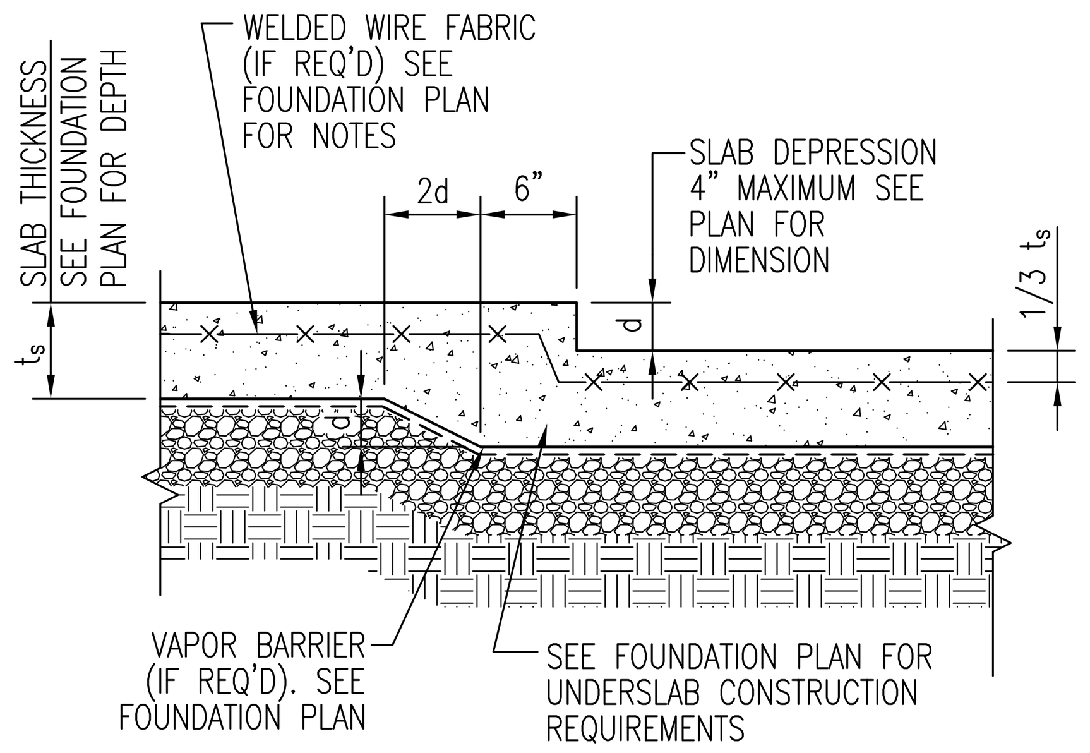


GENERAL NOTES:

1. SEE PLANS AND NOTES FOR SLAB CONSTRUCTION.
2. COORDINATE WITH SECTIONS FOR REQ'D FOUNDATION WALL THICKNESS AND REINFORCING.

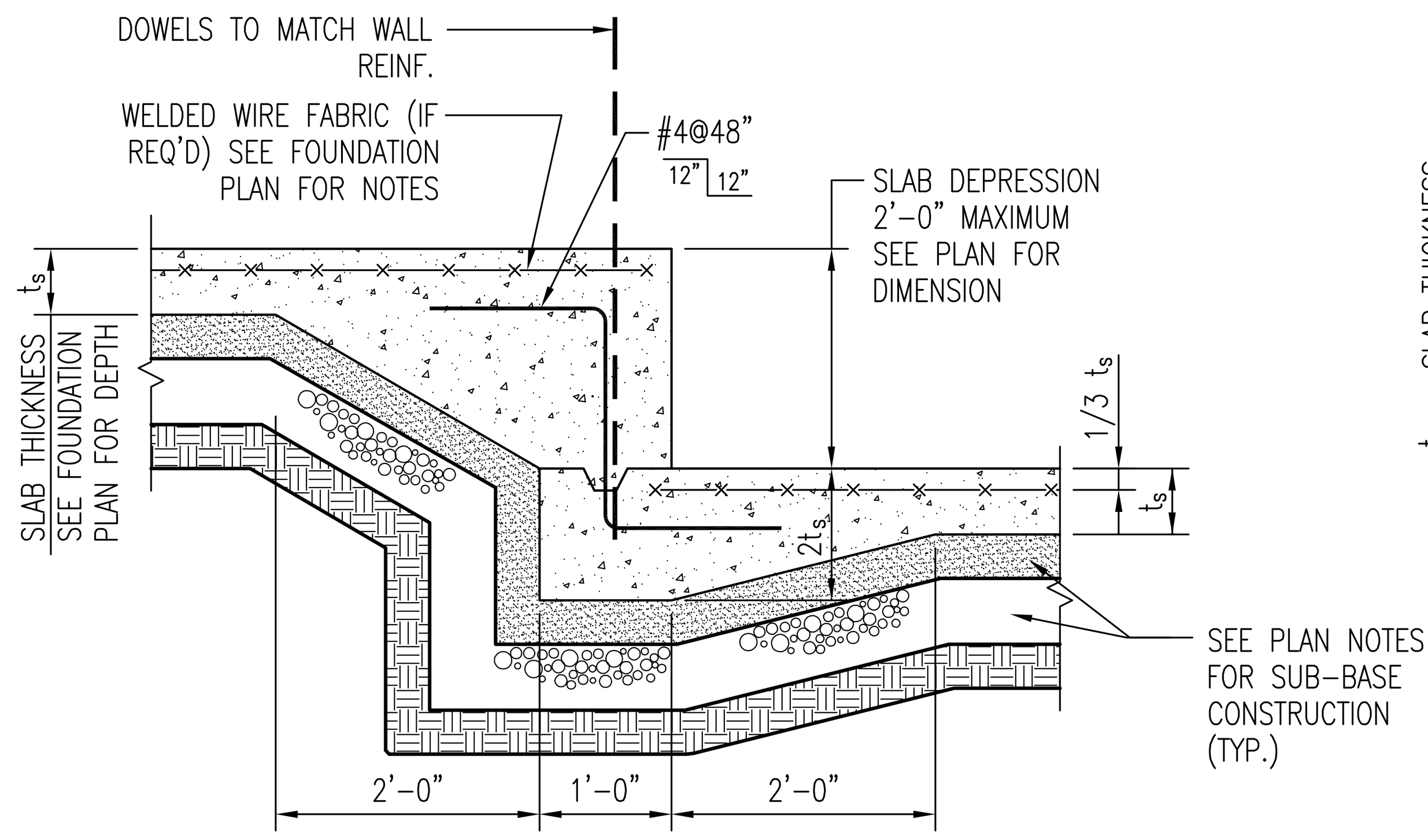
TYPICAL SLAB DETAIL AT DOOR

SCALE: N.T.S.



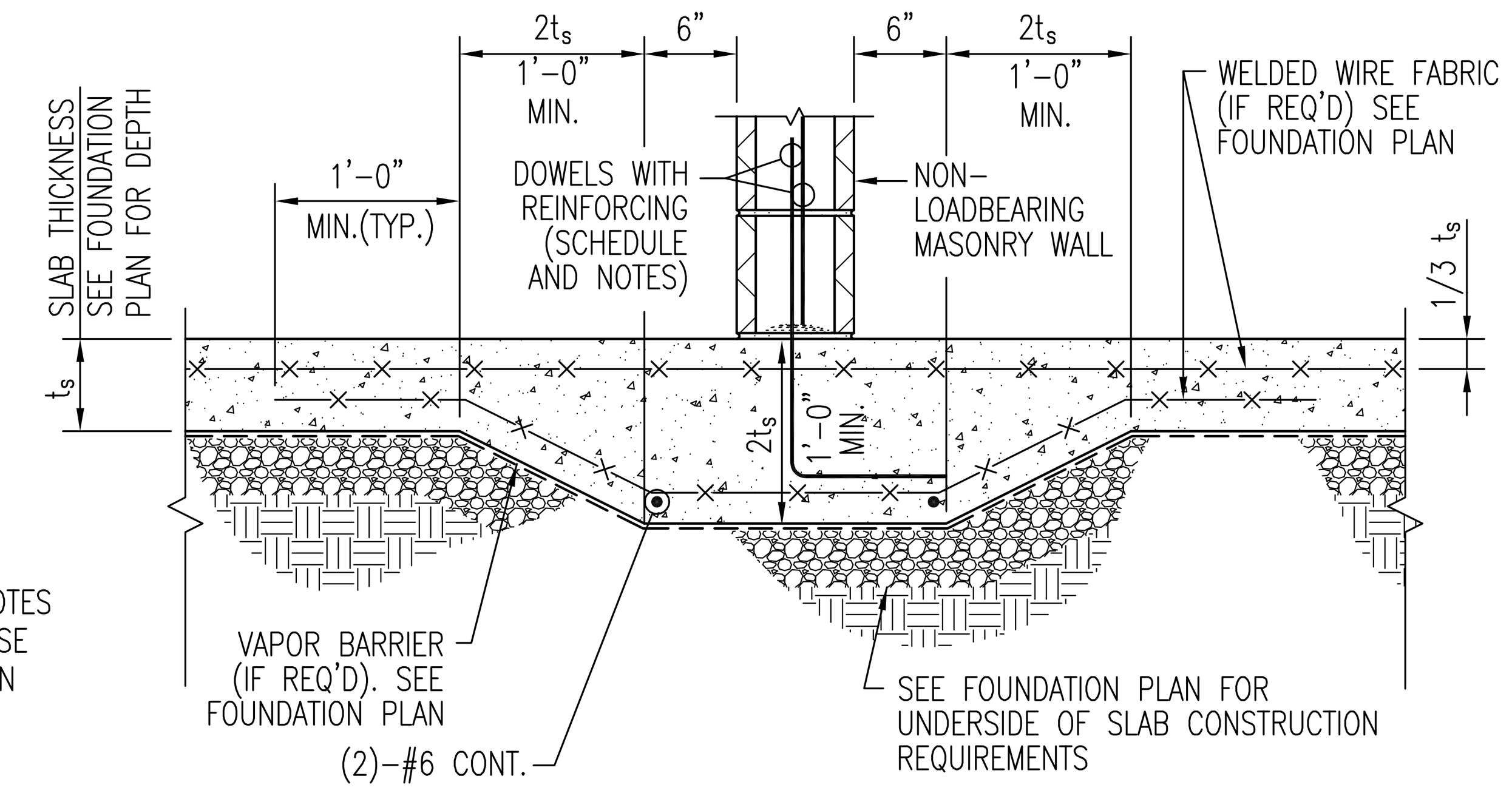
TYPICAL SLAB DEPRESSION DETAIL

SCALE: N.T.S.



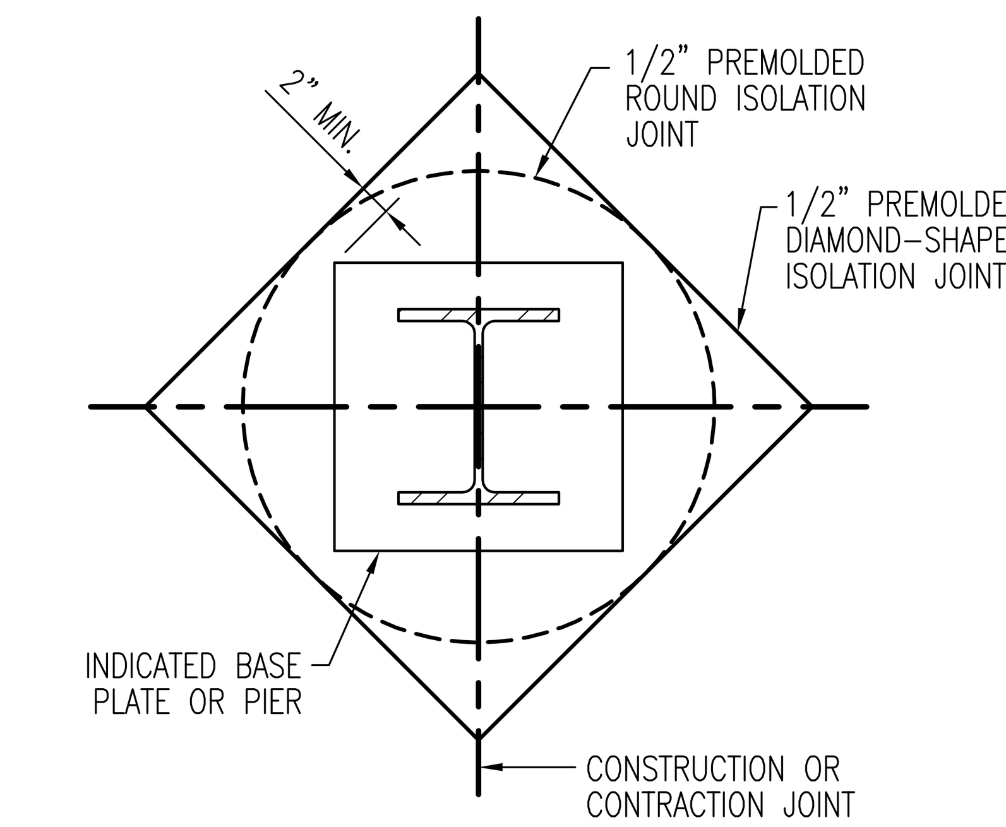
TYPICAL SLAB DEPRESSION DETAIL – DEEP

SCALE: N.T.S.



TYPICAL HAUNCHED SLAB DETAIL – CMU WALL

SCALE: N.T.S.

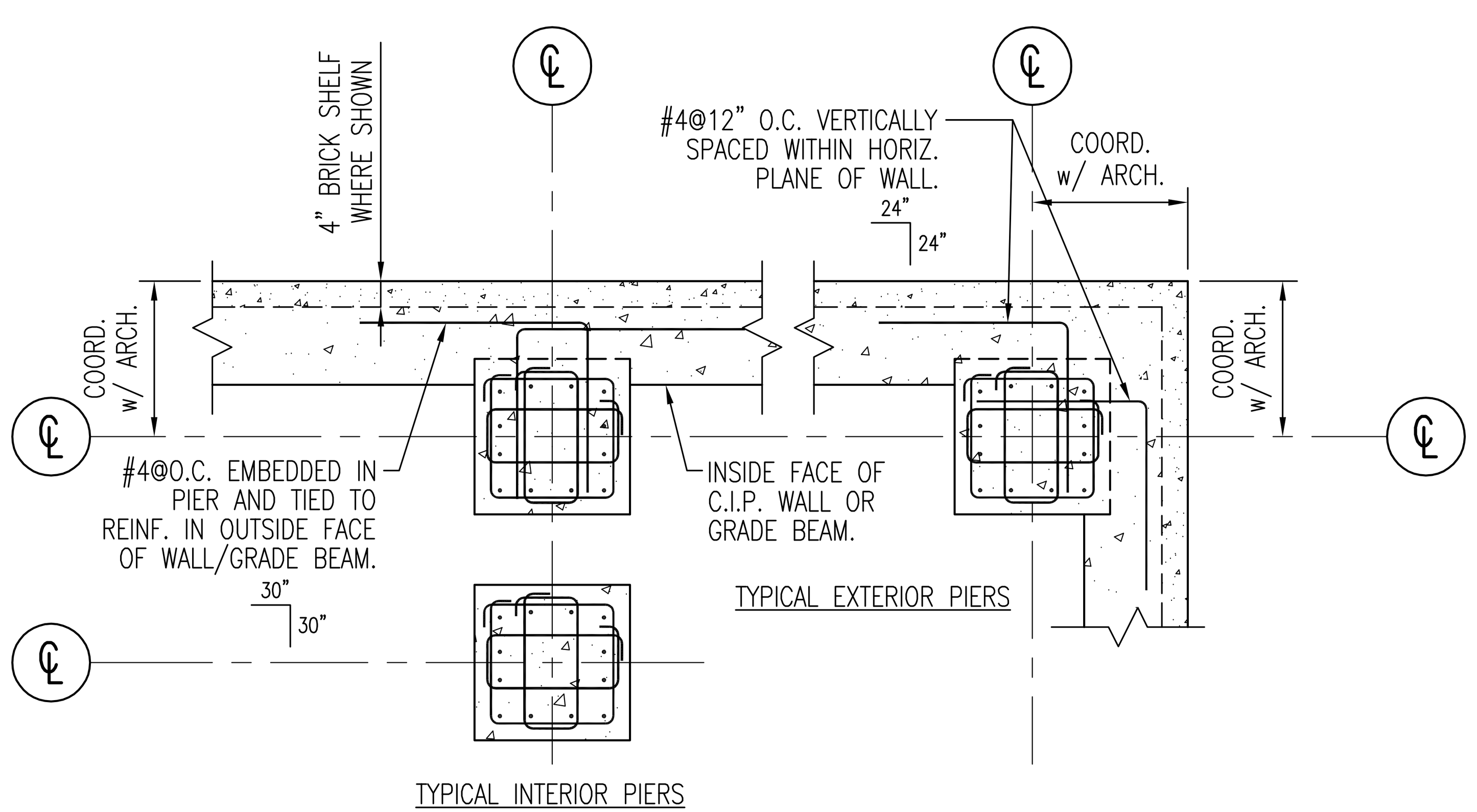


GENERAL NOTES:

1. CONTRACTOR HAS OPTION OF USING ROUND OR DIAMOND SHAPED ISOLATION JOINT.
2. USE HALF-CIRCLE OR HALF-DIAMOND AT EXTERIOR WALLS.
3. PROTECT FROM STORM WATER BEFORE FILLING.

TYPICAL COLUMN ISOLATION JOINT

SCALE: N.T.S.

