BASIS SCHOOL

BROOKLYN, NEW YORK

Remedial Action Work Plan

NYC VCP Number: 14CVCP193K

556 COLUMBIA STREET
BROOKLYN, NEW YORK
Block 601, Lot 17

BSA# 14BSA052K/556 Columbia Street School

Prepared for:
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OCTOBER 2013

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LIST OF ACRONYMS

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

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

CERTIFICATION

I, __James Venture___ _____, am a Professional Engineer licensed in the State of New York. I have primary direct responsibility for implementation of the remedial action for the Site name Site Site number.

I, __Christopher Brown__ _____ am a Qualified Environmental Professional as defined in §43-140. I have primary direct responsibility for implementation of the remedial action for the Site name Site Site number.

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

James Venture

Name

090052

NYS PE License Number

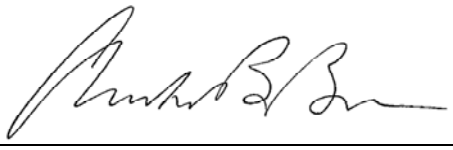
Signature

October 28, 2013

Date

Christopher B. Brown, CPG

QEP Name



QEP Signature

October 28, 2013

Date

EXECUTIVE SUMMARY

Highmark Schools has established this plan to remediate a 49,800-square foot site located at 556 Columbia Street in Brooklyn, New York. A Phase II Subsurface Investigation (Phase II and Remedial Investigation) were performed to compile and evaluate data and information necessary to develop this Remedial Action Plan (RAP). The remedial action described in this document achieves the remedial objectives, complies with applicable environmental standards, criteria and guidance and conforms with applicable laws and regulations.

Site Location and Current Usage

The Site is located at 556 Columbia Street in the Red Hook section of Brooklyn, New York and is identified as Block 601 and Lot 17 on the New York City Tax Map (Figure 1). The Site is 48,800-square feet and is bounded by Bay Street to the north, Sigourney Street to the south, and Columbia Street to the east, to the west is an adjoining warehouse. A map of the site boundary is depicted in Figure 2. Currently, the Site is vacant but was previously used for manufacturing lithographic varnish and vehicle parking for a trucking company and various tenants, including a bus company. No site improvements remain, with the exception of an abandoned loading dock along the western property boundary, and several storm water drywells.

Summary of Proposed Redevelopment Plan

The site is being proposed as the future location of a new private school with grades K through 12. Parking areas and landscaping around the perimeter will cover the lot at the current grade. The new school will be constructed over the grade-level parking lot. The total square footage of the future school will be 80,000 square feet and will consist of five floors with no ground-level occupied spaces, with the exception of a small area (1,000 sq ft) used for site security. Excavation depths during construction will range from approximately 0 to 4 feet below grade. Excavation below the water table is not anticipated. The current zoning designation is M-1-1, which is a Special Mixed Use District. The proposed use is consistent with existing zoning for the property, but will require a special use permit from the NYC Board of Standards and Appeals.

Summary of the Remedy

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

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan (CPP).
2. Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
3. Establishment of Track 4 Soil Cleanup Objectives (SCOs).
4. Excavation and removal of soil/fill exceeding Track 4 Site Specific SCOs. Hot spots will be excavated to a minimum depth of three feet as determined by remedial end point sampling;
5. 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;
6. Demarcation of residual soil/fill in open space areas;
7. Removal of underground storage tanks (if encountered) and closure of petroleum spills in compliance with applicable local, State and Federal laws and regulations;
8. Transportation and off-Site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities;

9. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of SCOs;

10. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations;

11. Installation and operation of a passive sub-slab depressurization system located beneath all grade level portions of the building not used for parking;

12. Construction and maintenance of an engineered composite cover consisting of a concrete building slab consisting of 6 inches of concrete over 6 inches of gravel , concrete parking area consisting of 6 inches of concrete over a 6 inch of sub-base of compacted stone, concrete sidewalks consisting of 4 inches of concrete over a 6 inch of sub-base of compacted earth, and 2 feet of clean fill that meets Part 375-6.8 residential soil quality standards and groundwater protection standards in open space areas (less than 10% of the site) with a demarcation barrier overlying any residual soils to prevent human exposure to residual soil/fill remaining under the Site;

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

14. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations;

15. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.

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

17. Submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual contamination, including plans for maintenance, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency; and

18. Institutional Controls including registration of the site with an E Designation with the NYC Department of Buildings and 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) are requirement for OER approval prior to change of land usage.

COMMUNITY PROTECTION STATEMENT

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

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

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

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

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

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

Site Safety Coordinator. This project has a designated Site Safety Coordinator to implement the Health and Safety Plan. The safety coordinator maintains an emergency contact sheet and protocol for management of emergencies. The Site safety coordinator is Tim Pagano and can be reached at 845-702-0785.

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

Odor, Dust and Noise Control. This cleanup plan includes actions for odor and dust control. These actions are designed to prevent off-Site odor and dust nuisances and includes steps to be taken if nuisances are detected. Generally, dust is managed by application of physical covers and by water sprays. Odors are controlled by limiting the area of open excavations, physical covers, spray foams and by a series of other actions (called operational measures). The project is also required to comply with NYC noise control standards. If you observe problems in these areas, please contact the onsite Project Manager Christopher Brown 914-475-2650 or NYC Office of Environmental Remediation Project Manager Rebecca Bub, (212) 341-2073

Quality Assurance. This cleanup plan requires that evidence be provided to illustrate that all cleanup work required under the plan has been completed properly. This evidence will be

summarized in the final report, called the Remedial Action Report. This report will be submitted to the NYC Office of Environmental Remediation and will be thoroughly reviewed.

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

Hours of Operation. The hours for operation of cleanup will comply with the NYC Department of Buildings construction code requirements or according to specific variances issued by that agency. For this cleanup project, the hours of operation are 7 am to 5 pm Monday through Friday. .

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

Complaint Management. The contractor performing this cleanup is required to address all complaints. If you have any complaints, you can call the facility Project Manager Christopher Brown 914-475-2650 or NYC Office of Environmental Remediation Project Manager Rebecca Bub, (212) 341-2073, or call 311 and mention the Site is in the NYC Voluntary Cleanup Program.

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

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

Soil Chemical Testing and Screening. All excavations will be supervised by a trained and properly qualified environmental professional. In addition to extensive sampling and chemical testing of soils on the Site, excavated soil will be screened continuously using hand-held

instruments, by sight, and by smell to ensure proper material handling and management, and community protection.

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

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

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

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

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

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

Final Report. The results of all cleanup work will be fully documented in a final report (called a Remedial Action Report) that will be available for you to review in the public document repositories located at Red Hook Library, 7 Wolcott Street, Brooklyn, NY 0.2 mi northwest of the site; (718) 935-0203; brooklynpubliclibrary.org

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

REMEDIAL ACTION WORK PLAN

1.0 SITE BACKGROUND

Highmark Schools has applied to enroll in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a property located at 556 Columbia Street in the Red Hook section of Brooklyn New York (the "Site"). A Remedial Investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP) in a manner that will render the Site protective of public health and the environment consistent with the contemplated end use. This RAWP establishes remedial action objectives, provides a remedial alternatives analysis that includes consideration of a permanent cleanup, and provides a description of the selected remedial action. The remedial action described in this document provides for the protection of public health and the environment, complies with applicable environmental standards, criteria and guidance and applicable laws and regulations.

1.1 SITE LOCATION AND CURRENT USAGE

The Site is located in the Red Hook section of Brooklyn, New York and is identified as Block 601 and Lot 17 on the New York City Tax Map. Figure 1 is a Site location map. The Site is 49,800 -square feet and is bounded by Bay Street to the north, Sigourney Street to the south, Columbia Street to the east, and an adjacent warehouseto the west. Currently, the Site is used for parking for various tenants and contains no site improvements with the exception of an abandoned loading dock along the western property boundary.

1.2 PROPOSED REDEVELOPMENT PLAN

The proposed future use of the Site will be a new charter school. Parking areas will cover the lot at the current grade. The new school will be constructed over the grade-level parking lot. The total square footage of the future school will be 80,000 square feet and will consist of five floors with no ground-level occupied spaces, with the exception of a small (1,000 sq ft) security outpost. Layout of the proposed site development is presented in Figure 3. The current zoning designation is M-1-1. The site is generally level, but will be re-graded to prepare the site for future construction. The estimated volume of material to be relocated across the site is 200

cubic yards. Excavation will also be necessary to install site utilities. Excavation below the water table is not anticipated.

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

1.3 DESCRIPTION OF SURROUNDING PROPERTY

The subject property is located in a mixed use residential and light industrial area. The property is zoned m-1-1 and a special use permit is being requested from Board of Standards and Appeals (BSA) for the project. The property to the west and south are open space and park land, with a community garden to the south on the south side of Sigourney Street. Figure 5 shows the surrounding land usage.1.4

REMEDIAL INVESTIGATION

A remedial investigation was performed and the results are documented in a companion document called "*Remedial Investigation Report, BASIS Schools*", dated October 2013(RIR).

The following work has been performed at the site:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Installed 45 soil borings across the entire project Site, and collected 102 soil samples for chemical analysis from the soil borings to evaluate soil quality;
3. Installed 7 groundwater monitoring wells throughout the Site to establish groundwater flow and collected 10 groundwater samples for chemical analysis to evaluate groundwater quality;
4. Installed 6 soil vapor probes around Site perimeter and collected 6 samples for chemical analysis.
5. Elevation of the property above mean sea level ranges from 3 to 7 feet.
6. Depth to groundwater ranges from 4 to 7 feet below grade at the Site.
7. Groundwater flow is generally from north to south beneath the Site.

8. Depth to bedrock is approximately 150 feet at the Site.

9. The stratigraphy of the site, from the surface down, consists of 4 to 6 feet of unconsolidated fill, underlain by 2 to 3 feet of organic rich wetland deposits, underlain by 140 feet of unconsolidated coastal plain sediments of silt and sand, underlain by the Manhattan Formation.

10. Soil/fill samples collected during the RI showed several VOCs were detected at trace concentrations and below Track 1 Unrestricted Use SCOs. Three VOCs including 1,3,5-Trimethylbenzene (max. of 25 ppb), 2-Butanone (max. of 140 ppb), and acetone (max. 2,500 ppb) were detected above Unrestricted Use SCOs. Acetone was detected in all soil samples. Several SVOCs including benzo(a)anthracene (max 100,000 ppb), benzo(a)pyrene (max 86,000 ppb), benzo(b)-fluoranthene (max 20,000 ppb), benzo(k)fluoranthene (max 85,000 ppb), chrysene (max 100,000 ppb), Dibenz(a,h)anthracene (max 4,300 ppb), Dibenzofuran (max of 17,000 ppb), fluoranthene (max 240,000 ppb) and indeno(1,2,3-cd)pyrene (max 40,000 ppb), and pyrene (max 190,000 ppb). Of these SVOCs benzo(a)anthracene, benzo(a)pyrene, benzo(b)-fluoranthene, benzo(k)fluoranthene, chrysene, Dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, Phenanthrene and pyrene were detected above Restricted Residential Use SCOs.Three SVOC hotspot (max. total of 1,556 ppm) areas have been identified (in the vicinity of GB-6, GB-11 and GB-12). The PCB (PCB-1232) was detected in one sample at 297 ug/kg, exceeding Unrestricted Use SCOs but below Track 2 Restricted residential SCOs. Five pesticides including 4,4'-DDE (max of 42 ug/kg), 4,4'-DDD (max of 86.3 ug/kg), 4,4'-DDT (max of 33.6 ug/kg), cis-Chlordane (max of 271 ug/kg) and Chlordane (max of 3130 ug/kg) were detected in half the samples at concentrations exceeding Unrestricted Use SCOs. Metals including arsenic (max of 160 mg/kg) barium (max 2,900 mg/kg), cadmium (max of 11 mg/kg), chromium (max of 100 mg/kg), copper (max of 40,000 mg/kg), lead (max of 10,000 mg/kg), mercury (max of 4.8 mg/kg) and zinc (max of 8,100 mg/kg) exceeded Unrestricted Use SCOs. Of these metals, arsenic, barium, cadmium, copper, lead and mercury exceeded Restricted Residential Use SCOs. There is a copper hotspot in the vicinity of GB-7. Metals were distributed throughout the site

soils. No soil samples contained VOCs, PCBs or pesticides at concentrations exceeding Restricted Residential Use SCOs.

11. Groundwater samples collected during the RI showed no detectable concentration of PCBs, or Pesticides. Several VOCs were detected at trace concentration. Only two VOCs, isopropylbenzene (max of 62 ug/L) and total xylenes (7.8 ug/L), exceeded New York State 6NYCRR Part 703.5 Groundwater Quality Standards (GQS). Five SVOCs including benzo(a)anthracene (15 ug/L), benzo(b)-fluoranthene (16 ug/L), benzo(k)fluoranthene (7.3 ug/L), chrysene (16 ug/L), and Indeno(1,2,3-cd)pyrene (4.1 ug/L) exceeded GQS. Metals including arsenic (34ug/L), barium (3,800 ug/L),beryllium (8.5 ug/L), iron (max of 48,000 ug/L), and manganese (max of 1,500ug/L) were detected in filtered groundwater samples above GQS. MW-3 contained the highest concentrations of metal and SVOC exceedences.

12. The soil vapor collected during the RI were compared to the compounds listed in Table 3.1 Air Guideline Values Derived by the NYSDOH located in the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion. Soil vapor samples showed generally low levels of petroleum related and chlorinated VOCs in all soil vapor samples. Most contaminant concentrations were below 50 ug/m^3 except for acetone, which was detected in all samples at a maximum concentration of 1300 ug/m^3 and hexane (850 ug/m^3). Tetrachloroethylene was detected in 2 of the 6 samples at a maximum concentration of 2.5 µg/m^3. Trichlorethylene was detected in 4 of the 6 samples all at a maximum concentration of 7.4 µg/m^3. Carbon tetrachloride, and 1,1,1-trichloroethane (1,1,1-TCA), were not detected in any soil vapor samples during this RI. The TCE concentrations are above the monitoring level ranges established within the State NYS DOH soil vapor guidance matrix.

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:

Groundwater

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

Soil

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

Soil Vapor

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

3.0 REMEDIAL ALTERNATIVES ANALYSIS

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 exceedence of applicable standards, criteria and guidance values (SCGs). A remedy is then developed based on the following ten criteria:

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

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

Alternative 1 involves

- Establishment of Track 1 Unrestricted Use Soil Cleanup Objectives.
- 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 require excavation to a depth of 6 feet to remove unconsolidated material above groundwater.

- No Engineering or Institutional Controls are required in a Track 1 cleanup.
- As part of development of a new school, installation and operation of a passive Sub Slab depressurization system (SSDS) beneath the centrally located security outpost, the only at-grade portion of the proposed building.

Alternative 2 involves

- Establishment of site-specific Track 4 SCOs
- Removal of all soil/fill exceeding Track 4 Site-Specific SCOs and confirmation that Track 4 has been achieved with post-excavation endpoint sampling. Based on the results of the remedial investigation, it is expected that this alternative would require excavation to a minimum depth of 3 feet in "hot spot" areas with end point sampling. Excavation for development purposes would take place to a depth of between 2 and 4 feet across the entire site for construction. However, if soil/fill containing analytes at concentrations above Track 4 Site Specific SCOs are still present at the base of the excavation after removal of all material required for construction, additional excavation would be performed to ensure complete removal of unconsolidated material that does not meet Track 4 Site Specific SCOs;
- Placement of a final cover over the entire Site to eliminate exposure to remaining soil/fill;
- Installation and operation of a passive SSDS system located beneath the grade level portions of the building (roughly 1,000 square feet area).
- Establishment of use restrictions including prohibitions on the use of groundwater from the Site and prohibitions on sensitive site uses, such as farming or vegetable gardening, to eliminate future exposure pathways;
- Establishment of an approved Site Management Plan to ensure long-term management of these Engineering and Institutional Controls including the performance of periodic inspections and certification that the controls are performing as they were intended. SMP will note that the property owner and property owner's successors and assigns must comply with the approved SMP; and
- Registration of the property with an E Designation with the NYC Buildings Department. This RAWP includes a description of all ECs and ICs and summarizes the requirements

of the Site Management Plan (SMP) which will note that the property owner and property owner's successors and assigns must comply with the approved SMP.

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 unconsolidated material and historic fill exceeding Track 1 Unrestricted Use SCOs and groundwater protection standards, thus eliminating potential for direct contact with contaminated soil/ fill once construction is complete and eliminating the risk of contamination leaching into groundwater.

Alternative 2 would achieve comparable protections of human health and the environment by excavating unconsolidated materials and historic fill at the Site and by ensuring that remaining soil/fill on-Site meets Track 4 Site-Specific SCOs as well as by placement of institutional and engineering controls, including a composite cover system (the building foundation and concrete sidewalks). The composite cover system would prevent direct contact with any remaining on-Site soil/ fill. Implementing institutional controls including placement of an E Designation and a Site Management Plan would ensure that the composite cover system remains intact and protective. Establishment of Track 4 Site-Specific SCOs would minimize the risk of contamination leaching into groundwater.

For both Alternatives, potential exposure to contaminated soils or groundwater during construction would be minimized by implementing a Construction Health and Safety Plan, a Soil and Materials Management Plan and Community Air Monitoring Plan (CAMP). Since groundwater is not anticipated during construction and remediation, dewatering activities will

not be required during the Site development. As such, there is minimal risk of contact with groundwater. The sub-grade portion of the building developed within the interim unsaturated zone will be insulated with a specialized waterproofing membrane. In future, potential contact with contaminated groundwater would be prevented as City laws and regulations prohibit its use. Potential migration of soil vapors into the new building would be prevented by installing a composite cover and a sub slab depressurization system beneath the centrally located security outpost.

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/fill in excess of the NYSDEC Part 375 Unrestricted Use SCOs and groundwater protection standards. All soil/fill excavated from the Site would be managed and disposed of in accordance with all applicable regulations. Compliance with SCGs for soil vapor would also be achieved by excavating contaminated materials to achieve Track 1 SCOs and installation of a composite cover over the entire site with a passive venting system beneath the at-grade portion of the new building.

Alternative 2 would achieve compliance with the remedial goals, chemical specific SCGs and RAOs for soil through removal of soil to meet Track 4 Site-Specific SCOs and placement of a composite cover system. Compliance with SCGs for soil vapor would also be achieved by installation of a passive SSDS system beneath all at grade portions of the building that are not used for parking. A Site Management Plan under Alternative 2 would ensure that these controls remain protective for the long term.

Health and safety measures contained in the CHASP and Community Air Monitoring Plan (CAMP) that comply with the applicable SCGs shall be implemented during Site redevelopment under this RAWP. For both Alternatives, focused attention on means and methods employed during the remedial action would ensure that handling and management of contaminated material

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

Short-term effectiveness and impacts

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

The potential for short term impacts would be higher for the Alternative 1 due to excavation of greater amounts of soil to achieve Track 1 Unrestricted Use SCOs. The duration of short-term exposures to site contaminants would be extended during Alternative 1 due to the need for additional excavation to achieve Track 1. All potential exposure pathways for site-derived contaminants would be eliminated following construction and development of the Site.

Both Alternatives would both employ appropriate measures to prevent short term impacts, including a Community Air Monitoring Plan (CAMP) and a Soil/Materials Management Plan (SMMP), during all on-Site soil disturbance activities and would effectively prevent the release of significant contaminants into the environment. Both alternatives also 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 Health and Safety Plan (CHASP) would be protected from on-Site contaminants (personal protective equipment would be worn consistent with the documented risks within the respective work zones).

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

Long-term effectiveness and permanence

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

Alternative 1 would achieve long-term effectiveness and permanence related to on-Site contamination by permanent removal of all impacted soil/fill above Track 1 SCOs. Removal of on-site contaminant sources would prevent future groundwater contamination.

Alternative 2 would provide long-term effectiveness by removing the most concentrated on-Site contamination and attaining Track 4 Site-Specific SCOs, establishing a composite cover system across the Site, establishing use restrictions, establishing a Site Management Plan to ensure long-term management of Institutional Controls (ICs) and Engineering Controls (ECs), and registration of an E-Designation with the NYC Buildings Department. The SMP would ensure long-term effectiveness of all ECs and ICs by requiring periodic inspection and certification that these controls and use restrictions continue to be in place and are functioning as they were intended assuring that protections designed into the remedy will provide continued high level of protection in perpetuity.

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

Reduction of toxicity, mobility, or volume of contaminated material

This evaluation criterion assesses the remedial alternative's use of remedial technologies that permanently and significantly reduce toxicity, mobility, or volume of contaminants as their principal element. The following is the hierarchy of source removal and control measures that

are to be used to remediate a Site, ranked from most preferable to least preferable: removal and/or treatment, containment, elimination of exposure and treatment of source at the point of exposure. It is preferred to use treatment or removal to eliminate contaminants at a Site, reduce the total mass of toxic contaminants, cause irreversible reduction in contaminants mobility, or reduce of total volume of contaminated media.

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

Alternative 2 would remove soil with the greatest concentrations of contaminants effectively reducing the toxicity of contaminants. Implementation of ECs and ICs in Alternative 2 would effectively eliminate the mobility of contaminants by eliminating infiltration of stormwater through contaminated media.

Implementability

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

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

Cost effectiveness

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

Alternative 1. The remedial plan creates an approach that combines the remedial action with the redevelopment of the Site, including the construction of the building foundation and subgrade structures. Costs associated with the Alternative 1 (Track 1 SCOs) will be significantly higher than Alternative 2 as additional excavation to the depths of 6 feet below grade will be required. Although long-term costs for Alternative 2 will be higher than Alternative 1 based on implementation of a Site Management Plan as part of Alternative 2, as well as maintenance of vapor mitigation systems.

Costs associated with Alternative 1 are estimated at approximately $1.5MM. This estimate includes the following elements and assumptions:

- Excavate to a depth ranging between 0 and 6 ft to achieve Unrestricted Use SCOs;
- Disposal of approximately 6,500 yd^3 (10,000 tons) of excavated soil as non-hazardous regulated solid waste;
- Installation of a passive SSDS beneath the footprint of the ground floor building area not used for parking.
- HASP and CAMP monitoring for the duration of the remedial activities.

Costs associated with Alternative 2 are estimated at approximately $750,000. This cost estimate includes the following elements and assumptions:

- Excavate hot-spots to achieve Track 4 Site-specific Use SCOs;
- Disposal of approximately 2000 yd^3 (3000 tons) of excavated soil as non-hazardous, regulated solid waste;
- Installation of a passive SSDS beneath the footprint of all ground floor building area (1,000 sq ft) not used for parking. HASP and CAMP monitoring for the duration of the remedial activities.
- Implementation of a Site Management Plan (SMP).
- Operation of the passive SSDS in accordance with the SMP

Community Acceptance

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

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

Land use

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

The proposed redevelopment of the Site will be compatible with the variance for zoning requirements (after BSA approval) and is consistent with recent development patterns. The property is currently vacant. Following remediation, the Site will meet either Track 1 Unrestricted Use or Track 4 Site-Specific SCOs, both of which are appropriate for its planned use. Improvements in the current environmental condition of the property achieved by both alternatives are also consistent with the City's goals for cleanup of contaminated land and bringing such properties into productive reuse. Both alternatives are equally protective of natural resources and cultural resources.

Sustainability of the Remedial Action

This criterion evaluates the overall sustainability of the remedial action alternatives and the degree to which sustainable means are employed to implement the remedial action including

those that take into consideration NYC's sustainability goals defined in *PlaNYC: A Greener, Greater New York*. Sustainability goals may include: maximizing the recycling and reuse of non-virgin materials; reducing the consumption of virgin and non-renewable resources; minimizing energy consumption and greenhouse gas emissions; improving energy efficiency; and promotion of the use of native vegetation and enhancing biodiversity during landscaping associated with Site development.

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

4.0 REMEDIAL ACTION

4.1 SUMMARY OF PREFERRED REMEDIAL ACTION

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

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan (CPP).
2. Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
3. Establishment of Track 4 Soil Cleanup Objectives (SCOs).
4. Excavation and removal of soil/fill exceeding Track 4 Site Specific SCOs. Hot spots will be excavated to a minimum depth of three feet as determined by remedial end point sampling;
5. 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;
6. Demarcation of residual soil/fill in open space areas;
7. Removal of underground storage tanks (if encountered) and closure of petroleum spills in compliance with applicable local, State and Federal laws and regulations;

8. Transportation and off-Site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities;

9. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of SCOs;

10. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations;

11. Installation and operation of a passive sub-slab depressurization system located beneath all grade level portions of the building not used for parking;

12. Construction and maintenance of an engineered composite cover consisting of a concrete building slab consisting of 6 inches of concrete over 6 inches of gravel , concrete parking area consisting of 6 inches of concrete over a 6 inch of sub-base of compacted stone , concrete sidewalks consisting of 4 inches of concrete over a 6 inch of sub-base of compacted earth, and 2 feet of clean fill that meets Part 375-6.8 residential soil quality standards and groundwater protection standards in open space areas (less than 10% of the site) with a demarcation barrier overlying any residual soils to prevent human exposure to residual soil/fill remaining under the Site;

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

14. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations;

15. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.

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

17. Submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual contamination, including plans for maintenance, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency; and

18. Institutional Controls including registration of the site with an E Designation with the NYC Department of Buildings and 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) are requirement for OER approval prior to change of land usage.

4.2 SOIL CLEANUP OBJECTIVES AND SOIL/FILL MANAGEMENT

Track 4 Soil Cleanup Objectives (SCOs) are proposed for this project. The SCOs for this Site are listed in Table4. Table 4

Contaminant	Track 4 SCO
Total SVOCs	250 ppm
Lead	1,200 ppm
Barium	800 ppm
Mercury	2.5 ppm

Soil and materials management on-Site and off-Site, including excavation, handling and disposal, will be conducted in accordance with the Soil/Materials Management Plan in Appendix 3. The location of planned excavations is shown in Figures 5 and 6.

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

Estimated Soil/Fill Removal Quantities

During property redevelopment the total quantity of soil/fill expected to be excavated and disposed off-Site is approximately 3,000 tons.

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

End-Point Sampling

Removal actions for development purposes under this plan will be performed in conjunction with confirmation soil sampling. Confirmation samples will be collected from the base of the excavation at locations to be determined by OER. For comparison to Track 1 SCOs, analytes will include VOCs, SVOC, pesticides, PCBs and metals according to analytical methods described below. For comparison to Track 4 SCOs, analytes will include SVOCs, metals (arsenic, barium, cadmium, copper, lead and mercury).

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

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

2. For excavations 20 to 300 feet in perimeter:

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

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

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

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

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

New York State ELAP certified labs will be used for all confirmation and end-point sample analyses. Labs performing confirmation and end-point sample analyses will be reported in the RAR. The RAR will provide a tabular and map summary of all confirmation and end-point sample results and will include all data including non-detects and applicable standards and/or guidance values. End-point samples will be Confirmation samples will be analyzed for compounds and elements as described above utilizing the following methodology:

Soil analytical methods will include:

- Volatile organic compounds by EPA Method 8260;
- Semi-volatile organic compounds by EPA Method 8270;
- Target Analyte List metals via EPA 6010B / 7471A; and
- Pesticides/PCBs by EPA Method 8081/8082.

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

Quality Assurance/Quality Control

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

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

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

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

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

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

Import and Reuse of Soils

Import of soils onto the property and reuse of soils already onsite will be performed in conformance with the Soil/Materials Management Plan in Appendix 3.

4.3 ENGINEERING CONTROLS

The excavation required for the proposed Site development will achieve Track 4 Site Specific SCOs. Engineering Controls are required to address residual contamination at the Site.The following elements will be incorporated into the foundation design as part of the development:

- Composite cover system consisting of concrete and asphalt covered parking areas and roads, concrete covered sidewalks, and concrete building slabs;
- Passive Sub-slab depressurization system.

Composite Cover System

As part of new development, the entire property will be covered by an engineered permanent cover system.

This composite cover system is comprised of:

- The future building slab will be comprised of a 6 inch thick concrete-building slab and 6” compacted stone over compacted soil beneath the area of the proposed building
- Concrete covered sidewalks consisting of 4 inches of concrete over a 6 inch of sub-base of compacted earth 2 feet of clean imported soil over a demarcation layer in open spaces.

Figure 9 shows the typical design for each remedial cover type used on this Site. Figure 8 shows the location of each cover type built at the Site.

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

Sub-Slab Depressurization System

Migration of soil vapor will be mitigated with the construction of a passive sub-slab depressurization system (SSDS). The system will be located beneath the building area at grade (1,000 square foot area) centrally located on the development site, and will consist of 4" Schedule 40 slotted PVC pipe backfilled in 6" crushed stone and overlain by a geotextile. Piping will be vented above roofline a minimum of 10 feet away from air intakes and operable windows. Figure 10 depicts the location and construction of the SSDS.

4.4 INSTITUTIONAL CONTROLS

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

Institutional Controls for this remedial action are:

- An E Designation will be registered with the NYC Buildings Department.
- Submittal of a Site Management Plan in the RAR for approval by OER that includes a description of all ECs and ICs, will summarize the requirements of the Site Management Plan, and will note that the property owner and property owner's successors and assigns must comply with the approved SMP;

- The Site Management Plan will provide procedures for appropriate operation, maintenance, inspection and certification of ECs. SMP will require that the property owner and property owner's successors and assigns will submit to OER a periodic written statement that certifies that: (1) controls employed at the Site are unchanged from the previous certification or that any changes to the controls were approved by OER; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. OER retains the right to enter the Site in order to evaluate the continued maintenance of any controls. This certification shall be submitted at a frequency to be 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 forcommercial use and will not be used for a higher level of use without prior approval by OER.

4.5 SITE MANAGEMENT PLAN

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

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

Site management activities, inspection and EC/IC certification will be scheduled by OER on a periodic basis to be established in the SMP and will be subject to review and modification by OER. The Site Management Plan will be based on a calendar year and certification reports will be due for submission to OER by July 31 of the year following the reporting period.

4.6 QUALITATIVE HUMAN HEALTH EXPOSURE ASSESSMENT

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

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

Known and Potential Sources

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

Soil

- Three VOCs including 1,3,5-Trimethylbenzene , 2-Butanone (MEK), and acetone were detected above Unrestricted Use SCOs.
- Pesticides including 4,4'-DDE, 4,4'-DDD , 4,4'-DDT and Chlordane were identified but did not exceed Restricted Residential Use SCOs.
- Several SVOCs including benzo(a)anthracene, benzo(a)pyrene, benzo(b)-fluoranthene, benzo(k)fluoranthene, chrysene, Dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, Phenanthrene and pyrene were detected above Restricted Residential Use SCOs.
- Metals including arsenic, barium, cadmium, copper, lead and mercury exceeded Restricted Residential Use SCOs.

Groundwater

- two VOCs, isopropylbenzene and total xylenes exceeded GQS.
- SVOCs including benzo(a)anthracene, benzo(b)-fluoranthene, benzo(k)fluoranthene, and chrysene exceeded GQS
- Metals including arsenic, barium, chromium, copper, iron, lead and manganese were detected in filtered groundwater samples above GQS

Soil Vapor

- TCE was detected in soil vapor at concentrations slightly exceeding its NYSDOH Air Guidance Value (AGV) of 5 $\mu g/m^3$.