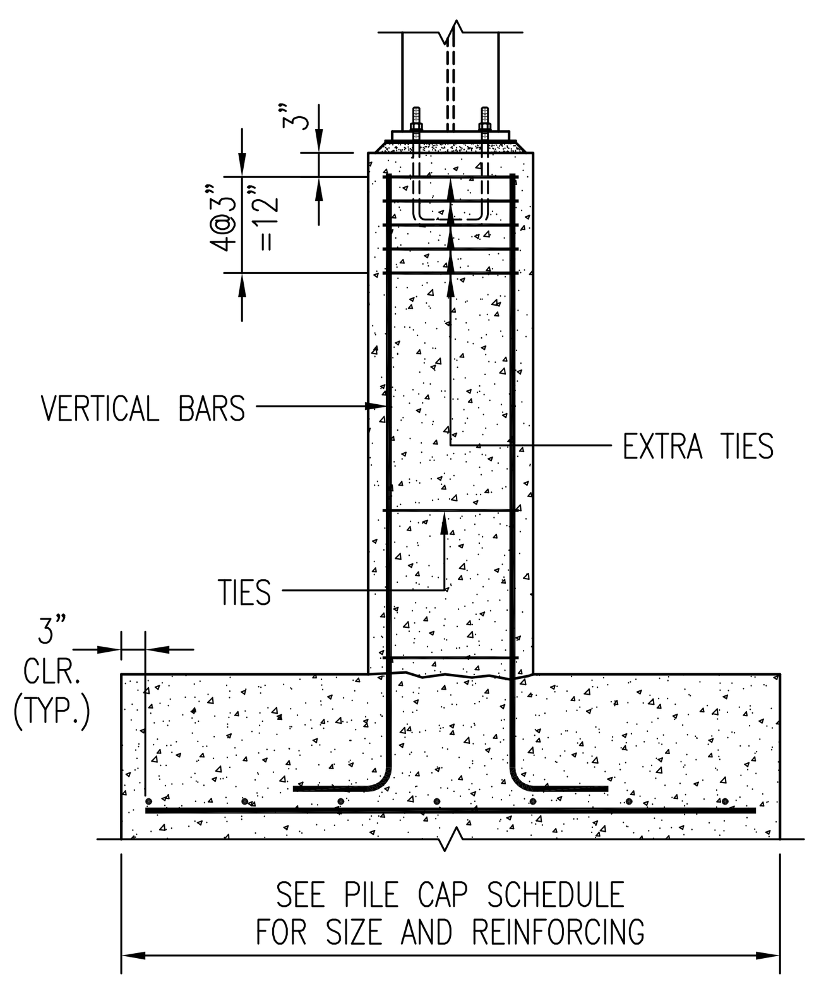


GENERAL NOTES:

1. SEE PLAN NOTES AND SCHEDULES FOR PIER SIZE AND REINFORCING.
2. REFER TO ACI-318 FOR CONCRETE COVE REQUIREMENTS.
3. REFER TO WALL SCHEDULE OR SECTIONS FOR REINFORCING IN WALLS.

TYPICAL PIER DETAILS

SCALE: N.T.S.



GENERAL NOTES:

1. DOWELS (IF REQUIRED) TO BE SAME SIZE AND SPACING AS VERTICAL BARS (PROVIDE TENSION LAP).

TYPICAL PIER AND PILE CAP DETAIL

SCALE: N.T.S.

70% CD
07-13-2015

REV	DATE	DESCRIPTION	BY
1	07/13/15	70% CD	DJH

MECHANICAL ENGINEER: IAQ SYSTEMS INC Consulting Engineers, 630 NINTH AVENUE, SUITE 1112, NEW YORK, NY 10036

STRUCTURAL ENGINEER: reuther+bowen Engineering, Design, Construction Services, 326 WARD ST, SCRANTON, PA

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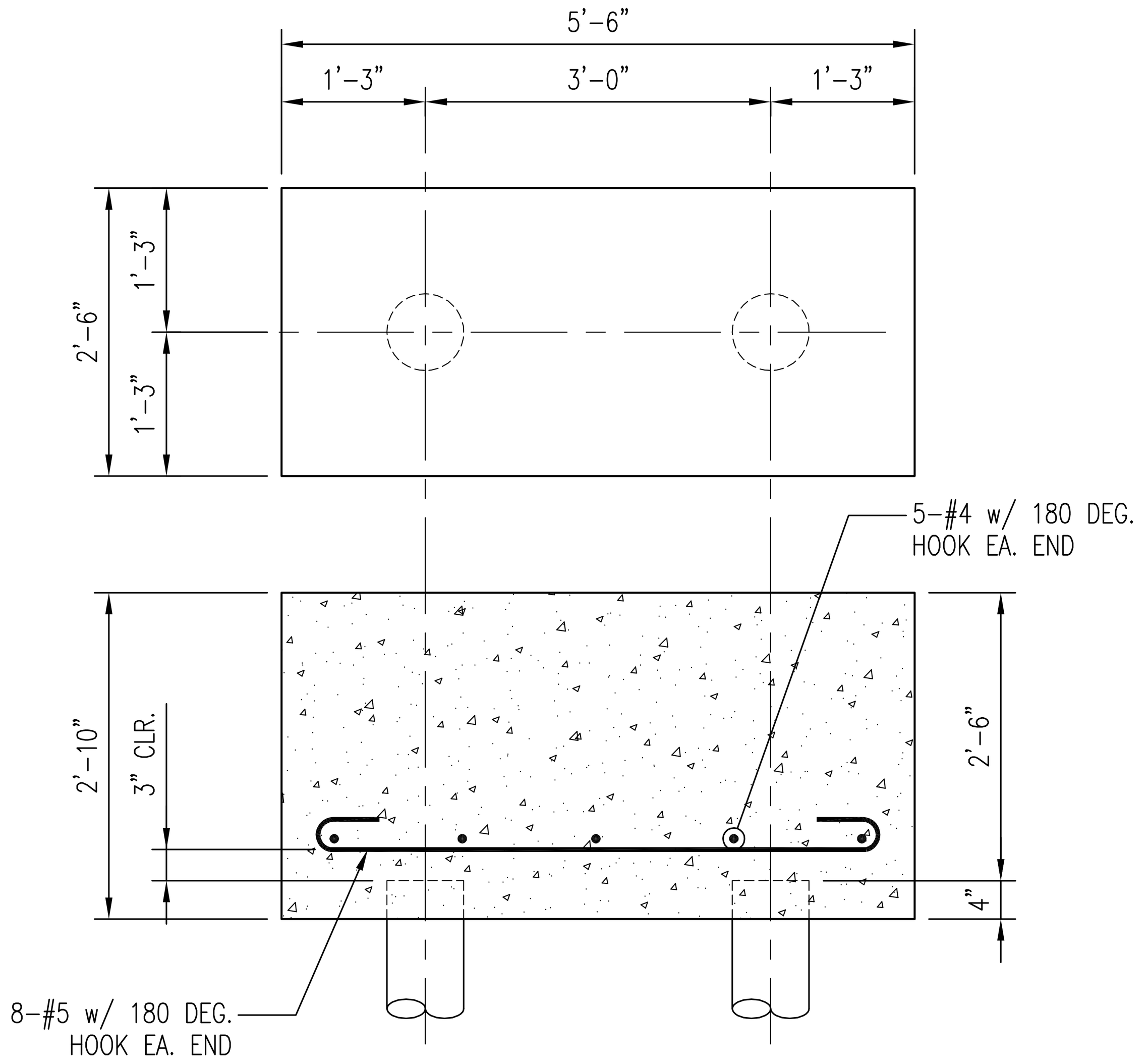
105 ROCKAWAY REALTY LLC
ROCKAWAY MEDICAL OFFICE BUILDING
105-38 ROCKAWAY BEACH BLVD, QUEENS, NY 11694
TYPICAL FOUNDATION DETAILS

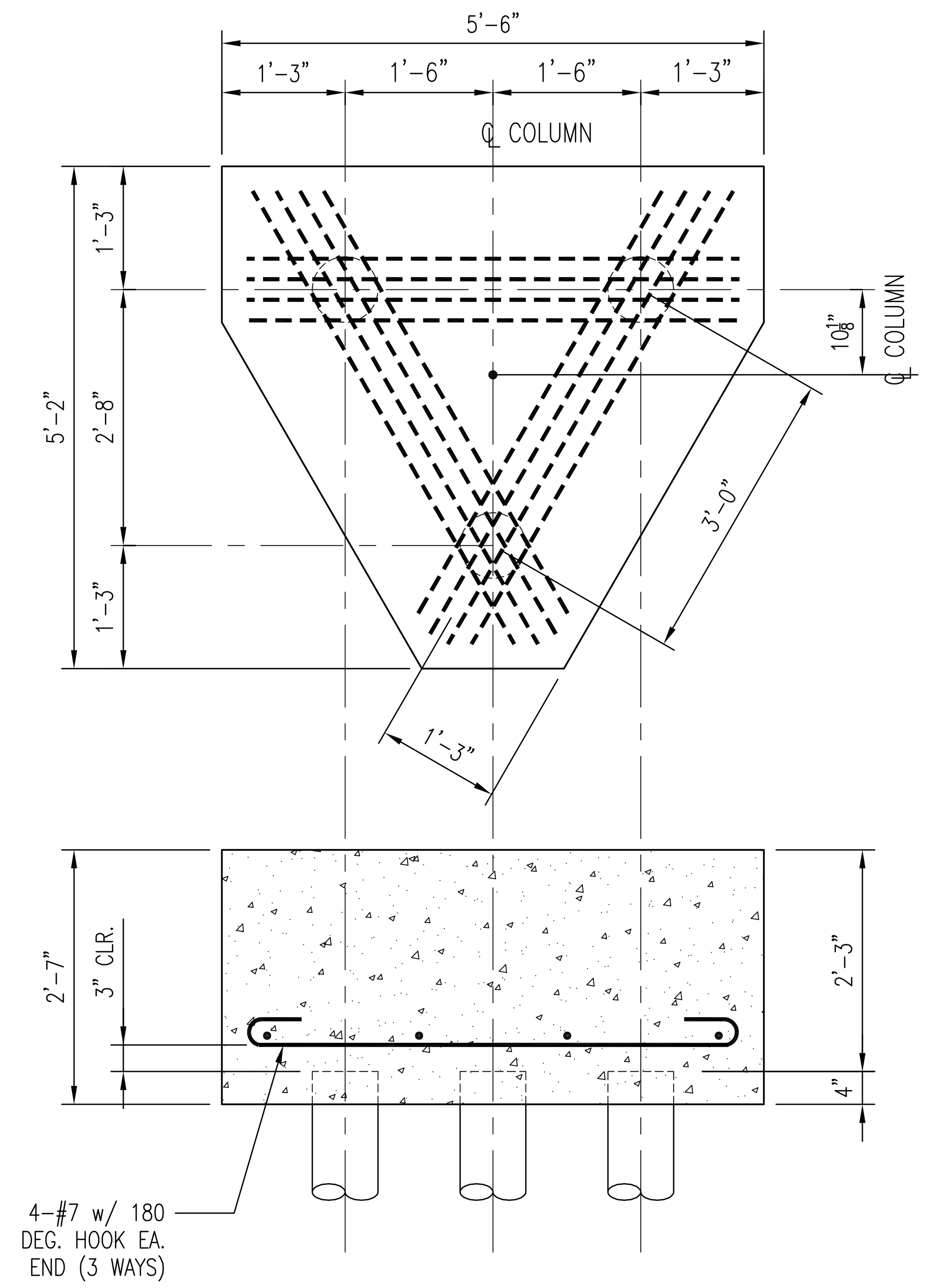
JOB NO.	15004
SCALE	AS SHOWN
DRAWN BY	DJH
CHECKED	MB
DATE	4/27/2015
DRAWING NO.	S-300.00

XX OF XX



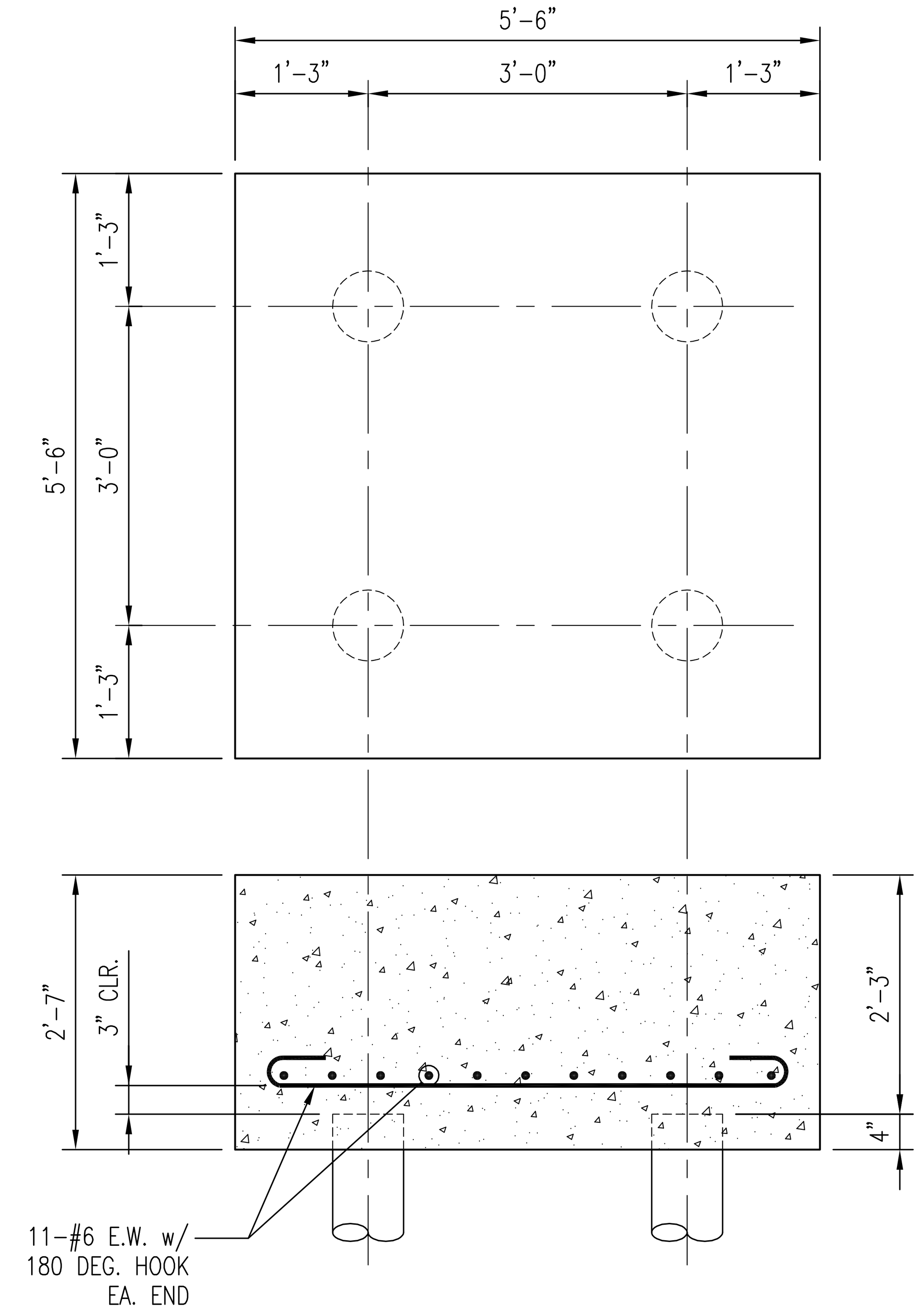
TYPICAL 2-PILE CAP (PC-2)

SCALE: N.T.S.



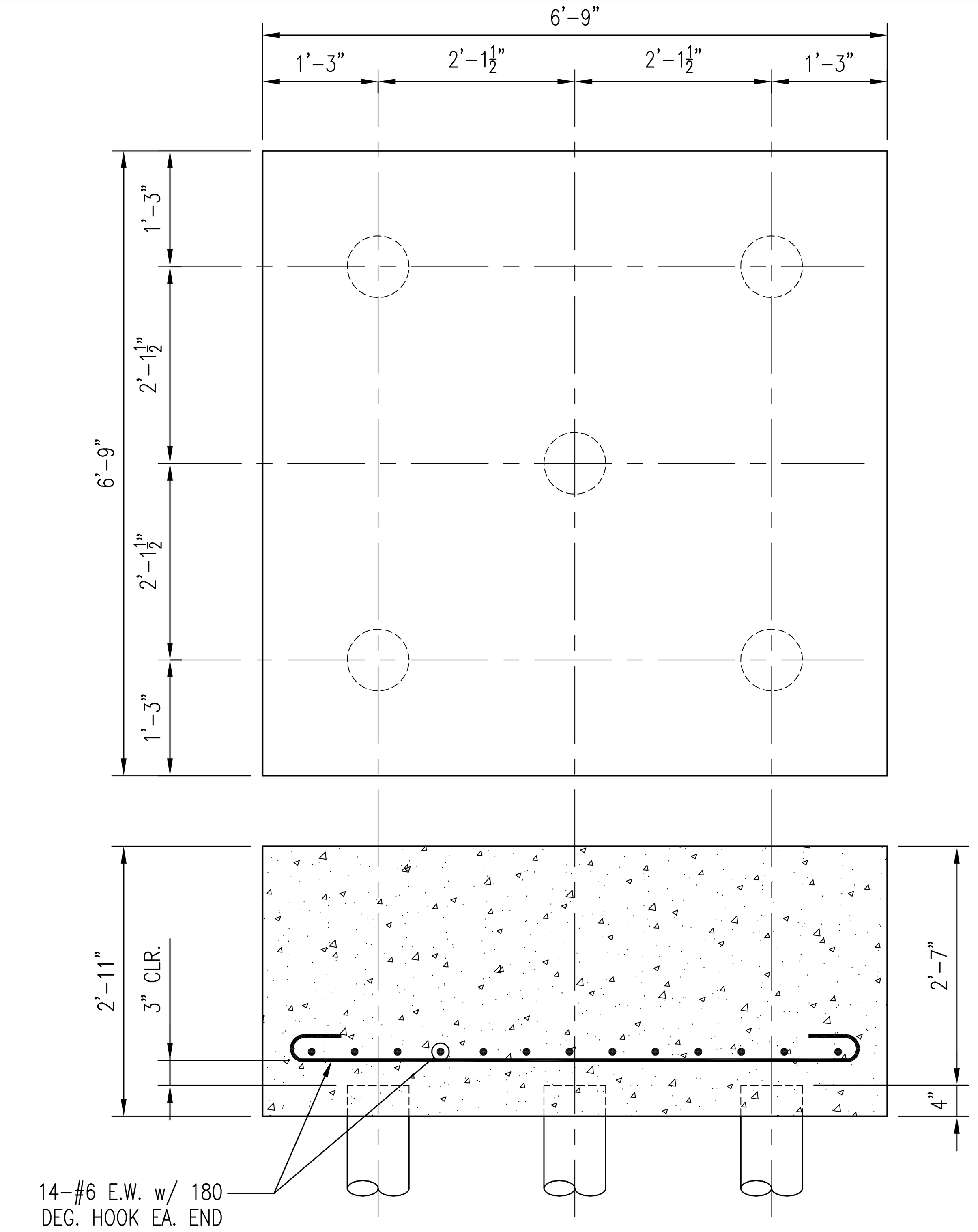
TYPICAL 3-PILE CAP (PC-3)

SCALE: N.T.S.



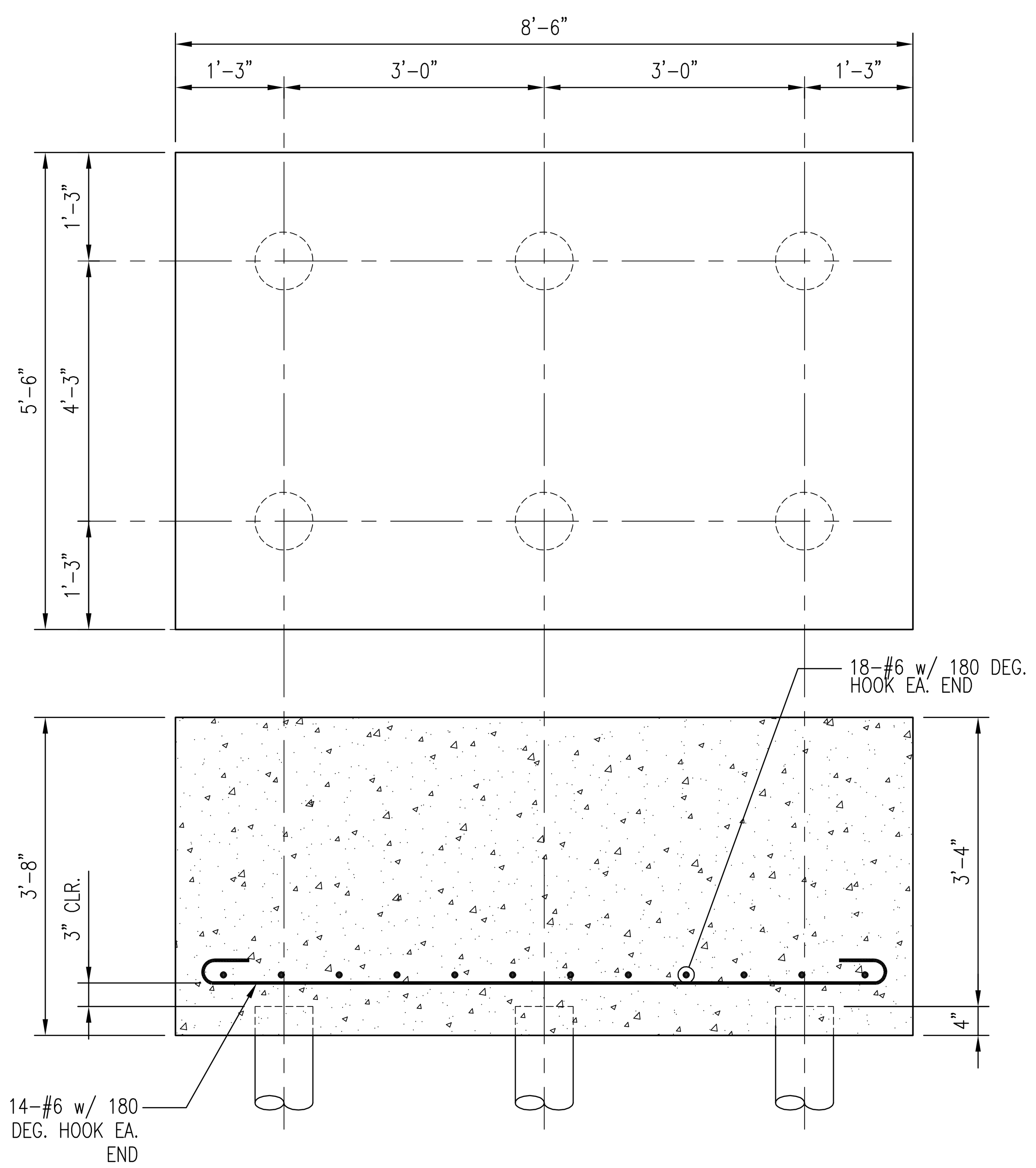
TYPICAL 4-PILE CAP (PC-4)

SCALE: N.T.S.



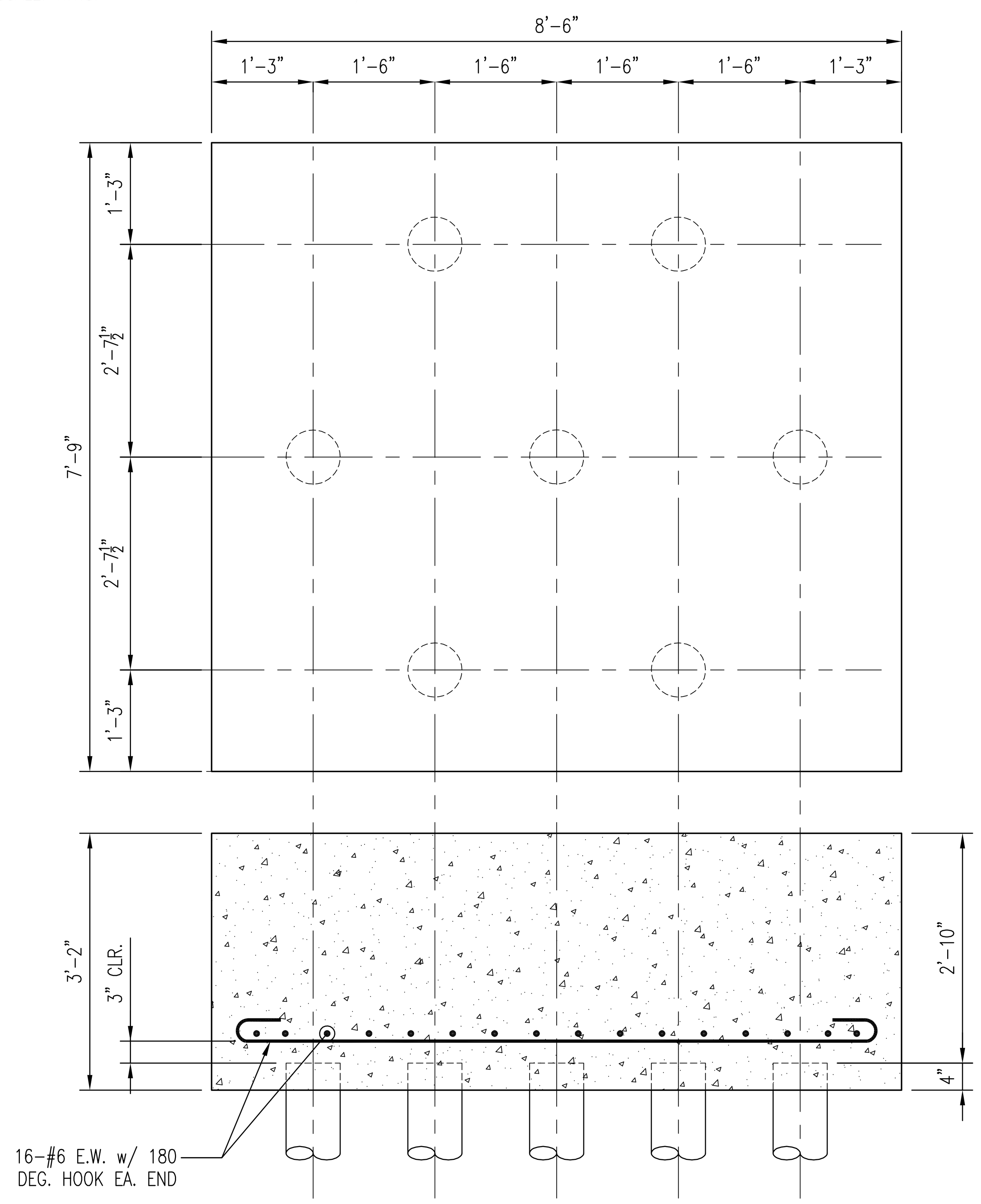
TYPICAL 5-PILE CAP (PC-5)

SCALE: N.T.S.



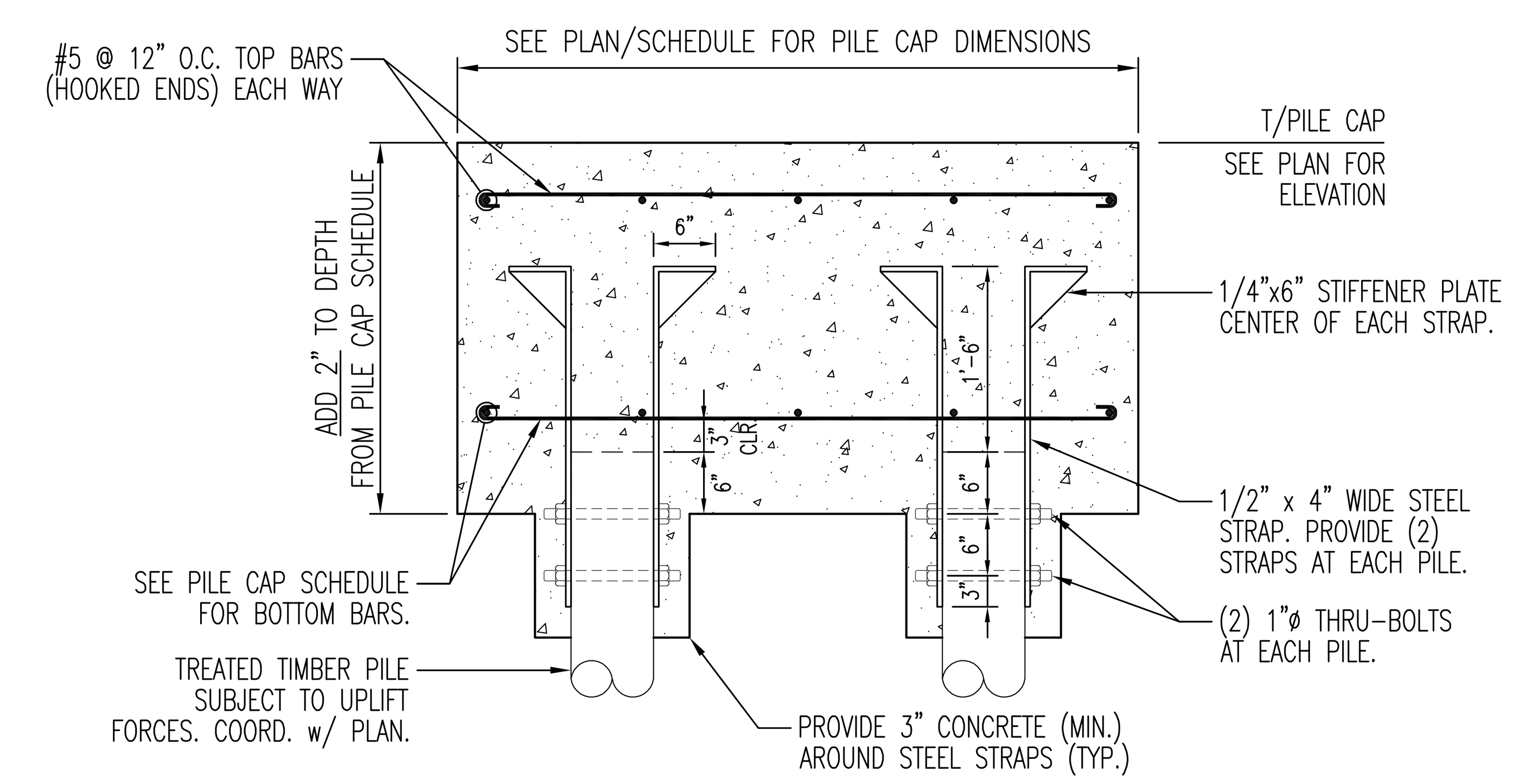
TYPICAL 6-PILE CAP (PC-6)

SCALE: N.T.S.



TYPICAL 7-PILE CAP (PC-7)

SCALE: N.T.S.



TYPICAL TENSION PILE CAP DETAIL

SCALE: 3/4" = 1'-0"

70% CD
07-13-2015

REV	DATE	DESCRIPTION	BY
1	07/13/15	70% CD	DJH

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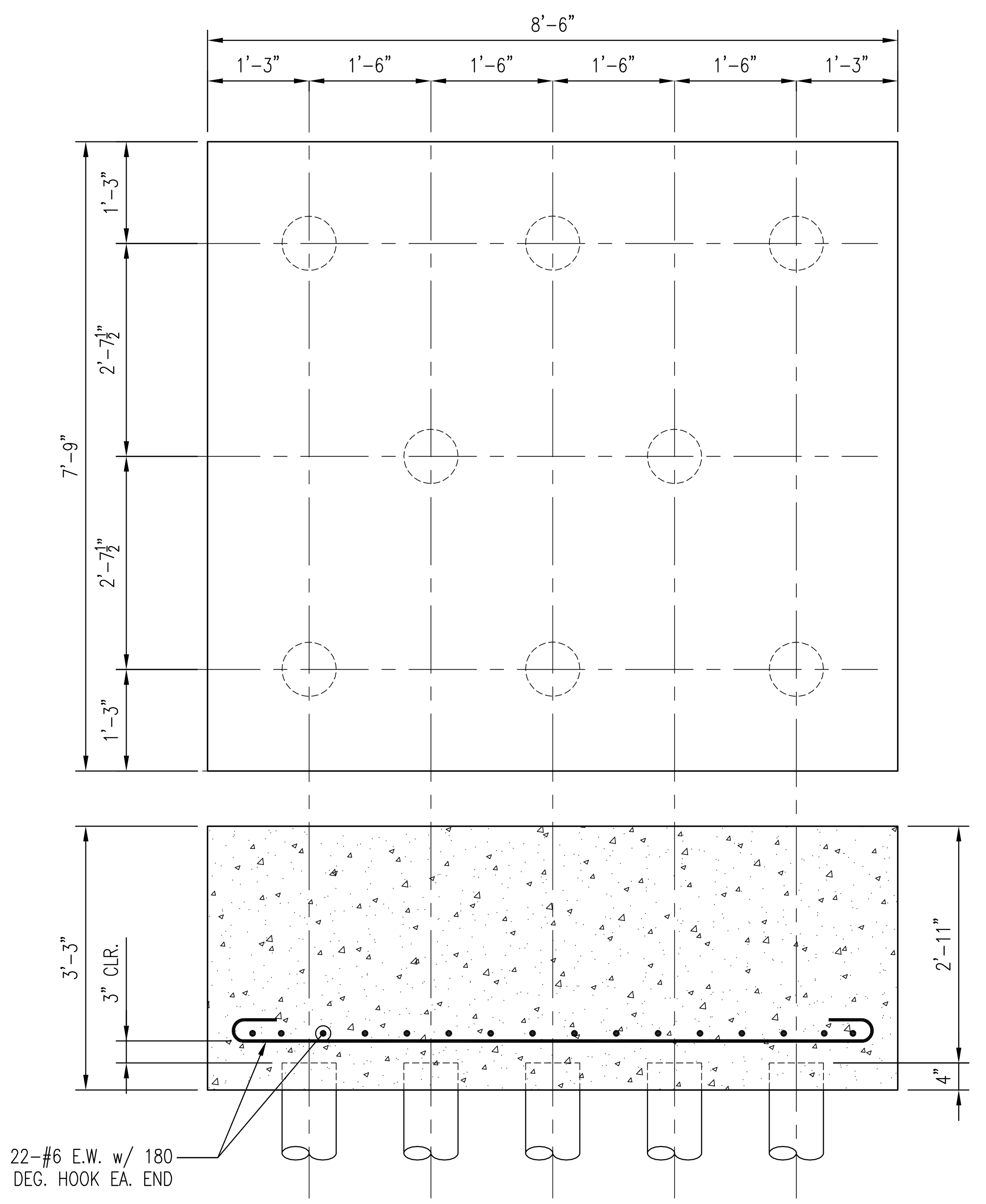
105 ROCKAWAY REALTY LLC
ROCKAWAY MEDICAL OFFICE BUILDING
105-38 ROCKAWAY BEACH BLVD., QUEENS, NY 11694

TYPICAL PILE CAP DETAILS

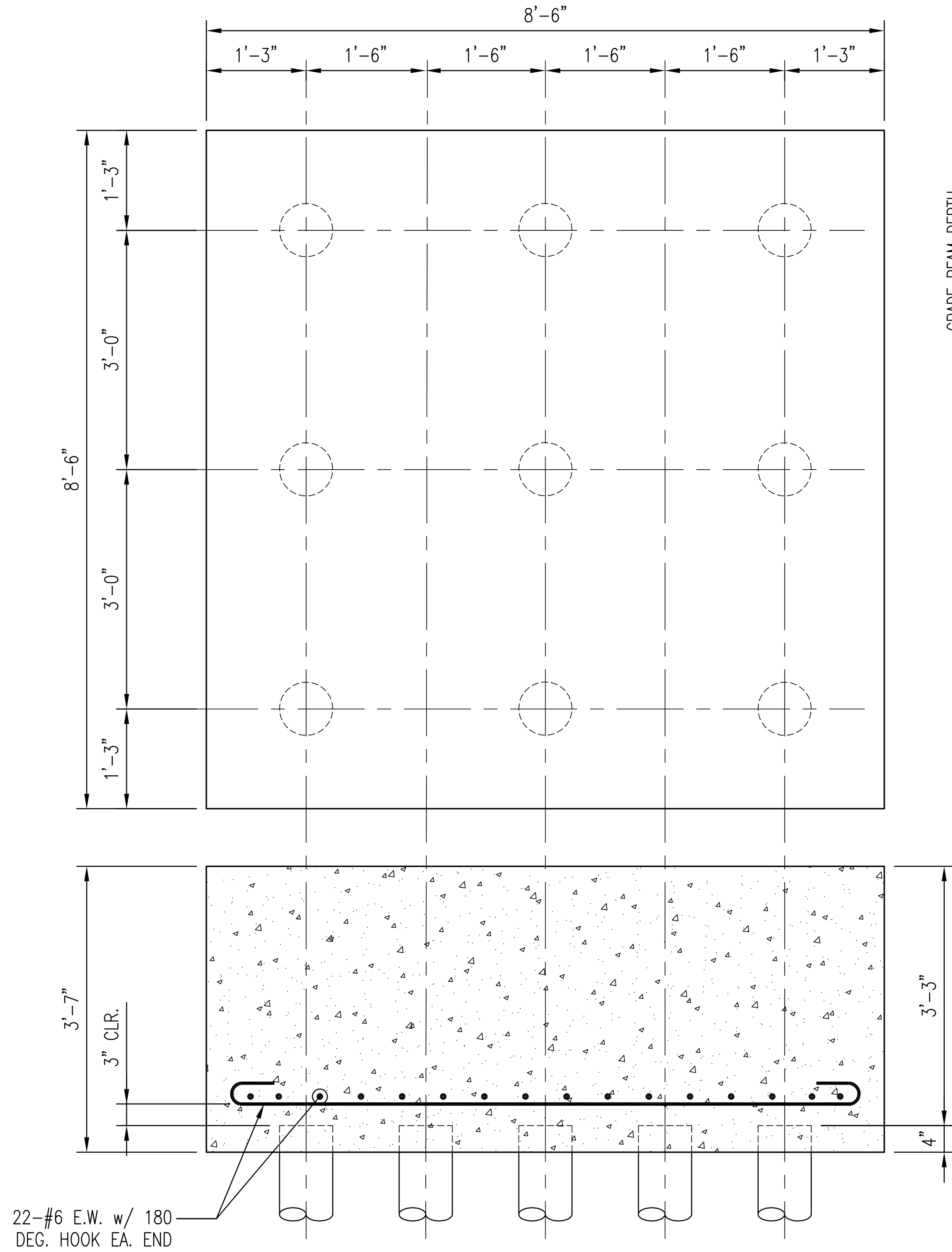
JOB NO.	15004
SCALE	AS SHOWN
DRAWN BY	DJH
CHECKED	MB
DATE	4/27/2015
DRAWING NO.	S-302.00