Nature, Extent, Fate and Transport of Contaminants

SVOCs and metals are present in the historic fill materials throughout the Site at shallow depths. Metals appear to be non-uniform in lateral distribution, but appear to be present in greater concentrations in shallow soil (1-3 feet bls). Copper was detected at high concentrations that were limited in one area (hotspot) along with elevated mercury. Copper was not detected in permanent groundwater monitoring wells, but was detected in temporary well MW-3. Lead was detected at elevated concentrations in soil and was not detected in groundwater. Petroleum

related SVOCs were detected in soil. Four SVOCs were detected in groundwater at concentrations exceeding applicable standards.

Potential Routes of Exposure

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

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

Existence of Human Health Exposure

Current Conditions: Currently, the site is vacant and paved with no structures and there is limited potential for exposure of site related contaminants. Groundwater is not accessible at the Site, and because the Site is served by the public water supply, there is no potential exposure. There is no building and thus no potential for soil vapor to enter and accumulate within an on-Site structure.

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

Proposed Future Conditions: Once the remedial actions and redevelopment of the Site has been completed, there will be no potential on-site or off-site exposure pathways. The Site will be fully capped with the concrete and asphalt parking, sidewalks and soil cover, which will prevent contact with any residual soils. Exposures to vapors is prevented by the proposed building construction with a parking lot located at ground level and the passive venting system beneath all ground level portions of the building. Implementation of site management will prevent exposure to residual soil in the future.

Receptor Populations

On-Site Receptors - The on-Site potential receptors include students, teachers, site workers, construction workers and trespassers. During redevelopment of the Site, the on-Site potential receptors will include construction workers, residents, trespassers and visitors. Once the Site is redeveloped, the on-Site potential receptors will include building occupants and visitors.

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

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

Overall Human Health Exposure Assessment

Based upon this analysis, there is a very limited potential complete exposure pathway for the current site condition. There is a potential complete exposure pathway that requires mitigation during implementation of the remedy. There is no complete exposure pathway under future conditions after the site is developed. This assessment takes into consideration the reasonably anticipated use of the site, which includes a residential structure, site-wide surface cover cap, and a subsurface vapor barrier system for the building. 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. During the remedial action, on-site exposure pathways will be eliminated by preventing access to the Site, through implementation of soil/materials management, stormwater pollution prevention, dust controls, employment of a community air monitoring plan, and implementation of a Construction Health and Safety Plan. After the remedial action is complete, there will be no remaining exposure pathways to on-Site soil/ fill, due to the complete capping of remaining soil, passive SSDS under all grade level potions of the building, absence of below grade structures and construction of a parking areas with high volume air exchange at grade.

5.0 REMEDIAL ACTION MANAGEMENT

5.1 PROJECT ORGANIZATION AND OVERSIGHT

Principal personnel who will participate in the remedial action include

- Stephanie LaRose, Geologist
- Timothy Pagano, Senior Hydrogeologist.

The Professional Engineer (PE) and Qualified Environmental Professionals (QEP) for this project are:

- Christopher Brown, CPG, Principal and Senior Hydrogeologist
- James Venture, PE, Principal and Principal Engineer

5.2 SITE SECURITY

Site access will be controlled by gated entrances to the fenced property.

5.3 WORK HOURS

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

5.4 CONSTRUCTION HEALTH AND SAFETY PLAN

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

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

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

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

5.5 COMMUNITY AIR MONITORING PLAN

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

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

or adjacent to a school or residence. 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 continuousbasis during invasive work. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work will be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment will be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

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

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

Particulate Monitoring, Response Levels, and Actions

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

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

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

5.6 AGENCY APPROVALS

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

5.7 SITE PREPARATION

Pre-Construction Meeting

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

Mobilization

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

Utility Marker Layouts, Easement Layouts

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

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

Equipment and Material Staging

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

Stabilized Construction Entrance

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

Truck Inspection Station

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

Extreme Storm Preparedness and Response Contingency Plan

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

Storm Preparedness

Preparations in advance of an extreme storm event will include the following: containerized hazardous materials and fuels will be removed from the property; lose materials will be secured to prevent dislocation and blowing by wind or water; heavy equipment such as excavators and

generators will be removed from holes, trenches and depressions on the property to high ground or removed from the property; an inventory of the property with photographs will be performed to establish conditions for the site and equipment prior to the event; stockpile covers for soil and fill will be secured by adding weights such as sandbags for added security and worn or ripped stockpile covers will be replaced with competent covers; stockpiled hazardous wastes will be removed from the property; stormwater management systems will be inspected and fortified, including, as necessary: clean and reposition silt fences, haybales; clean storm sewer filters and traps; and secure and protect pumps and hosing.

Storm Response

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

professional will determine the nature and extent of the spill and report to NYS DEC's spill hotline at DEC 800-457-7362. If the source of the spill is ongoing and can be identified, it should be stopped it this can be done safely. Potential hazards will be addressed immediately, consistent with guidance issued by NYS DEC.

Storm Response Reporting

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

5.8 TRAFFIC CONTROL

Drivers of trucks leaving the NYC VCP Site with soil/fill will be instructed to proceed without stopping in the vicinity of the site to prevent neighborhood impacts. The planned route on local roads for trucks leaving the site is to exit Bay Street heading east to Clinton Street and turning north to the Gowanus Expressway/Brooklyn Queens Expressway.

5.9 DEMOBILIZATION

Demobilization will include:

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

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

5.10 REPORTING AND RECORD KEEPING

Daily Reports

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

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

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

Record Keeping and Photo-Documentation

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

5.11 COMPLAINT MANAGEMENT

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

5.12 DEVIATIONS FROM THE REMEDIAL ACTION WORK PLAN

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

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

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

6.0 REMEDIAL ACTION REPORT

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

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

Remedial Action Report Certification

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

I, James Venture am currently a professional engineer licensed by the State of New York. I had primary direct responsibility for implementation of the remedial program for the BASIS School Site #14CVCP193K.

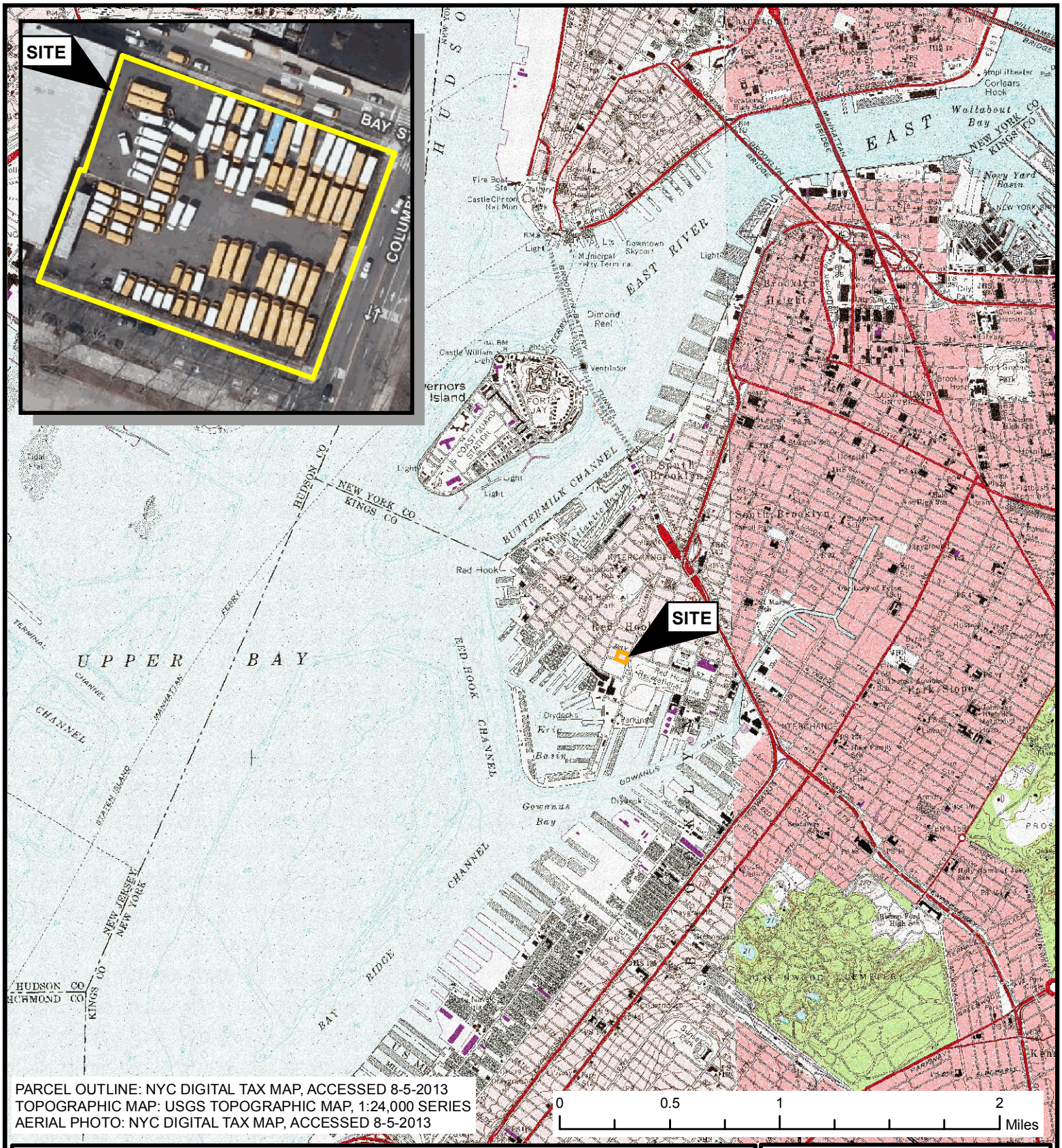
I, Christopher Brown am a qualified Environmental Professional. I had primary direct responsibility for implementation remedial program for the BASIS Schoo Site#14CVCP193K.

I certify that the OER-approved Remedial Action Work Plan dated October 2013 and Stipulations in a letter dated month day, year; if any were implemented and that all requirements in those documents have been substantively complied with. I certify that contaminated soil, fill, liquids or other material from the property were taken to facilities licensed to accept this material in full compliance with applicable laws and regulations.

7.0 SCHEDULE

The table below presents a schedule for the proposed remedial action and reporting. If the schedule for remediation and development activities changes, it will be updated and submitted to OER. Currently, a 1 month remediation period is anticipated.

Schedule Milestone	Weeks from Remedial Action Start	Duration (weeks)
OER Approval of RAWP	0	-
Fact Sheet 2 announcing start of remedy	0	-
Mobilization	0	1
Remedial Excavation	1	2
Demobilization	3	1
Submit Remedial Action Report	16	



SITE LOCATION MAP

556 COLUMBIA STREET BLOCK 601, LOT 17
BROOKLYN, NEW YORK

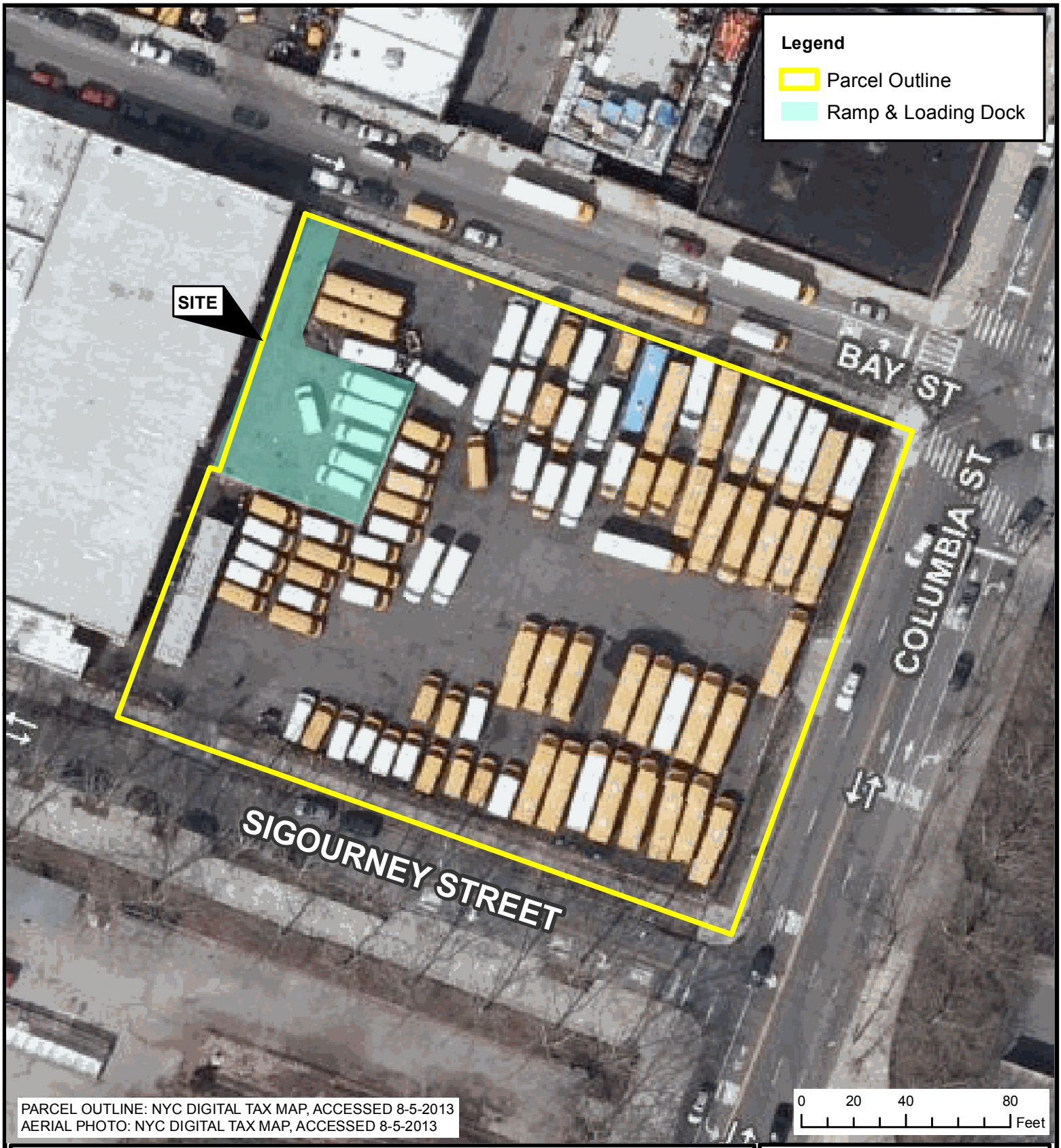
FIGURE 1

DATE:	10/20/2013
SCALE:	As Indicated
PROJECT NUMBER:	560896

ALL LOCATIONS APPROXIMATE

PVE Sheffler

One Civic Center Plaza
Suite 501
Poughkeepsie, New York 12601
Phone: (845) 454-2544
Fax: (845) 454-2655



PARCEL OUTLINE: NYC DIGITAL TAX MAP, ACCESSED 8-5-2013
AERIAL PHOTO: NYC DIGITAL TAX MAP, ACCESSED 8-5-2013

SITE MAP

556 COLUMBIA STREET BLOCK 601, LOT 17
BROOKLYN, NEW YORK

FIGURE 2

DATE:	10/17/2013
SCALE:	1 " = 50 '
PROJECT NUMBER:	560896

ALL LOCATIONS APPROXIMATE

PVE Sheffler

One Civic Center Plaza
Suite 501
Poughkeepsie, New York 12601
Phone: (845) 454-2544
Fax: (845) 454-2655

MAP ☐
GENERAL DIRECTION ■
MAGNETIC ☐

N 20° 39' 11" W

SCALE 1"=15'

LEGEND

- SEWER MANHOLE — Ⓢ
- WATER MANHOLE — Ⓦ
- WATER VALVE — ▣
- FIRE HYDRANT — 🚒
- ELECTRIC MANHOLE — Ⓔ
- ALUMINUM LIGHT POLE — ☼
- DROP CURB
- PEDESTRIAN RAMP GRIP PAD
- UTILITY POLE — Ⓤ
- TREE WITH DIAMETER — ⌀00"
- EXISTING GRADE — 4.88

BAY STREET — 50 FEET WIDE — TRAFFIC DIRECTION

8" WATER MAIN
12" COMBINED SEWER — FLOW
CONCRETE & STONE CURB
STONE CURB
CONCRETE SIDEWALK
EARTH

241'-9"
244'-6"
100'-10"
99'-2"
200'

90° 0'-0"W
90° 2'-9" N 0.91' W
90°

0.01'E
0.16'W
0.07'W
0.05'W
0.46'N

FENCE 0.3'S
FENCE 0.1'S
FENCE 0.6'W WALL 0.5'E
FENCE 0.8'W WALL 0.5'E
FENCE 1.7'N CURB 1.0'N
CURB 0.4'N
FENCE 2.0'N
FENCE ATOP RETAINING WALL
CONCRETE RETAINING WALL
GATE
STEP & PLATFORM

RAISED CONCRETE PLATFORM
ONE STORY CONCRETE BLOCK
MOBILE TRAILER
AUTO STORAGE YARD
ASPHALT AND GRAVE PAVED

DRAIN=4.40
DRAIN=4.08
DRAIN=4.36
DRAIN=4.23

SIGOURNEY STREET — 50 FEET WIDE — TRAFFIC DIRECTION

COLUMBIA STREET — 80 FEET WIDE — TRAFFIC DIRECTION

6" COMBINED SEWER — FLOW
12" WATER MAIN
STEEL CURB
CONCRETE

ENCROACHMENTS IF ANY BELOW SURFACE NOT SHOWN HEREON

NOT TO BE USED IN THE CONVEYANCE OF REAL PROPERTY

UNLESS OTHERWISE NOTED, PHYSICAL MONUMENTS HAVE NOT BEEN SET.
Use of this survey for any other purpose may result in problems for which this surveyor will not be liable.
"Unauthorized alteration to a survey map bearing a licensed land surveyor's seal is a violation of section 7209, sub-division 2, of the New York State Education Law"
"Only copies from the original of this survey marked with an original of the land surveyor's embossed seal shall be considered to be valid true copies."
Unauthorized reproduction of this map is a violation of the copyright law.

ELEVATIONS REFER TO THE DATUM USED BY THE BROOKLYN TOPOGRAPHICAL BUREAU (0.00) DENOTES NEGATIVE NUMBERS.
L.G. DENOTES LEGAL GRADE, TW DENOTES TOP OF WALL, BW DENOTES BOTTOM OF WALL

THIS IS TO CERTIFY THAT THERE ARE NO VISIBLE STREAMS OR WATER COURSES RUNNING ON OR ACROSS THE PROPERTY

UTILITY INFORMATION SHOWN WAS PROVIDED BY CITY RECORDS AND IS NOT GUARANTEED FOR COMPLETENESS NOR ACCURACY.

548 COLUMBIA–ARCH PR

— — — = LOT LINE ⎔ = UTILITY POLE LOT # = TAX MAP LOT # (23) = FILED MAP LOT # C.D. = CELLAR DOOR G.B.C. = GRANITE BLOCK CURB C.C. = CONCRETE CURB

—— X —— WOOD —\\— POST & RAIL —□— PROPERTY LINE A.O. = AWNING OVER O.H. = OVER HEAD S.W. = SIDEWALK FENCES; METAL

ARCHITECTURAL SURVEY

JOB No. 20110309
TITLE No.
SECTION No.
TAX BLOCK No. 601 LOT No.17
COUNTY OF: KINGS BROOKLYN
DATE SURVEYED: MARCH 30, 2011

BARRY M. FAHRER
NEW YORK STATE
LICENSED LAND SURVEYOR
No. 49851

BARRY M. FAHRER L.S. P.C.
206 CHURCH STREET
FREEPORT NEW YORK 11520
(516) 623-2069
FAX (516) 623-0628

STATE OF NEW YORK

PARTNERS FOR ARCHITECTURE

13-607

NEW CONSTRUCTION FOR: BASIS INDEPENDENT SCHOOLS

556 COLUMBIA STREET
BROOKLYN, NY 11231

Issued to:
BUILDING DEPARTMENT

Issued for:
PERMIT

Issued on:
08/19/13

48 UNION STREET,
STAMFORD, CT 06906
P 203/708.0047, F203/348.4165
WWW.PFARCH.NET

ZONING :

SITE: 556 COLUMBIA STREET, BROOKLYN, NY 11231

BLOCK NO.: 601 LOTS: 17

COMMUNITY PLANNING BOARD: 306

ZONE DISTRICT: M1-1 (page 16a)

LOT AREA: 48,623.00 SF

PROPOSED USE: SCHOOL - USE GROUP 3

(42-31) SCHOOL PERMITTED BY SPECIAL PERMIT OF THE BOARD OF STANDARDS AND APPEALS.

MAXIMUM ALLOWABLE FLOOR AREA

(41-122) MAXIMUM FLOOR AREA FOR COMMUNITY FACILITY BUILDING SCHOOL)

MAXIMUM PERMITTED FLOOR AREA RATIO (FAR): 2.40

(LA)43,623.00 SF x (FAR)2.40 = **104,695.20 SF MAXIMUM ALLOWABLE FLOOR AREA**

PROPOSED FLOOR AREA: 82,895 SF

REFER TO FLOOR AREA PLANS ON THIS SHEET.

FLOOR AREA SCHEDULE	
FLOOR	FLOOR AREA
5	15,124 SF
4	13,606 SF
3	14,977 SF
2	13,524 SF
1	23,741 SF
*BASEMENT	1,923 SF
**BASEMENT	0 SF
TOTAL FLOOR AREA	82,895 SF

* STAIR AND ELEVATOR ENCLOSURES

** 12-10 (b)(IV)
FLOOR AREA OF A BUILDING SHALL NOT INCLUDE FLOOR SPACE USED FOR ACCESSORY OFF-STREETPARKING SPACES PROVIDED IN ANY STORY LOCATED NOT MORE THAN 23 FEET ABOVE CURB LEVEL.

(43-25) MINIMUM REQUIRED SIDE YARDS:

NO SIDE YARD REQUIRED - IF PROVIDED, MINIMUM 8 FEET WIDE.

SIDE YARD PROVIDED - REFER TO SITE PLAN

(43-26) MINIMUM REQUIRED REAR YARDS

MINIMUM 20 FEET REAR YARD REQUIRED.

(43-28 (b)) THROUGH LOT PORTION:

- PROVIDED TWO OPEN AREAS ADJOINING STREET LINE A DEPTH OF 20 FEET PROVIDED AT EACH STREET LINE. REFER TO SITE PLAN.

(43-311) WITHIN 100 FEET OF CORNERS: NO REAR YARD REQUIRED

(12-10) CORNER LOT PORTION: REFER TO SITE PLAN

(43-46) SIGOURNEY ST. - PARK ACROSS THE STREET?

BC 1106.1 - H.C. CAR SPACES - 5% OF TOTAL CARS.

BC 1106.5 - VAN SPACE FOR EVERY 6 H.C. SPACES (SEE ICCA 117.1 + SEC.502 B.C.)

BC 1106.5 - VAN SPACE FOR EVERY 6 H.C. SPACES 11' WIDE - ACCESSABLE 5' WIDE

(44-20) (44-21) PARKING FOR COMMUNITY FACILITY USE - NOT REQUIRED

PROPOSED = 66 PARKING SPACES

(44-42) MIN DIMENSIONS OF CAR SPACE = 18'-00" LONG x 8'-6" WIDE

(43-02) STREET TREE PLANTING REQUIRED

(37-90) COMMUNITY FACILITY PARKING TO COMPLY WITH SECTION 37-90 - N/A

AVERAGE CURB ELEVATION

BAY ST. L.G. 7.2+6.0 = 13.2÷2= 6.6 AVG.

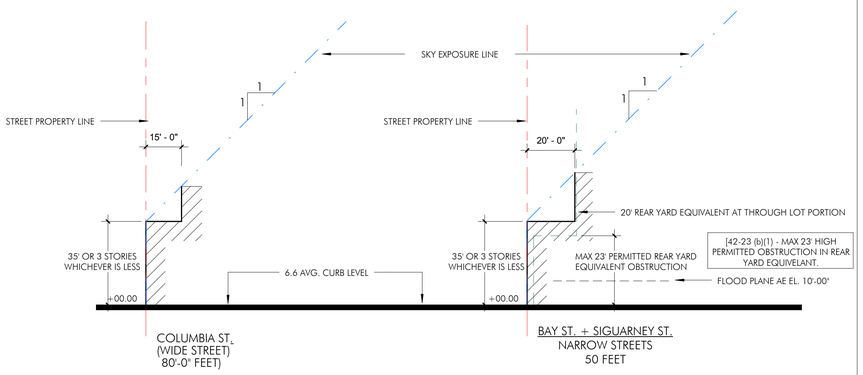
COLUMBIA ST. L.G. 6.0÷6.0 = 6.0 AVG.

SIGOURNEY ST. L.G. 6.1 + 8.3 = 14.4 = 7.2 AVG.

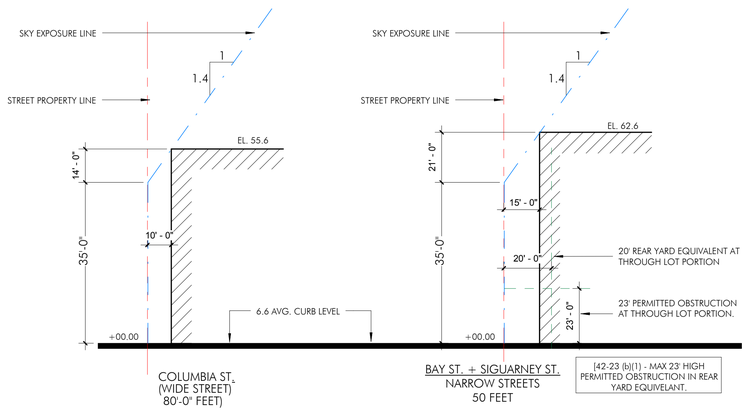
19.8 / 3 = 6.60 AVG. CURB LEVEL

(43-40) HEIGHTS & SETBACKS:

(43-43) MAXIMUM HEIGHT OF FRONT WALL AND REQUIRED SETBACKS: REFER TO ZD1 ZONING DIAGRAM



FRONT SETBACKS (REQUIRED)



(43-44) ALTERNATE FRONT SETBACKS (REQUIRED)

BUILDING CODE DATA:

SITE : 556 COLUMBIA STREET, BROOKLYN, NY 11231

PROPOSED: SCHOOL - USE GROUP 3

USE CLASSIFICATION: EDUCATIONAL GROUP 3 - SCHOOL

(TABLE 503) ALLOWABLE BUILDING HEIGHTS & AREAS
GROUP : E
CONSTRUCTION CLASSIFICATION: 1B
MAXIMUM HEIGHT: 160 FEET - PROPOSED :75'
MAXIMUM STORIES: UNLIMITED - PROPOSED: BASEMENT + FLOORS
MAXIMUM BUILDING AREA: UNLIMITED- REFER TO FLOOR AREA SCHEDULE

(TABLE 601/602) FIRE RESISTANCE RATING REQUIREMENTS:

CONSTRUCTION TYPE:	REQUIRED	PROPOSED
STRUCTURAL FRAME	2 HRS	2 HRS
BEARING WALLS		
EXTERIOR	2 HRS	N/A
INTERIOR	2 HRS	N/A
NON-BEARING WALLS AND PARTITIONS		
EXTERIOR (TABLE 602)	1 HR (AT WEST WALL)	1 HR
INTERIOR	0 HRS	AS APPLICABLE TO OTHER BLDG AREAS
FLOOR CONSTRUCTION	2 HRS	2 HRS
ROOF CONSTRUCTION	1 HR	1 HR

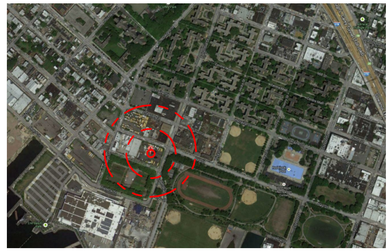
(910.5) SMOKE VENTING OF SHAFTS:

SHAFTS GREATER IN AREA OF 4 SQ. FT. - MIN VENT OF 3.5% OF SHAFT AREA

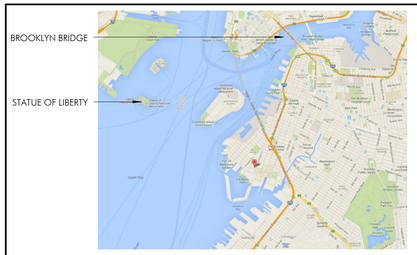
ENTIRE BUILDING IS SPRINKLERED AT ALL FLOORS.