XX OF XX



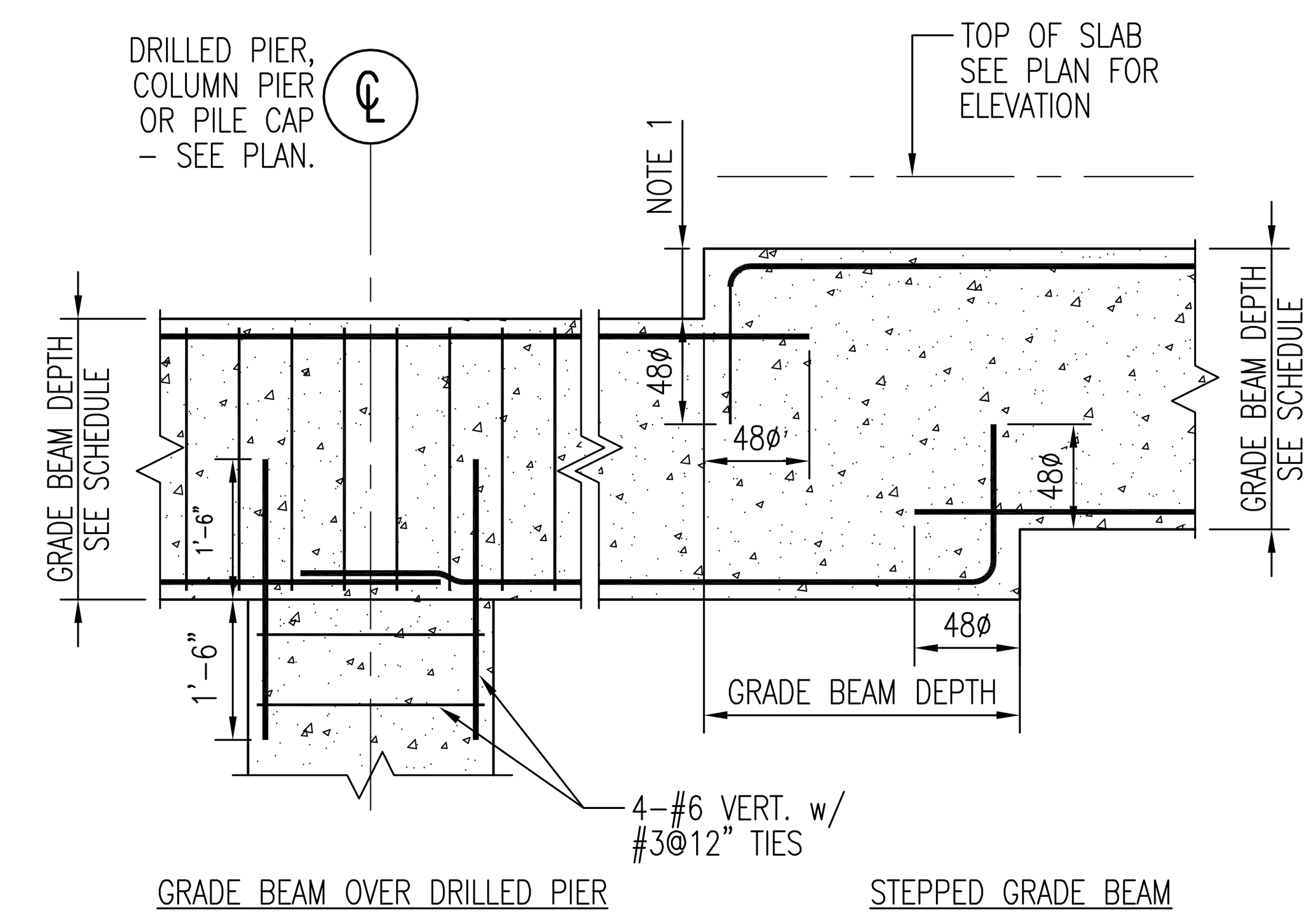
TYPICAL 8-PILE CAP (PC-8)

SCALE: N.T.S.



TYPICAL 9-PILE CAP (PC-9)

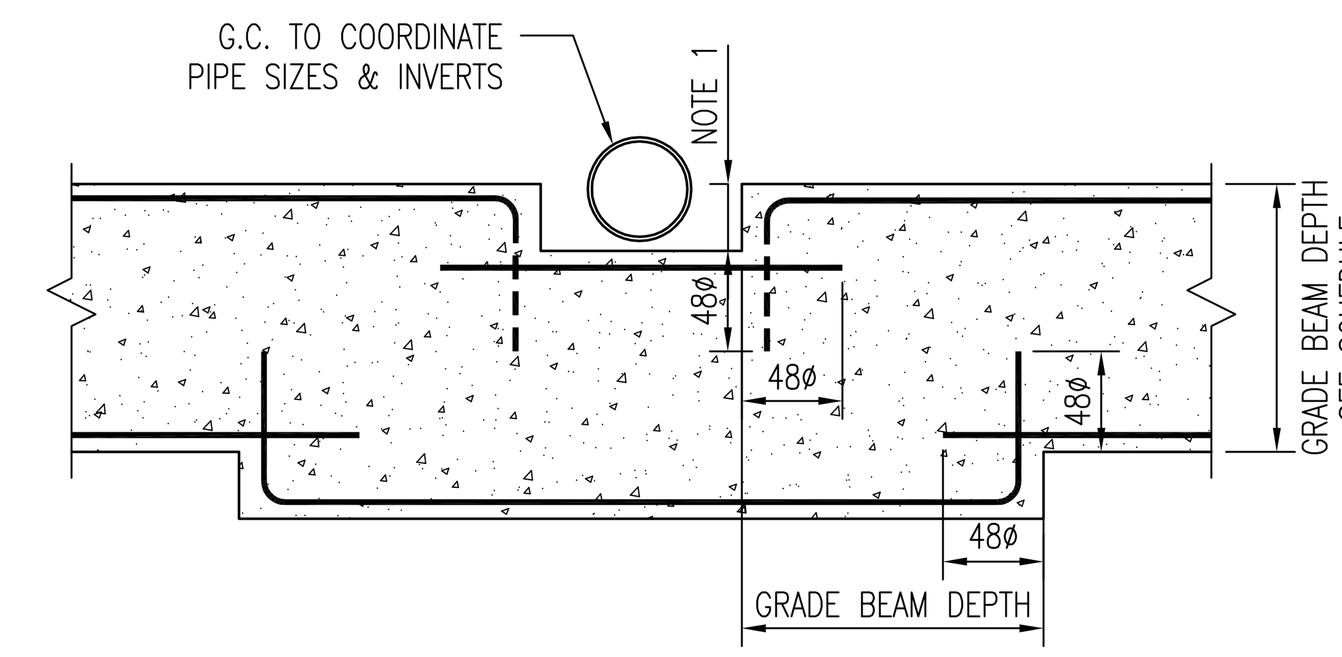
SCALE: N.T.S.



GENERAL NOTES:
1. IF DIMENSION IS 1'-6" OR LESS, DASHED REINFORCING MAY BE OMMITTED.

TYPICAL GRADE BEAM DETAILS

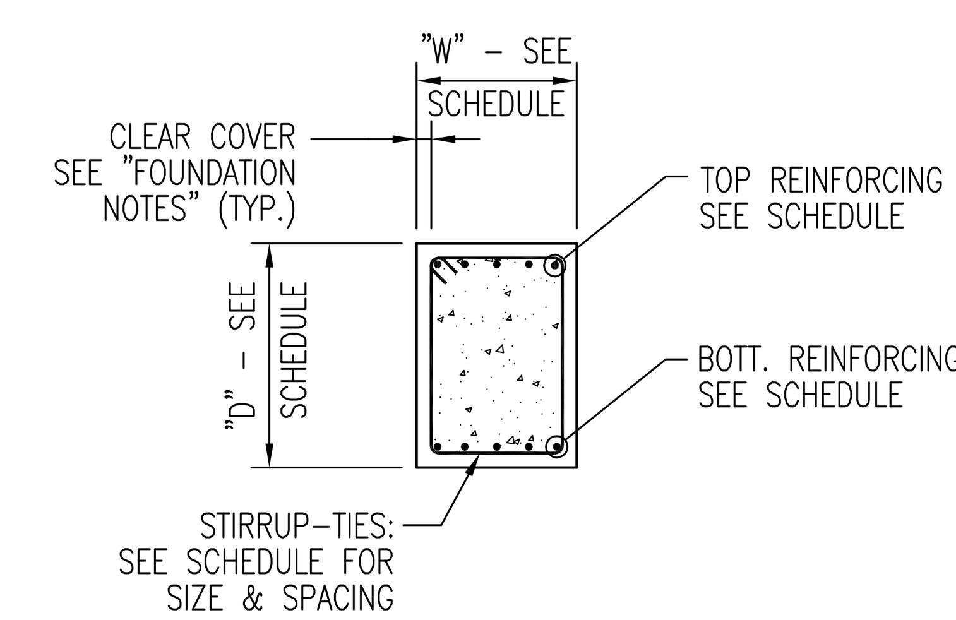
SCALE: N.T.S.



GENERAL NOTES:
1. IF DIMENSION IS 1'-6" OR LESS, DASHED REINFORCING MAY BE OMITTED.

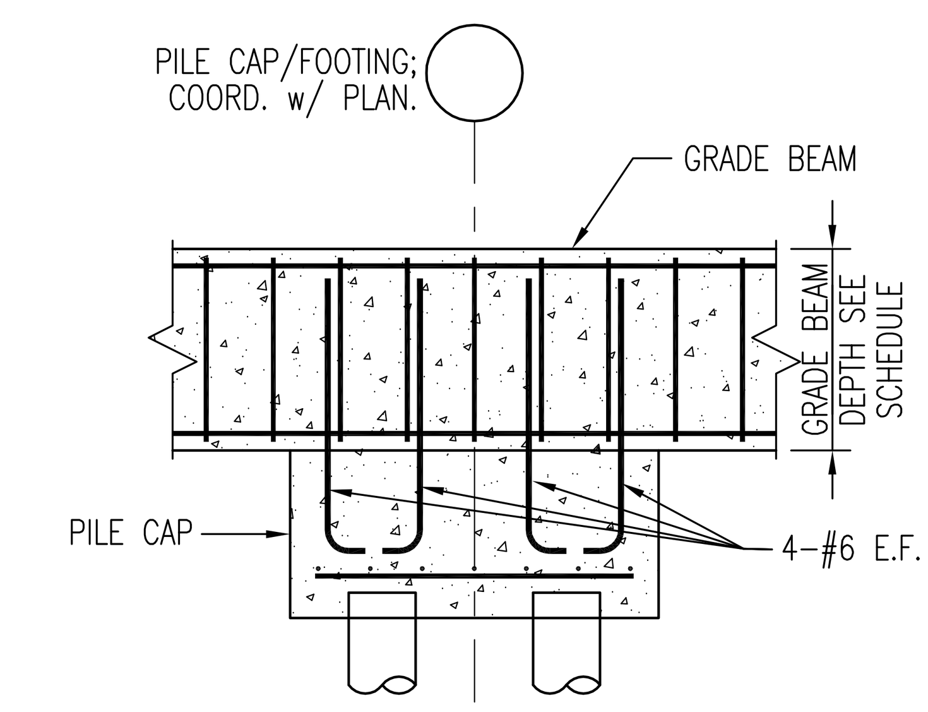
NOTCHED GRADE BEAM AT UTILITY PIPES

SCALE: N.T.S.



TYPICAL GRADE BEAM SECTION

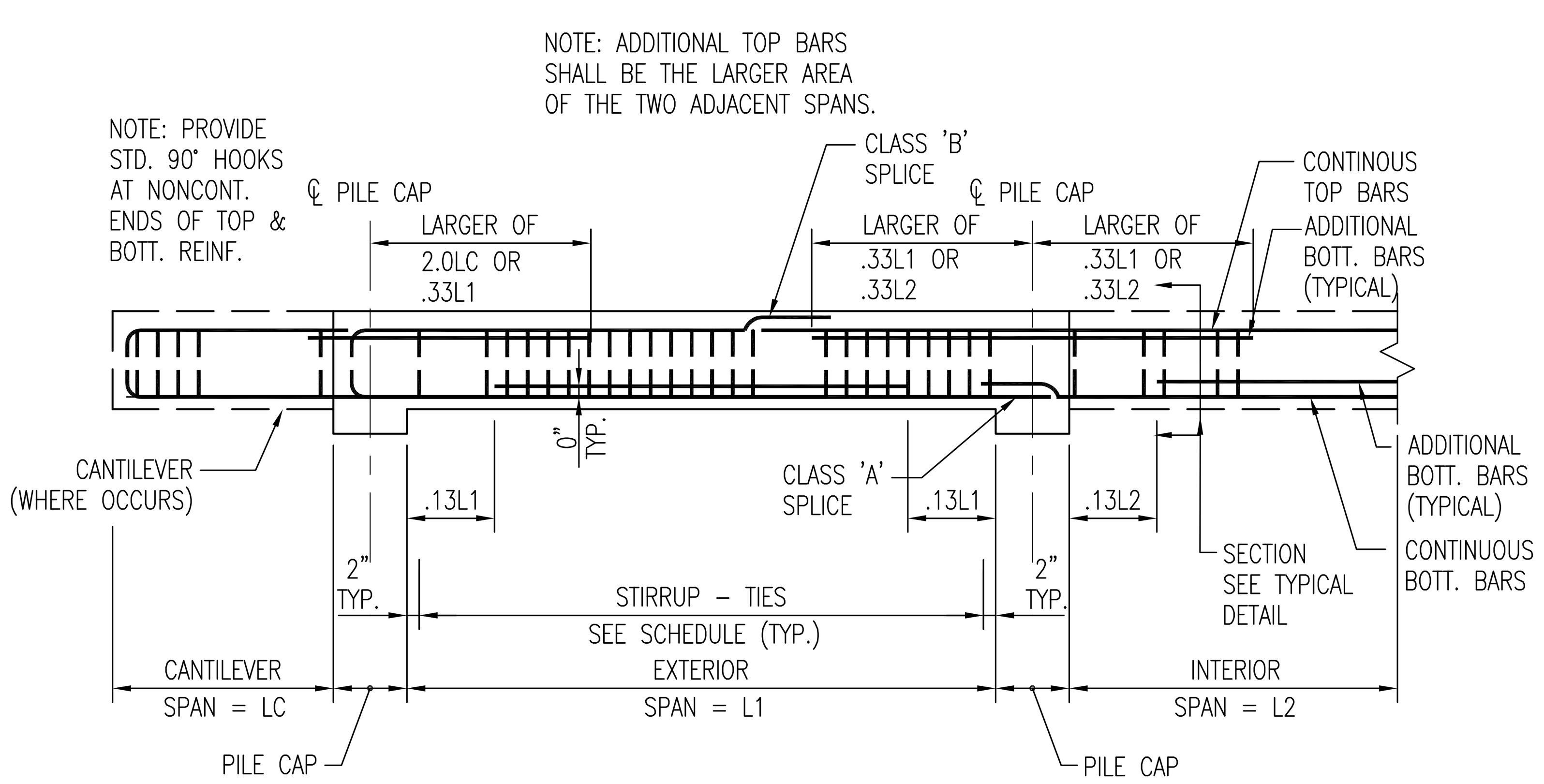
SCALE: N.T.S.



GENERAL NOTES:
1. SEE GRADE BEAM SCHEDULE FOR SIZE & REINFORCING.
2. SEE PILE CAP DETAILS FOR SIZE & REINFORCING.

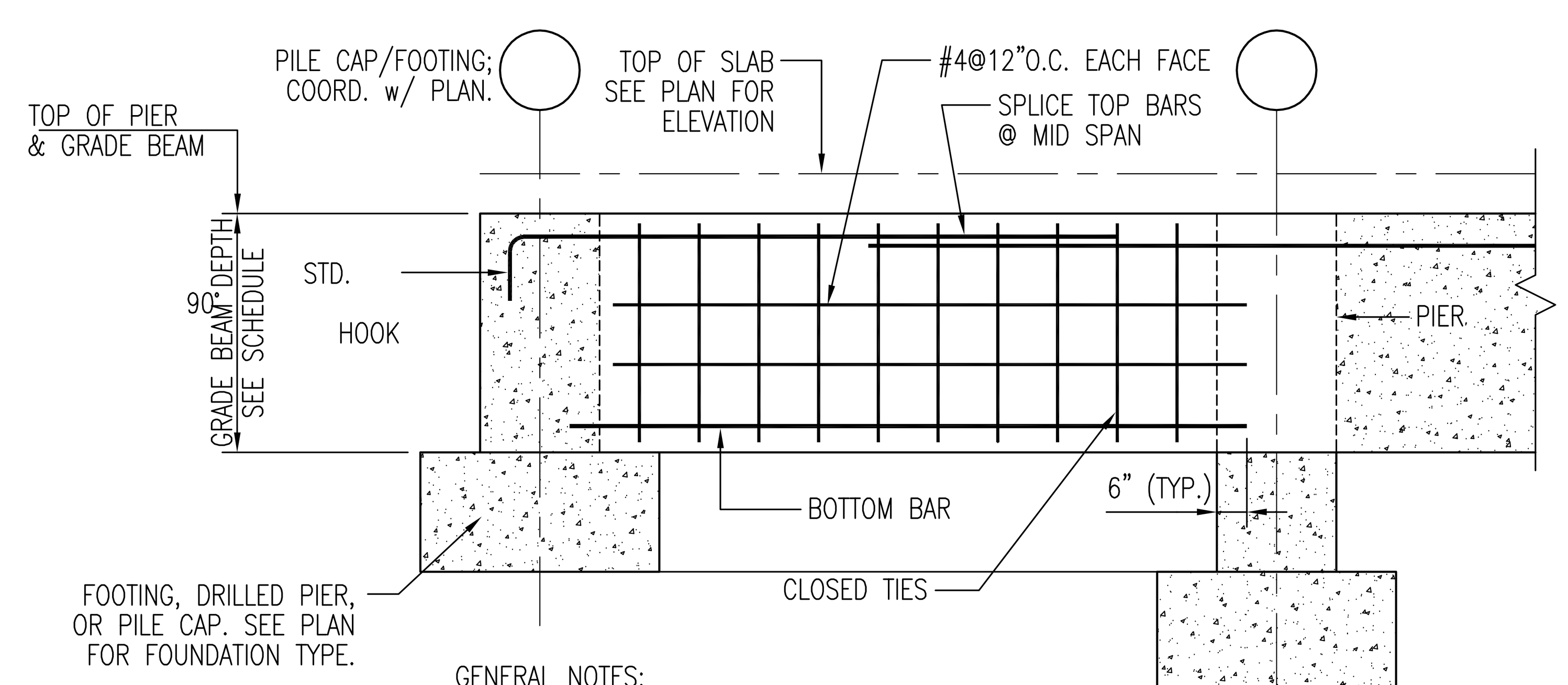
TYPICAL GRADE BEAM / PILE CAP DETAIL

SCALE: N.T.S.



TYPICAL GRADE BEAM ELEVATION DETAIL

SCALE: N.T.S.



GENERAL NOTES:
1. SEE SCHEDULE FOR GRADE BEAM REINFORCING.
2. SEE FOUNDATION PLAN FOR ADDITIONAL NOTES.

TYPICAL GRADE BEAM DETAIL

SCALE: N.T.S.

70% CD
07-13-2015

REV	DATE	DESCRIPTION	BY
1	07/13/15	70% CD	DJH

IAQ SYSTEMS INC. Consulting Engineers
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SCRANTON, PA
STRUCTURAL ENGINEER

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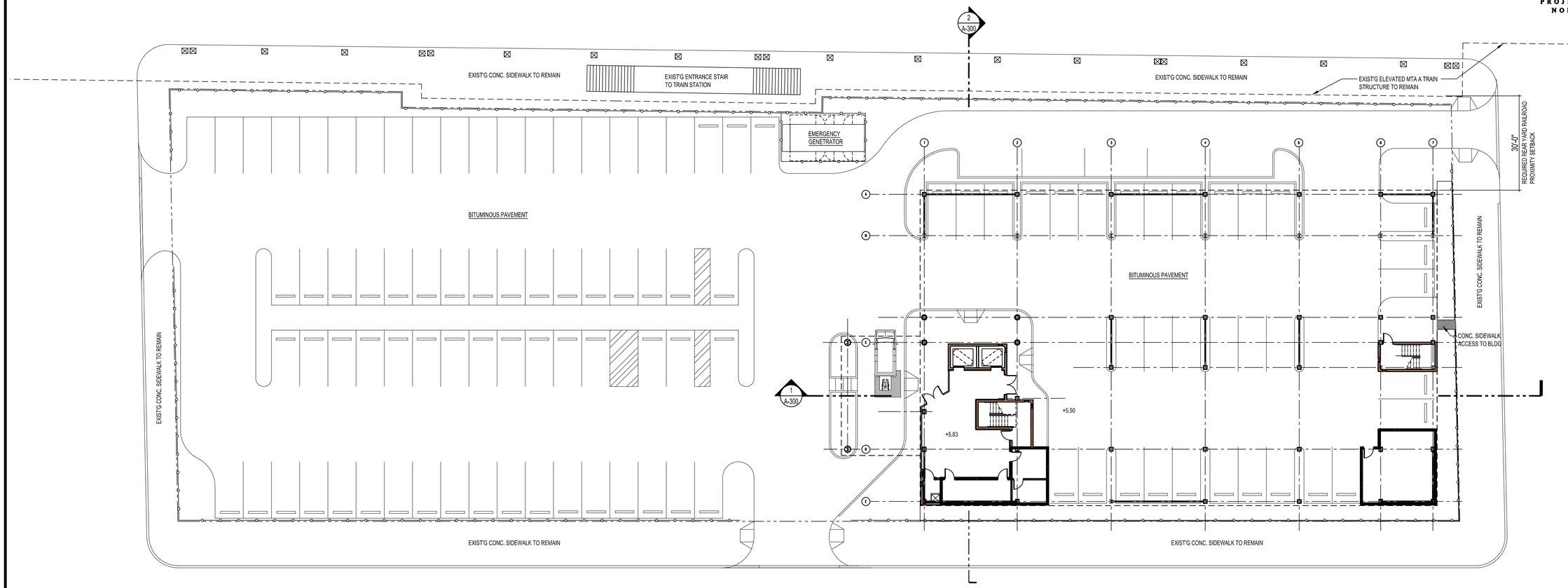
105 ROCKAWAY REALTY LLC
ROCKAWAY MEDICAL OFFICE BUILDING
105-38 ROCKAWAY BEACH BLVD., QUEENS, NY 11694

TYPICAL GRADE BEAM AND PILE CAP DETAILS

JOB NO.	15004
SCALE	AS SHOWN
DRAWN BY	DJH
CHECKED	MB
DATE	4/27/2015
DRAWING NO.	S-303.00

XX OF XX



1 ARCHITECTURAL SITE PLAN

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

REV	DATE	DESCRIPTION	BY
1	07/31/15	70 PERCENT SUBMISSION	JHC

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reuthar-bowen — Engineering, Design, Construction Services — 518 NORTH BLAKELY ST., DUNMORE, PA 18512, PHONE (570) 496-0500, FAX (570) 496-0507 — STRUCTURAL ENGINEER

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105 ROCKAWAY REALTY LLC

ROCKAWAY MEDICAL OFFICE BUILDING

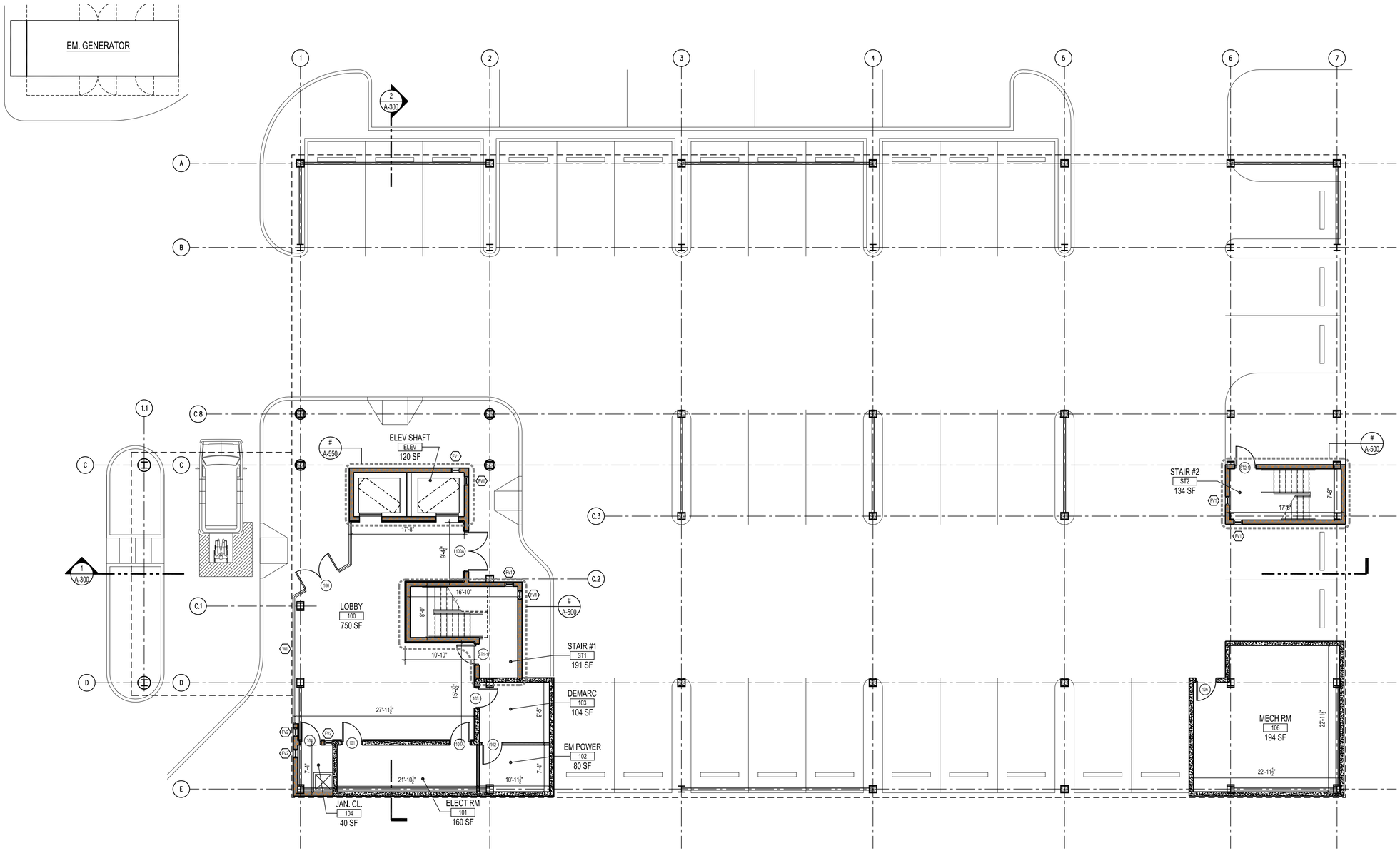
105-38 ROCKAWAY BEACH BLVD., QUEENS, NY 11694

ARCHITECTURAL SITE PLAN

JOB NO. 15004
SCALE SEE DWG
DRAWN BY JHC
CHECKED
DATE 06/04/15

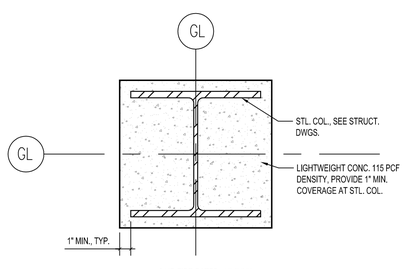
DRAWING NO. A-001.00

OF



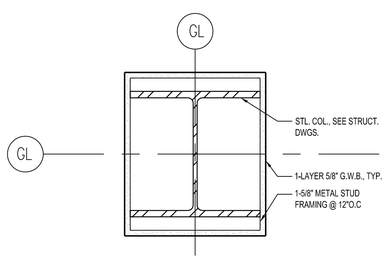
1 1ST FLOOR PLAN

SCALE: 1/8" = 1'-0"



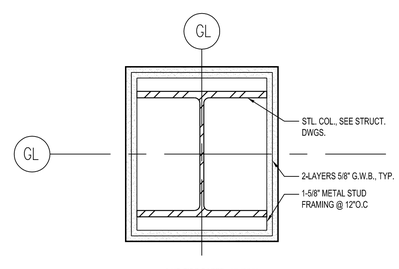
2 COLUMN DETAIL A

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



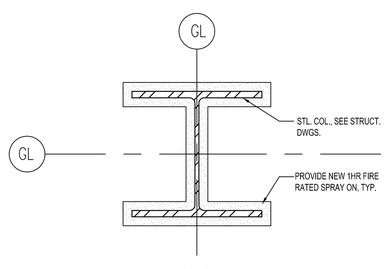
3 COLUMN DETAIL B

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



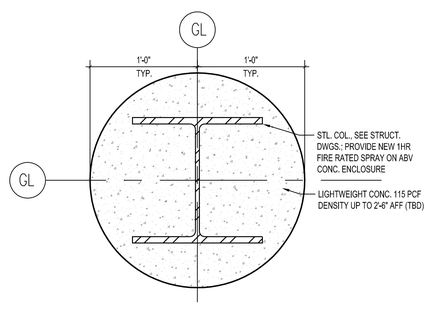
4 COLUMN DETAIL C

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



5 COLUMN DETAIL D

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



6 COLUMN DETAIL E

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

REV	DATE	DESCRIPTION	BY
1	07/31/15	TOV, CD	JHC

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LIC NO. 21A0047400

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105 ROCKAWAY REALTY LLC
ROCKAWAY MEDICAL OFFICE BUILDING
105-38 ROCKAWAY BEACH BLVD., QUEENS, NY 11694

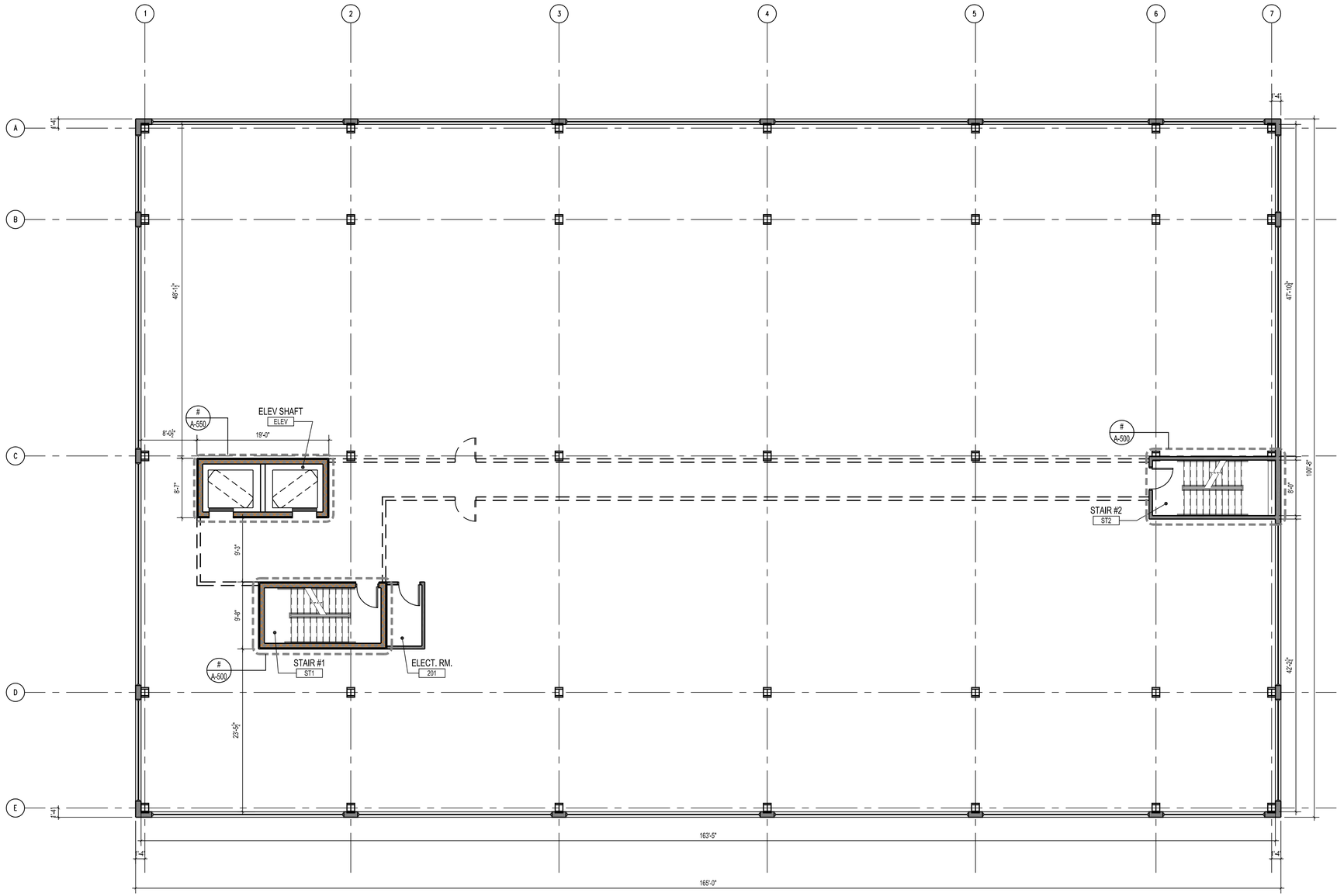
FIRST FLOOR PLAN
FIRST FLOOR

JOB NO.	15004
SCALE	SEE DWG
DRAWN BY	JHC
CHECKED	
DATE	06/04/15

DRAWING NO.