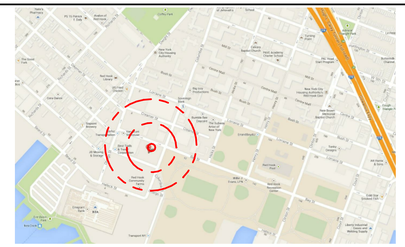
(1002.0) GROUP E - CORRIDOR IS DEFINED AS AN INTERIOR CORRIDOR SERVING ONLY ONE TENANT

SPECIAL INSPECTIONS REQUIREMENTS:	CODE/SECTION
FLOOD ZONE COMPLIANCE	G105
EMERGENCY POWER SYSTEMS	1704.13 / 2702
STRUCTURAL STEEL - ERECTION & BOLTING	1704.3.2,.3
STRUCTURAL COLD-FORMED STEEL	1704.3.4
CONCRETE - CAST-IN-PLACE	1704.4
SOILS - INVESTIGATIONS (BORINGS/TEST PITS0	1704.7.4
CONCRETE TEST CYLINDERS	1905.6
CONCRETE DESIGN MIX	1905.3
MECHANICAL SYSTEMS	1704.15
SPRINKLER SYSTEMS	1704.21
STANDPIPE SYSTEMS	1704.22
HEATING SYSTEMS	1704.23



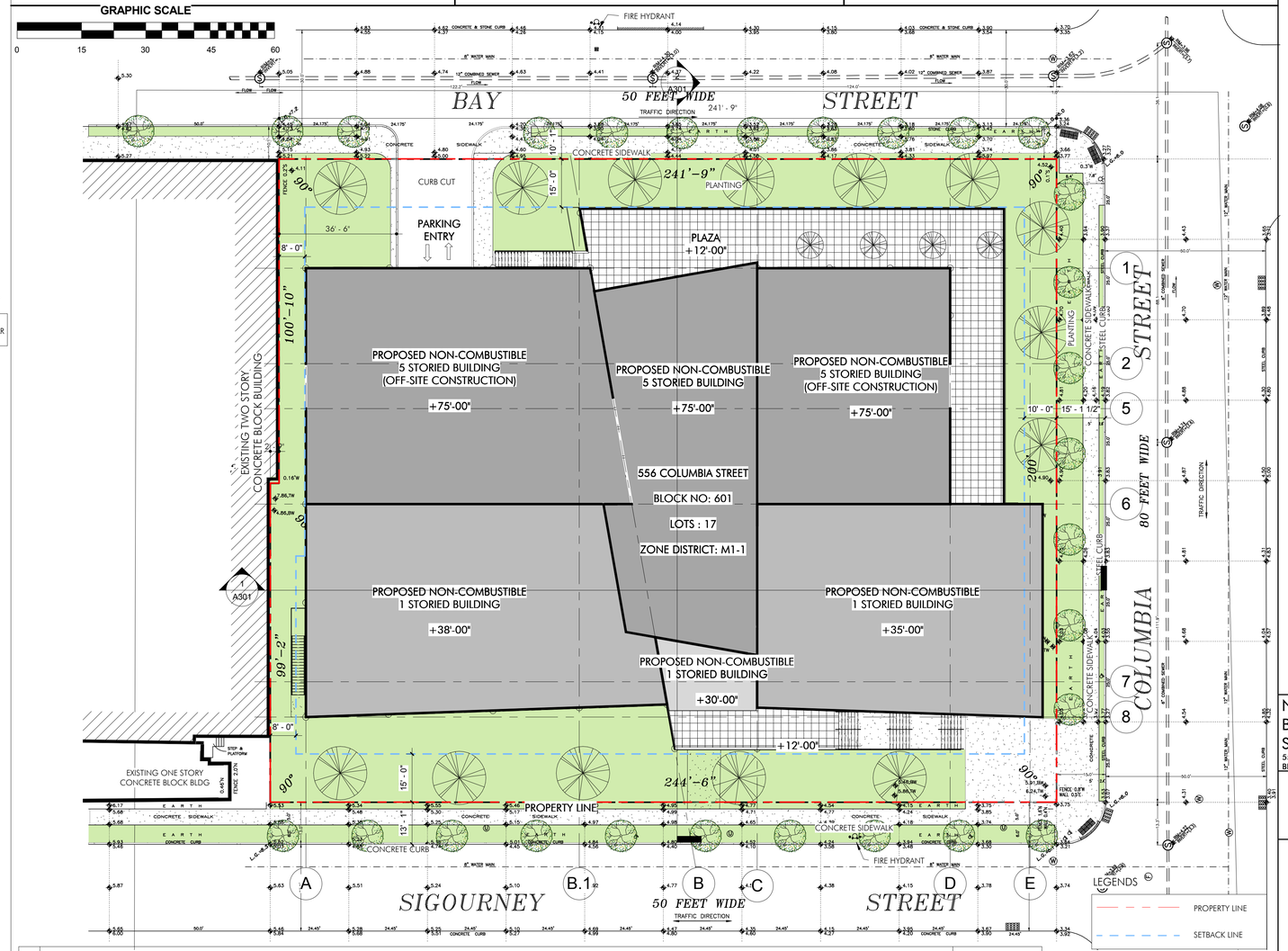
SATELLITE VIEW





MAP VIEW

GRAPHIC SCALE
0 15 30 45 60



1 SITE PLAN — SCALE 1" = 20'-0"

ISSUED TO | DATE | ISS/REV | DESCRIPTION

PARTNERS FOR ARCHITECTURE
48 UNION STREET,
STAMFORD, CT 06906
P 203/708.0047
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NORTH

NEW CONSTRUCTION FOR:
BASIS INDEPENDENT SCHOOLS
556 COLUMBIA STREET
BROOKLYN, NY 11231

GENERAL INFORMATION

SEAL & SIGNATURE

DATE: 08.19.2013
PROJECT NO.: 13-607
DRAWN BY: BT
CHECKED BY: VG
DRAWING NO: G101

CADD FILE NO:
C:\Users\Staff\Documents\13-607 BASIS Brooklyn-PTA-r2-CENTRAL_bhatt.rvt

BASEMENT EGRESS		
CODE REF	COMPONENT	(AS PER CODE)
NYCBC 1004.1.2	OCCUPANT LOAD	0 OCCUPANTS - PARKING, LOBBY, STORAGE, MECHANICAL ROOMS
NYCBC 1005.1	DOORS	
	REQUIRED	N/A
	PROPOSED	4 DOORS @ 36 INCHES EACH = **144 INCHES**
NYCBC 1005.1	STAIRWAYS	
	REQUIRED	NOT AT GRADE STREET LEVEL
	PROPOSED	N/A

EGRESS WITH DATA		
	MINIMUM INCHES / OCC. REQUIRED	INCHES / OCC. PROPOSED
STAIR WIDTH	NONE - FLOOR AT STREET LEVEL	NONE
DOOR WIDTH	0.2"/OCC.	4 DOORS AT 36" EACH = 144"

TOTAL CAPACITY OF DOORS
4 DOORS AT 36" WIDE EACH TOTAL OCCUPANTS ALLOWED = 720 OCCUPANTS
TOTAL OCCUPANTS PROPOSED = 0 OCCUPANTS (PARKING + STORAGE)

FLOOR AREA CALC.	
FLOOR	**AREA**
BASEMENT	1,923 S.F.
LEVEL 1	23,741 S.F.
LEVEL 2	13,524 S.F.
LEVEL 3	14,977 S.F.
LEVEL 4	13,606 S.F.
LEVEL 5	15,124 S.F.
TOTAL AREA	82,895 S.F.

BAY STREET
NARROW STREET - 50 FEET

TRAFFIC DIRECTION

PARKING ENTRY

CURB CUT

PLAZA
+12'-00"

99' - 0"
11 SPACES @ 9'-0" X 18'-0"

241'-9"

100'-10"

SES/ UTILITY
734 SF | S-2 | - | 3B

PROPOSED NON-COMBUSTIBLE
5 STORIED BUILDING
(OFF-SITE CONSTRUCTION)
+75'-00"

PROPOSED NON-COMBUSTIBLE
5 STORIED BUILDING
72' - 0"
8 SPACES @ 9'-0"
+75'-00"

PROPOSED NON-COMBUSTIBLE
5 STORIED BUILDING
(OFF-SITE CONSTRUCTION)
+75'-00"

LOBBY
526 SF | E | -

SECURITY
407 SF | B | 2

VESTIBULE
122 SF | E | -

M.R.
135 SF | F-2 | -

4 SPACES @ 9'-0" X 18'-0"

7 SPACES @ 9'-0" X 18'-0"

6 SPACES @ 9'-0" X 18'-0"

3 SPACES @ 9'-0" X 18'-0"

PROPOSED NON-COMBUSTIBLE
1 STORIED BUILDING
+38'-00"

TOTAL PARKING SPACES: 60

PROPOSED NON-COMBUSTIBLE
1 STORIED BUILDING
+35'-00"

9 SPACES @ 9'-0" X 18'-0"

PROPOSED NON-COMBUSTIBLE
1 STORIED BUILDING
+30'-00"

+12'-00"

99'-2"

244'-6"

EXISTING ONE STORY
CONCRETE BLOCK BLDG

EXISTING ONE STORY
CONCRETE BLOCK BUILDING

PROPERTY LINE

SIGOURNEY STREET
NARROW STREET - 50 FEET

COLUMBIA STREET
WIDE STREET - 80 FEET

CONCRETE SIDEWALK
EARTH
CONCRETE CURB
STEEL CURB
SIDEWALK
PLANTING
STONE CURB
FENCE 0.2'S
FENCE 0.8'W
WALL 0.5'E
NCE 0.6'W
ALL 0.5'E

1 GROUND LEVEL PLAN

SCALE 3/32" = 1'-0"

BASIS INDEPENDENT SCHOOLS

DESCRIPTION	ISSUED TO	DATE	ISS/REV

PARTNERS FOR ARCHITECTURE
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STAMFORD, CT 06906
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NEW CONSTRUCTION FOR:
BASIS INDEPENDENT SCHOOLS
556 COLUMBIA STREET
BROOKLYN, NY 11231

BASEMENT FLOOR PLAN

SEAL & SIGNATURE

DATE:	08.19.2013
PROJECT NO.:	13-607
DRAWN BY:	BT
CHECKED BY:	IO
DRAWING NO:	A101

CAD FILE NO.
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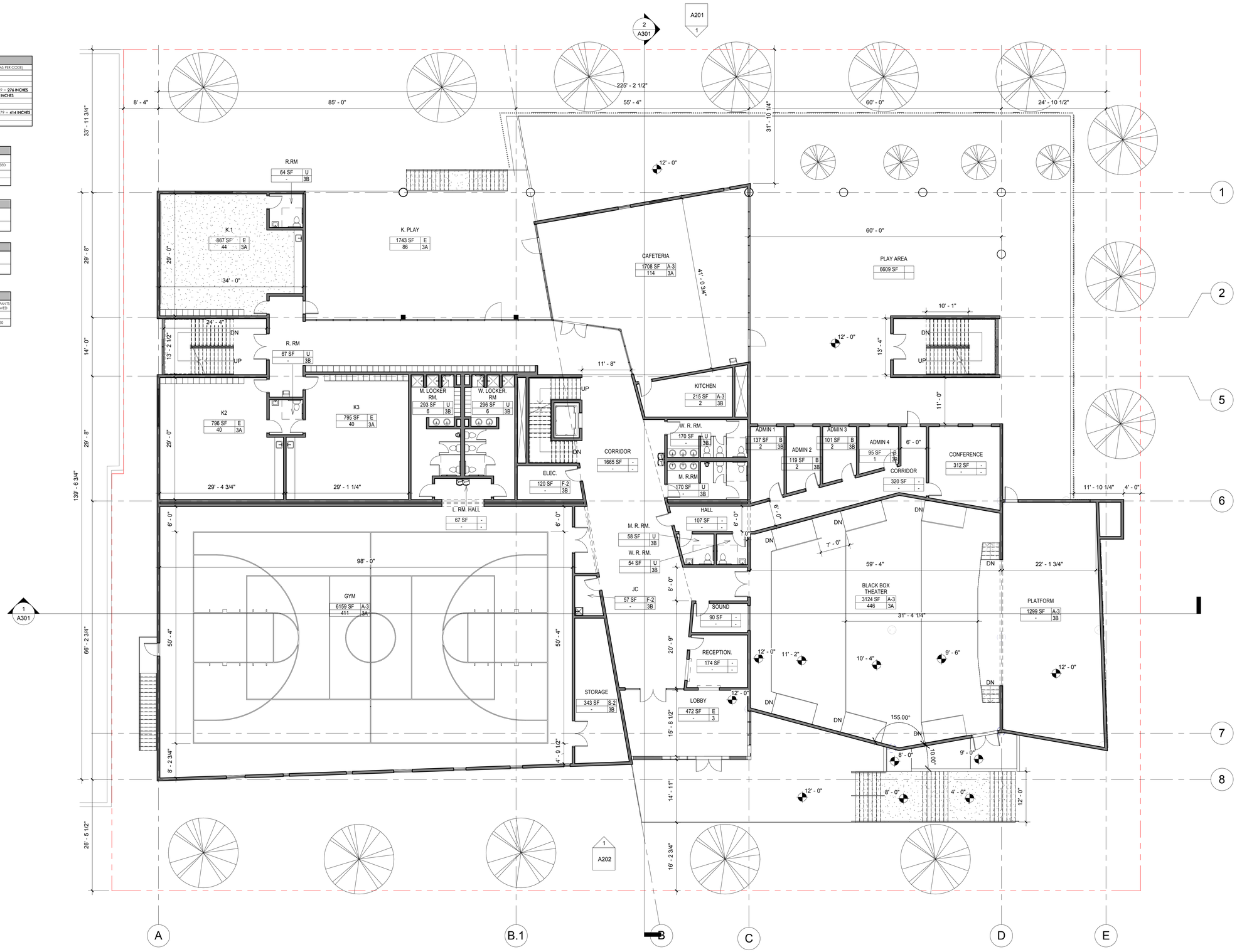
1st FLOOR EGRESS			
CODE REF.	COMPONENT		(AS PER CODE)
NYCBC 1004.1.2	OCCUPANT LOAD	1379 OCCUPANTS	
NYCBC 1005.1	DOORS		
	REQUIRED	0.2 INCHES x OCCUPANTS = 0.2 x 169 =	**276 INCHES**
	PROPOSED	9 DOORS @ 36 INCHES EACH =	**324 INCHES**
NYCBC 1005.1	STAIRWAYS		
	REQUIRED	0.3 INCHES x OCCUPANTS = 0.3 x 1379 =	**414 INCHES**
	PROPOSED	4 STAIRS = 426 INCHES	

EGRESS WITH DATA		
STAIRS AND DOORS		
	MINIMUM INCHES / OCC. REQUIRED	INCHES / OCC. PROPOSED
STAIR WIDTH	0.3"/OCC 414"	0.301"/OCC 414"
STAIR DOOR WIDTH	0.2"/OCC 276"	0.231"/OCC 324"

TOTAL CAPACITY OF STAIRS
414" WIDE STAIRS = 1,380 TOTAL OCCUPANTS ALLOWED = 1,380 OCCUPANTS
TOTAL OCCUPANTS PROPOSED = 1,379 OCCUPANTS

TOTAL CAPACITY OF DOORS
324" WIDE DOORS = 1,440 TOTAL OCCUPANTS ALLOWED = 1,620 OCCUPANTS
TOTAL OCCUPANTS PROPOSED = 1,379 OCCUPANTS

STAIRS			DOORS		
MAX. OCCUPANT PER TABLE 1005.1	"/OCC PROVIDED	OCCUPANTS ALLOWED	MAX. OCCUPANT PER TABLE 1005.1	"/OCC PROVIDED	OCCUPANTS ALLOWED
STAIRS					
0.3"/OCC.	0.3"/OCC.	1,380	0.2"/OCC.	0.23"/OCC	1620



BASIS INDEPENDENT SCHOOLS

DESCRIPTION

ISSUED TO

DATE

ISS/REV

PARTNERS FOR ARCHITECTURE

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NEW CONSTRUCTION FOR: BASIS INDEPENDENT SCHOOLS

556 COLUMBIA STREET
BROOKLYN, NY 11231

FIRST FLOOR PLAN

SEAL & SIGNATURE

DATE: **08.19.2013**
PROJECT NO.: **13-607**
DRAWN BY: **BT**
CHECKED BY: **IO**
DRAWING NO:

A102

CADD FILE NO:
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1 LEVEL 1 FLOOR PLAN

SCALE 3/32" = 1'-0"

2nd FLOOR EGRESS			
NYCBC 1004.1.2	**OCCUPANT LOAD**	314 OCCUPANTS	(AS PER CODE)
NYCBC 1005.1	**DOORS**		
	REQUIRED:	0.2 INCHES x OCCUPANTS = 0.2 x 314 = **63 INCHES**	
	PROPOSED:	4 DOORS @ 36 INCHES = **144 INCHES**	
NYCBC 1005.1	**STAIRWAYS**		
	REQUIRED:	0.3 INCHES x OCCUPANTS = 0.3 x 314 = **94 INCHES**	
	PROPOSED:	2 STAIRS AT 75" EACH = 150 INCHES	

EGRESS WITH DATA		
STAIR A		
	MINIMUM INCHES / OCC. REQUIRED	INCHES / OCC. PROPOSED
STAIR WIDTH	0.3"/OCC. 44"	0.47/OCC. 75"
STAIR DOOR WIDTH	0.2"/OCC. 34"	0.46"/OCC. 72"
STAIR B		
	MINIMUM INCHES / OCC. REQUIRED	INCHES / OCC. PROPOSED
STAIR WIDTH	0.3"/OCC. 44"	0.47/OCC. 75"
STAIR DOOR WIDTH	0.2"/OCC. 34"	0.46"/OCC. 72"

TOTAL CAPACITY OF STAIRS A+B
75" WIDE STAIR A = 250 OCCUPANTS ALLOWED
75" WIDE STAIR B = 250 OCCUPANTS ALLOWED
TOTAL OCCUPANTS ALLOWED = 500 OCCUPANTS
TOTAL OCCUPANTS PROPOSED = 314 OCCUPANTS

TOTAL CAPACITY OF DOORS @ STAIRS A+B
75" WIDE DOOR @STAIR A = 360 OCCUPANTS ALLOWED
75" WIDE DOOR @ STAIR B = 360 OCCUPANTS ALLOWED
TOTAL OCCUPANTS ALLOWED = 720 OCCUPANTS
TOTAL OCCUPANTS PROPOSED = 314 OCCUPANTS

STAIRS			DOORS		
MAX. OCCUPANT PER TABLE 1005.1	"/OCC PROVIDED	OCCUPANTS ALLOWED	MAX. OCCUPANT PER TABLE 1005.1	"/OCC PROVIDED	OCCUPANTS ALLOWED
STAIR A					
0.3"/OCC.	0.47"/OCC.	250	0.2"/OCC.	0.46"/OCC	360
STAIR B					
0.3"/OCC.	0.47"/OCC.	250	0.2"/OCC.	0.46"/OCC	360
TOTAL ALLOWED		500	TOTAL ALLOWED		720

BASIS INDEPENDENT SCHOOLS

DESCRIPTION	ISS/REV	DATE	ISSUED TO

PARTNERS FOR ARCHITECTURE
48 UNION STREET,
STAMFORD, CT 06906
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NEW CONSTRUCTION FOR: BASIS INDEPENDENT SCHOOLS

556 COLUMBIA STREET
BROOKLYN, NY 11231

SECOND FLOOR PLAN

SEAL & SIGNATURE

DATE: **08.19.2013**
PROJECT NO.: **13-607**
DRAWN BY: **BT**
CHECKED BY: **IO**
DRAWING NO:
A103

CADD FILE NO:
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1 LEVEL 2 FLOOR PLAN

SCALE 3/32" = 1'-0"

3rd FLOOR EGRESS			
NYCBC 1004.1.2	**OCCUPANT LOAD**	499 OCCUPANTS	(AS PER CODE)
NYCBC 1005.1	**DOORS**		
	REQUIRED	0.2 INCHES x OCCUPANTS = 0.2 x 499 = **100 INCHES**	
	PROPOSED	4 DOORS @ 36 INCHES = **144 INCHES**	
NYCBC 1005.1	**STAIRWAYS**		
	REQUIRED	0.3 INCHES x OCCUPANTS = 0.3 x 499 = **150 INCHES**	
	PROPOSED	2 STAIRS AT 75" EACH = 150 INCHES	

EGRESS WITH DATA		
STAIR A		
	MINIMUM INCHES / OCC. REQUIRED	INCHES / OCC. PROPOSED
STAIR WIDTH	0.3"/OCC. 44"	0.3"/OCC. 75"
STAIR DOOR WIDTH	0.2"/OCC. 30"	0.3"/OCC. 72"
STAIR B		
	MINIMUM INCHES / OCC. REQUIRED	INCHES / OCC. PROPOSED
STAIR WIDTH	0.3"/OCC. 44"	0.3"/OCC. 75"
STAIR DOOR WIDTH	0.2"/OCC. 30"	0.3"/OCC. 72"

STAIRS			DOORS		
MAX. OCCUPANT PER TABLE 1005.1	%OCC PROVIDED	OCCUPANTS ALLOWED	MAX. OCCUPANT PER TABLE 1005.1	%OCC PROVIDED	OCCUPANTS ALLOWED
STAIR A					
0.3"/OCC.	0.3"/OCC.	250	0.2"/OCC.	0.3"/OCC.	360
STAIR B					
0.3"/OCC.	0.3"/OCC.	250	0.2"/OCC.	0.3"/OCC.	360
TOTAL ALLOWED		500	TOTAL ALLOWED		720

TOTAL CAPACITY OF STAIRS A+B
75" WIDE STAIR A = 250 OCCUPANTS ALLOWED
75" WIDE STAIR B = 250 OCCUPANTS ALLOWED
TOTAL OCCUPANTS ALLOWED = 500 OCCUPANTS
TOTAL OCCUPANTS PROPOSED = 499 OCCUPANTS

TOTAL CAPACITY OF DOORS @ STAIRS A+B
72" WIDE DOOR @STAIR A = 360 OCCUPANTS ALLOWED
72" WIDE DOOR @ STAIR B = 360 OCCUPANTS ALLOWED
TOTAL OCCUPANTS ALLOWED = 720 OCCUPANTS
TOTAL OCCUPANTS PROPOSED = 499 OCCUPANTS

1 LEVEL 3 FLOOR PLAN

SCALE 3/32" = 1'-0"

BASIS INDEPENDENT SCHOOLS

ISS/REV	DATE	DESCRIPTION
		ISSUED TO

PARTNERS FOR ARCHITECTURE

48 UNION STREET,
STAMFORD, CT 06905
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NEW CONSTRUCTION FOR: BASIS INDEPENDENT SCHOOLS

556 COLUMBIA STREET
BROOKLYN, NY 11231

THIRD FLOOR PLAN

SEAL & SIGNATURE

DATE: **08.19.2013**
PROJECT NO.: **13-607**
DRAWN BY: **BT**
CHECKED BY: **IO**
DRAWING NO:

A104

CADD FILE NO.:
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Basis
Brooklyn-PFA-v2-CENTRAL_bStaff.rvt

4th FLOOR EGRESS			
NYCBC 1004.1.2	**OCCUPANT LOAD**	407 OCCUPANTS	(AS PER CODE)
NYCBC 1005.1	**DOORS**		
	REQUIRED:	0.2 INCHES x OCCUPANTS = 0.2 x 407 = **81 INCHES**	
	PROPOSED:	4 DOORS @ 36 INCHES = **144 INCHES**	
NYCBC 1005.1	**STAIRWAYS**		
	REQUIRED:	0.3 INCHES x OCCUPANTS = 0.3 x 407 = **122 INCHES**	
	PROPOSED:	2 STAIRS AT 75" EACH = **150 INCHES**	

EGRESS WITH DATA		
STAIR A		
	MINIMUM INCHES / OCC. REQUIRED	INCHES / OCC. PROPOSED
STAIR WIDTH	0.3"/OCC. 44"	0.37"/OCC. 72"
STAIR DOOR WIDTH	0.2"/OCC. 29"	0.35"/OCC. 72"
STAIR B		
	MINIMUM INCHES / OCC. REQUIRED	INCHES / OCC. PROPOSED
STAIR WIDTH	0.3"/OCC. 44"	0.37"/OCC. 75"
STAIR DOOR WIDTH	0.2"/OCC. 29"	0.35"/OCC. 72"

STAIRS			DOORS		
MAX. OCCUPANT PER TABLE 1005.1	"/OCC. PROVIDED	OCCUPANTS ALLOWED	MAX. OCCUPANT PER TABLE 1005.1	"/OCC PROVIDED	OCCUPANTS ALLOWED
STAIR A					
0.3"/OCC.	0.37"/OCC.	250	0.2"/OCC.	0.35"/OCC	360
STAIR B					
0.3"/OCC.	0.37"/OCC.	250	0.2"/OCC.	0.35"/OCC	360
TOTAL ALLOWED		500	TOTAL ALLOWED		720

TOTAL CAPACITY OF STAIRS A+B
75" WIDE STAIR A = 250 OCCUPANTS ALLOWED
75" WIDE STAIR B = 250 OCCUPANTS ALLOWED
TOTAL OCCUPANTS ALLOWED = 500 OCCUPANTS
TOTAL OCCUPANTS PROPOSED = 407 OCCUPANTS

TOTAL CAPACITY OF DOORS @ STAIRS A+B
72" WIDE DOOR @STAIR A = 360 OCCUPANTS ALLOWED
72" WIDE DOOR @ STAIR B = 360 OCCUPANTS ALLOWED
TOTAL OCCUPANTS ALLOWED = 720 OCCUPANTS
TOTAL OCCUPANTS PROPOSED = 407 OCCUPANTS

1 LEVEL 4 FLOOR PLAN

SCALE 3/32" = 1'-0"

BASIS INDEPENDENT SCHOOLS

ISS/REV | DATE | DESCRIPTION

ISSUED TO

PARTNERS FOR ARCHITECTURE

48 UNION STREET,
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NEW CONSTRUCTION FOR: BASIS INDEPENDENT SCHOOLS

556 COLUMBIA STREET
BROOKLYN, NY 11231

FOURTH FLOOR PLAN

SEAL & SIGNATURE

DATE: **08.19.2013**
PROJECT NO.: **13-607**
DRAWN BY: **BT**
CHECKED BY: **IO**
DRAWING NO:

A105

CADD FILE NO.:
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5th FLOOR EGRESS			
NYCBC 1004.1.2	**OCCUPANT LOAD**	263 OCCUPANTS	(AS PER CODE)
NYCBC 1005.1	**DOORS**		
	REQUIRED:	0.2 INCHES x OCCUPANTS = 0.2 x 263 = **53 INCHES**	
	PROPOSED:	4 DOORS @ 36 INCHES EACH = **144 INCHES**	
NYCBC 1005.1	**STAIRWAYS**		
	REQUIRED:	0.3 INCHES x OCCUPANTS = 0.3 x 263 = **79 INCHES**	
	PROPOSED:	2 STAIRS AT 75" EACH = **150 INCHES**	

EGRESS WITH DATA		
STAIR A		
	MINIMUM INCHES / OCC. REQUIRED	INCHES / OCC. PROPOSED
STAIR WIDTH	0.3"/OCC. 44"	0.57"/OCC. 75"
STAIR DOOR WIDTH	0.2"/OCC. 36"	0.54"/OCC. 72"
STAIR B		
	MINIMUM INCHES / OCC. REQUIRED	INCHES / OCC. PROPOSED
STAIR WIDTH	0.3"/OCC. 44"	0.57"/OCC. 75"
STAIR DOOR WIDTH	0.2"/OCC. 36"	0.54"/OCC. 72"

STAIRS			DOORS		
MAX. OCCUPANT PER TABLE 1005.1	"/OCC PROVIDED	OCCUPANTS ALLOWED	MAX. OCCUPANT PER TABLE 1005.1	"/OCC PROVIDED	OCCUPANTS ALLOWED
STAIR A					
0.3"/OCC.	0.57"/OCC.	250	0.2"/OCC.	0.54"/OCC.	360
STAIR B					
0.3"/OCC.	0.57"/OCC.	250	0.2"/OCC.	0.54"/OCC.	360
TOTAL ALLOWED		500	TOTAL ALLOWED		720

TOTAL CAPACITY OF STAIRS A+B
75" WIDE STAIR A = 250 OCCUPANTS ALLOWED
75" WIDE STAIR B = 250 OCCUPANTS ALLOWED
TOTAL OCCUPANTS ALLOWED = 500 OCCUPANTS
TOTAL OCCUPANTS PROPOSED = 263 OCCUPANTS

TOTAL CAPACITY OF DOORS @ STAIRS A+B
72" WIDE DOOR @STAIR A = 360 OCCUPANTS ALLOWED
72" WIDE DOOR @ STAIR B = 360 OCCUPANTS ALLOWED
TOTAL OCCUPANTS ALLOWED = 720 OCCUPANTS
TOTAL OCCUPANTS PROPOSED = 263 OCCUPANTS

BASIS INDEPENDENT SCHOOLS

ISS./REV	DATE	DESCRIPTION

ISSUED TO

PARTNERS FOR ARCHITECTURE

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NORTH

NEW CONSTRUCTION FOR: BASIS INDEPENDENT SCHOOLS

556 COLUMBIA STREET
BROOKLYN, NY 11231

FIFTH FLOOR PLAN

SEAL & SIGNATURE

DATE: **08.19.2013**
PROJECT NO.: **13-607**
DRAWN BY: **BT**
CHECKED BY: **IO**
DRAWING NO:

A106

CADD FILE NO.:
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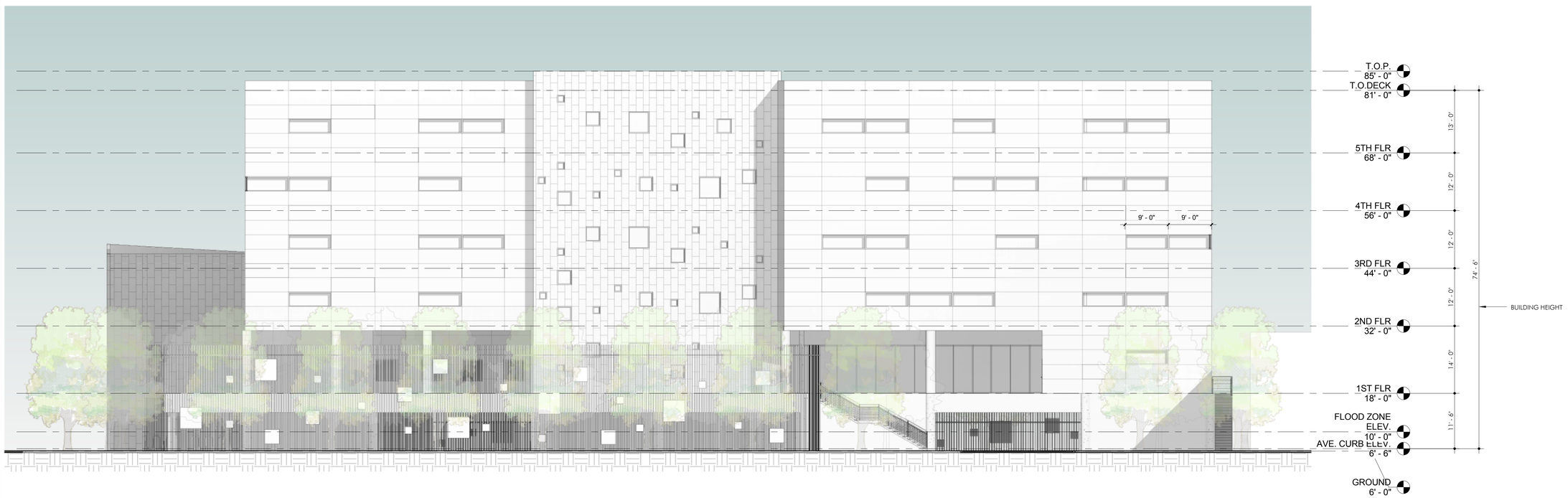
1 LEVEL 5 FLOOR PLAN

SCALE 3/32" = 1'-0"

2 EAST ELEVATION

SCALE 3/32" = 1'-0"



1 NORTH ELEVATION

SCALE 3/32" = 1'-0"