A-100

OF



1 TYP FLOOR PLAN

SCALE: 1/8" = 1'-0"

REV	DATE	DESCRIPTION	BY
1	07/31/15	TOV, CO	JHC

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105 ROCKAWAY REALTY LLC
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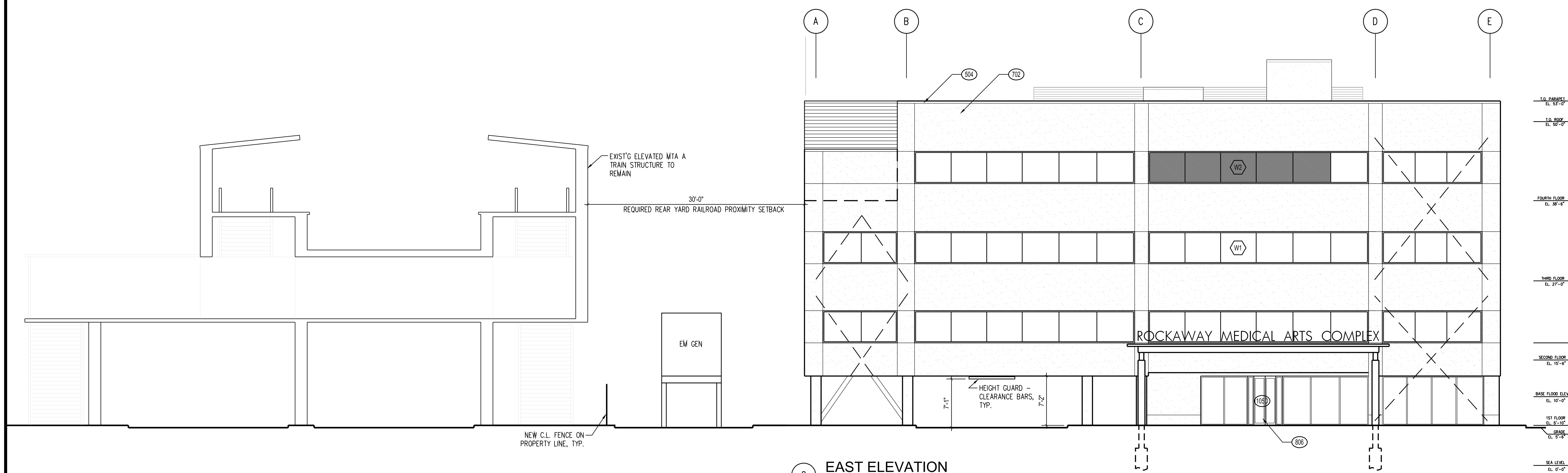
105-38 ROCKAWAY BEACH BLVD., QUEENS, NY 11694

SECOND FLOOR PLAN
SECOND FLOOR

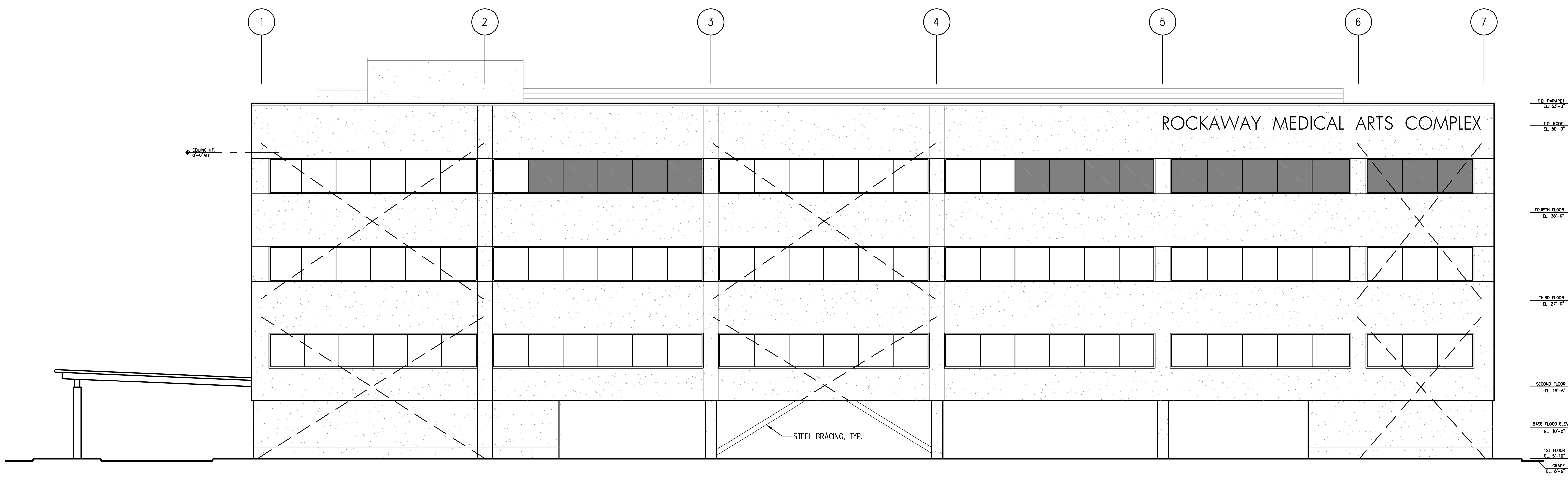
JOB NO. 15004
SCALE SEE DWG
DRAWN BY JHC
CHECKED
DATE 06/04/15

DRAWING NO.
A-101
OF



2 EAST ELEVATION

SCALE: 1/8" = 1'-0"



1 SOUTH ELEVATION

SCALE: 1/8" = 1'-0"

GENERAL NOTES:

1. PROVIDE ALUM. FLASHING AS REQ'D AT ALL WINDOW LOCATIONS.
2 CONTRACTOR TO PROVIDE FLUID APPLIED AIR/MOISTURE BARRIER FOR ALL EXISTING C.M.U. WALLS, "STOGUARD" BY STO OR EQ. TYP.

KEY NOTES

500. METALS:

- 501 GUARDRAIL, PTD. TYP.
- 502 MTL. HANDRAIL, PTD. TYP.
- 503 COMP. ALUM. PANEL
- 504 ALUMINUM COPING, TYP.
- 505 CUSTOM METAL CANOPY
- 506 ALUMINUM PANEL IN-FILL W/ ALUCOBOND WRAP-AROUND
- 507 EXTERIOR WALL MOUNTED LIGHTING FIXTURE (SEE LIGHTING FIXTURE SCHEDULE)
- 508 EXTERIOR FLOOD LIGHT (SEE LIGHTING FIXTURE SCHEDULE)

700. THERMAL & MOISTURE PROTECTION:

- 701 EXISTING MTL ROOF'G TO BE REPAINTED; COLOR TO MATCH NEW ALUM. COPING.
- 702 TYP. 2" E.I.F.S., FINE TEXTURE, "STOTHERM ESSENCES NEXT BY STO OR EQ.
- 703 E.I.F.S. V-GROOVE, TYP.
- 704 HARD COAT STUCCO, TYP.

800. DOORS & WINDOWS:

- 801 ALUMINUM & GLASS STOREFRONT SYSTEM - CLEAR ANODIZED ALUMINUM, CLEAR GLASS
- 802 NEW ALUMINUM & GLASS CURTAIN WALL SYSTEM
- 803 EXIST'G ALUMINUM & GLASS CURTAIN WALL SYSTEM
- 804 H.M. DOOR; COLOR TO MATCH ADJACENT E.I.F.S. FINISH
- 805 ALUM. DOOR, SOLID PANEL; COLOR TO MATCH ADJACENT E.I.F.S. FINISH
- 806 ALUM. GLASS DOOR
- 807 ALUMINUM WINDOW

REV	DATE	DESCRIPTION	BY
1	07/13/15	70 PERCENT CD SUBMISSION	JHC

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105 ROCKAWAY REALTY LLC
ROCKAWAY MEDICAL OFFICE BUILDING
105-38 ROCKAWAY BEACH BLVD., QUEENS, NY 11694

ELEVATIONS

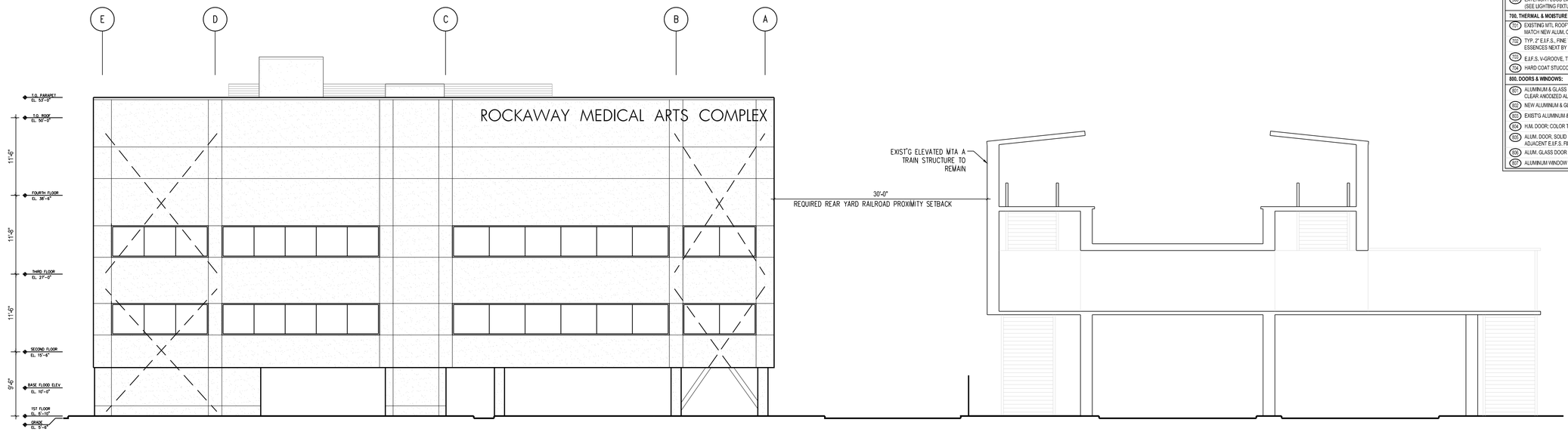
JOB NO. 15004
SCALE SEE DWG
DRAWN BY JHC
CHECKED
DATE 06/04/15
DRAWING NO. A-200
OF

GENERAL NOTES:

1. PROVIDE ALUM. FLASHING AS REQ'D AT ALL WINDOW LOCATIONS.
2. CONTRACTOR TO PROVIDE FLUID APPLIED AIR/MOISTURE BARRIER FOR ALL EXISTING C.M.U. WALLS, "STOGUARD" BY STO OR EQ. TYP.

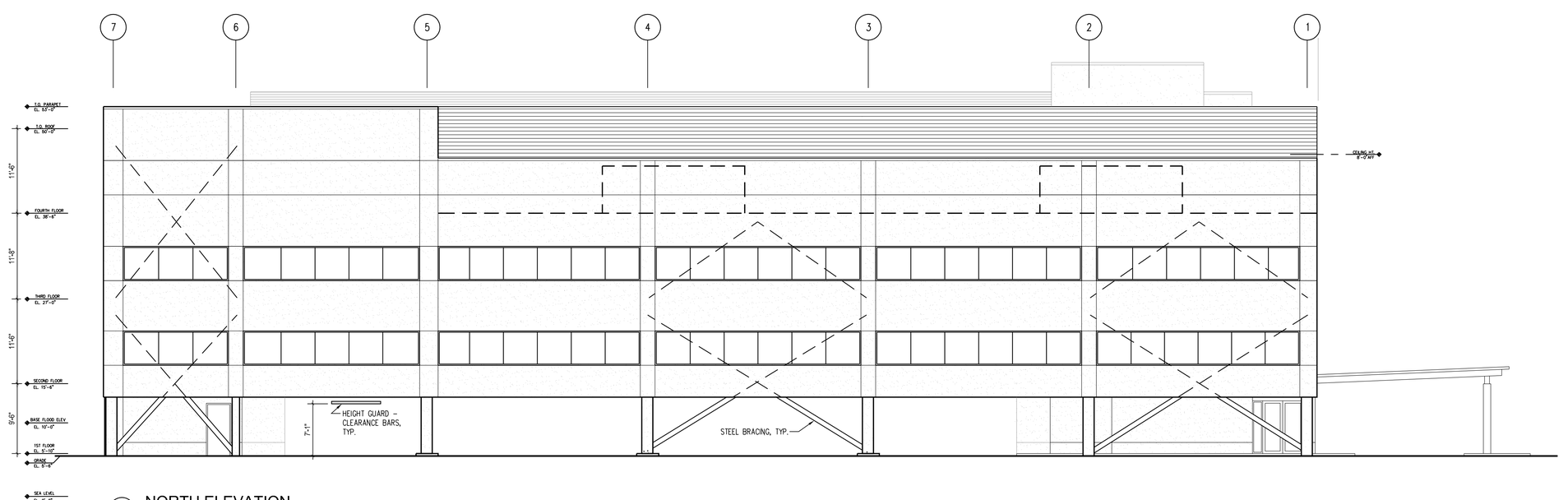
KEY NOTES

500, METALS:	
501	GUARDRAIL, PTD. TYP.
502	MTL. HANDRAIL, PTD. TYP.
503	COMP. ALUM. PANEL
504	ALUMINUM COPING, TYP.
505	CUSTOM METAL CANOPY
506	ALUMINUM PANEL IN-FILL W/ ALUCOBOND WRAP-AROUND
507	EXTERIOR WALL MOUNTED LIGHTING FIXTURE (SEE LIGHTING FIXTURE SCHEDULE)
508	EXTERIOR FLOOD LIGHT (SEE LIGHTING FIXTURE SCHEDULE)
700, THERMAL & MOISTURE PROTECTION:	
701	EXISTING MTL ROOF'G TO BE REPAINTED; COLOR TO MATCH NEW ALUM. COPING.
702	TYP. 2" E.I.F.S., FINE TEXTURE, "STOTHERM ESSENCES NEXT BY STO OR EQ.
703	E.I.F.S. V-GROOVE, TYP.
704	HARD COAT STUCCO, TYP.
800, DOORS & WINDOWS:	
801	ALUMINUM & GLASS STOREFRONT SYSTEM - CLEAR ANODIZED ALUMINUM, CLEAR GLASS
802	NEW ALUMINUM & GLASS CURTAIN WALL SYSTEM
803	EXIST'G ALUMINUM & GLASS CURTAIN WALL SYSTEM
804	H.M. DOOR; COLOR TO MATCH ADJACENT E.I.F.S. FINISH
805	ALUM. DOOR, SOLID PANEL; COLOR TO MATCH ADJACENT E.I.F.S. FINISH
806	ALUM. GLASS DOOR
807	ALUMINUM WINDOW



2 WEST ELEVATION

SCALE: 1/8" = 1'-0"



1 NORTH ELEVATION

SCALE: 1/8" = 1'-0"

REV	DATE	DESCRIPTION	BY
1	07/31/15	70 PERCENT CD SUBMISSION	JHC

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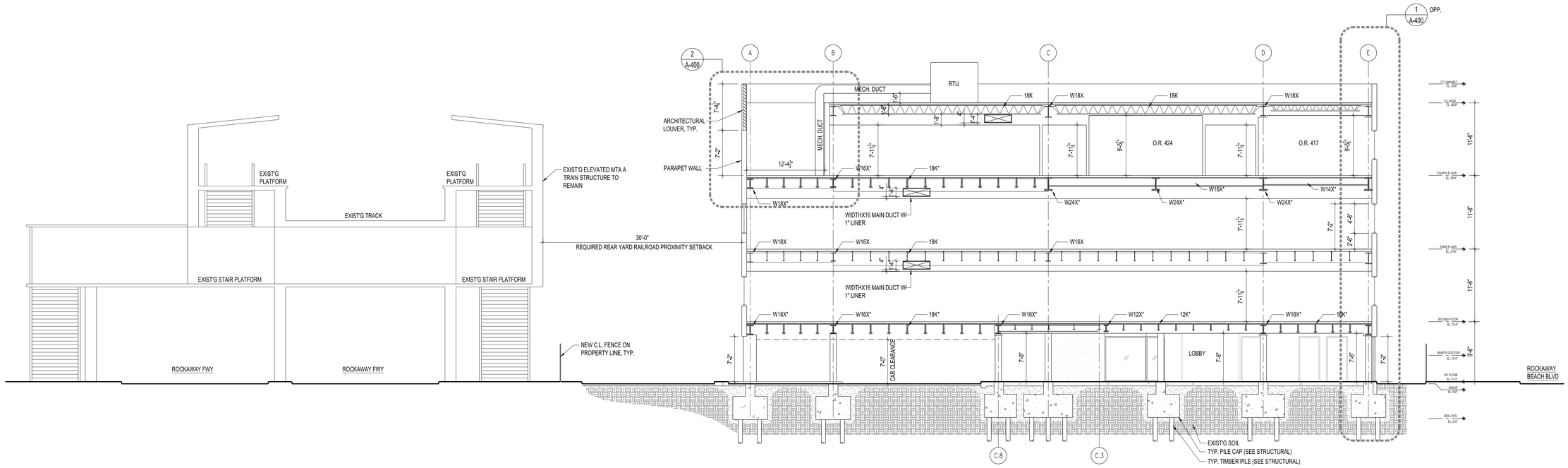
ELEVATIONS

JOB NO.	15004
SCALE	SEE DWG
DRAWN BY	JHC
CHECKED	
DATE	06/04/15

DRAWING NO.

A-201

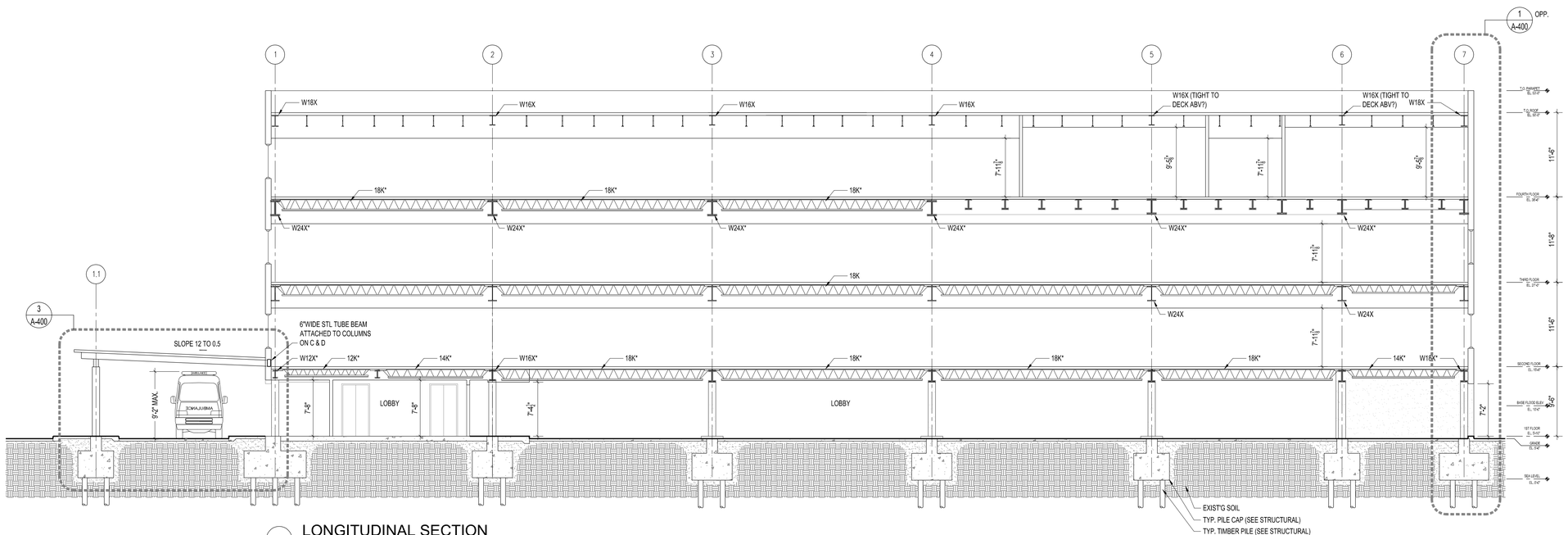
OF



2 CROSS SECTION

SCALE: 1/8" = 1'-0"

NOTES!
1. ALL STRUCTURAL MEMBERS INDICATED W/ * TO BE APPLIED W/ CEMENTITIOUS FIRE PROOF (APPROX. 1" THICK)



1 LONGITUDINAL SECTION

SCALE: 1/8" = 1'-0"

NOTES!
1. ALL STRUCTURAL MEMBERS INDICATED W/ * TO BE APPLIED W/ CEMENTITIOUS FIRE PROOF (APPROX. 1" THICK)

REV	DATE	DESCRIPTION	BY
1	07/31/15	70% CD	JHC

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105 ROCKAWAY REALTY LLC
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105-38 ROCKAWAY BEACH BLVD., QUEENS, NY 11694

BUILDING SECTIONS

JOB NO.	15004
SCALE	SEE DWG
DRAWN BY	JHC
CHECKED	
DATE	06/04/15

DRAWING NO.