BASIS INDEPENDENT SCHOOLS

ISS/REV	DATE	ISSUED TO
		DESCRIPTION

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NORTH

NEW CONSTRUCTION FOR: BASIS INDEPENDENT SCHOOLS

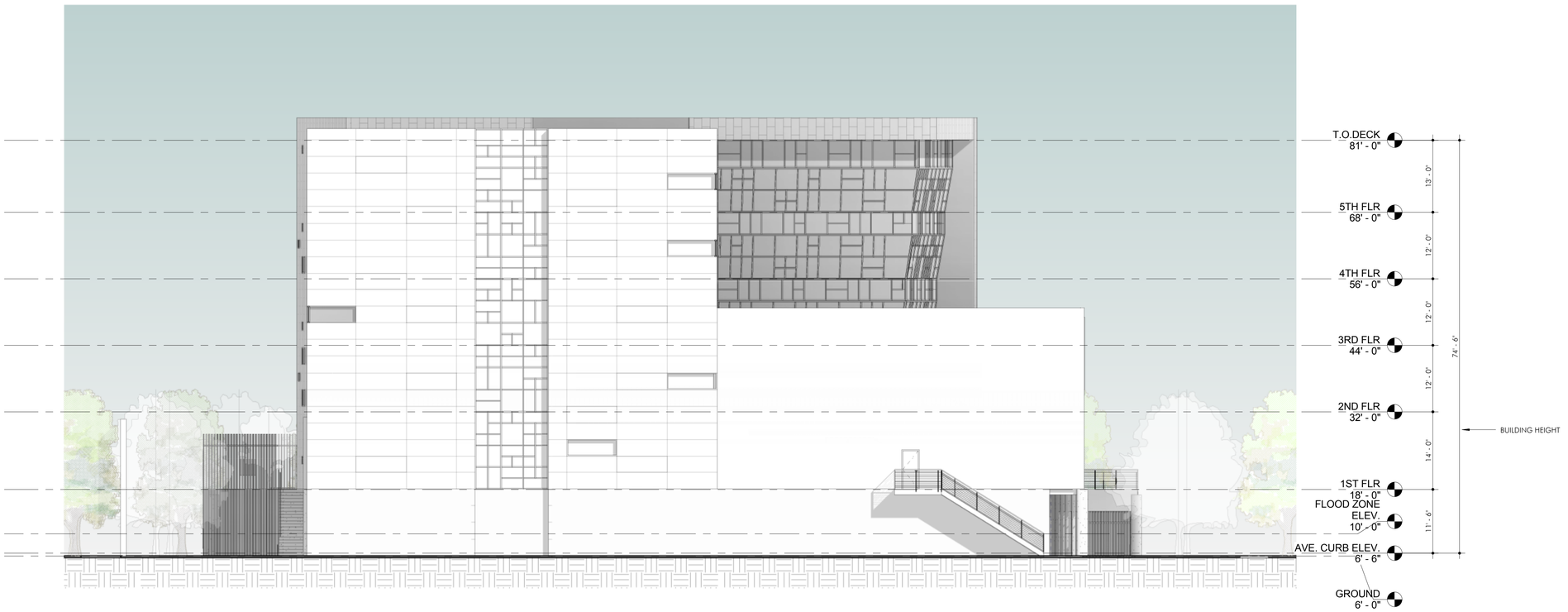
556 COLUMBIA STREET
BROOKLYN, NY 11231

EAST - NORTH ELEVATION

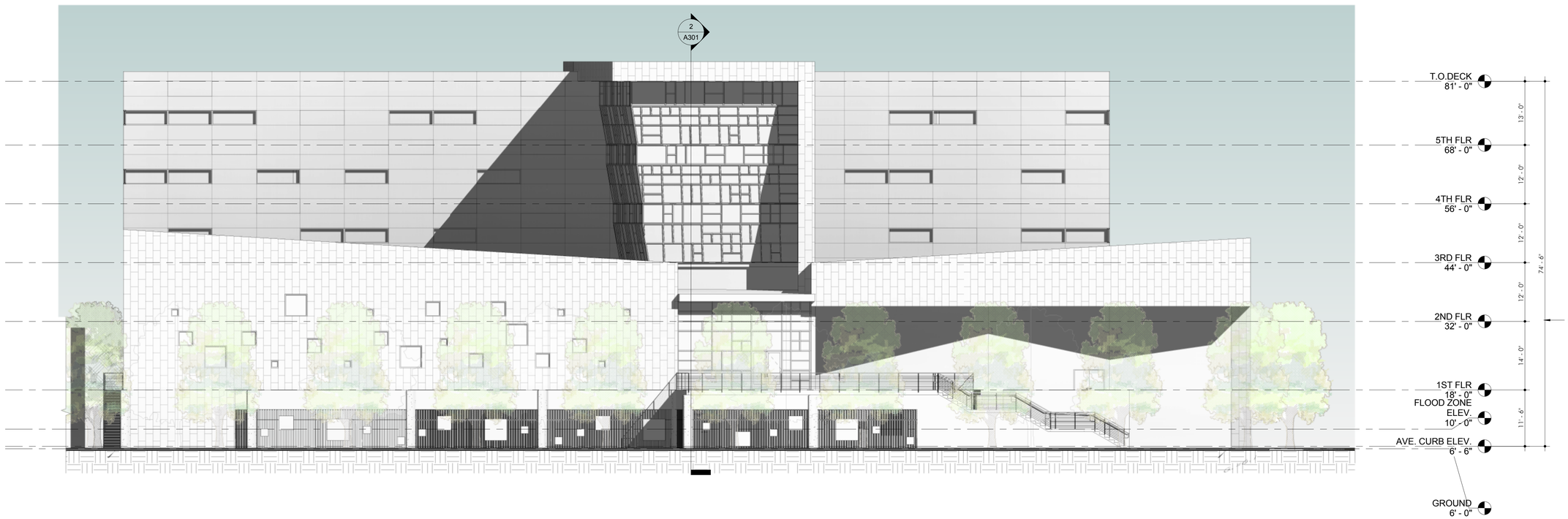
SEAL & SIGNATURE

DATE: 08.19.2013
PROJECT NO.: 13-607
DRAWN BY: BT
CHECKED BY: IO
DRAWING NO:
A201

CADD FILE NO.:
C:\Users\Staff\Documents\13-607 BASIS Brooklyn-PFA-v2-CENTRAL_bStaff.rvt



2 WEST ELEVATION SCALE 3/32" = 1'-0"



1 SOUTH ELEVATION SCALE 3/32" = 1'-0"

BASIS INDEPENDENT SCHOOLS

ISS/REV	DATE	ISSUED TO

DESCRIPTION

PARTNERS FOR ARCHITECTURE
48 UNION STREET,
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NEW CONSTRUCTION FOR: BASIS INDEPENDENT SCHOOLS

556 COLUMBIA STREET
BROOKLYN, NY 11231

WEST - SOUTH ELEVATION

SEAL & SIGNATURE

DATE:	08.19.2013
PROJECT NO.:	13-607
DRAWN BY:	BT
CHECKED BY:	IO
DRAWING NO:	A202

CADD FILE NO:
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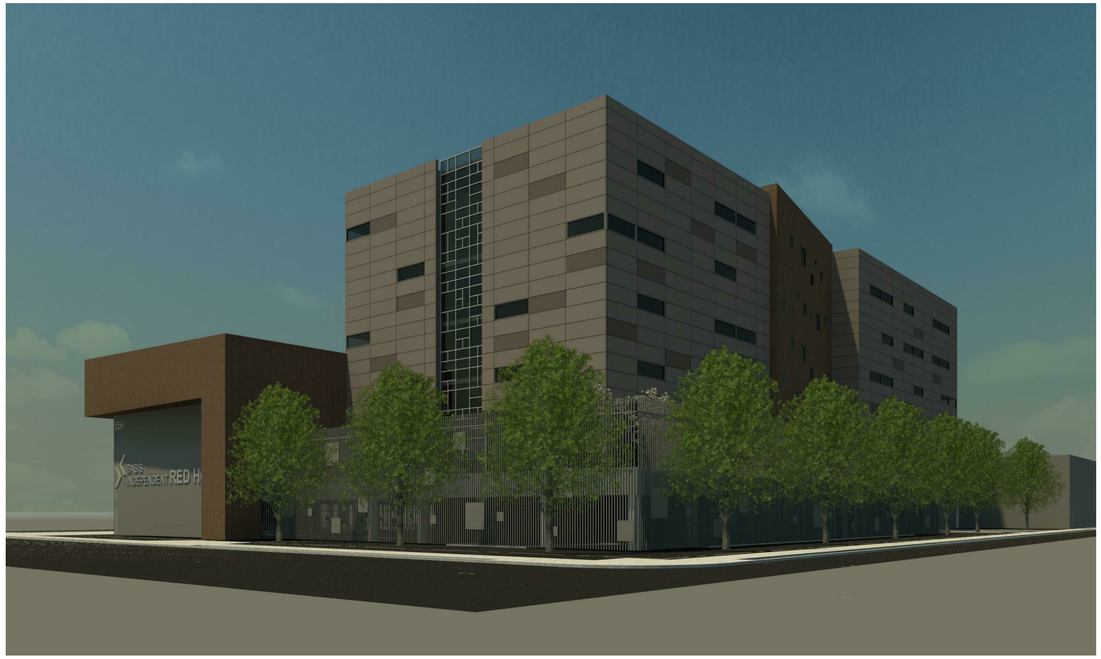

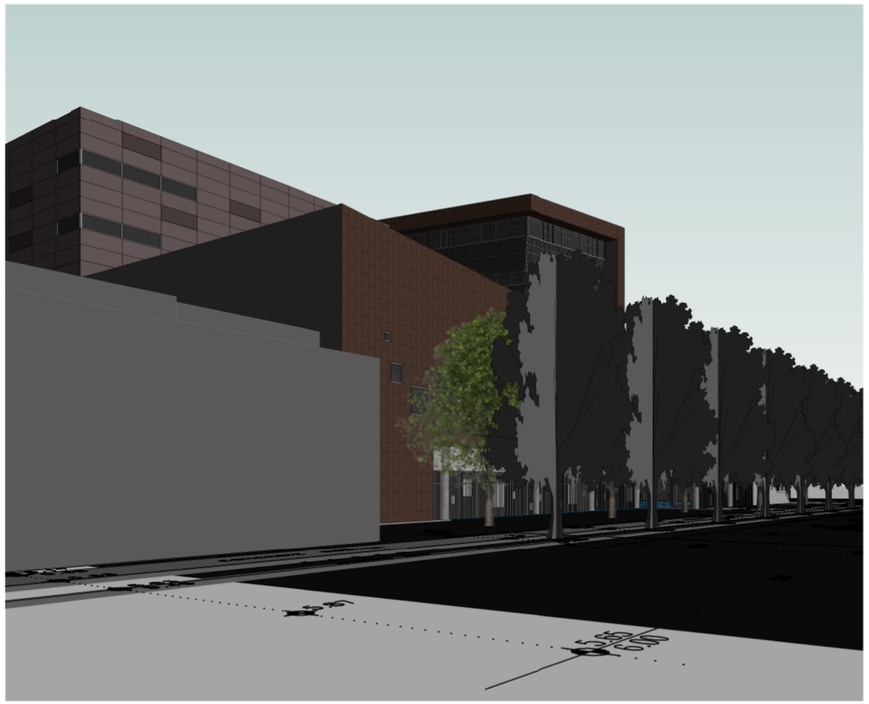

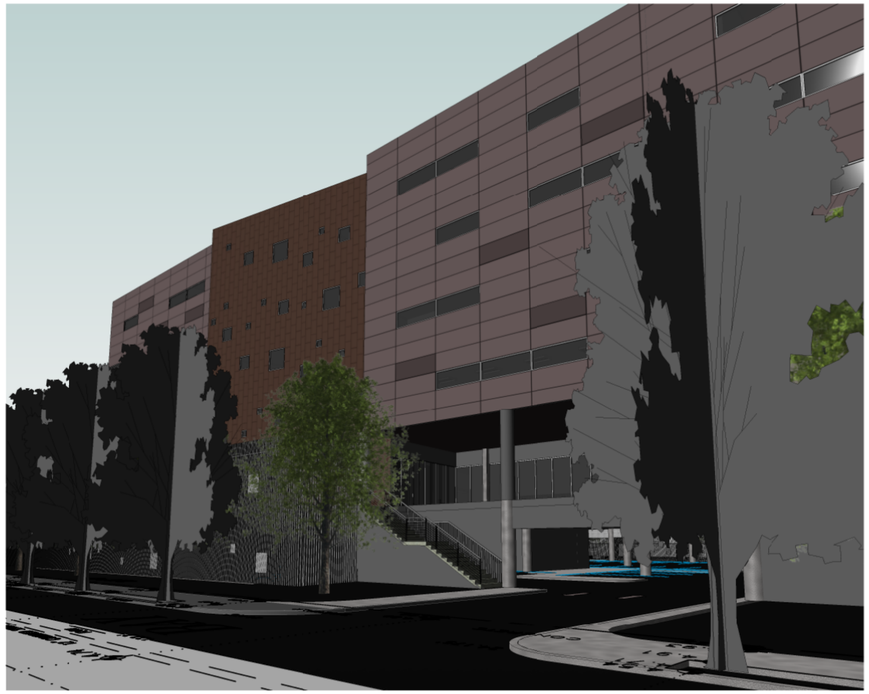

ISS/REV	DATE	ISSUED TO

DESCRIPTION

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STAMFORD, CT 06906
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NEW CONSTRUCTION FOR: BASIS INDEPENDENT SCHOOLS

556 COLUMBIA STREET
BROOKLYN, NY 11231

PERSPECTIVE

SEAL & SIGNATURE

DATE: **08.19.2013**

PROJECT NO.: **13-607**

DRAWN BY: **Author**

CHECKED BY: **Checker**

DRAWING NO:

A203

CADD FILE NO:
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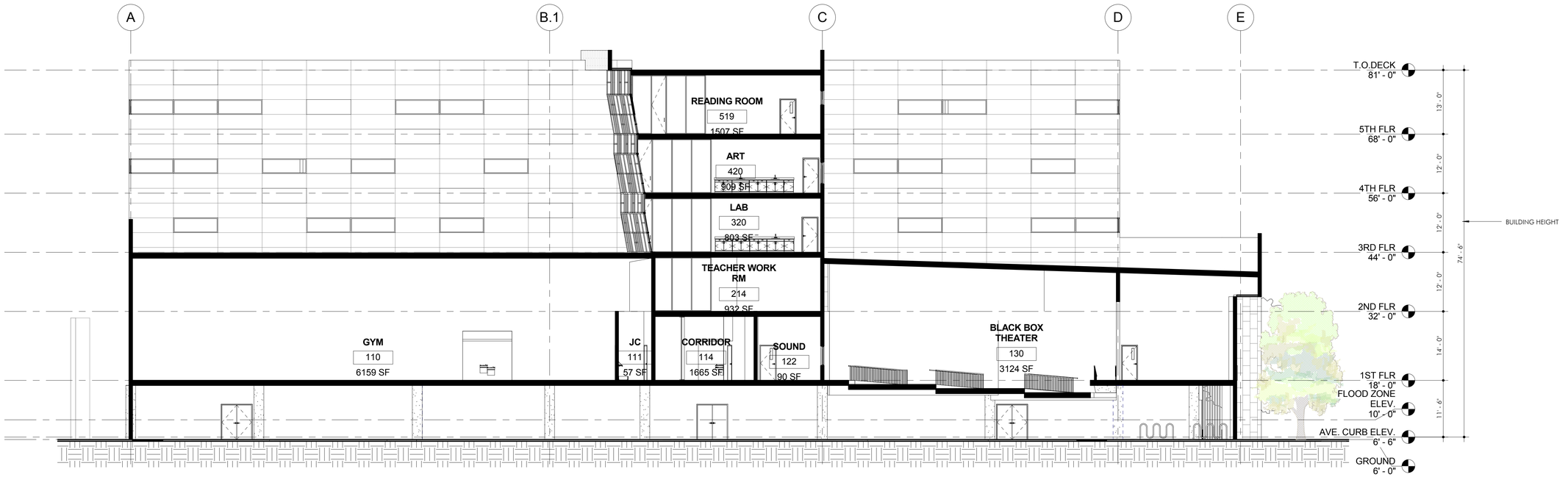
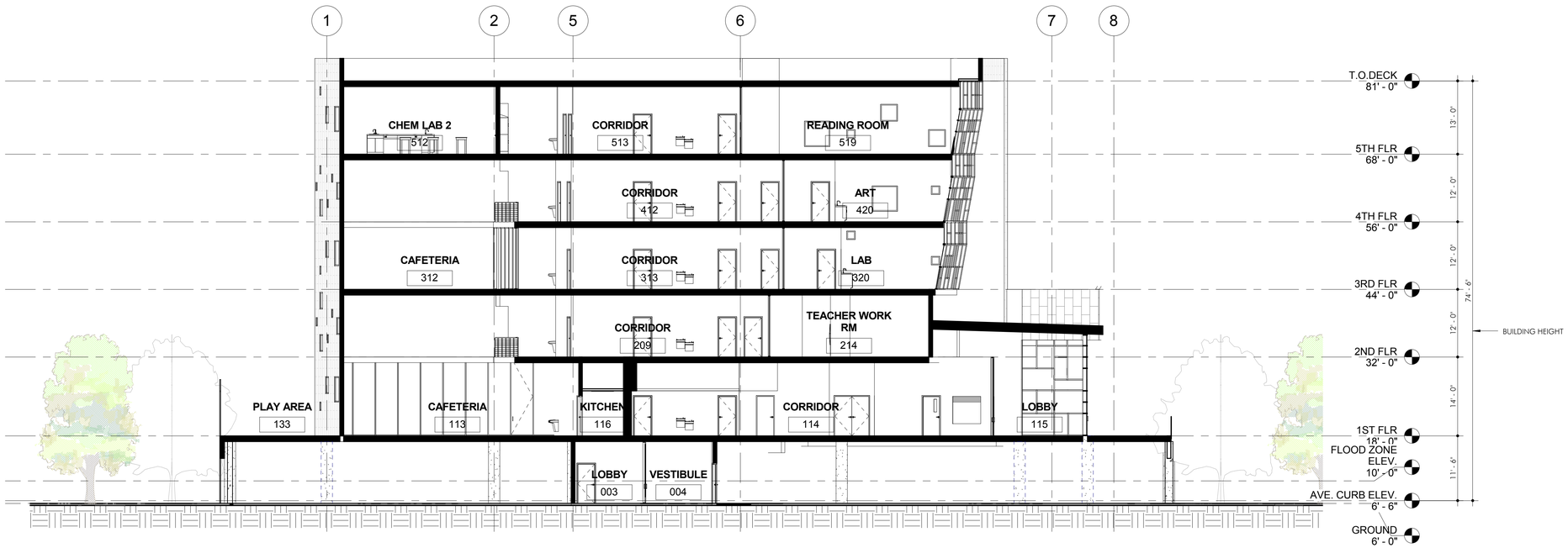


1 EAST-WEST SECTION — SCALE 3/32" = 1'-0"



2 NORTH - SOUTH SECTION — SCALE 3/32" = 1'-0"

DESCRIPTION
ISSUED TO
DATE
ISS/REV

PARTNERS FOR ARCHITECTURE
48 UNION STREET
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NEW CONSTRUCTION FOR: BASIS INDEPENDENT SCHOOLS

556 COLUMBIA STREET
BROOKLYN, NY 11231

SECTION

SEAL & SIGNATURE

DATE: 08.19.2013
PROJECT NO.: 13-607
DRAWN BY: BT
CHECKED BY: IO
DRAWING NO:

A301

CADD FILE NO:
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Brooklyn-PFA-v2-CENTRAL_bt&R.rvt

RED HOOK NEIGHBORHOOD

PARCEL OUTLINE: NYC DIGITAL TAX MAP, ACCESSED 8-5-2013
AERIAL PHOTO: NYC DIGITAL TAX MAP, ACCESSED 8-5-2013

SITE EXCAVATION DIAGRAM

556 COLUMBIA STREET
(BLOCK 601, LOT 17)
BROOKLYN, NEW YORK

FIGURE 5

DATE:	10/25/2013
SCALE:	1 " = 40 '
PROJECT NUMBER:	560896

ALL LOCATIONS APPROXIMATE

PVE Sheffler

One Civic Center Plaza
Suite 501
Poughkeepsie, New York 12601
Phone: (845) 454-2544
Fax: (845) 454-2655

PARCEL OUTLINE: NYC DIGITAL TAX MAP, ACCESSED 8-5-2013
AERIAL PHOTO: NYC DIGITAL TAX MAP, ACCESSED 8-5-2013

MAP OF END POINT SAMPLES

556 COLUMBIA STREET
(BLOCK 601, LOT 17)
BROOKLYN, NEW YORK

FIGURE 6

DATE:	10/25/2013
SCALE:	1 " = 40 '
PROJECT NUMBER:	560896

ALL LOCATIONS APPROXIMATE

PVE Sheffler

One Civic Center Plaza
Suite 501
Poughkeepsie, New York 12601
Phone: (845) 454-2544
Fax: (845) 454-2655

BASEMENT EGRESS		
CODE REF	COMPONENT	(AS PER CODE)
NYCBC 1004.1.2	OCCUPANT LOAD	0 OCCUPANTS - PARKING, LOBBY, STORAGE, MECHANICAL ROOMS
NYCBC 1005.1	DOORS	
	REQUIRED	N/A
	PROPOSED	4 DOORS @ 36 INCHES EACH = **144 INCHES**
NYCBC 1005.1	STAIRWAYS	
	REQUIRED	NOT AT GRADE STREET LEVEL
	PROPOSED	N/A

EGRESS WITH DATA		
	MINIMUM INCHES / OCC. REQUIRED	INCHES / OCC. PROPOSED
STAIR WIDTH	NONE - FLOOR AT STREET LEVEL	NONE
DOOR WIDTH	0.2"/OCC.	4 DOORS AT 36" EACH = 144"

TOTAL CAPACITY OF DOORS
4 DOORS AT 36" WIDE EACH TOTAL OCCUPANTS ALLOWED = 720 OCCUPANTS
TOTAL OCCUPANTS PROPOSED = 0 OCCUPANTS (PARKING + STORAGE)

FLOOR AREA CALC.	
FLOOR	**AREA**
BASEMENT	1,923 S.F.
LEVEL 1	23,741 S.F.
LEVEL 2	13,524 S.F.
LEVEL 3	14,977 S.F.
LEVEL 4	13,606 S.F.
LEVEL 5	15,124 S.F.
TOTAL AREA	82,895 S.F.

BAY STREET
NARROW STREET - 50 FEET

TRAFFIC DIRECTION

PARKING ENTRY

CURB CUT

PLAZA
+12'-00"

99' - 0"
11 SPACES @ 9'-0" X 18'-0"

241'-9"

100'-10"

SES/ UTILITY
734 SF | S-2 | - | 3B

PROPOSED NON-COMBUSTIBLE
5 STORIED BUILDING
(OFF-SITE CONSTRUCTION)
+75'-00"

PROPOSED NON-COMBUSTIBLE
5 STORIED BUILDING
72' - 0"
8 SPACES @ 9'-0"
+75'-00"

PROPOSED NON-COMBUSTIBLE
5 STORIED BUILDING
(OFF-SITE CONSTRUCTION)
+75'-00"

LOBBY
526 SF | E | -

SECURITY
407 SF | B | 2

VESTIBULE
122 SF | E | -

M.R.
135 SF | F-2 | -

4 SPACES @ 9'-0" X 18'-0"

7 SPACES @ 9'-0" X 18'-0"

6 SPACES @ 9'-0" X 18'-0"

3 SPACES @ 9'-0" X 18'-0"

PROPOSED NON-COMBUSTIBLE
1 STORIED BUILDING
+38'-00"

TOTAL PARKING SPACES: 60

PROPOSED NON-COMBUSTIBLE
1 STORIED BUILDING
+35'-00"

9 SPACES @ 9'-0" X 18'-0"

PROPOSED NON-COMBUSTIBLE
1 STORIED BUILDING
+30'-00"

+12'-00"

99'-2"

244'-6"

EXISTING ONE STORY
CONCRETE BLOCK BLDG

EXISTING ONE STORY
CONCRETE BLOCK BUILDING

PROPERTY LINE

SIGOURNEY STREET
NARROW STREET - 50 FEET

COLUMBIA STREET
WIDE STREET - 80 FEET

CONCRETE SIDEWALK
EARTH
CONCRETE CURB
STEEL CURB
SIDEWALK
PLANTING
STONE CURB
FENCE 0.2'S
FENCE 0.8'W
WALL 0.5'E
NCE 0.6'W
ALL 0.5'E

1 GROUND LEVEL PLAN

SCALE 3/32" = 1'-0"

BASIS INDEPENDENT SCHOOLS

DESCRIPTION	ISSUED TO	DATE	ISS/REV

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NEW CONSTRUCTION FOR:
BASIS INDEPENDENT SCHOOLS
556 COLUMBIA STREET
BROOKLYN, NY 11231

BASEMENT FLOOR PLAN

SEAL & SIGNATURE

DATE:	08.19.2013
PROJECT NO.:	13-607
DRAWN BY:	BT
CHECKED BY:	IO
DRAWING NO:	A101

CAD FILE NO.
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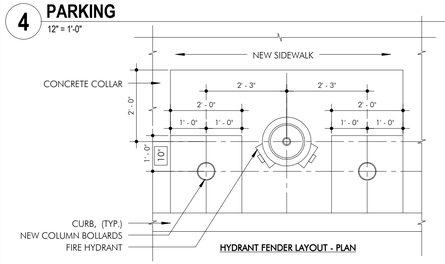
THE FOLLOWING GUIDELINES SHALL BE OBSERVED WHEN CITING TREE PITS ALONG SIDEWALKS. THESE GUIDELINES GENERALLY FOLLOW REGULATIONS OF OTHER AGENCIES WITH STREET JURISDICTIONS SUCH AS FIRE, DOT, AND MTA. THESE REQUIREMENTS ARE DESIGN AND SPECIES DEPENDENT. THE AMERICANS WITH DISABILITIES ACT (ADA) GUIDELINES MUST BE FOLLOWED.

A. DO NOT PLANT IN FRONT OF BUILDING ENTRANCES IN ORDER TO PERMIT EASY ACCESS BY THE FIRE DEPARTMENT.
B. MINIMUM DISTANCE BETWEE TREES (CENTER TO CENTER) RANGES FROM 20' TO 30', DEPENDING UPON THE TREE SPECIES AND OTHER LOCAL CONDITIONS).
C. MINIMUM DISTANCE FROM A STREETLIGHT IS 25' (VARIES WITH TREE SPECIES).
D. MINIMUM DISTANCE FROM A STOP SIGN IS 30'.
E. MINIMUM DISTANCE FROM OTHER TRAFFIC SIGNS IS 6'.
F. SUGGESTED DISTANCE FROM A PARKING METER IS MORE THAN 5' BEHIND THE METER, TO ALLOW FOR THE SWING OF CAR DOORS.
G. MINIMUM DISTANCE FROM A GAS OR WATER VALVE IS 2' FROM THE EDGE OF THE PIT.
H. MINIMUM DISTANCE FROM AN OIL FILL PIPE IS 4' FROM THE EDGE OF THE PIT.
I. MINIMUM DISTANCE FROM A COAL CHUTE IS 6'. (N/A)
J. MINIMUM DISTANCE FROM A FIRE HYDRANT IS 5' FROM THE EDGE OF THE PIT.
K. MINIMUM DISTANCE FROM A CURB CUT OR DRIVEWAY IS 7'.
L. MINIMUM DISTANCE FROM THE MIDDLE OF A STREET INTERSECTION IS 40'.
M. MINIMUM DISTANCE FROM THE EDGE OF THE PIT TO ANY OPPOSITE OBSTRUCTION (BUILDING WALL, STOOP, RAILING, ETC) IS FROM 4' TO 6', DEPENDING UPON LOCAL CONDITIONS AND THE AMOUNT OF SIDEWALK TRAFFIC.
N. ALL TREE PITS MUST BE CONTIGUOUS TO THE STREET CURB (EXCEPT AS NOTED BELOW, OR WITH THE PERMISSION OF THE AGENCY REPRESENTATIVE).
O. TREES MAY BE PLANTED ON EITHER SIDE OF SIDEWALKS (IF ANY EXIST) IN LAWN AREAS WHERE THERE IS SUFFICIENT ROOM BETWEEN THE PROPERTY LINE AND THE STREET CURB.
P. DO NOT PLANT WITHIN BUS STOPS.

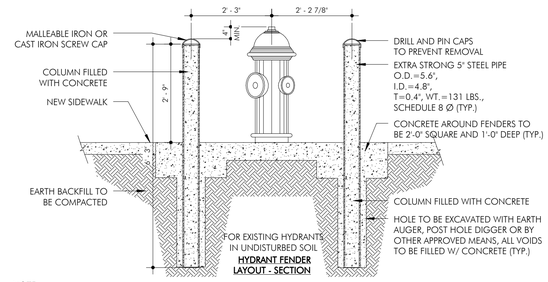
THE LOCATIONS OF ALL TREES SHOWN ON PLANS MAY BE RELOCATED AS REQUIRED BY SITE AND AS DIRECTED BY THE AGENCY REPRESENTATIVE.
ALL NEW TREES TO BE GUARANTEED A MINIMUM OF TWO (2) YEARS.
NEW TREES TO BE AS SHOWN ON TREE SCHEDULE ON THIS SHEET. SIZE TO BE A MINIMUM OF 2 1/2" MEASURED A DISTANCE OF SIX (6) INCHES FROM THE FINISHED GRADE AND NO LARGER THAN 3 1/2" IN CALIPER.
ALL NEW TREES TO BE MAINTAINED UNTIL TWO (2) YEARS AFTER FINAL ACCEPTANCE.
STAKES SHALL BE MAINTAINED THROUGHOUT THE ENTIRE TWO (2) YEAR GUARANTEE PERIOD.
PLANTING SEASONS AS PER THE PARKS AND RECREATION RULES AND REGULATIONS.
ALL TREES TO BE NURSERY GROWN IN A USDA HARDINESS ZONE OF 7B OR LOWER.

4 GUIDELINES FOR STREET PARKING

12" = 1'-0"



HYDRANT FENDER LAYOUT - PLAN



HYDRANT FENDER LAYOUT - SECTION

NOTE:
ALL PARTS OF HYDRANT FENDER SHALL BE CLEANED OF SCALE, RUST AND DIRT AND BE COATED ON THE OUTSIDE WITH ONE COAT OF BLACK ASPHALT PAINT BELOW THE GROUND AND ONE COAT OF ALUMINUM PAINT ABOVE THE GROUND.

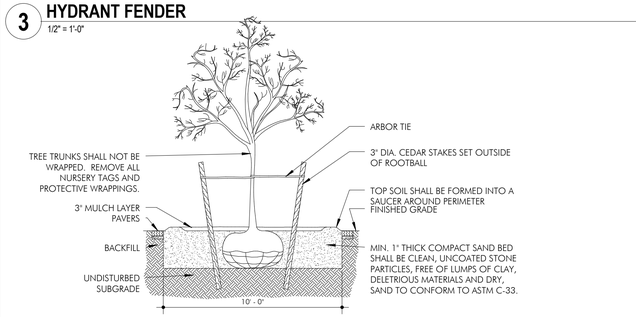
DIMENSIONS SHOWN THUS [ ] ARE TYPICAL DIMENSIONS

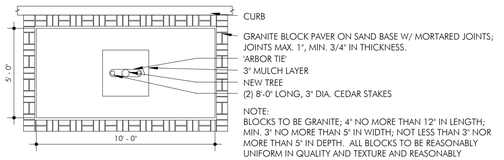
DIMENSIONS MARKED WITH AN * ARE MINIMUM DIMENSIONS.