A-300

OF

APPENDIX 2 – CITIZEN PARTICIPATION PLAN

The NYC Office of Environmental Remediation and 105 Rockaway Realty LLC have established this Citizen Participation Plan because the opportunity for citizen participation is an important component of the NYC Voluntary Cleanup Program. This Citizen Participation Plan describes how information about the project will be disseminated to the Community during the remedial process. As part of its obligations under the NYC VCP, 105 Rockaway Realty LLC will maintain a repository for project documents and provide public notice at specified times throughout the remedial program. This Plan also takes into account potential environmental justice concerns in the community that surrounds the project Site. Under this Citizen Participation Plan, project documents and work plans are made available to the public in a timely manner. Public comment on work plans is strongly encouraged during public comment periods. Work plans are not approved by the NYC Office of Environmental Remediation (OER) until public comment periods have expired and all comments are formally reviewed. An explanation of cleanup plans in the form of a public meeting or informational session is available upon request to OER's project manager assigned to this Site, Alysha Alfieri, 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:

Queens Library at Seaside

312 Beach 54th Street

(718) 634-1876

HOURS:

Monday – 12-8 pm
Tuesday – 1-6 pm
Wednesday – 10 am-6 pm
Thursday – 12-8 pm
Friday – 10 am – 6 pm
Saturday – 10 am – 5 pm
Sunday 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: The major issues of concern to the public will be potential impacts of nuisance odors and dust during the disturbance of historic fill soils at the Site. This work will be performed in accordance with procedures which will be specified under a detailed Remedial Program which considers and takes preventive measures for exposures to future residents of the property and those on adjacent properties during construction. Detailed plans to monitor the potential for exposure including a Construction Health and Safety Plan and a Community Air Monitoring Plan are required components of the remedial program. Implementation of these plans will be under the direct oversight of the New York City Office of Environmental Remediation (NYCOER).

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

- On-site air monitoring for worker protection;
- Perimeter air monitoring for community protection;
- Dust control as needed based on air monitoring.

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

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

CITIZEN PARTICIPATION MILESTONES: Public notice and public comment activities occur at several steps during a typical NYC VCP project. These steps include:

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

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

APPENDIX 3 – SUSTAINABILITY STATEMENT

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

REUSE OF CLEAN, RECYCLABLE MATERIALS AND REDUCED CONSUMPTION OF NON-RENEWABLE RESOURCES: Reuse of clean, locally-derived recyclable materials reduces consumption of non-renewable virgin resources and can provide energy savings and greenhouse gas reduction.

The enrollee plans to reuse clean, non-virgin materials in the selected remedial action and redevelopment, including the reuse and recycling of concrete aggregate, stone and clean soils derived from the Site.

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

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.

Natural gas will be utilized for fuel in the new building.

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.

On-Site controls that will provide protection against recontamination originating from currently unknown off-Site sources include a waterproofing/vapor barrier that can eliminate the risk of future migration of soil vapor contamination from off-Site. Site covers including bituminous asphalt driving and parking areas and concrete walkways on-Site will help to prevent the occurrence of new contamination.

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

STORMWATER RETENTION: Stormwater retention improves water quality by lowering the rate of combined 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: 105 Rockaway Realty LLC is participating in OER's Paperless Voluntary Cleanup Program. Under this program, submission of electronic documents will replace submission of hard copies for the review of project documents, communications and milestone reports.

LOW-ENERGY PROJECT MANAGEMENT PROGRAM: 105 Rockaway Realty LLC is participating in OER's low-energy project management program. Under this program, whenever possible, meetings are held using remote communication technologies, such as videoconferencing and teleconferencing to reduce energy consumption and traffic congestion associated with personal transportation.

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

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

APPENDIX 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. 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 – MANUFACTURER SPECIFICATIONS FOR WATERPROOFING / VAPOR BARRIER

Section 071324
Pre-Applied Sheet Membrane Waterproofing

PART 1 — GENERAL

1.01 SUMMARY

A. The Work of this Section includes, but is not limited to, pre-applied sheet membrane waterproofing that forms an integral bond to poured concrete for the following applications:

1. Vertical Applications: Membrane applied against soil retention system prior to placement of concrete foundation walls;
2. Horizontal Applications: Membrane applied on prepared subbase prior to placement of concrete slabs.

B. Related sections include, but are not limited to, the following:

1. Section 031000 - Concrete Forming
2. Section 312000 – Earth Moving
3. Section 031500 – Concrete Accessories
4. Section 031500 – Hydrophilic Waterstop
5. Section 316200 - Driven Piles
6. Section 316400 - Caissons
1. Section 032000 - Concrete Reinforcing
2. Section 033000 – Cast-In-Place Concrete

NOTE TO SPECIFIER: For vertical applications, coordinate with concrete formwork section to require one-sided wall forming system to minimize punctures to the sheet membrane waterproofing during formwork installation.

1.02 SUBMITTALS

A. Submit manufacturer's product data, installation instructions and membrane samples for approval.

1.03 REFERENCE STANDARDS

A. The following standards and publications are applicable to the extent referenced in the text.

B. American Society for Testing and Materials (ASTM):

C 836 Standard Specification for High Solids, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course

D 412 Standard Test Methods for Rubber Properties in Tension

D 570 Standard Test Method for Water Absorption of Plastics

D 903 Standard Test Method for Peel or Stripping Strength of Adhesive Bonds

D 1876 Standard Test Method for Peel Release of Adhesives (T-Peel)

D 1970 Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection

D 3767 Standard Practice for Rubber - Measurements of Dimensions

D 5385 Standard Test Method for Hydrostatic Pressure Resistance of Waterproofing Membranes

E 96 Standard Test Methods for Water Vapor Transmission of Materials

E 154 Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover

1.04 QUALITY ASSURANCE

A. Manufacturer: Sheet membrane waterproofing system shall be manufactured and marketed by a firm with a minimum of 20 years experience in the production and sales of sheet membrane waterproofing. Manufacturers proposed for use but not named in these specifications shall submit evidence of ability to meet all requirements specified, and include a list of projects of similar design and complexity completed within the past 5 years.

B. Installer: A firm which has at least 3 years experience in work of the type required by this section.

C. Materials: For each type of material required for the work of this section, provide primary materials which are the products of one manufacturer.

D. Pre-Installation Conference: A pre-installation conference shall be held prior to commencement of field operations to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work. Agenda for meeting shall include review of special details and flashing.

E. Schedule Coordination: Schedule work such that membrane will not be left exposed to weather for longer than that recommended by the manufacturer.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in labeled packages. Store and handle in strict compliance with manufacturer's instructions. Protect from damage from weather, excessive temperature and construction operations. Remove and dispose of damaged material in accordance with applicable regulations.

1.06 PROJECT CONDITIONS

A. Perform work only when existing and forecasted weather conditions are within the limits established by the manufacturer of the materials used. Proceed with installation only when the substrate construction and preparation work is complete and in condition to receive sheet membrane waterproofing.

1.07 WARRANTY

A. Sheet Membrane Waterproofing: Provide written five year material warranty issued by the membrane manufacturer upon completion of work.

PART 2 — PRODUCTS

2.01 MATERIALS

A. Pre-applied Integrally Bonded Sheet Waterproofing Membrane: Preprufe® 300R Membrane by Grace Construction Products, a 1.2mm (0.046 in) nominal thickness composite sheet membrane comprising 0.8 mm (0.030 in.) of high density polyethylene film, and layers of specially formulated synthetic adhesive layers. The membrane shall form an integral and permanent bond to poured concrete to prevent water migration at the interface of the membrane and structural concrete. Provide membrane with the following physical properties:

NOTE TO SPECIFIER: Preprufe 300R and Preprufe 300LT can both be installed at temperatures 25°F (-4°C) and above. For temperatures 25°F (-4°C) to 55°F (13°C) Grace Technical Bulleting #16 states the use of Preprufe LT Tape is recommended at all sidelaps when using Preprufe 300R. Alternatively, contractors may elect the use of Preprufe 300LT which does not require the use of Preprufe LT Tape at sidelaps in temperature ranges 25°F (-4°C) to 55°F (13°C). For this reason, Grace suggests that both products be incorporated into the specification.

PHYSICAL PROPERTIES FOR PREPRUFE 300R (or 300LT) MEMBRANE:

Property	Test Method	Typical Value
Color		White
Thickness	ASTM D 3767 Method A	1.2 mm (0.046 in.) nominal
Lateral Water Migration Resistance	ASTM D 5385 Modified[1]	Pass at 71 m (231 ft) of hydrostatic head pressure
Low Temperature Flexibility	ASTM D 1970	Unaffected at -29°C (-20°F)
Elongation	ASTM D 412 Modified[2]	500%
Crack Cycling at -23°C (-9.4°F), 100 Cycles	ASTM C 836	Unaffected, Pass
Tensile Strength, film	ASTM D 412	27.6 MPa (4,000 lbs/in.^{2})
Peel Adhesion to Concrete	ASTM D 903 Modified[3]	880 N/m (5.0 lbs/in.)
Lap Adhesion	ASTM D 1876 Modified[4]	880 N/m (5.0 lbs/in.)
Resistance to Hydrostatic Head	ASTM D 5385 Modified[5]	71 m (231 ft)
Puncture Resistance	ASTM E 154	990 N (221 lbs)
Permeance	ASTM E 96 Method B	0.6 ng/Pa x s x m^2 (0.01 perms)
Water Absorption	ASTM D 570	0.5%

Footnotes:

1. *Lateral water migration resistance is tested by casting concrete against membrane with a hole and subjecting the membrane to hydrostatic head pressure with water. The test measures the resistance of lateral water migration between the concrete and the blind side waterproofing membrane. A hydrostatic head pressure of 71 m (231 ft) of water is the limit of the apparatus.*
2. *Elongation of membrane is run at a rate of 50 mm (2 in.) per minute.*
3. *Concrete is cast against the protective coating surface of the membrane and allowed to cure (7 days minimum). Peel adhesion of membrane to concrete is measured at a rate of 50 mm (2 in.) per minute at room temperature.*
4. *The test is conducted 15 minutes after the lap is formed as per manufacturer's instructions and run at a rate of 50 mm (2 in.) per minute.*
5. *Hydrostatic head tests are performed by casting concrete against the membrane with a lap. Before the concrete sets a 3 mm (0.125 in.) spacer is inserted perpendicular to the membrane to create a gap. The cured block is placed in a chamber where water is introduced to the membrane surface up to a head of 71 m (231 ft) of water which is the limit of the apparatus.*

B. Pre-applied Integrally Bonded Sheet Waterproofing Membrane: Preprufe® 160R Membrane [or Preprufe 160LT Membrane for application temperatures between 25°F (-4°C) and 60°F (+16°C)] by Grace Construction Products, a 1.0mm (0.032 in) nominal thickness composite sheet membrane comprising 0.4 mm (0.016 in.) of high density polyethylene film, and layers of specially formulated synthetic adhesive layers. The membrane shall form an integral and permanent bond to poured concrete to prevent water migration at the interface of the membrane and structural concrete. Provide membrane with the following physical properties:

NOTE TO SPECIFIER: Preprufe 160R and Preprufe 160LT can both be installed at temperatures 25°F (-4°C) and above. For temperatures 25°F (-4°C) to 55°F (13°C) Grace Technical Bulleting #16 states the use of Preprufe LT Tape is recommended at all sidelaps when using Preprufe 160R. Alternatively, contractors may elect the use of Preprufe 160LT which does not require the use of Preprufe LT Tape at sidelaps in temperature ranges 25°F (-4°C) to 55°F (13°C). For this reason, Grace suggests that both products be incorporated into the specification.

PHYSICAL PROPERTIES FOR PREPRUFE 160R (or 160LT) MEMBRANE:

Property	Test Method	Typical Value
Color		White
Thickness	ASTM D 3767 Method A	1.0 mm (0.032 in.) nominal
Lateral Water Migration Resistance	ASTM D5385, Modified[1]	Pass at 71 m (231 ft) of hydrostatic head pressure
Low Temperature Flexibility	ASTM D 1970	Unaffected at -29°C (-20°F)
Elongation	ASTM D 412 Modified[2]	500%
Crack Cycling at -23°C (-9.4°F), 100 Cycles	ASTM C 836	Unaffected, Pass
Tensile Strength, film	ASTM D 412	27.6 MPa (4,000 lbs/in.^{2})
Peel Adhesion to Concrete	ASTM D 903 Modified[3]	880 N/m (5.0 lbs/in.)
Lap Adhesion	ASTM D 1876 Modified[4]	880 N/m (5.0 lbs/in.)
Resistance to Hydrostatic Head	ASTM D 5385 Modified[5]	Pass at 71 m (231 ft)
Puncture Resistance	ASTM E 154	445 N (100 lbs)
Permeance	ASTM E 96 Method B	0.6 ng/Pa x s x m^2 (0.01 perms)
Water Absorption	ASTM D 570	0.5%

Footnotes:

1. *Lateral water migration resistance is tested by casting concrete against membrane with a hole and subjecting the membrane to hydrostatic head pressure with water. The test measures the resistance of lateral water migration between the concrete and the blind side waterproofing membrane. A hydrostatic head pressure of 71 m (231 ft) of water is the limit of the apparatus.*
2. *Elongation of membrane is run at a rate of 50 mm (2 in.) per minute.*
3. *Concrete is cast against the protective coating surface of the membrane and allowed to cure (7 days minimum). Peel adhesion of membrane to concrete is measured at a rate of 50 mm (2 in.) per minute at room temperature.*
4. *The test is conducted 15 minutes after the lap is formed as per manufacturer's instructions and run at a rate of 50 mm (2 in.) per minute.*
5. *Hydrostatic head tests are performed by casting concrete against the membrane with a lap. Before the concrete sets a 3 mm (0.125 in.) spacer is inserted perpendicular to the membrane to create a gap. The cured block is placed in a chamber where water is introduced to the membrane surface up to a head of 71 m (231 ft) of water which is the limit of the apparatus.*

C. Waterstop: Adcor™ ES hydrophilic non-bentonite waterstop by Grace Construction Products for non-moving concrete construction joints.

PHYSICAL PROPERTIES FOR GRACE ADCOR™ ES HYDROPHYLIC WATERSTOP:

Property	Typical Value
Color	Green
Size	1.0 in. x ½ in. x 16 ft. rolls (25.4 mm x 12.7 mm x 4.9 m)
Hydrostatic Head Resistance	70 m (231 ft)
Wet - Dry Cycling [25 Cycles @ 231 ft. (70 m)]	No Effect
Adhesion to Concrete using Adcor ES Adhesive	Excellent

D. Preformed Soil Retention Wall Tieback Cover: Preprufe Tieback Cover by Grace Construction Products as a prefabricated detail for soil retention wall tiebacks.

E. Preformed Inside and Outside Corners: Preprufe Preformed Corners by Grace Construction Products as prefabricated inside and outside corners.

F. Tape for covering cut edges, roll ends, penetrations and detailing: Preprufe Tape LT (for temperatures between 25°F (-4°C) and 86°F (+30°C)) and Preprufe Tape HC (for use in Hot Climates, minimum 50°F (10°C))

G. Miscellaneous Materials: accessories specified or acceptable to manufacturer of pre-applied waterproofing membrane.

PART 3 — EXECUTION

3.01 EXECUTION

A. The installer shall examine conditions of substrates and other conditions under which this work is to be performed and notify the Contractor, in writing, of circumstances detrimental to the proper completion of the work. Do not proceed with work until unsatisfactory conditions are corrected.

3.02 SUBSTRATE PREPARATION

A. It is essential to create a sound and solid substrate to eliminate movement during the concrete pour. Substrates must be regular and smooth with no gaps or voids greater than 0.5 in. (12 mm). Grout around all penetrations such as utility conduits, etc. for stability.

1. Horizontal Surfaces - The substrate must be free of loose aggregate and sharp protrusions. Avoid curved or rounded substrates. When installing over earth or crushed stone, ensure substrate is well compacted to avoid displacement of substrate due to traffic or concrete pour. The surface does not need to be dry, but standing water must be removed.
2. Vertical Surfaces - Use concrete, plywood, insulation or other approved facing to sheet piling to provide support to the membrane. Board systems such as timber lagging must be close butted to provide support and not more than 0.5 in. (12 mm) out of alignment.

3.03 INSTALLATION, HORIZONTAL APPLICATIONS

A. Strictly comply with installation instructions in manufacturer's published literature, including but not limited to, the following:

1. Place the membrane HDPE film side to the substrate with the clear plastic release liner facing towards the concrete pour. End laps should be staggered to avoid a build-up of layers.
2. Leave the plastic release liner in position until overlap procedure is completed.
3. Accurately position succeeding sheets to overlap the previous sheet 3 in. (75 mm) along the marked selvedge. Ensure the underside of the succeeding sheet is clean, dry and free from contamination before attempting to overlap.
4. Peel back the plastic release liner from between the overlaps as the two layers are bonded together. Ensure a continuous bond is achieved without creases and roll firmly with a heavy roller.
5. Completely remove the plastic liner to expose the protective coating. Any initial tack will quickly disappear.

3.04 INSTALLATION, VERTICAL APPLICATIONS

A. Strictly comply with installation instructions in manufacturer's published literature, including but not limited to, the following:

1. Mechanically fasten the membrane vertically using fasteners appropriate to the substrate with the clear plastic release liner facing towards the concrete pour. The membrane may be installed in any convenient length.
2. Fastening through the selvedge using a small and low profile head fastener so that the membrane lays flat and allows firmly rolled overlaps.
3. Immediately remove the plastic release liner.
4. Ensure the underside of the succeeding sheet is clean, dry and free from contamination before attempting to overlap.
5. Roll firmly to ensure a watertight seal.
6. Overlap all roll ends and cut edges by a minimum 3 in. (75 mm) and ensure the area is clean and free from contamination, wiping with a damp cloth if necessary.
7. Allow to dry and apply Preprufe Tape LT (or HC in hot climates) centered over the lap edges and roll firmly.
8. Immediately remove printed plastic release liner from the tape.

3.05 WATERSTOP INSTALLATION

A. Strictly comply with installation instructions in manufacturer's published literature, including but not limited to, the following:

1. Secure Adcor ES using masonry nails 1½ in. - 2 in. (40 mm – 50 mm) long with a washer ¾ in. (20 mm) in diameter. Hilti EM6-20-12 FP8 shot fired fixings with ¼ in. (6 mm) nuts and ¾ in. (20 mm) diameter washers may also be used. Fixings should be spaced at a maximum of 12 in. (300 mm) centers with a minimum spacing that ensures proper contact to substrate.
2. On irregular concrete faces, or on vertical surfaces, apply a ½ in. (12 mm) bead of Adcor ES Adhesive as bedding for Adcor ES.