CONCRETE COLLARS SHALL BE SQUARED AND MADE FLUSH WITH NEW SIDEWALK PAVEMENT AND CURB

3 HYDRANT FENDER

1/2" = 1'-0"

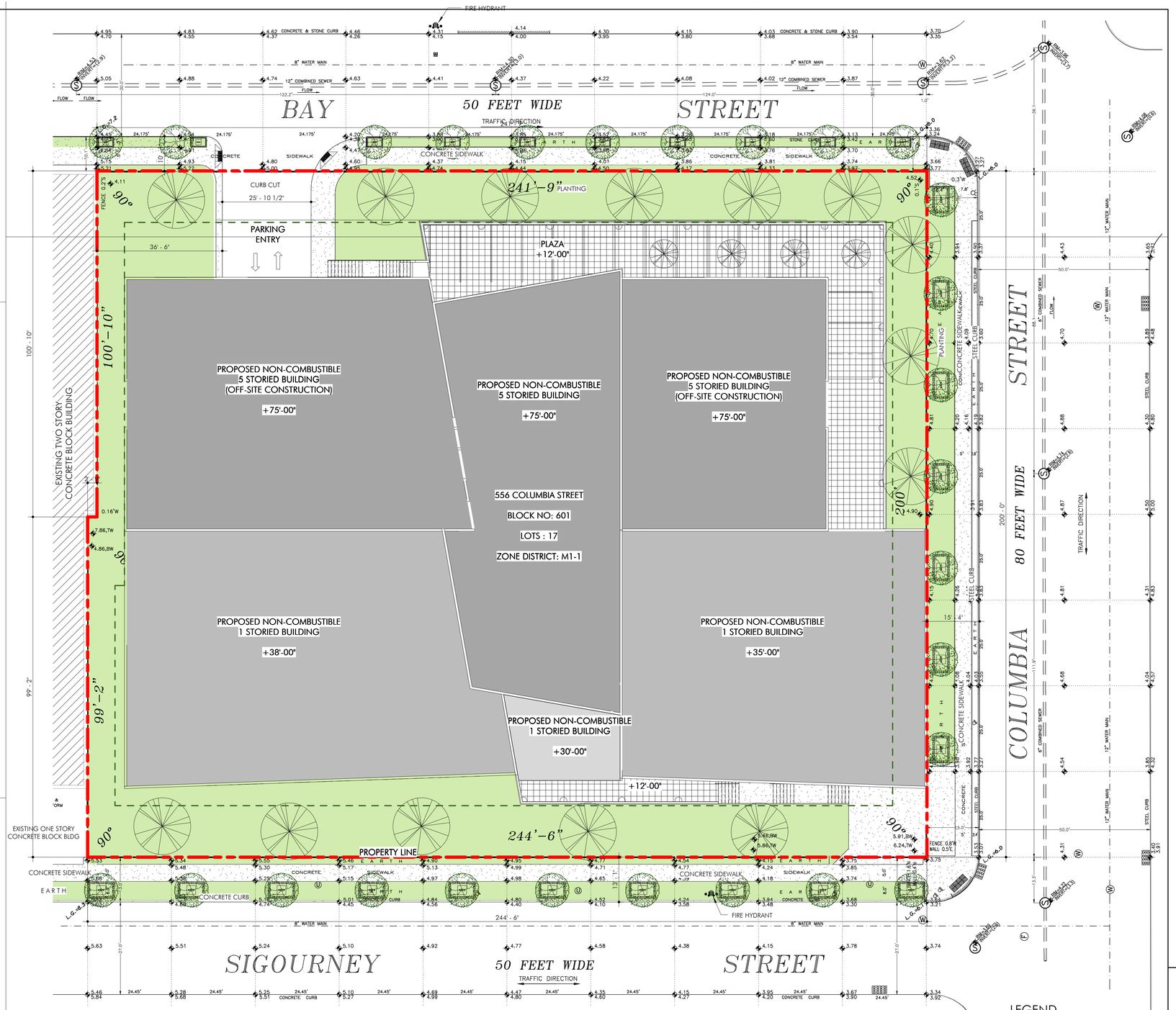




NOTE:
BLOCKS TO BE GRANITE; 4" NO MORE THAN 12" IN LENGTH; MIN. 3" NO MORE THAN 5" IN WIDTH; NOT LESS THAN 3" NOR MORE THAN 5" IN DEPTH. ALL BLOCKS TO BE REASONABLY UNIFORM IN QUALITY AND TEXTURE AND REASONABLY SMOOTH SPLIT HEAD. AS PER PARKS DEPT. REGULATIONS.

2 TREE PLANTATION AND STAKE DETAIL

1/4" = 1'-0"



1 BPP SITE PLAN

1" = 15'-0"

LEGEND

- SEWER MANHOLE — S
- WATER MANHOLE — W
- WATER VALVE — ■
- FIRE HYDRANT — ⊷
- ELECTRIC MANHOLE — E
- ALUMINUM LIGHT POLE — ☼
- DROP CURB
- PEDESTRIAN RAMP GRIP PAD
- UTILITY POLE — U
- TREE WITH DIAMETER — ○00"
- EXISTING GRADE — 4.88

GRAPHIC SCALE

0 15 30 45 60

DESCRIPTION | ISSUED TO | DATE | ISS/REV

PARTNERS FOR ARCHITECTURE
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STAMFORD, CT 06906
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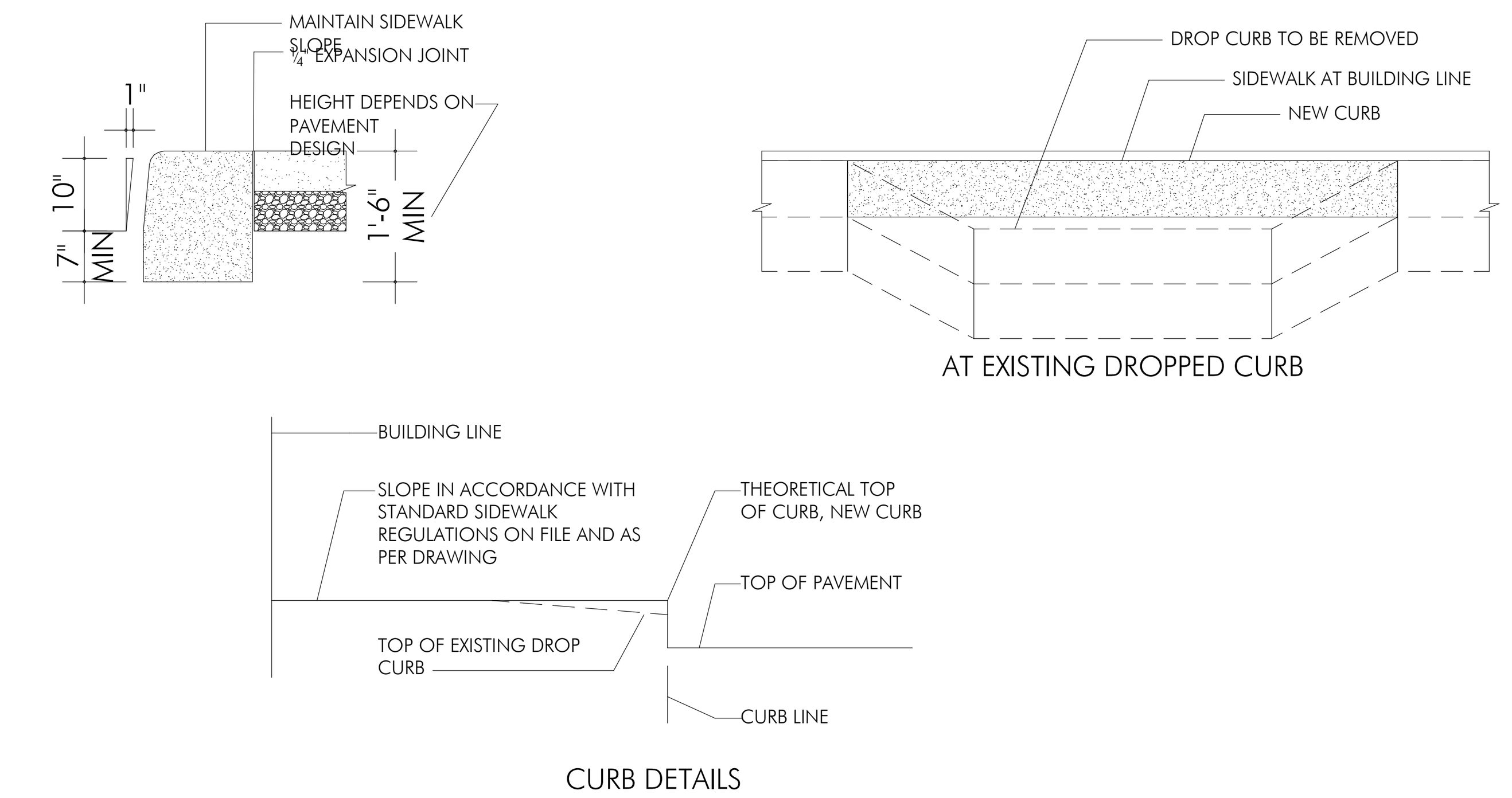
NEW CONSTRUCTION FOR : BASIS INDEPENDENT SCHOOLS

556 COLUMBIA STREET
BROOKLYN, NY 11231

BUILDER'S PAVEMENT PLAN & DETAILS

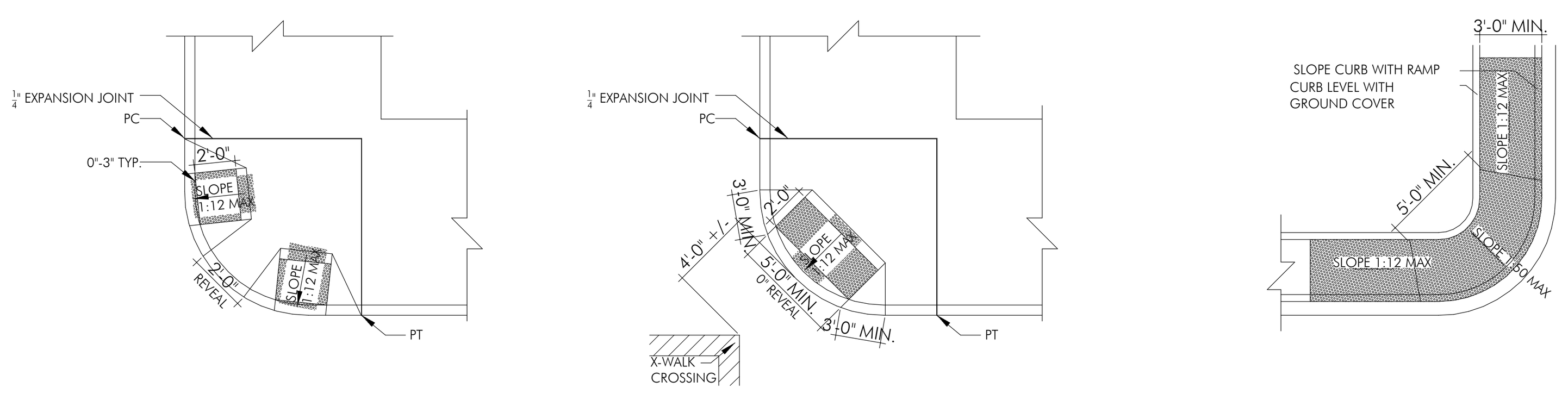
SEAL & SIGNATURE

DATE: 08/06/2013
PROJECT NO.: 13-607
DRAWN BY: BT
CHECKED BY: IO
DRAWING NO: BPP-901



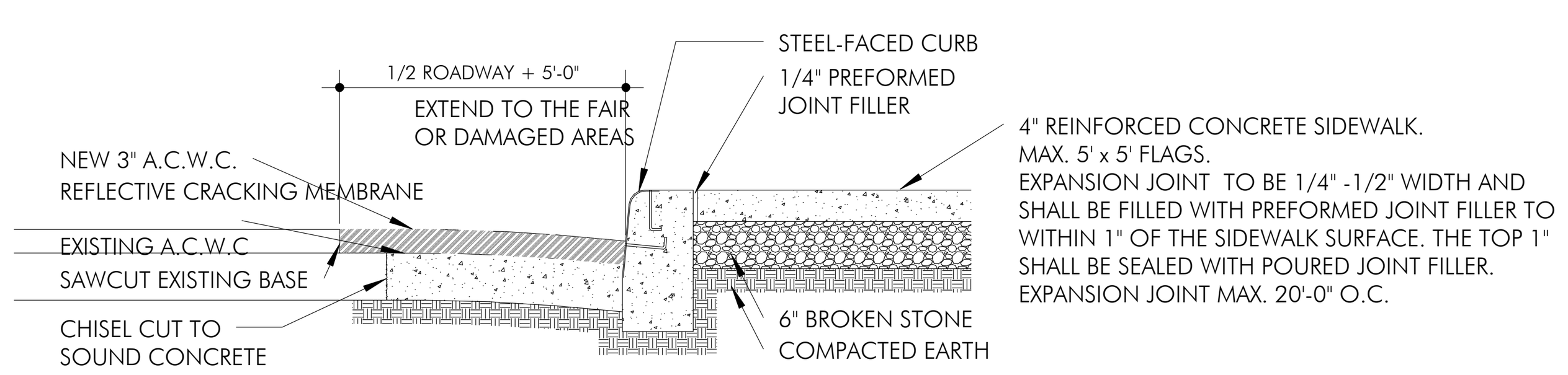
6 CURB DETAILS

1/2" = 1'-0"



5 CURB RAMP PLAN

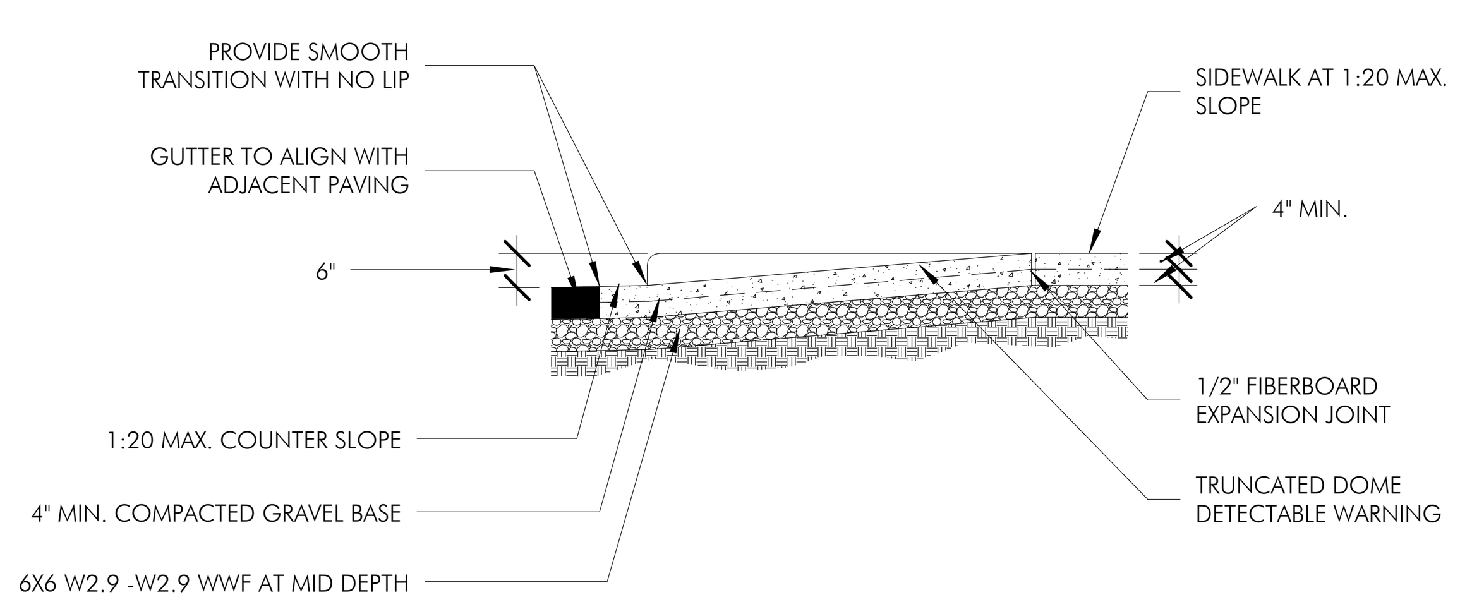
1/8" = 1'-0"



NOTES:
1. STRIP EXISTING ROADWAY
2. SAWCUT ALL EDGES
3. REPAIR OR REPLACE EXISTING CONCRETE BASE OR INSTALL A 6" TO 9" CONCRETE BASE
4. TACK COAT ALL EDGES AND SURFACES
5. RESURFACE WITH A 3" ASPHALTIC CONCRETE WEARING COURSE
6. ALL JOINTS TO BE PROPERLY WELDED AS NEEDED

4 ROADWAY PAVING DETAIL

1/2" = 1'-0"



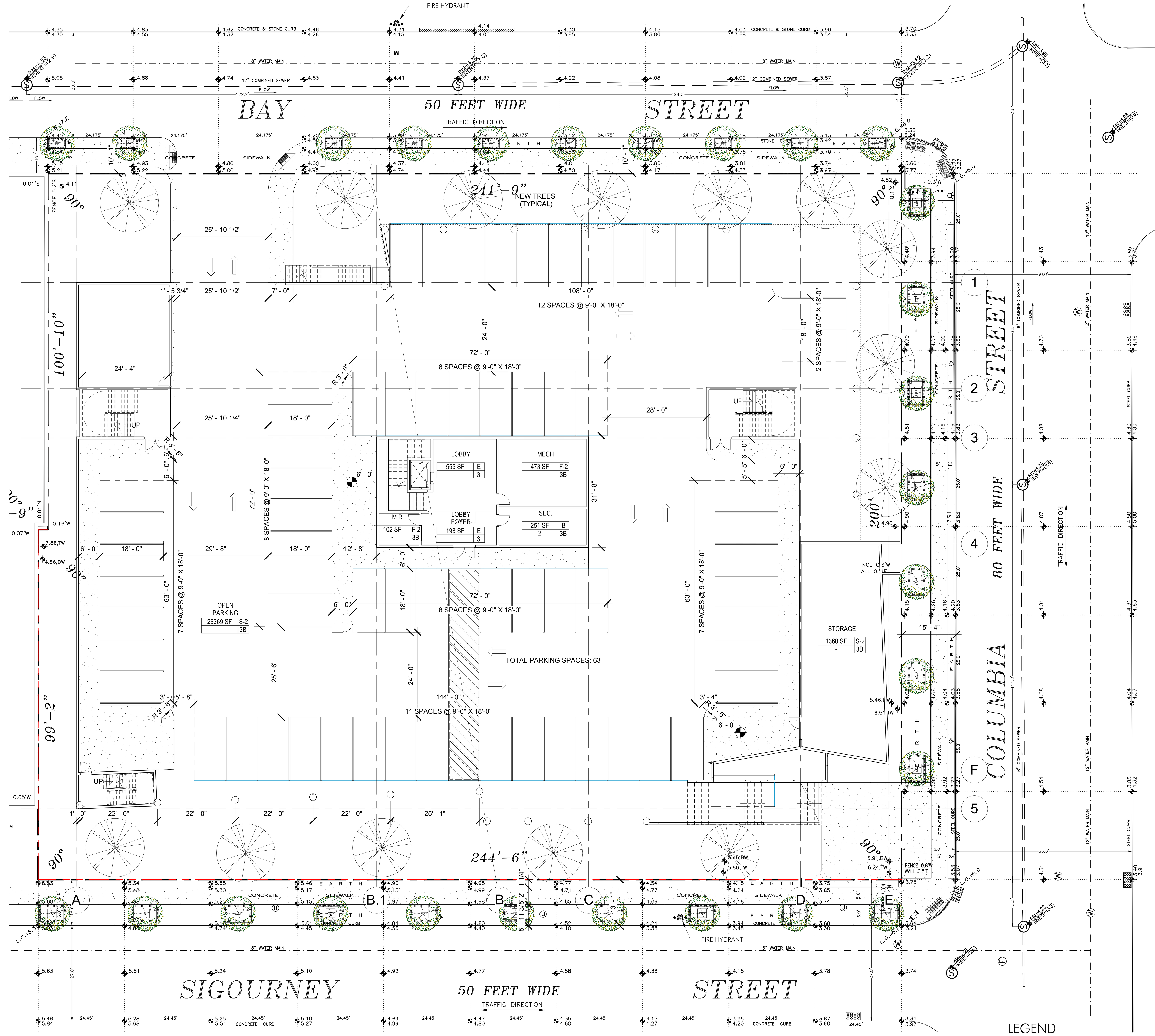
3 CURB RAMP SECTION

1/2" = 1'-0"

SYMBOL	COMMON NAME	SCIENTIFIC NAME	SPREAD	TREE TYPE	GROWTH RATE	SUN EXPOSURE	SOIL TYPE
A	PURPLELEAF PLUM	PRUNUS CERASIFERA	15'-25'	SMALL SHADE	MEDIUM	FULL SUN	SOME SAND TO SOME CLAY. PH RANGE: 4.5 TO 7.5 WATER RANGE: NORMAL TO MOIST
B	CHINESE ELM	UMUS PARVIFOLIA	35'	SHADY	MEDIUM	PARTIAL SHADE TO FULL SUN	SHADY, LOAMY OR CLAY. PH RANGE:p 4.0 TO 7.0

2 TREE TYPES

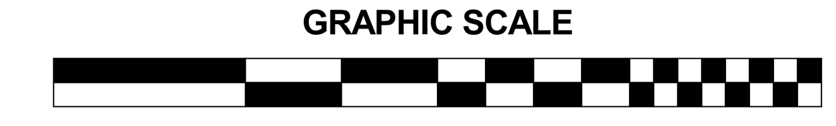
12" = 1'-0"



1 BASEMENT FLOOR PLAN

1" = 15'-0"

GRAPHIC SCALE



LEGEND

- SEWER MANHOLE
- WATER MANHOLE
- WATER VALVE
- FIRE HYDRANT
- ELECTRIC MANHOLE
- ALUMINUM LIGHT POLE
- DROP CURB
- PEDESTRIAN RAMP GRIP PAD
- UTILITY POLE
- TREE WITH DIAMETER
- EXISTING GRADE

ISS/REV	DATE	ISSUED TO	DESCRIPTION

PARTNERS FOR ARCHITECTURE

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NEW CONSTRUCTION FOR : BASIS INDEPENDENT SCHOOLS

556 COLUMBIA STREET
BROOKLYN, NY 11231

BUILDER'S PAVEMENT PLAN & DETAILS

SEAL & SIGNATURE

DATE: 08/06/2013
PROJECT NO.: 13-607
DRAWN BY: BT
CHECKED BY: IO
DRAWING NO:

BPP-902

"MINI-PILE" SPECIFICATIONS:

1. ALL PILES SHALL BE DRIVEN CLOSE-END CONCRETE -FILLED STEEL PIPE PILE DRIVEN TO BEDROCK OR DRIVEN CAISSON PILES SOCKETED INTO BEDROCK AS SPECIFIED IN BC SECTION 1808.

2. CONCRETE FILLED STEEL PIPE PILE SHALL COMPLY WITH THE REQUIREMENTS OF BC SECTION 1810.6.

3. STEEL PIPE SECTION SHOULD CONFIRM TO ASTM A36, ASTM A252 OR ASTM A283. PIPE SHALL HAVE NOMINAL OUTSIDE DIMENSIONS OF NOT LESS THAN 12.75 INCHES. MINIMUM WALL THICKNESS 0.375 INCHES.

4. CONCRETE MIX SHALL BE DESIGNED TO PROVIDE 28-DAY SPECIFIED COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 PSI. MIX SHALL BE PROPORTIONED SO AS TO PRODUCE A SLUMP OF NOTELESS THICKNESS 4 INCHES. THE MAXIMUM COARSE AGGREGATE SIZE SHALL BE MAXIMUM 3/4". CONCRETE PLACEMENT SHALL CONFORM TO BC SECTION 1810.3. NO PLACEMENT CONCRETE THROUGH WATER IS ALLOWED.

5. THE PILES SHALL BE INSTALLED TO A MINIMUM DEPTH OF 110-140 FEET BELOW THE EXISTING GRADE TO BE ABLE TO BE SUPPORTED BY BEDROCK AS SPECIFIED IN THE REPORT ISSUED BY GEO TECH CONSULTANTS LLC GTC JOB No: CYPD213 DATED 09-09-13.

6. # 11 CENTRAL REINFORCING ROD SHALL BE INSTALLED INTO THE PIPE BEFORE CONCRETE PLACEMENT. PROVISIONS SHALL BE MADE TO KEEP CONCRETE COVER AS MINIMUM 2 2".

7. EACH PILE SHALL BE INSTALLED TO SUSTAIN A DESIGN UNFACTORED LOAD OF MINIMUM 100 TON, USING FACTOR OF SAFETY 2.0.

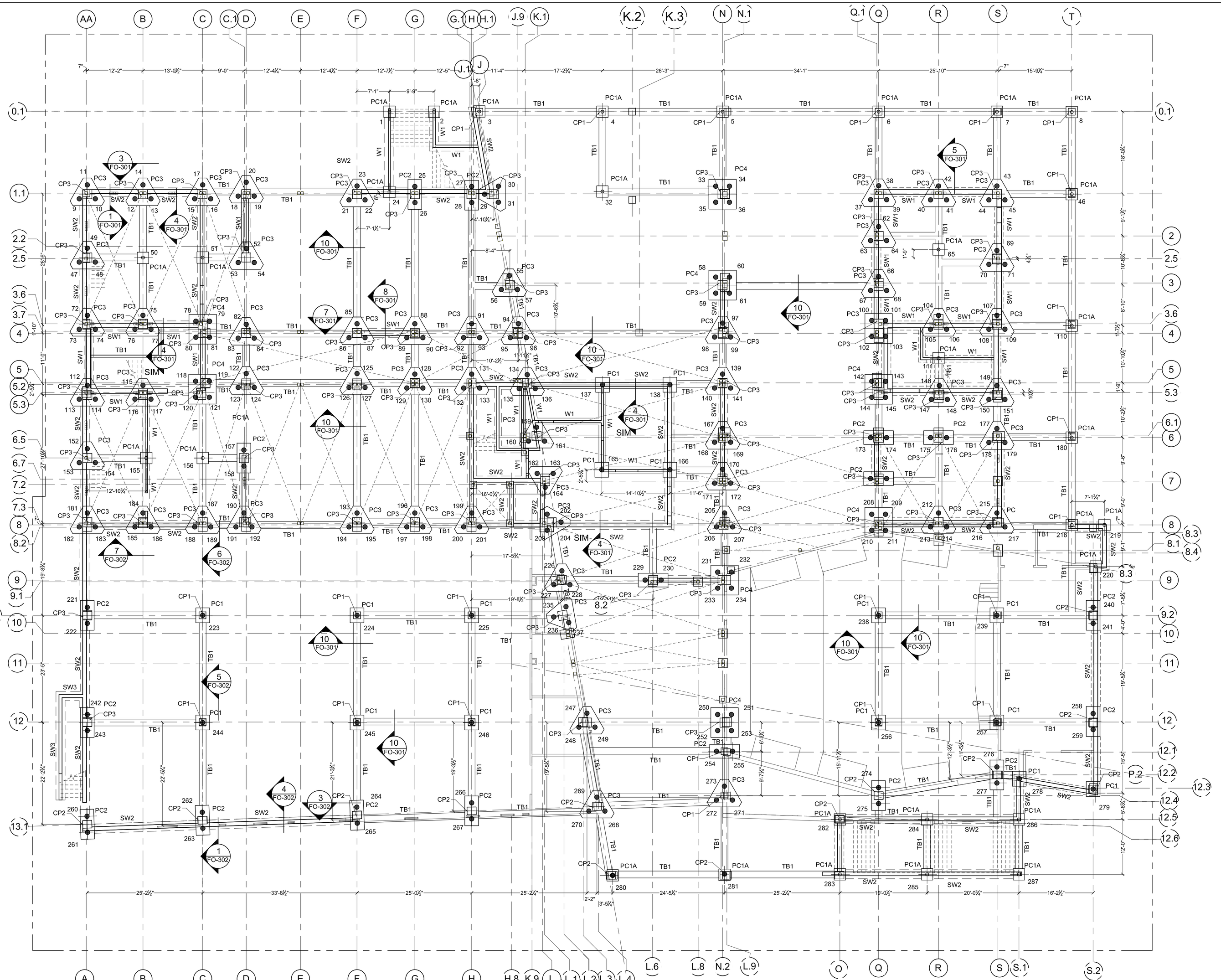
8. DUE TO THE FACT THAT THE PILES WILL BE DRIVEN INTO BEDROCK LOAD TEST IS NOT REQUIRED N ACCORDANCE WITH THE REQUIREMENTS OF BC SECTION 1808.2.8.3. VIDEO INSPECTION IS REQUIRED FOR MINIMUM 25% OF PILES SOCKETED INTO BEDROCK AS MINIMUM 10 FT.

9. ALL PILE INSTALLATION OPERATIONS SHALL BE SUPERVISED BY A LICENSED ENGINEER. THE INSPECTOR SHALL KEEP A COMPLETE RECORD OF THE PILE INSTALLATION OPERATION.

10. IF UNDERGROUND OBSTRUCTIONS ARE ENCOUNTERED DURING INSTALLATION, THE CONTRACTOR SHALL HAVE THE OPTION OF REMOVING THE OBSTRUCTION IF POSSIBLE OR RELOCATING THE PILE WITH THE ENGINEER'S APPROVAL. THE LATTER OPTION MAY REQUIRE THE RELOCATION OF ADJACENT PILES AND OR ADDITIONAL PILES.

11. THE PILE SHALL BE CONNECTED TO THE STRUCTURE USING #11 DOWEL INSTALLED INTO THE PILE CAP UTILIZING FULL DEVELOPMENT LENGTH.

12. WRITTEN INSTALLATION RECORDS SHALL BE OBTAINED FOR EACH INSTALLED PILE. THESE RECORDS SHALL INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:
    a) PROJECT NAME AND/OR LOCATION.
    b) NAME OF CONTRACTOR'S FOREMAN OR REPRESENTATIVE WHO WITNESSED THE INSTALLATION.
    c) DATE AND TIME OF INSTALLATION.
    d) LOCATION AND REFERENCE NUMBER OF EACH PILE.
    e) DESCRIPTION OF LEAD SECTION AND EXTENSIONS INSTALLED.
    f) OVERALL DEPTH OF INSTALLATIONS REFERENCED FROM BOTTOM OF GRADE BEAM OR FOOTING.
    g) LOAD TEST DATE
    h) ANY OTHER RELEVANT INFORMATION RELATING TO THE INSTALLATION.



NOTE:

1. ALL DIMENSIONS AND ELEVATIONS SHALL BE COORDINATED WITH ARCHITECTURAL DRAWINGS.
2. PC - DENOTES PILE CAP TYPE. SEE SCHEDULE FOR SIZES AND REINFORCEMENT.
3. CP - DENOTES CONCRETE PIER TYPE. SEE SCHEDULE FOR SIZES AND REINFORCEMENT.
4. TB - DENOTES TIE BEAM. SEE SCHEDULE FOR SIZES AND REINFORCEMENT.
5. SW - DENOTES CONCRETE SHEAR WALL TYPE. SEE SCHEDULE FOR SIZES AND REINFORCEMENT.
6. ⊕ DENOTES DRIVEN CLOSE-END CONCRETE - FILLED STEEL PIPE PILE DRIVEN TO BEDROCK OR DRIVEN CAISSON PILES SOCKET INTO BEDROCK WITH A DESIGN UNFACTORED LOAD OF 200 KIPS (100 TON). TOTAL QUANTITY OF PILES ARE 257.
7. ⊖ DENOTES DRIVEN CLOSE-END CONCRETE - FILLED STEEL PIPE PILE WITH DESIGN UN-FACTORED LOAD OF 80 KIPS (40 TON). TOTAL QUANTITY OF PILES ARE 30.

1 FO-101 FOUNDATION AND PILING PLAN
SCALE: 1/8"=1'-0"

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DOB BSCAN

NYC DOB	DESCRIPTION
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1	10-14-13
ISS/REV	DATE

PARTNERS FOR ARCHITECTURE
48 UNION STREET,
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556 COLUMBIA STREET
BROOKLYN, NY 11231

FOUNDATION AND PILING PLAN

SEAL & SIGNATURE

STATE OF NEW YORK · JOSEPH RABINER · PROFESSIONAL ENGINEER

DATE:	09/26/2013
PROJECT NO:	13-607
DRAWN BY:	BT
CHECKED BY:	RS
DRAWING NO:	FO-101.00

CADD FILE NO:
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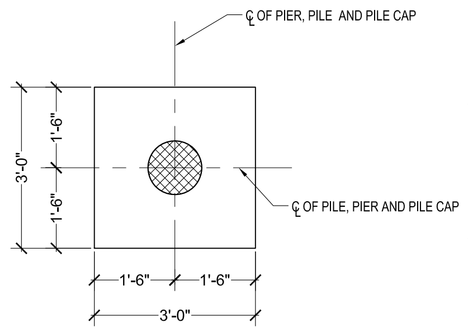

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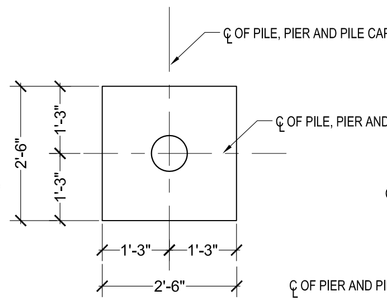

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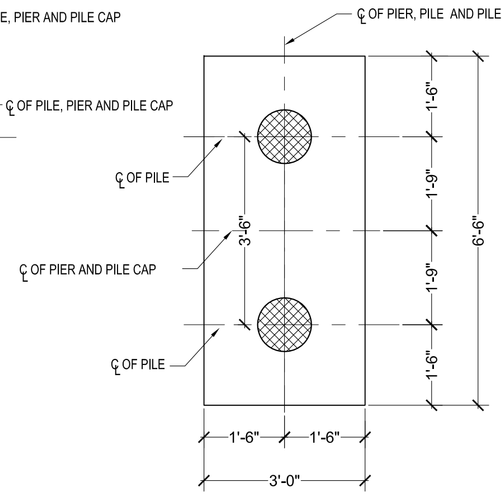

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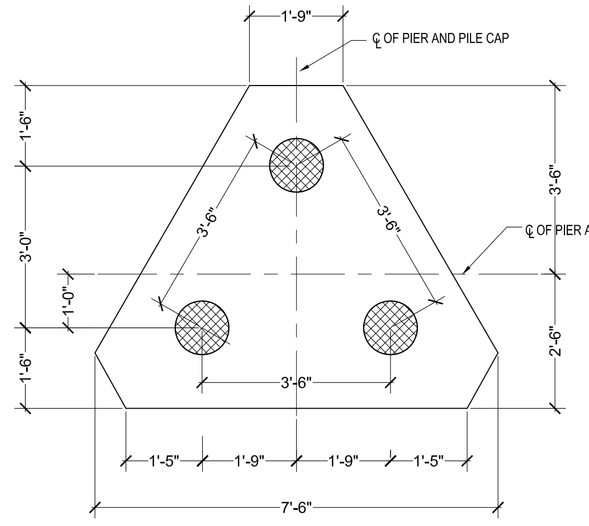

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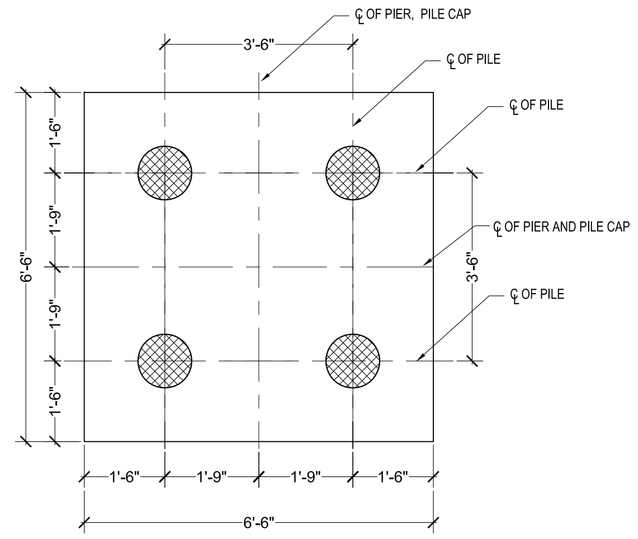
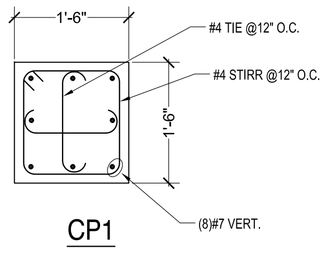


PC4

1 FO-201 PILE CAP TYPICAL DETAILS
SCALE: 3/4"=1'-0"



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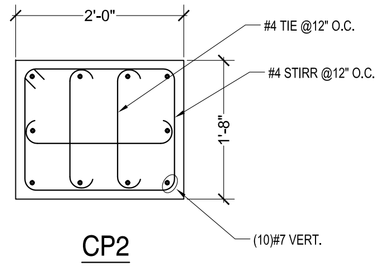

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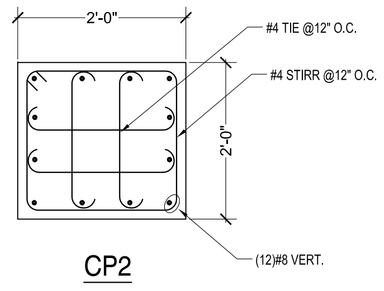

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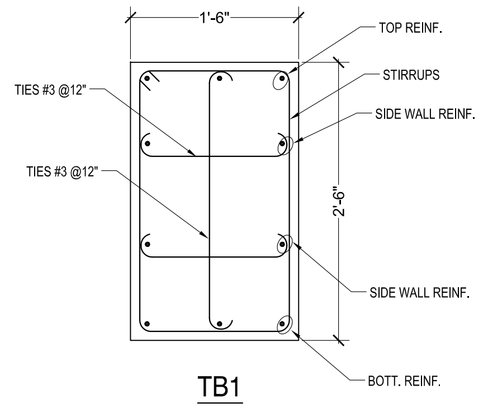

TB1

3 FO-201 CONCRETE PIER TYPICAL DETAILS
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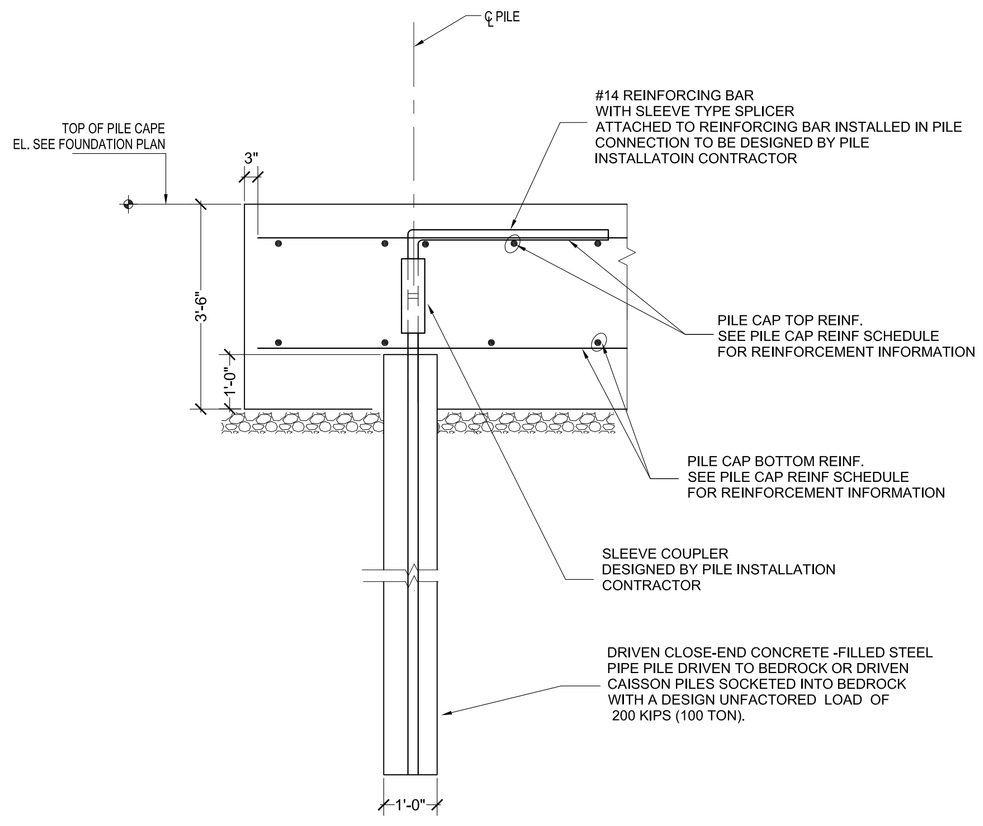

2 FO-201 TYPICAL PILE CAP INSTALLATION DETAIL
SCALE: 3/4"=1'-0"

4 FO-201 CONCRETE TIE BEAM TYPICAL DETAILS
SCALE: 3/4"=1'-0"

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DOB BSCAN

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1	10-14-13	PERMIT

NYC DOB DESCRIPTION

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BROOKLYN, NY 11231

PILE CAP, SHEAR WALLS AND PIERS DETAILS

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DATE:	09/26/2013
PROJECT NO:	13-607
DRAWN BY:	BT
CHECKED BY:	RS
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E CAP

CONCRETE PILE CAP SCHEDULE

PILE CAP TYPE	SIZE	BOTTOM REINF.		TOP REINF.		COMMENTS
		PARALLEL TO LENGTH	PARALLEL TO WIDTH	PARALLEL TO LENGTH	PARALLEL TO WIDTH	
PC1	SEE TYPICAL DETAIL	4 #9	4 #9	4 #8	4 #8	
PC1A	SEE TYPICAL DETAIL	4 #9	4 #9	4 #8	4 #8	
PC2	SEE TYPICAL DETAIL	4 #9	8 #9	4 #8	8 #8	
PC3	SEE TYPICAL DETAIL	8 #9	8 #9	8 #8	8 #8	

CONCRETE SPREAD FOOTING SCHEDULE

PILE CAP TYPE	WIDTH	DEPTH	BOTTOM REINF.		TOP REINF.		COMMENTS
			PARALLEL TO LENGTH	PARALLEL TO WIDTH	PARALLEL TO LENGTH	PARALLEL TO WIDTH	
CF1	2'-0"	1'-0"	(3 #5 CONT	#5 @12"	N/A	N/A	

CONCRETE PIER SCHEDULE

PIER TYPE	SIZE	REINFORCEMENT			COMMENTS
		VERTICAL	HORIZONTAL	TIES	
CP1	18"x18"	(8) #7	STIRR #4 @12"	#4 @12" STAGGERED	(4) STIRR AT TOP @3"
CP2	20"x24"	(10) #7	STIRR #4 @12"	#4 @12" STAGGERED	(4) STIRR AT TOP @3"
CP3	24"x24"	(12) #7	STIRR #4 @12"	#4 @12" STAGGERED	(4) STIRR AT TOP @3"

CONCRETE SHEAR WALL SCHEDULE

WALL TYPE	THICKNESS	WALL MID WIDTH		TOP AND BOTT		COMMENTS
		VERTICAL	HORIZONTAL	HORIZONTAL		
SW1	12"	#7 @12"	#6 @12"	(2) #6		
SW2	10"	#6 @12"	#5 @12"	(2) #6		
SW3	8"	#5 @12"	#5 @12"	N/A		

CONCRETE TIE BEAM SCHEDULE

TIE BEAM TYPE	WIDTH	DEPTH	LONG REINFORCEMENT	STIRRUPS	COMMENTS
TB1	18"	30"	(3) #7 TOP & BOTT; (2) #6 @SIDE WALL	#3 @12" O.C.	

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DOB BSCAN

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1	10-14-13	NYC DOB DESCRIPTION

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48 UNION STREET,
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NEW SCHOOL FOR:
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556 COLUMBIA STREET
BROOKLYN, NY 11231

FOUNDATION SCHEDULES

SEAL & SIGNATURE

STATE OF NEW YORK
JOSEPH RABINOV
PROFESSIONAL ENGINEER

DATE: 09/26/2013
PROJECT NO13-607
DRAWN BY: BT
CHECKED BYRS
DRAWING NO:
FO-203.00

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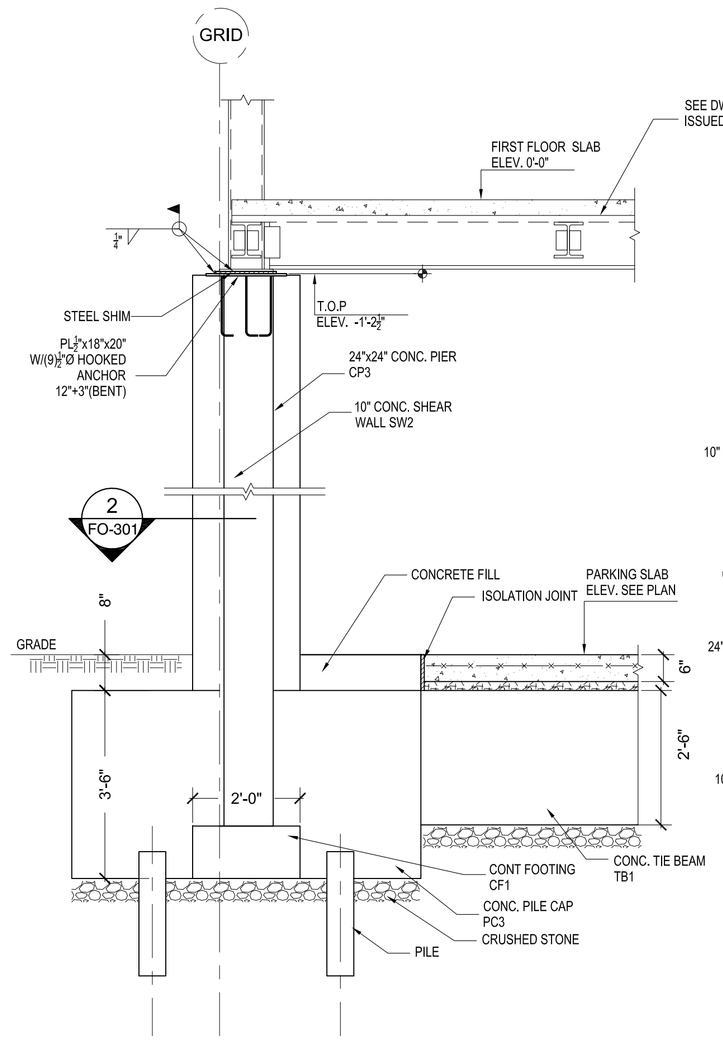

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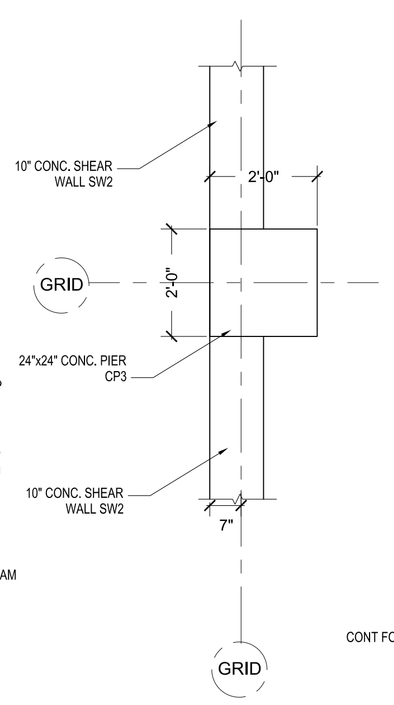

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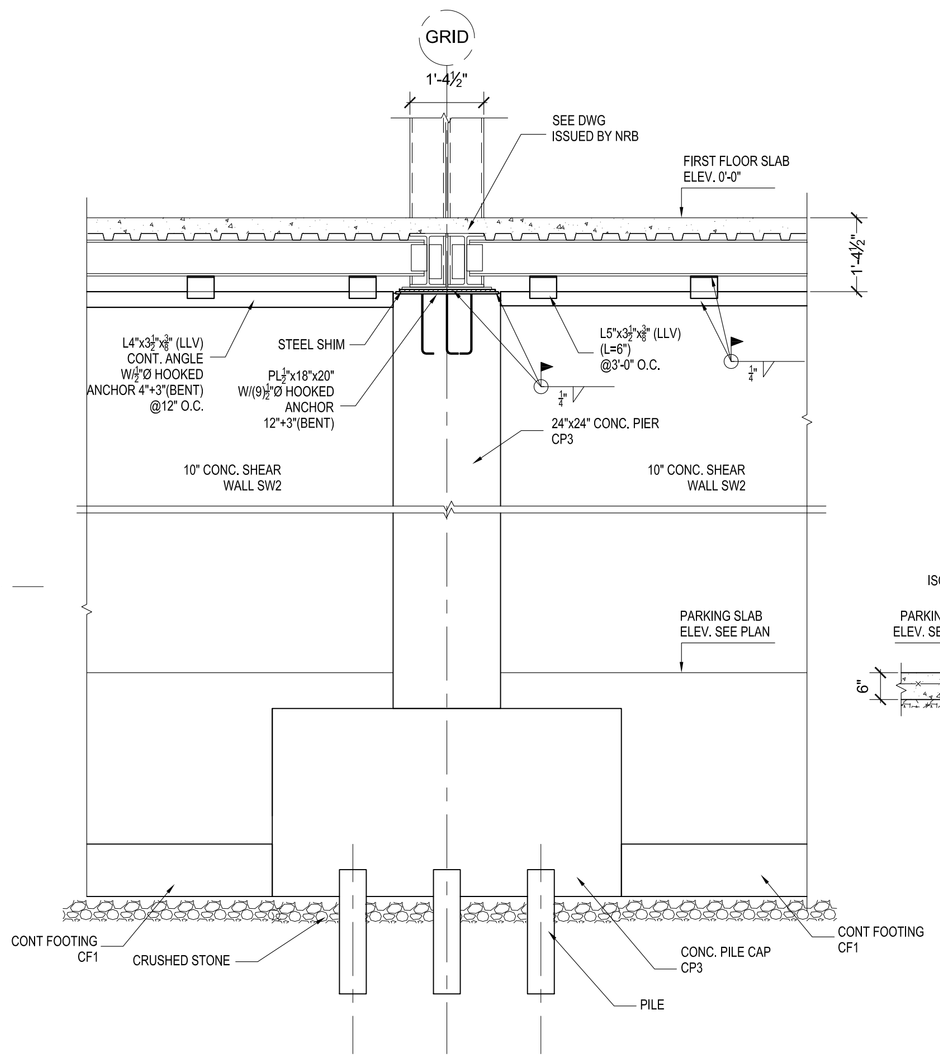

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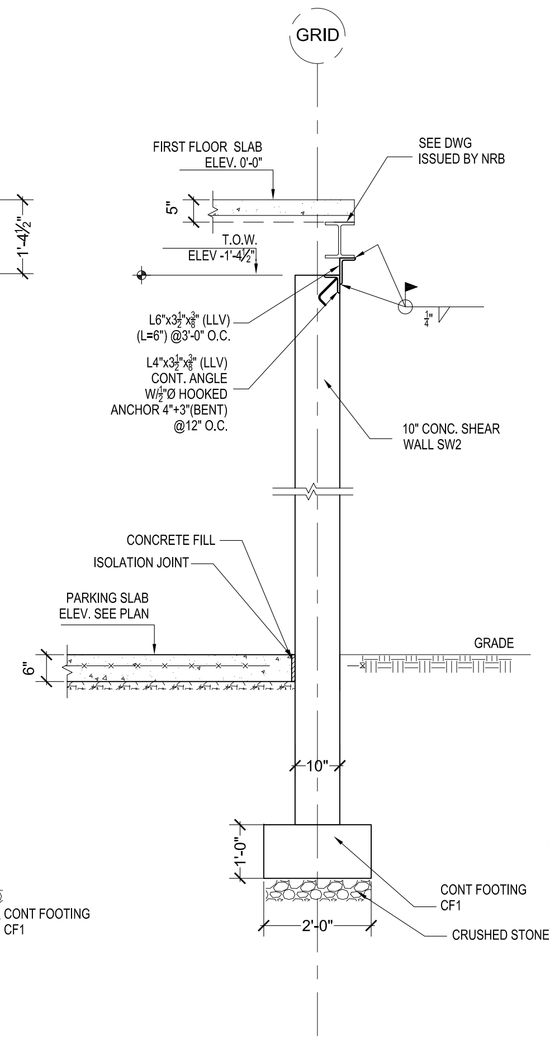

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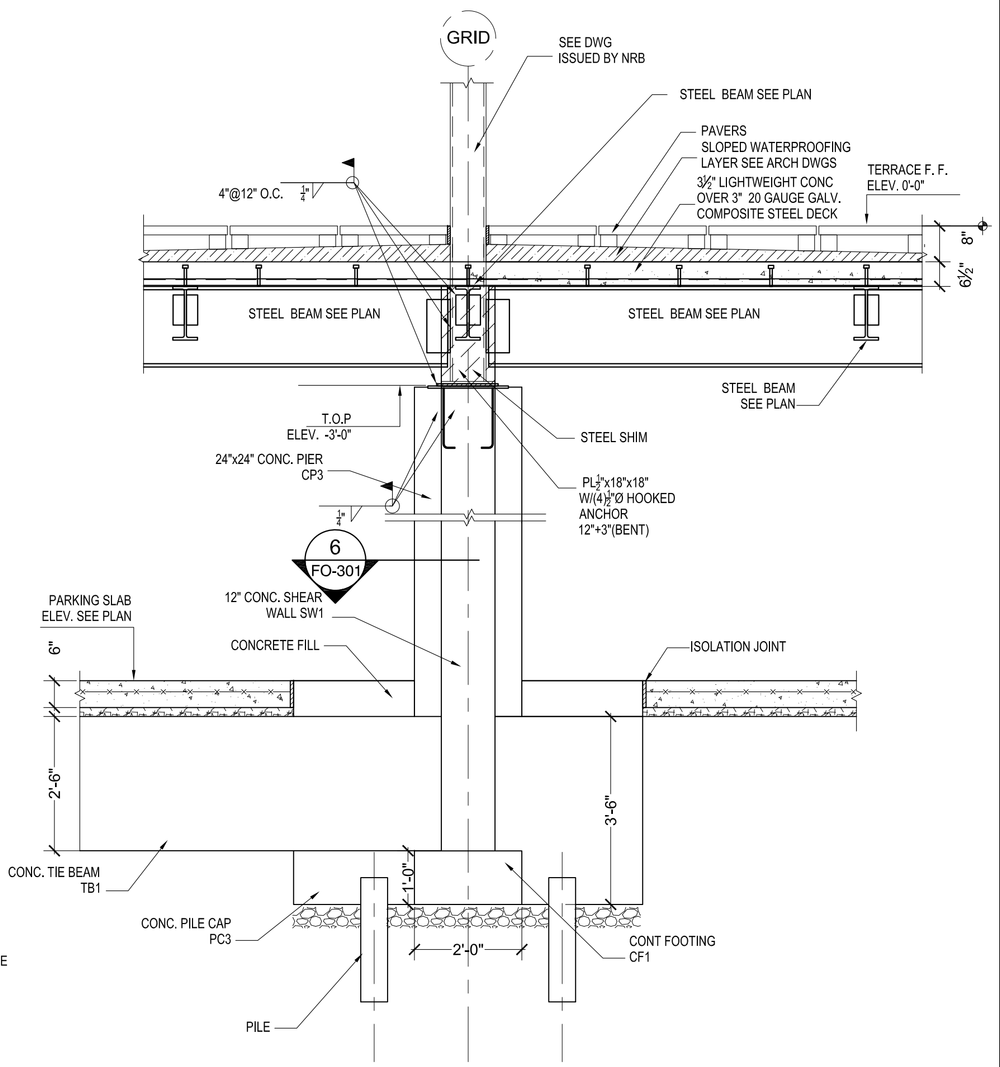

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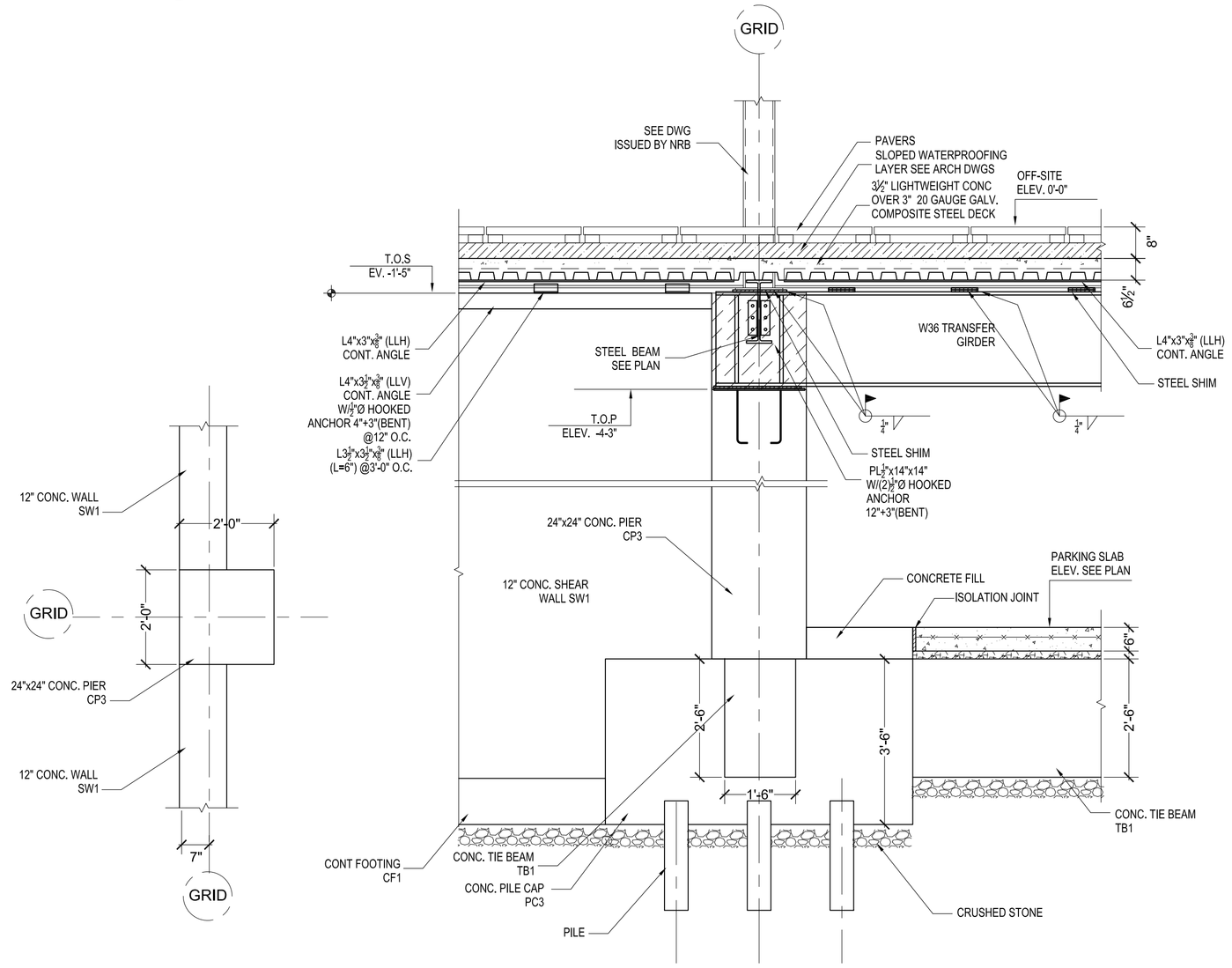
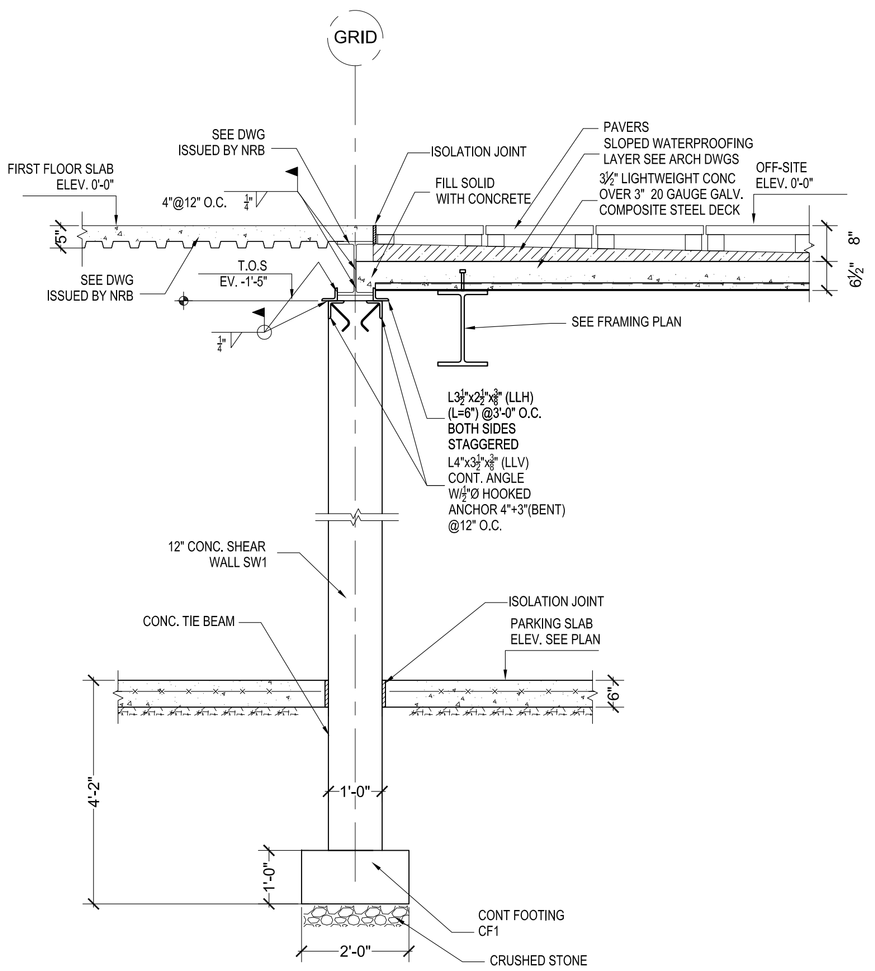


6 FO-301 TYPICAL SECTION
SCALE: ¾"=1'-0"

7 FO-301 TYPICAL SECTION
SCALE: ¾"=1'-0"



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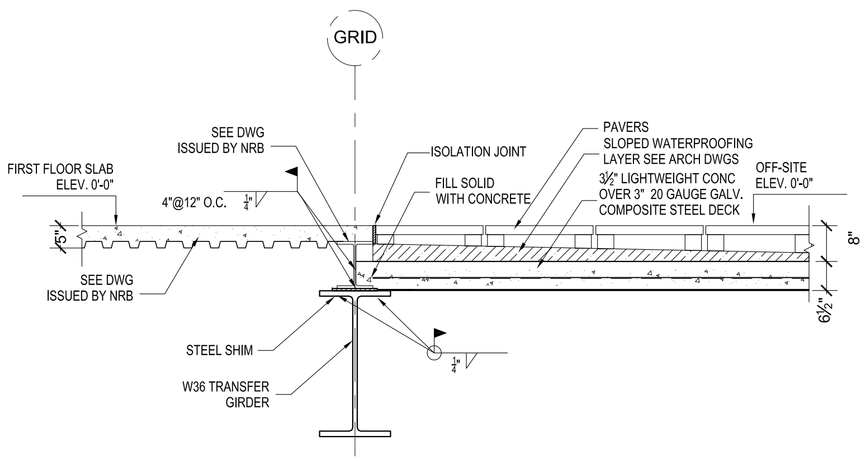

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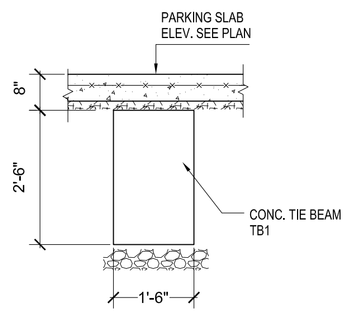