3. Adcor ES joints should overlap a minimum of 4 in. (100 mm), ensuring full contact between jointed pieces.

3.06 PROTECTION

A. Protect membrane in accordance with manufacturer's recommendations until placement of concrete. Inspect for damage just prior to placement of concrete and make repairs in accordance with manufacturer's recommendations.

END OF SECTION

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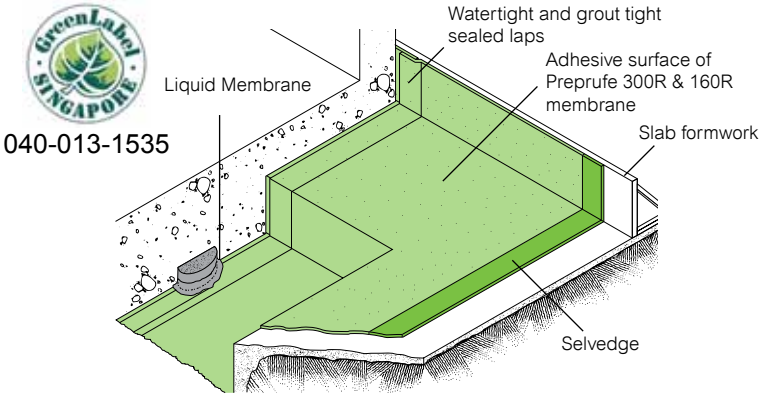
Document Code: GSWP-001B Updated: 7/2012

Preprufe® 300R & 160R

Pre-applied waterproofing membranes that bond integrally to poured concrete for use below slabs or behind basement walls on confined sites

040-013-1535



Advantages

- Forms a unique integral seal to concrete poured against it. This prevents water migration and makes it unaffected by ground settlement beneath slabs.
- Fully-adhered watertight laps and detailing
- Provides a barrier to water, moisture and gas – physically isolates the structure from the surrounding ground.
- BBA Certified for basement Grades 2, 3, & 4 to BS 8102:1990
- Zero permeance to moisture
- Solar reflective - reduced temperature gain
- Simple and quick to install, requiring no priming or fillets.
- Can be applied to permanent formwork - allows maximum use of confined sites.
- Self protecting - can be trafficked immediately after application and ready for immediate placing of reinforcement.
- Unaffected by wet conditions - cannot activate prematurely.
- Inherently waterproof, non-reactive system:
  - not reliant on confining pressures or hydration
  - unaffected by freeze/thaw, wet/dry cycling
- Chemically resistant, effective in all types of soils and waters - protects structure from salt or sulphate attack.

Description

Preprufe® 300R & 160R membranes are unique composite sheets comprising a thick HDPE film, an aggressive pressure sensitive adhesive and a weather resistant protective coating.
Unlike conventional non-adhering membranes, which are vulnerable to water ingress tracking between the unbonded membrane and structure, the unique Preprufe seal to concrete prevents any ingress or migration of water around the structure.

The Preprufe R System includes:

- Preprufe 300R - heavy-duty grade for use below slabs and on rafts (i.e. mud slabs). Designed to accept the placing of heavy reinforcement using conventional concrete spacers.
- Preprufe 160R - thinner grade for lighter applications and reverse tanking (i.e. blindside zero property line) applications against permanent formwork such as soil retention systems.
- Preprufe Tape LT - for covering cut edges, roll ends, penetrations and detailing (temperatures between -4°C and +30°C).
- Preprufe Tape HC - as above for use in Hot Climates (minimum10°C).
- Liquid Membrane - for sealing around penetrations, etc.

Preprufe 300R & 160R membranes are applied either horizontally to smooth prepared concrete or well rolled and compacted sand or crushed stone blinding; or vertically to permanent formwork or adjoining structures. Concrete is then cast directly against the adhesive side of the membranes. The specially developed Preprufe adhesive layers work together to form a continuous and integral seal to the structure.

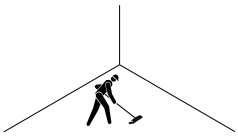
Preprufe can be returned up the inside face of slab formwork but is not recommended for conventional twin-sided formwork on walls, etc. Use Bituthene self-adhesive membrane or Procor fluid applied membrane to walls after removal of formwork for a fully bonded system to all structural surfaces.

BBA BRITISH BOARD OF AGREMENT CERTIFICATE No.

Installation

Preprufe® 300R & 160R membranes are supplied in rolls 1.2m wide, with a selvedge on one side to provide self-adhered laps for continuity between rolls. The rolls of Preprufe membrane and Preprufe Tape are interwound with a disposable plastic release liner which must be removed before placing reinforcement and concrete.

Substrate Preparation



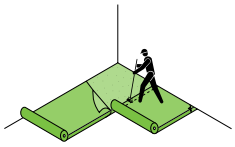
All Surfaces - It is essential to create a sound and solid substrate to eliminate movement during the concrete pour. Substrates must be regular and smooth with no gaps or voids greater than 12 mm. Grout around all penetrations such as utility conduits, etc. for stability.

Horizontal Blinding - Monolithic concrete blinding or mud slab is preferred. The blinding must be free of loose aggregate and sharp protrusions. An angular profiled blinding is recommended rather than a sloping or rounded substrate. The surface does not need to be dry, but standing water must be removed.

Vertical Sheet Piling - Use concrete, plywood, insulation or other approved facing to sheet piling to provide support to the membrane. Board systems such as timber lagging must be close butted to provide support and not more than 12 mm out of alignment.

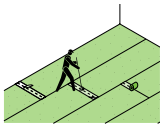
Membrane Installation

Preprufe can be applied at temperatures of -4ºC or above. During cold or damp conditions, the selvedge and tape adhesive can be gently warmed using a hot air gun or similar to remove moisture or condensation and improve initial adhesion.



Horizontal Substrates - Place the membrane HDPE film side to the substrate with printed coated side up facing towards the concrete pour. End laps should be staggered to avoid a build up of layers. Leave plastic release liner in position until overlap procedure is completed. Accurately position succeeding sheets to overlap the previous sheet 75 mm along the marked selvedge. Ensure the underside of the succeeding sheet is clean, dry and free from contamination before attempting to overlap. Peel back the plastic release liner from between the overlaps as the two layers are bonded together. Ensure a continuous bond is achieved without creases and roll firmly with a heavy roller. Completely remove the plastic liner to expose the protective coating. Any initial tack will quickly disappear.

Vertical Substrates - Mechanically fasten the membrane vertically using fixings (i.e. fasteners) appropriate to the substrate with the printed coated side facing towards the concrete pour. The membrane may be installed in any convenient length. Secure the top of the membrane using a batten such as a termination bar or fixing 50 mm below the top edge. Fixings can be made through the selvedge so that the membrane lays flat and allows firmly rolled overlaps. Immediately remove the plastic release liner. Any additional fixings must be covered with a patch of Preprufe Tape. Ensure the underside of the succeeding sheet is clean, dry and free from contamination before attempting to overlap. Roll firmly to ensure a watertight seal. Roll Ends and Cut Edges - Overlap all roll ends and cut edges by a minimum 75 mm and ensure the area is clean and free from contamination, wiping with a damp cloth if necessary. Allow to dry and apply Preprufe Tape LT (or HC in hot climates) centered over the lap and roll firmly. Immediately remove printed plastic release liner from the tape.

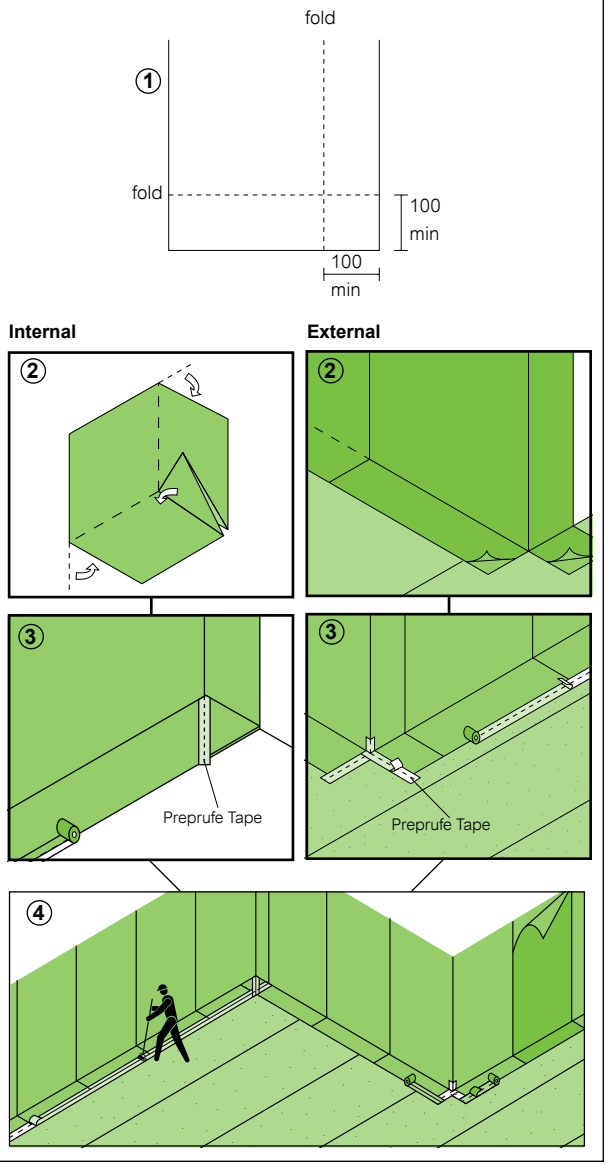


Penetrations

Use the following steps to seal around penetrations such as service pipes, piles, lightning conductors, etc.
Grout around the penetration if the penetration is not stable. Scribe membrane tight to the penetration. If the membrane is not within 12mm of the penetration, apply Preprufe Tape to

Corners

Internal and external corners should be formed as shown in the diagrams returning the membrane a minimum of 100mm and sealing with Preprufe Tape. Ensure that the apex of the corner is covered and sealed with tape and roll firmly. Crease and fold the membrane to ensure a close fit to the substrate profile and avoid hollows.



cover the gap. Wrap the penetration with Preprufe Tape by positioning the tape 12 mm above the membrane.
Mix and apply Bituthene Liquid Membrane around the penetrations using a fillet to provide a watertight seal between the Preprufe membrane and Preprufe Tape.

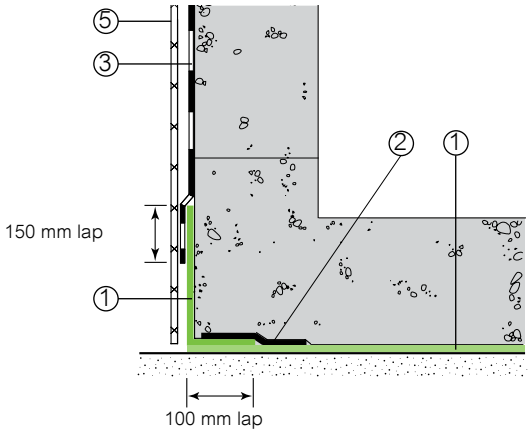
Membrane Repair

Inspect the membrane before installation of reinforcement steel, formwork and final placement of concrete. The membrane can be easily cleaned by jet washing if required. Repair damage by wiping the area with a damp cloth to ensure the area is clean and free from dust, and allow to dry. Apply Preprufe Tape centered over the damaged area and roll firmly. Any areas of damaged adhesive should be covered with Preprufe Tape. Remove printed plastic release liner from tape. Where exposed selvedge has lost adhesion or laps have not been sealed, ensure the area is clean and dry and cover with fresh Preprufe Tape, rolling firmly. Alternatively, use a hot air gun or similar to activate adhesive and firmly roll lap to achieve continuity.

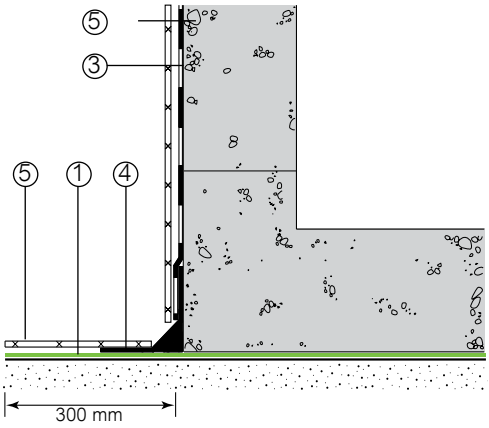
Pouring of Concrete

Ensure the plastic release liner is removed from all areas of Preprufe R membrane and Tape. It is recommended that concrete be poured within 56 days (42 days in hot climates) of application of the membrane. Concrete must be placed and compacted carefully to avoid damage to the membrane. Never use a sharp object to consolidate the concrete.

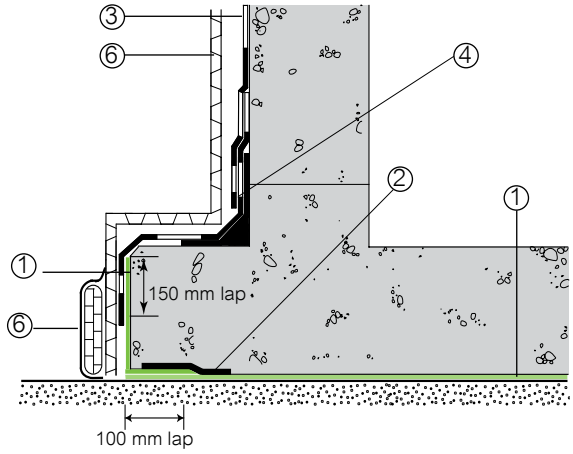
Wall base detail



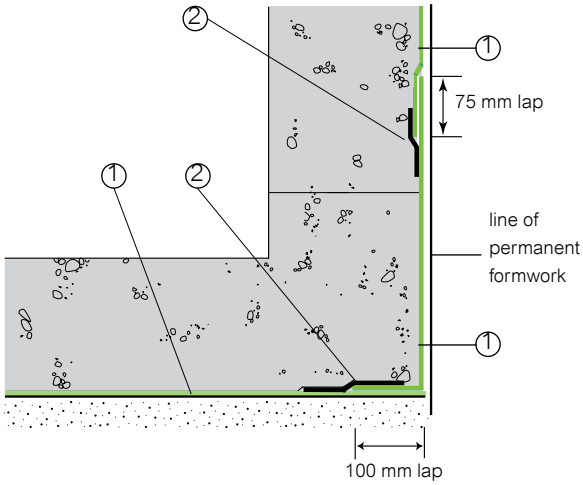
Alternative wall base detail for early shutter removal



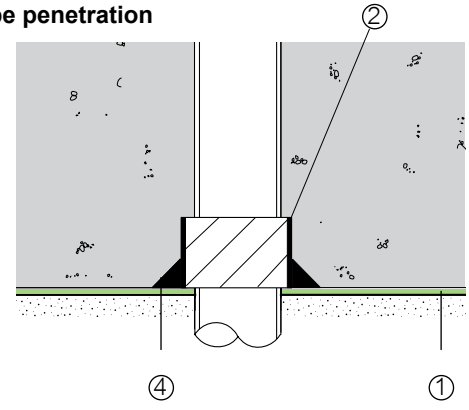
Wall base with toe detail showing drainage option



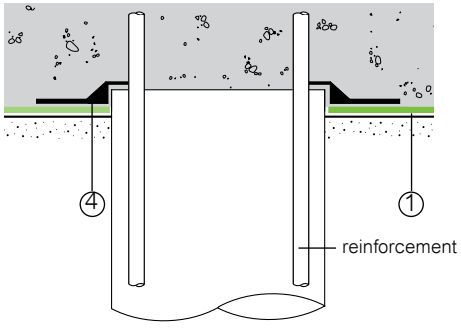
Wall base detail against permanent shutter



Pipe penetration



Pile detail



1 Preprufe
2 Preprufe Tape
3 Bituthene® or Procor®
4 Liquid Membrane
5 Protection
6 Hydroduct®

Details shown are typical illustrations and not working details. For assistance with detailing and problem solving please contact Grace Technical Department.

Physical Properties

Property	Typical Value		Test Method
	300R	160R	
Colour	White		
Thickness*	1.2 mm	0.8 mm	ASTM D3767
Peel Adhesion to Concrete	880 N/m		ASTM D903 modified
Resistance to Hydrostatic Head	>70 m		ASTM D5385 modified
Low Temperature Flexibility	<-23°C		ASTM D1970
Puncture Resistance	990 N	445 N	ASTM E 154
Elongation	300% minimum		ASTM D412 modified
Tensile Strength, Film	27.6 Mpa		ASTM D412
Crack Cycling @ -23°C	Pass		ASTM C 836

Typical test values represent average values from samples tested. Test methods noted may be modified.
* Nominal thickness refers to the thickness of the membrane without release liner.

Supply

Preprufe	300R	160R	Tape LT or HC*
Thickness (nominal)	1.2 mm	0.8 mm	-
Roll size	1.2x30.0 m	1.2x35.0 m	100 mmx15.0 m
Roll area	36.0 m^2	42 m^2	-
Roll weight	50 kg	42 kg	2 kg
Min. edge/end laps	75 mm	75 mm	75 mm

* LT denotes Low Temperature (between -4˚C and +30˚C)
HC denotes Hot Climates (>+10˚C)

Ancillary Products
Liquid Membrane, 5.7 litre

Removal of Formwork

Preprufe membranes can be applied to removable formwork, such as slab perimeters, elevator and lift pits, etc. Once the concrete is poured the formwork must remain in place until the concrete has gained sufficient compressive strength to develop the surface bond. Preprufe membranes are not recommended for conventional twin-sided wall forming systems.

A minimum concrete compressive strength of 10 N/mm^2 (1500 psi) is recommended prior to stripping formwork supporting Preprufe membranes. Premature stripping may result in displacement of the membrane and/or spalling of the concrete.

As a guide, to reach the minimum compressive strength stated above, a structural concrete mix with an ultimate strength of 40 N/mm^2 (6000 psi) will typically require a cure time of approximately 6 days at an average ambient temperature of 4ºC, or 2 days at 21ºC.

Specification Clauses

Preprufe 300R or 160R shall be applied with its adhesive face presented to receive fresh concrete to which it will integrally bond. Only Grace Construction Products approved membranes shall be bonded to Preprufe 300R &160R. All Preprufe 300R &160R system materials shall be supplied by Grace Construction Products, and applied strictly in accordance with their instructions. Specimen performance and formatted clauses are also available.

Health and Safety

Refer to relevant Material Safety data sheet. Complete rolls should be handled by a minimum of two persons.

Grace Technical Services

For assistance with working drawings for projects and additional technical advice, please contact Grace Technical Services.

www.grace.com/construction

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APPENDIX 6 – CONSTRUCTION HEALTH AND SAFETY PLAN