10 FO-301 TYPICAL SECTIONS
SCALE: ¾"=1'-0"

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NEW SCHOOL FOR: BASIS INDEPENDENT SCHOOLS

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FOUNDATION SECTIONS AND DETAILS

SEAL & SIGNATURE

STATE OF NEW YORK · JOSEPH R. RAINIERI · LICENSED PROFESSIONAL ENGINEER

DATE:	09/26/2013
PROJECT NO:	13-607
DRAWN BY:	BT
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DRAWING NO:	FO-301.00

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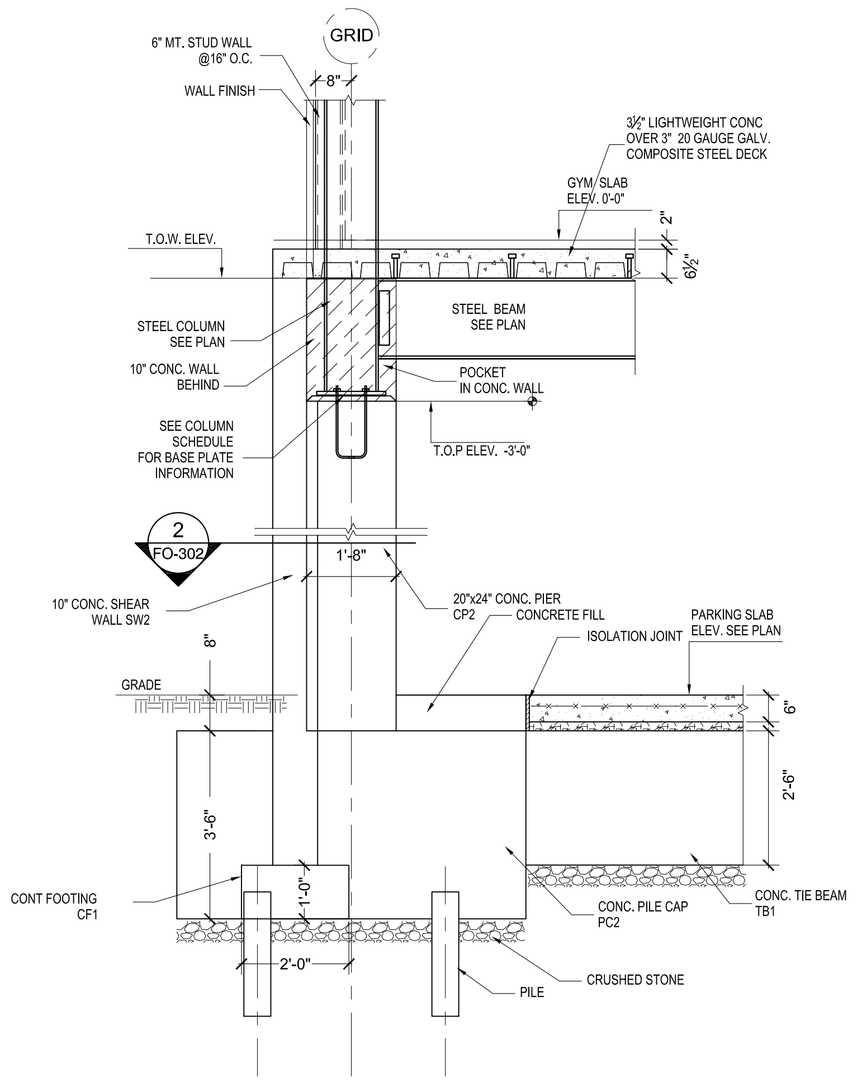

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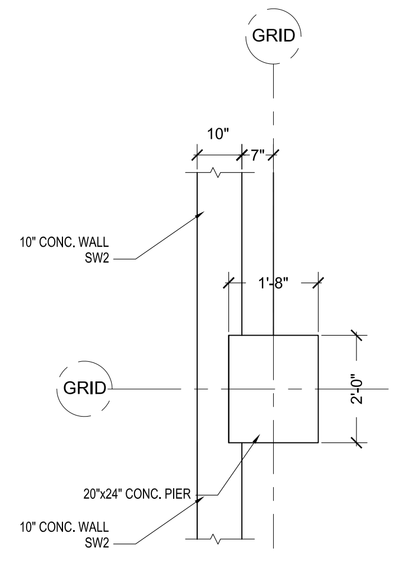

2 TYPICAL SECTIONS
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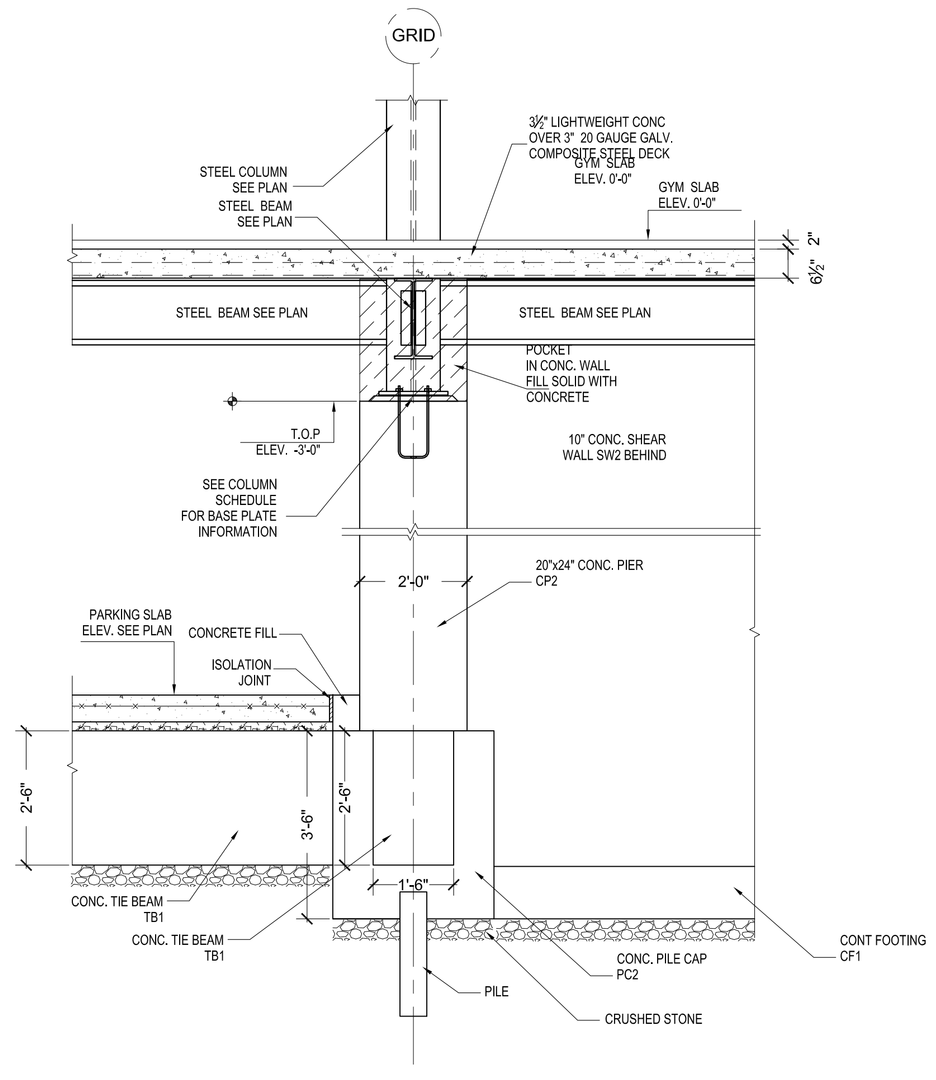

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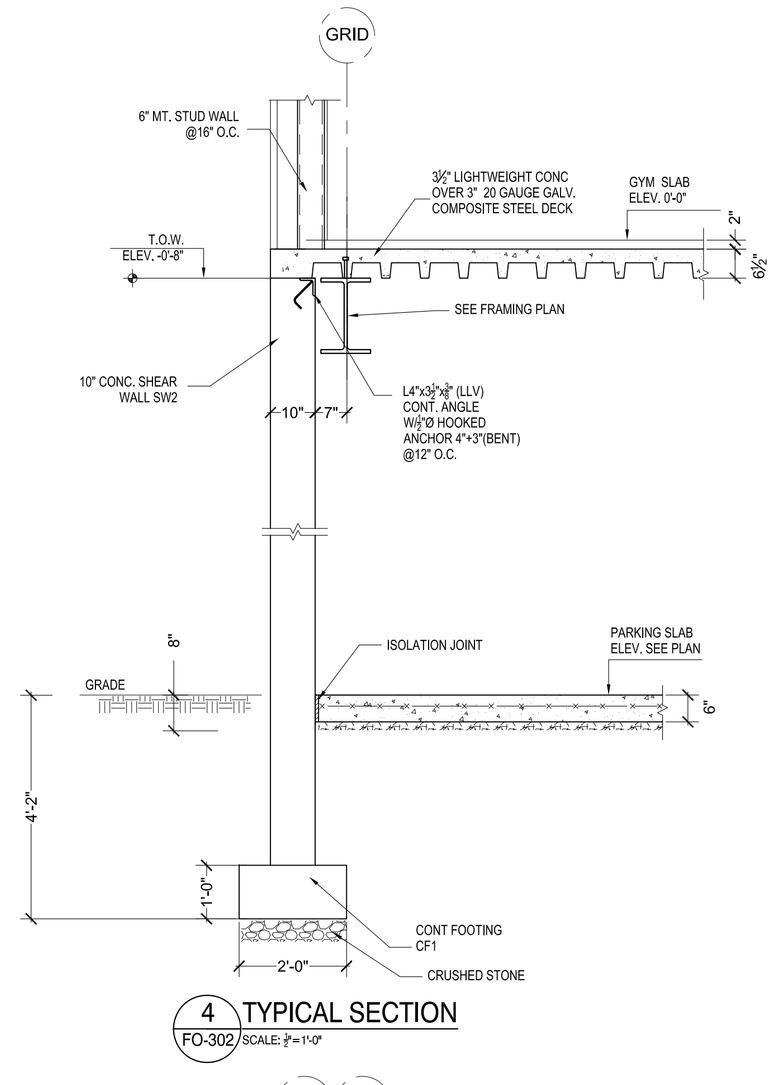

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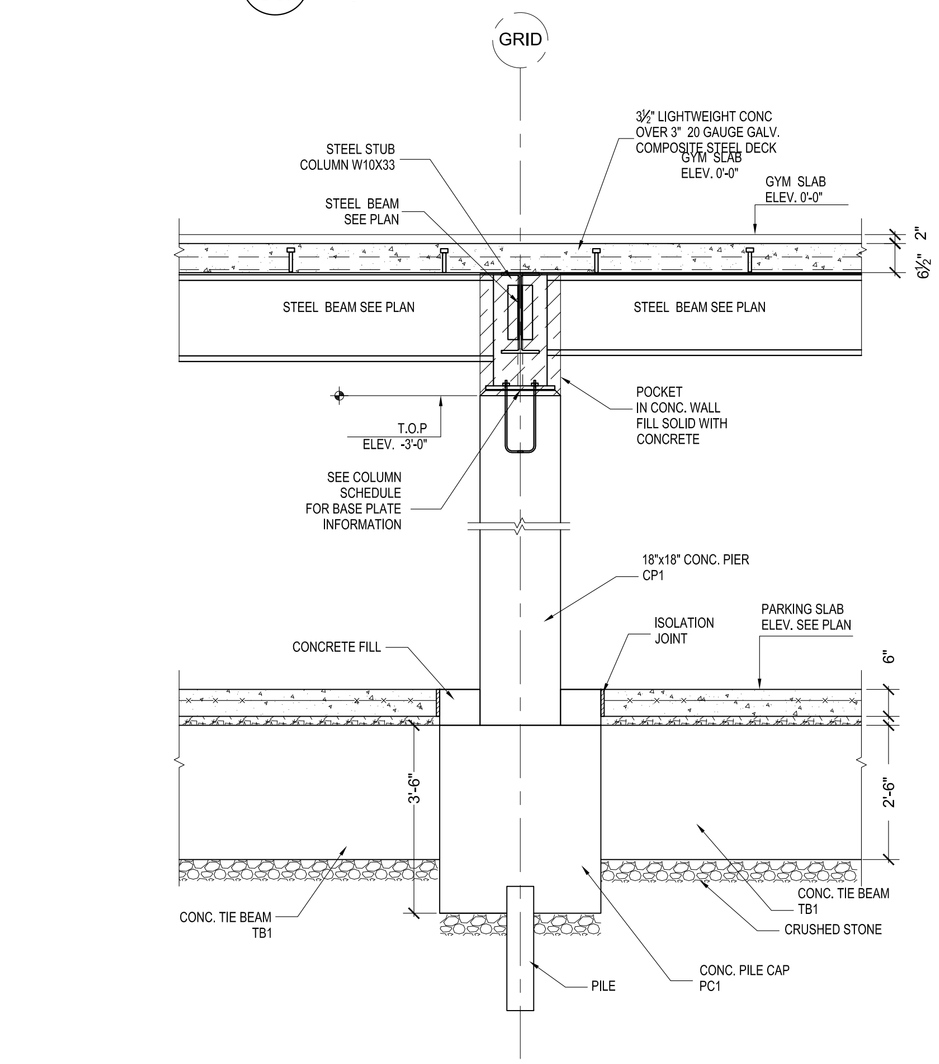

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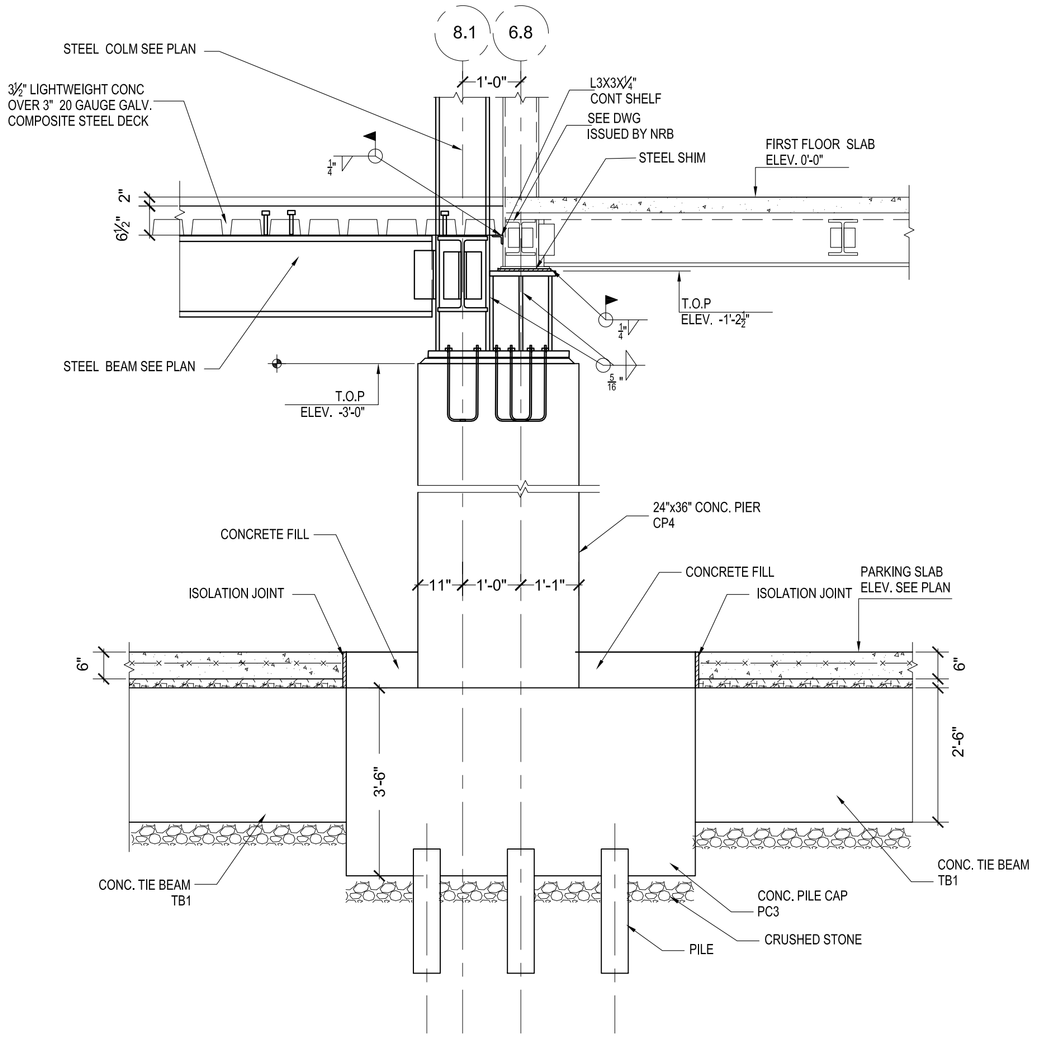
FO-302 SCALE: ¾"=1'-0"



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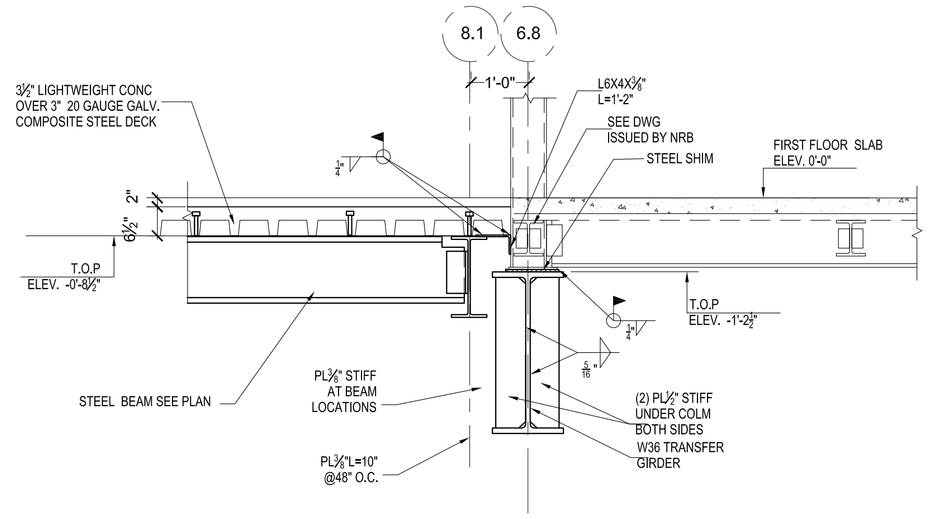

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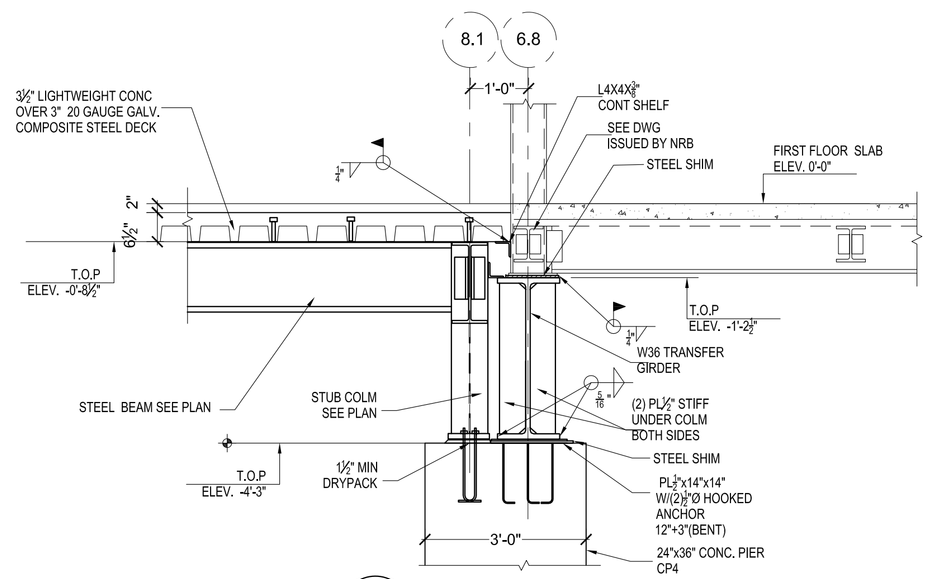

8 TYPICAL SECTION
FO-302 SCALE: ¾"=1'-0"

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DOB BSCAN

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556 COLUMBIA STREET
BROOKLYN, NY 11231

FOUNDATION SECTIONS AND DETAILS

SEAL & SIGNATURE

STATE OF NEW YORK JOSEPH RAZMINIA LICENSED PROFESSIONAL ENGINEER

DATE:	09/26/2013
PROJECT NO:	13-607
DRAWN BY:	BT
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DRAWING NO:	FO-302.00

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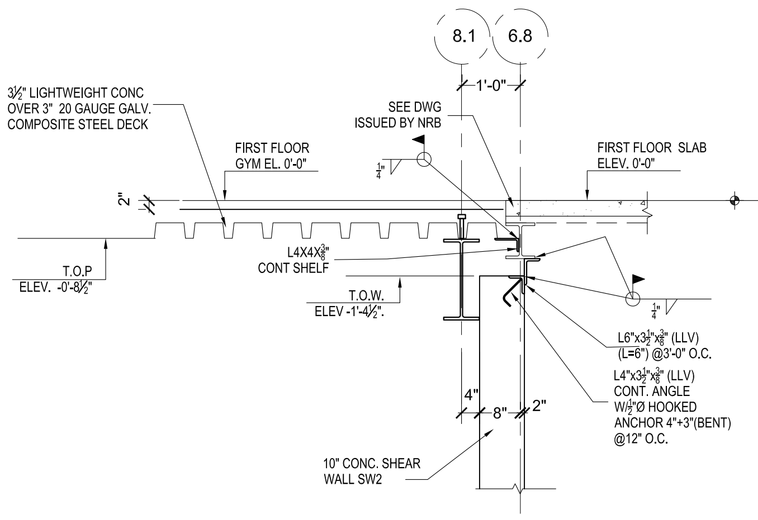

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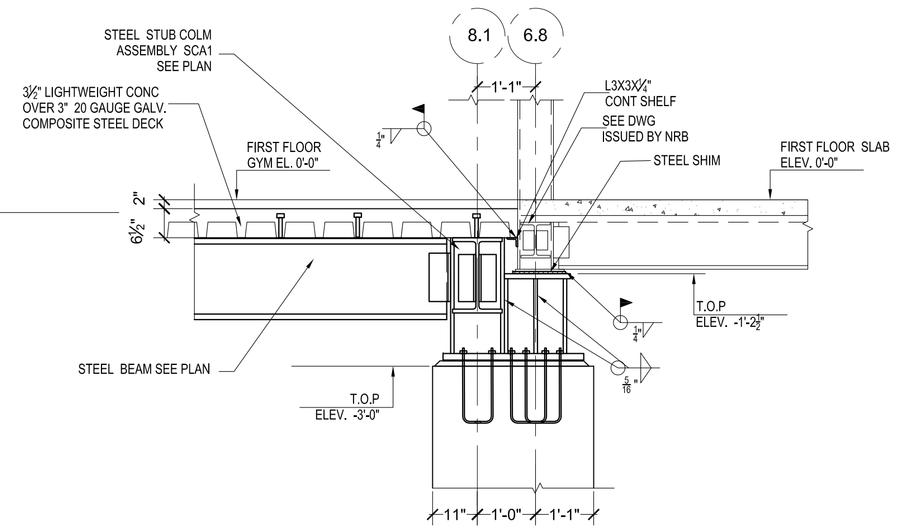
SCALE: ¾"=1'-0"



2 FO-303 TYPICAL SECTION
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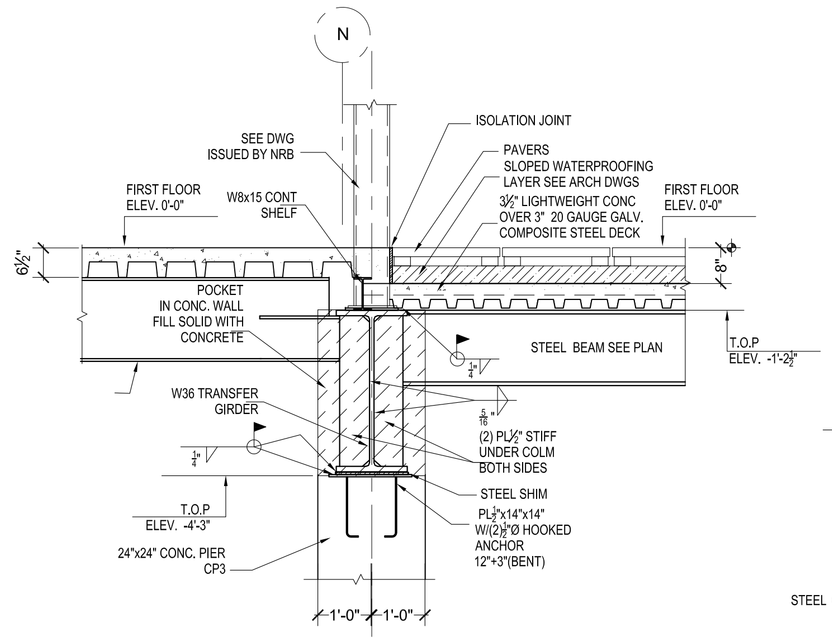
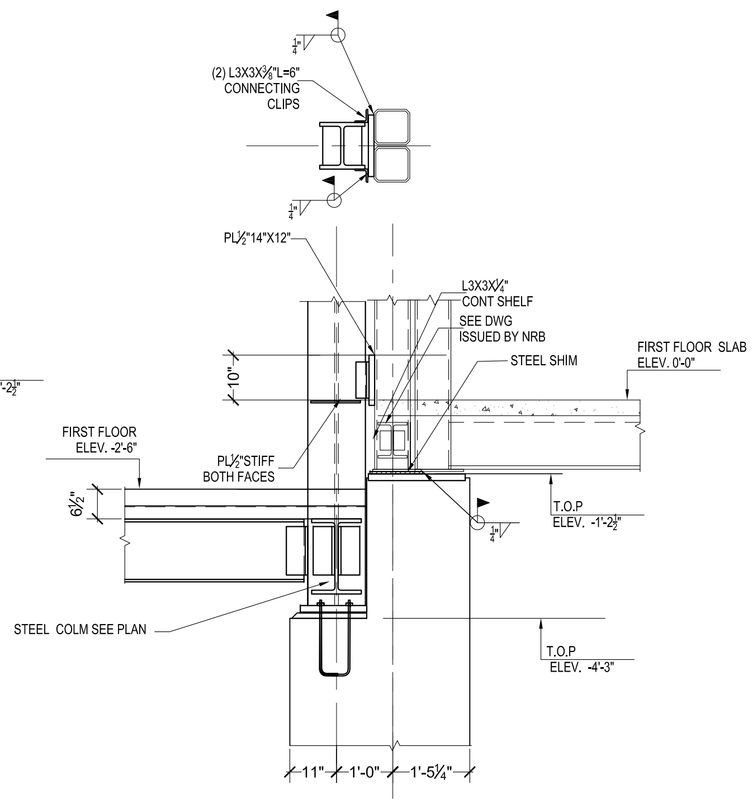


3 FO-303 TYPICAL SECTION
SCALE: ¾"=1'-0"



4 FO-303 TYPICAL SECTION
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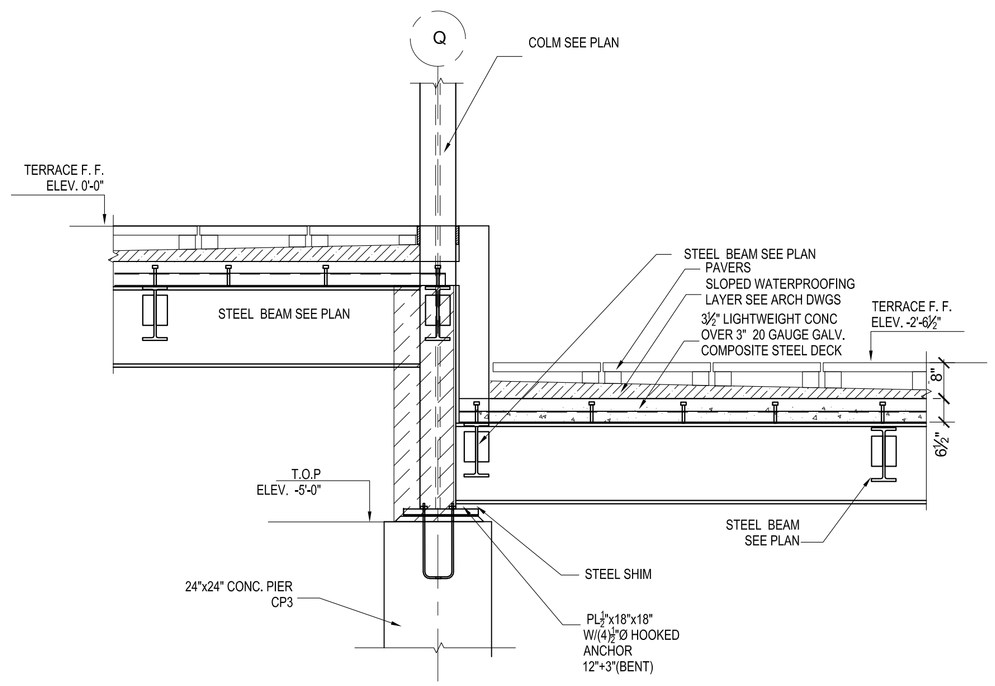

5 FO-303 TYPICAL SECTION
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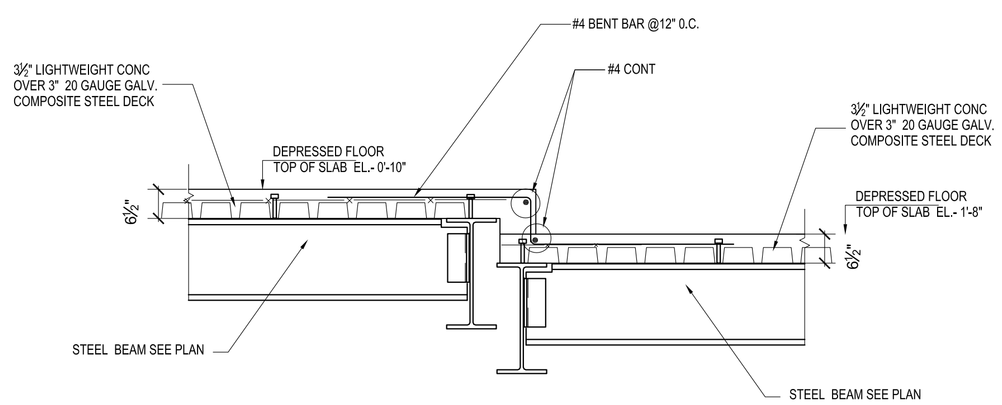

6 FO-303 TYPICAL SECTION
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7 FO-303 TYPICAL SECTION
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556 COLUMBIA STREET
BROOKLYN, NY 11231

FOUNDATION SECTIONS AND DETAILS

SEAL & SIGNATURE

STATE OF NEW YORK JOSEPH RADWAN LICENSED PROFESSIONAL ENGINEER

DATE:	09/26/2013
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CODES AND SPECIFICATIONS:

1. THE STRUCTURAL PLANS, TO THE BEST OF OUR KNOWLEDGE, COMPLY WITH THE APPLICABLE REQUIREMENTS OF "THE INTERNATIONAL BUILDING CODE" AS APPLICABLE TO "2008 BUILDING CODE OF THE CITY OF NEW YORK" AND LOCAL LAWS.

REFERENCED STANDARDS:

1. ACI 318–02 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE.
2. AISC 335–89s1 SPECIFICATION FOR STRUCTURAL STEEL BUILDING–ALLOWABLE STRESS DESIGN AND PLASTIC DESIGN, INCLUDING SUPPLEMENT No.2001.
3. AISI GENERAL STANDARD FOR COLD–FORMED STEEL FRAMING–GENERAL PROVISIONS, 2001.
4. ASCE/SEI 7–02 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES.

GENERAL NOTES :

1. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY SHORING AND BRACING REQUIRED FOR PLUMBNESS, STABILITY AND SAFETY WHENEVER REQUIRED TO SUPPORT LOADS AS MAY BE IMPOSED UPON THE STRUCTURE DURING CONSTRUCTION. BRACING AND SHORING SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND HIS/HER LICENSED PROFESSIONAL ENGINEER.
2. STAGING AND SEQUENCE OF SHORING, BRACING AND OTHER CONSTRUCTION REQUIRED FOR SUCH WORK SHALL BE PREPARED IN THE FORM OF SHOP OR DETAIL DRAWINGS REVIEWED BY THE ENGINEER OF RECORD.
3. ALL DIMENSIONS AND ELEVATIONS FOR FINAL CONSTRUCTION SHALL BE FIELD VERIFIED BY THE CONTRACTOR AND COORDINATED WITH ARCH./M/E/P DRAWINGS. SHOP DRAWINGS SHALL BE BASED ON EXISTING CONDITIONS AND DIMENSIONS.
4. ANY ADDITIONAL WORK/ FRAMING NOT SPECIFICALLY SHOWN OR CALLED FOR IN THE DRAWINGS/ SPECIFICATIONS AND THAT ARE REQUIRED TO COMPLETE THE INTENT OF THE WORK SHALL BE SUPPLIED AND INSTALLED BY THE CONTRACTOR AS IF INCLUDED IN THE DRAWINGS/ SPECIFICATIONS. THE CONTRACTOR SHALL ADVISE THE ENGINEER OF SUCH OCCURRENCES.
5. FOUNDATION WALL AND FOOTING DESIGN MAY REQUIRE MODIFICATION AFTER EXISTING SOIL BEARING CAPACITY AND SUBSURFACE CONDITION HAVE BEEN FIELD VERIFIED BY THE CONTRACTOR'S GEOTECHNICAL ENGINEER OR SOIL TESTING AGENCY.
6. CONTRACTOR SHALL ALLOW FOR TWO WEEKS OF REVIEW TIME FOR EACH SHOP DRAWING AND SCHEDULE ALL SUBMITTALS ACCORDINGLY.

DESIGN LOADS:

1. THE STRUCTURAL COMPONENTS HAVE BEEN DESIGNED FOR THE FOLLOWING LOADS:
   - A. LIVE LOAD WITH LIVE LOAD REDUCTION PROVISIONS AS SPECIFIED IN NYC BC 1607.9
     - a) FIRST FLOOR OUTDOOR PLAY AREA AND CORRIDORS, GYM ..... 100 PSF
     - ASSEMBLY AREAS, CAFETERIA, THEATER AND STAIRS
     - b) LABORATORIES, OFFICES, ART ROOMS..... 50 PSF
     - c) CLASS ROOMS..... 40 PSF
     - d) ROOFS WITH TRIBUTARY AREA UNDER 200 SF..... 20 PSF
     - e) CORRIDORS ABOVE FIRST FLOOR ..... 80 PSF
   - B. BASIC GROUND SNOW LOAD..... 25 PSF
     WITH APPLICABLE SNOW SHADOWING FACTORS
     - a) FLAT–ROOF SNOW LOAD, Pf..... 22.0 PSF
     - b) SNOW EXPOSURE FACTOR, Ce..... 0.9
     - c) SNOW LOAD IMPORTANCE FACTOR, Is..... 1.1
     - d) THERMAL FACTOR, Ct..... 1.0
   - C. BASIC WIND SPEED (3–SEC GUST).....98 MPH
     BASED ON MRI 50 YEARS
     - a) WIND IMPORTANCE FACTOR, Iw..... 1.15
     - b) WIND EXPOSURE C
     - c) INTERNAL PRESSURE COEFFICIENT ..... ± 0.18
     - d) WIND EXPOSURE C
     - e) COMPONENTS AND CLADDING (EFFECTIVE WIND AREA 50 SF)..... 30 PSF
   - D. SEISMIC LOAD BASED ON PARAMETERS AS DEFINED IN SECTION 1614.0 OF THE 2008 NEW YORK CITY BUILDING CODE:

MAPPED SHORT PERIOD SPECTRAL RESPONCE ACCELERATION.....	Ss=0.365
MAPPED 1–SECOND PERIOD SPECTRAL RESPONCE ACCELERATION..	S1=0.071
SPECTRAL RESPONSE COEFFICIENTS.....	Sds=0.243
	Sd1=0.038
SEISMIC IMPORTANCE FACTOR	1.25
SEISMIC USE GROUP	II
SEISMIC DESIGN CATEGORY.....	C
SITE CLASS DEFINITION.....	E
BASIC SEISMIC–FORCE–RESISTING SYSTEM.....	ORDINARY STEEL CONCENTRICALLY BRACED FRAMES
RESPOND MODIFICATION FACTOR.....	R=5
DEFLECTION AMPLIFICATION FACTOR.....	C=4.5
SEISMIC RESPONSE COEFFICIENT	Cs=0.052
DESIGN BASED SHEAR.....	420 KIPS
PROCEDURE USED: ASCE 7–02/IBC 2003 EQUIVALENT LATERAL FORCE	

EXCAVATION AND FOUNDATION NOTES :

1. DESIGN OF THE FOUNDATIONS WAS BASED ON THE FOUNDATION RECOMMENDATIONS PROVIDED IN GEOTECHNICAL ENGINEERING REPORT ISSUED BY GEO TECH CONSULTANTS, LLC GTC JOB No: CYPD213. THE GEOTECHNICAL REPORT, SOIL BORING PROFILE AND ITS RECOMMENDATIONS MUST BE PART OF CONSTRUCTION DOCUMENTS AND MUST BE REVIEWED BY PILING CONTRACTOR.
2. BUILDING FOUNDATIONS MUST BE SUPPORTED ON DEEP FOUNDATIN SYSTEM SUCH AS PILES THAN EXTEND THROUGH FILL, ORGANIC PEAT AND SOFT SILT/CLAY LAYERS TO TRANSFER THE LOAD INTO COMPETENT GLACIAL SAND STRATUM AND /OR BEDROCK.
3. SEE PILE FOUNDATION DESIGN DRAWINGS FOR PROPOSED PILING SYSTEMS SUCH AS DRIVEN CONCRETE–FILLED STEEL PIPE AND DRILLED MICROPILE AND CAISSSON PILE.
4. ALL STRUCTURAL WORK SHALL BE COORDINATED AND VERIFIED WITH THE ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING REQUIREMENTS.
5. THE SUBGRADE OF FOOTINGS AND SLABS SHALL BE INSPECTED AND APPROVED BY THE CONTRACTOR'S SOIL INSPECTION AGENCY IMMEDIATELY PRIOR PLACING FOUNDATION CONCRETE.
4. THOROUGHLY COMPACT THE BOTTOM OF EXCAVATIONS PRIOR TO FORMING FOOTINGS.
5. ALL FOUNDATION SHALL BE BACK FILLED EVENLY ON BOTH SIDES TO PREVENT UNBALANCED LOADINGS.
6. ALL BACK FILL USED INSIDE THE BUILDING SHALL BE WELL GRADED BANK OR CRUSH STONE,SAND AND GRAVEL. MAXIMUM AGRAGATE SIZE MUST NOT EXCEED $\frac{3}{4}$". THE BACKFILL SHALL BE THOROUGHLY COMPACTED (95% PROCTOR TEST) IN 8" – 12" LIFTS. ON–SITE MATERIAL MAY BE USED IF IT MEETS THE SPECIFICATIONS AND ACCEPTABLE TO THE ENGINEER. CONCRETE SLAB SUB–BASE SHALL BE BANKRUN GRAVE BASE COMPACTED TO 95% ROUGHT GRADE TOLERANCES SUBGRADE–(HIGH – +0", – LOW –1 $\frac{1}{2}$"),B.) SUB–BASE–(HIGH +0",–LOW–$\frac{3}{4}$")
7. FOOTING SUB–GRADES SHOULD BE THOROUGHLY CLEARED OF ALL MUD, DEBRIS AND LOOSE MATERIAL PRIOR TO THE PLACEMENT OF CONCRETE OR CRUSHED STONE.
8. ALL UNDERPINNING, SHEETING, SHORING OR OTHER SIMILAR CONSTRUCTION REQUIRED SHALL BE THE CONTRACTOR'S RESPONSIBILITY AND SHALL BE SUBJECT TO CONTROLLED INSPECTIONS AS REQUIRED BY THE GOVERNING CODE. THE CONTRACTOR SHALL RETAIN A LICENSED PROFESSIONAL ENGINEER TO PROVIDE ALL NECESSARY DESIGNS AND REQUIRED INSPECTIONS. CONTRACTOR SHALL ALLOW FOR TWO WEEKS OF REVIEW TIME FOR EACH SHOP DRAWING AND SCHEDULE ALL SUBMITTALS ACCORDINGLY.
9. THE CONTRACTOR SHALL PROVIDE ALL MEASURES AND PRECAUTIONS NECESSARY TO PREVENT DAMAGE AND SETTLEMENT (HORIZONTAL AND VERTICAL) OF EXISTING OR NEW CONSTRUCTION, INSIDE AND OUTSIDE THE PROJECT LIMITS.
10. DO NOT BACKFILL AGAINST BASEMENT WALL UNTIL ALL SUPPORTING SLABS (OR BRACING) HAS BEEN PLACED AND THE CONCRETE HAS OBTAINED FULL 28–DAY DESIGN STRENGTH.
11. THE CONTRACTOR SHALL COORDINATE ALL ELEMENTS OF THE SOIL/ ROCK RETENTION SYSTEM WITH ALL ELEMENTS OF THE PERMANENT BUILDING.

STRUCTURAL CONCRETE NOTES :

1. ALL WORK SHALL COMPLY TO THE ACI CODE, LATEST EDITION, AS AMENDED BY THE NEW YORK CITY BUILDING CODE.
2. ALL FOUNDATION, FOOTINGS, WALLS, BEAMS AND SLAB ON GRADE CONCRETE SHALL BE NORMAL WEIGHT CONCRETE WEIGHING 145 PCF HAVING A COMPRESSIVE STRENGTH 4,000 PSI AT 28 DAYS AND MAXIMUM WATER–CEMENT RATIO OF 0.45.
   CONCRETE FOR ALL SUSPENDED SLABS MUST BE LIGHTWEIGHT CONCRETE WEIGHING 115 PCF HAVING A COMPRESSIVE STRENGTH 4,000 PSI AT 28 DAYS AND MAXIMUM WATER–CEMENT RATIO OF 0.40
   ALL CONCRETE SHALL CONFIRM TO ACI318–02 CHAPTER 4 FOR DURABILITY AND CHAPTER 5 FOR CONCRETE QUALITY MIXING AND PLACEMENT AND IN FULL COMPLIANCE WITH CHAPTER 19 OF NYC BC.
3. ALL CONCRETE EXPOSED TO WEATHER SHALL AIR–ENTRAINED AS PER SECTION NYC BC 1904.2.3 AND ALSO COMPLY WITH SPECIAL EXPOSURE REQUIREMENTS OF SECTION 1904.2.2 AND 1904.2.3. ANY ADMIXTURES TO BE USED SHALL SUBJECTED TO APPROVAL BY THE ENGINEER AND TO CONFIRM TO THE REQUIREMENTS OF SECTION 1903.6 OF NYC BC.
4. ALL CONCRETE WORK: MIXES, CYLINDERS TEST, INSPECTIONS, AND FORMWORK SHALL CONFORM TO THE REQUIREMENTS OF LOCAL BUILDING CODE AND ACI CODES.
5. CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR DESIGN OF CONCRETE MIXES AND FOR MAINTAINING STRENGTH AND PROPER SLUMP DURING CONSTRUCTION IN ACCORDANCE WITH NYC BC 1905. CONCRETE MIXES SHALL BE DESIGNED IN ACCORDANCE WITH METHOD DESCRIBED IN THE GOVERNING CODE AND SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. NO CONCRETE SHALL BE PLACED UNTIL CONCRETE MIXES HAVE BEEN APPROVED BY THE ENGINEER.
6. REINFORCING BARS SHALL BE DEFORMED STEEL BARS COMPLYING WITH "SPECIFICATIONS FOR DEFORMED BILLET BARS FOR CONCRETE REINFORCEMENT" ASTM A615, GRADE 60.
7. WELDED WIRE FABRIC SHALL COMPLY WITH "SPECIFICATIONS FOR STEEL WELDED WIRE FABRIC DEFORMED FOR CONCRETE REINFORCEMENT" ASTM A497 AND SHALL HAVE MINIMUM YIELD STRENGTH OF 60,000 PSI.
8. CHECKED SHOP DRAWINGS SHOWING REINFORCING DETAILS, INCLUDING STEEL SIZES, SPACING AND PLACEMENT, SHALL BE SUBMITTED TO THE ARCHITECT FOR REVIEW PRIOR FABRICATION.
9. ALL CONTINUOUS REINFORCEMENT SHALL BE LAPPED AT SPLICES, BENT AROUND CORNERS AND FULLY EMBEDDED AT NON–CONTINUOUS EDGE. SEE TYPICAL DETAILS, EMBEDMENT AND SPLICE LENGTH SCHEDULE ON DETAIL CONCRETE DRAWINGS.
10. WELDED WIRE FABRIC SHALL BE LAPPED TWO (2) FULL MESH PANELS AND TIED SECURELY.
11. WHERE REQUIRED, DOWELS SHALL MATCH SIZE AND NUMBER OF MAIN REINFORCING, UNLESS OTHERWISE NOTED.
12. PROVIDE ADDITIONAL 2#5 BARS AROUND ALL FLOORS AND WALL OPENINGS.
13. CONSTRUCTION JOINTS IN ALL SLABS AND BEAMS SHALL NOT BE FURTHER APART THAN 15 FEET IN ANY DIRECTION. CONSTRUCTION JOINTS IN WALLS SHALL NOT BE FURTHER APART THAN 40 FEET.
14. DRY PACK SHALL BE ONE PARTY SAND, ONE PART CEMENT WITH ENOUGH WATER FOR PLACEMENT.
15. ALL BEARING GROUT SHALL BE NON–SHRINK, NONMETALLIC WITH A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI.
16. PROVIDE MINIMUM CONCRETE PROTECTION TO REINFORCING AS SHOWN ON DETAILS BUT NOT LESS THAN REQUIRED BY SECTION 7.7 OF THE ACI 318–02.

STRUCTURAL STEEL NOTES :

1. ALL STRUCTURAL STEEL INCLUDING STEEL SHAPES, SHALL CONFORM TO ASTM A992, GRADE 50 UNLESS OTHERWISE INDICATED ON THE DRAWING. ALL ANGLES, CHANNELS AND PLATES SHALL CONFORM TO ASTM A36, UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
2. ALL STRUCTURAL TUBING SHALL CONFORM TO ASTM A500 GRADE B, Fy = 46 kSI.
3. ALL STRUCTURAL PIPE SHALL CONFORM TO ASTM A53, TYPE E, GRADE B, Fy = 35 KSI.
4. ALL ANCHOR BOLTS SHALL CONFORM TO F1554 GRAGE 50 (UNO).
5. WELDED CONNECTIONS SHALL CONFORM TO THE LATEST REVISION OF THE "STRUCTURAL WELDING CODE – STEEL (ANSI/AWS D1.1) OF THE AMERICAN WELDING SOCIETY", CLASS 70 SERIES ELECTRODES.
6. BOLTS AND BOLTED CONNECTIONS SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 BOLTS OR A490 BOLTS" AS APPROVED BY THE RESEARCH COUNCIL ON RIVETED AND BOLTED JOINTS. UNFINISHED BOLTS SHALL CONFORM TO ASTM A–307.
7. ALL SHOP CONNECTIONS SHALL BE HIGH STRENGTH BOLTED OR WELDED.
8. ALL BEAM CONNECTIONS SHALL BE MADE WITH DOUBLE ANGLES UNLESS OTHERWISE NOTED. PROVIDE INDICATED CAMBER IN BEAMS AS NOTED IN THE DRAWINGS.
9. WHERE DIMENSIONS ARE NOT INDICATED, BEAMS SHALL BE EQUALLY SPACED.
10. DETAILING, FABRICATION AND ERECTION SHALL COMPLY WITH AISC SPECIFICATIONS AND CODES, LATEST EDITIONS AS AMENDED BY THE LOCAL BUILDING CODE.
11. SUBMIT SHOP DRAWINGS FOR ALL WORK. DO NOT PROCEED WITH ANY FABRICATION UNTIL THE SHOP DRAWINGS ARE REVIEWED AND APPROVED. SHOP DRAWINGS SHALL BE BASED ON FIELD VERIFIED CONDITIONS.
12. PROVIDE ANY MEASURES REQUIRED FOR STABILITY OF STRUCTURE DURING ERECTION.
13. ALL WELDING SHALL BE DONE BY QUALIFIED WELDERS. WELDERS SHALL BE LICENSED IN ACCORDANCE WITH ALL REQUIREMENTS OF CONNECTICUT BUILDING CODE.
14. WELDING ELECTRODES SHALL BE E70XX FOR NEW CONSTRUCTION , AND E60 LOW–HYDROGEN FOR EXISTING CONSTRUCTION.
15. MINIMUM FILLET WELDS SHALL COMPLY WITH AISC, BUT SHALL NOT BE LESS THAN $\frac{1}{4}$" UNLESS OTHERWISE NOTED.
16. ALL CONNECTIONS SHALL BE DESIGNED BY THE FABRICATOR'S PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NEW YORK. PLACEMENT AND ITEMIZED SHOP DRAWINGS SEALED AND STAMPED BY A PE SHALL BE SUBMITTED FOR REVIEW. BEAM TO BEAM CONNECTIONS SHALL BE DESIGNED TO TRANSFER THE REACTION FOR A SIMPLY SUPPORTED, UNIFORMLY LOADED BEAM OF SAME SIZE. ALL LATERAL BRACING CONNECTIONS SHALL BE DESIGNED BASED ON CLIP CRITICAL CONDITION FOR BOLTED CONNECTIONS.
17. ALL STEEL STAIRS SHALL BE DESIGNED BY THE STAIR MANUFACTURER'S PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NEW YORK. SEE DESIGN LOAD REQUIREMENTS FOR STAIRS PLACEMENT AND ITEMIZED SHOP DRAWINGS SEALED AND STAMPED BY A PE SHALL BE SUBMITTED FOR REVIEW.
18. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM UNLESS OTHERWISE NOTED ON THE PLANS AND DETAILS. ALL BOLTED CONNECTIONS SHALL CONSIST OF A MINIMUM OF TWO 3/4" DIA. BOLTS.
19. ALL SURFACES OF THE STEEL INTENDED TO BE FIREPROOFED, SHALL BE LEFT UNPAINTED. ALL SURFACES OF THE EXPOSED STELL SHALL BE PROTECTED USING CORROSION PROTECTION SYSTEM DESIGNED FOR STEEL EXPOSED TO THE ATMOSPHERE. CORROSION PROTECTION SYSTEM DATA SHALL BE SUBMITTED FOR THE REVIEW AND APPROVAL.
20. ALL BEAMS EXCEPT CANTILEVER BEAMS SHALL BE FABRICATED WITH NATURAL CAMBER UP. ALL CANTILEVER BEAMS SHALL BE FABRICATED SO THAT THE NATURAL CAMBER RAISES THE CANTILEVER END.
21. THE CONTRACTOR SHALL ADEQUATELY GUY AND BRACE ALL STRUCTURAL STEEL TO MAINTAIN SAFETY AND ALIGNMENT DURING ALL PHASES OF CONSTRUCTION. SUCH GUYING AND BRACING SHALL REMAIN IN PLACE UNTIL THE STRUCTURE HAS REACHED ADEQUATE STRENGTH AND ALL PERMANENT BRACING IS IN PLACE.
22. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD.

METAL DECK NOTES :

1. ALL METAL DECK IS DESIGNED UNSHAPED UNLESS OTHERWISE NOTED ON THE PLANS. ALL METAL DECK UNITS SHALL BE A MINIMUM OF THREE CONTINUOUS SPANS WHEREVER POSSIBLE.
2. METAL DECK IS DESIGNED TO SUPPORT THE WET LOAD OF NEW CONCRETE AND 20 PSF OF CONSTRUCTION LOAD WITHOUT SHORING. IF THE LOADS ARE EXCEEDED, THE CONTRACTOR SHALL PROVIDE ADEQUATE SHORING.
3. NO PIPES, FANS, HEAVY DUCTS OR OTHER HEAVY LOADS CAN BE HUNG FROM THE METAL DECK. PROVIDE SECONDARY FRAMING AND SUPPORT FROM STRUCTURAL BEAMS AND GIRDERS. CEILING LIGHTS AND LIGHT DUCTWORK WHICH DO NOT EXCEED A COMBINED LOAD OF 10 PSF MAY BE SUSPENDED FROM THE DECK.
4. ALL METAL DECK SHALL BE MANUFACTURED FROM STEEL CONFIRMING TO ASTM A–446 OR A–611 HAVING A MINIMUM YIELD STRENGTH OF 33,000 psi.
5. ALL METAL DECK SHALL CONFIRM TO AISI "SPECIFICATIONS FOR THE DESIGN OF COLD–FORMED STEEL STRUCTURAL MEMBERS".
6. METAL DECK SHALL HAVE A MINIMUM RIB WIDTH TO DEPTH RATION OF 2.
7. ALL METAL DECKING SHALL BE CONNECTED TO SUPPORTING STEEL STRUCTURE AS DESIGNED BY STEEL DECK MANUFACTURER. SIDE LAPS SHALL BE FASTENED AT 24 INCHES MAXIMUM ON CENTER.
8. PROVIDE CONTINUOUS SHEET METAL CLOSURES AT ALL SLAB OPENINGS AND SLAB EDGES AND CONTINUOUS DECK CLOSURE AT ALL DECK ENDS.
9. DECK SHALL BE A MIN. OF TWO (2) SPAN CONTINUOUS.
10. SUBMIT, TO THE ARCHITECT, PUBLISHED MANUFACTURER'S DATA VERIFYING THE SPECIFIED DECK REQUIREMENTS. SUBMIT ENGINEERED AND CHECKED SHOP DRAWINGS INDICATING LOCATION, GAUGE AND SIZE OF EACH PIECE OF DECKING. SHOP DRAWINGS SHALL CLEARLY SHOW FASTENING/ WELDING DETAILS TO STRUCTURAL FRAMING, SIDE LAP CONNECTION DETAILS AND SUPPLEMENTARY SUPPORT STEEL AS REQUIRED.

COLD–FORMED STEEL STRUCTURAL MEMBERS NOTES:

1. ALL PRODUCT SHALL MEET THE REQUIREMENTS OF THE CURRENT EDITION OF ASTM C 645 "SPECIFICATION FOR THE DESIGN OF COLD–FORMED STEEL STRUCTURAL MEMBERS".
2. ALL COLD–FORMED STEEL SHALL CONFIRM TO SPECIFICATIONS ASTM A 653. MINIMUM STEEL YIELD Fy(min) SHALL BE, AS FOLLOWS:
   - a) MINIMUM STEEL YIELD Fy(min)=50 KSI FOR 14 AND 16 GAUGE STUDS.
   - b) MINIMUM STEEL YIELD Fy(min)=33 KSI FOR 18 AND 20 GAUGE STUDS.
3. ALL DESIGNATIONS FOR COLD–FORMED STRUCTURAL STEEL MEMBERS IS BASED ON MARINO WARE CATALOGS. INSTALLATION OF COLD–FORMED MEMBERS SHALL COMPLY WITH THE TYPICAL DETAILS OF THE REFERENCED CATALOGS.
   - a) PROVIDE MECHANICAL BRIDGING SPACED AT INTERVALS NOT TO EXCEED 4'–0" ON CENTER FOR VERTICAL MEMBERS AND NOT TO EXCEED 7'–0" ON CENTER FOR JOISTS.
   - b) PROVIDE UTILITY ANGLES AT EACH END OF THE JOISTS FOR THE ATTACHMENT TO THE STRUCTURAL STEEL MEMBER BASED ON MARINO WARE RECOMMENDATIONS.
   - c) COMPRESSION (TOP) FLANGE FOR SIMPLY SUPPORTED JOISTS SHALL BE BRACED BY THE ATTACHMENT OF CONTINUOUS DIAPHRAGM RATED SHEATHING OR DECKING. USE MECHANICAL CONNECTORS (SCREWS) TO CONNECT DECK TO THE COLD FORMED JOISTS.
4. ALL CONNECTIONS SHALL BE DESIGNED BY THE FABRICATOR'S PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NEW YORK. PLACEMENT AND ITEMIZED SHOP DRAWINGS SEALED AND STAMPED BY A PE SHALL BE SUBMITTED FOR REVIEW.

1. JOISTS SLOPE UNIFORMLY BETWEEN ELEVATIONS NOTED.
2. BEAMS PARALLEL TO JOISTS SHALL BE 2 1/2" ABOVE BEAMS PERPENDICULAR TO JOISTS U.N.O.
3. ALL DIMENSIONS SHALL BE COORDINATED WITH ARCHITECTURAL DRAWINGS.
4. COORDINATE SIZE AND LOCATION OF OPENINGS FOR ROOF TOP UNITS (RTU) WITH MECHANICAL DRAWINGS.
5. JOIST BRIDGING SHALL BE DESIGNED AND INSTALLED PER SJI SPECIFICATIONS. BRIDGING INDICATED ON DRAWINGS IS IN ADDITION TO THAT REQUIRED BY THE SJI SPECIFICATIONS. JOIST BRIDGING SHALL BE DESIGNED TO RESIST A NET UPLIFT LOAD AS INDICATED IN THE 'WIND NET UPLIFT TABLE'.
6. PROVIDE OPEN WEB, UNDERSLUNG, PARALLEL CHORD JOISTS AND JOIST GIRDERS UNLESS NOTED OTHERWISE ON THE DRAWINGS.
7. DESIGN, FABRICATE, AND ERECT OPEN WEB STEEL JOISTS AND JOIST GIRDERS TO THE SPECIFICATIONS OF THE STEEL JOIST INSTITUTE, LATEST EDITION.
8. SHOP DRAWINGS FOR JOISTS, JOIST ACCESSORIES AND JOIST GIRDERS TO BE PREPARED BY THE JOIST MANUFACTURER'S DETAILERS.
9. PROVIDE 2–1/2 INCH MINIMUM BEARING ON STRUCTURAL STEEL FOR K–SERIES JOISTS OR PROVIDE BEARING LENGTHS PER STEEL JOIST INSTITUTE REQUIREMENTS UNLESS GREATER LENGTHS ARE SHOWN ON DRAWINGS.
10. ALL HANGERS SUPPORTING MECHANICAL EQUIPMENT, SPRINKLER LINES, ETC., FROM THE CHORD OF THE STEEL JOISTS SHALL BE LOCATED AT THE PANEL POINTS OF THE JOISTS OR THE JOIST CHORD SHALL BE REINFORCED TO SUPPORT THE ADDITIONAL LOAD. HANGERS SHALL NOT BE ATTACHED TO THE EDGE OF THE CHORD ANGLES. HANGERS SHALL BE CENTERED ON THE JOIST CHORD.
11. ALL K–SERIES JOISTS SHALL HAVE 2 1/2 INCH DEEP BEARING SEATS.
12. PROVIDE CAMBER FOR ALL JOISTS. DEPTH OF CAMBER TO BE IN ACCORDANCE THE STEEL JOIST INSTITUTE SPECIFICATIONS.
13. ALL JOIST–GIRDERS SHALL HAVE 7 1/2 INCH DEEP BEARING SEATS, UNLESS NOTED OTHERWISE.
14. JOIST–GIRDER SUPPLIER SHALL PROVIDE BOTTOM CHORD BRACING AS REQUIRED PER STEEL JOIST INSTITUTE FOR STABILITY AND AS REQUIRED BY DESIGN.
15. ALL JOISTS TO BEAR AT TOP CHORD PANEL POINTS OF THE JOIST GIRDER UNLESS NOTED OTHERWISE.
16. JOIST GIRDERS TO BE DESIGNED FOR A NET UPLIFT LOAD AS INDICATED ON TABLE "WIND NET UPLIFT" ON SHEET S–2.1. APPLIED AS A POINT LOAD AT JOIST LOCATIONS.
17. PROVIDE CAMBER FOR ALL JOIST GIRDERS. DEPTH OF CAMBER TO BE IN ACCORDANCE WITH THE STEEL JOIST INSTITUTE SPECIFICATIONS.

STRUCTURAL INSPECTION REQUIREMENTS SECTION 1704 NYC BUILDING CODE

1. ALL INSPECTIONS SHALL BE IN ACCORDANCE WITH THE LATEST STATE OF NEY YORK CITY BUILDING CODE AND LOCAL AND OTHER GOVERNING CODES.
2. ANY REQUIRED INSPECTIONS AND TESTS OF MATERIALS BY THE CONTRACTOR SHALL BE MADE UNDER THE DIRECT SUPERVISION OF A LICENSED ARCHITECT OR ENGINEER RETAINED BY OR ON THE BEHALF OF THE CONTRACTOR.
3. SEE ARCH. DRAWINGS FOR ADDITIONAL INSPECTIONS.
4. THE CONTRACTOR SHALL SUBMIT TO THE ARCHITECT INSPECTION REPORTS PREPARED BY THE TESTING AGENCY AFTER EACH INSPECTION.
5. THE TESTING AGENCY SHALL FURNISH ALL FORMS REQUIRED BY THE LOCAL AND STATE BUILDING CODE TO THE BUILDING DEPARTMENT PRIOR TO START OF WORK AND AT COMPLETION OF WORK.

CONTROLLED INSPECTION NOTES:

1. THE FOLLOWING CONTROLLED INSPECTIONS ARE REQUIRED TO BE PERFORMED IN ACCORDANCE WITH THE BUILDING CODE OF THE CITY OF NEW YORK:

ITEM	NYC CODE REFERENCED SECTION
STRUCTURAL STEEL – WELDING	BC 1704.3.1
STRUCTURAL STEEL – ERECTION & BOLTING	BC 1704.3.2, BC 1704.3.3
STRUCTURAL COLD–FORMED STEEL	BC 1704.3.4
CONCRETE–CAST–IN–PLACE	BC 1704.4
PILE FOUNDATION AND DRILLED PIER INSTALLATION	BC 1704.8 TR5
SOIL–SITE PREPARATION	BC 1704.7.1
SOIL–FILL PLACEMENT & IN–PLACE DENSITY	BC 1704.7.2, BC 1704.7.3
SOIL INVESTIGATION (BORINGS/TEST PITS)	BC 1704.7.4. TR4
WALL PANELS, CURTAIN WALLS, AND VENEERS	BC 1704.11
EXCAVATION–SHEETING, SHORING, AND BRACING	BC 1704.19, BC 3304.4.1
CONCRETE TEST CYLINDERS	BC 1905.6 TR2
CONCRETE DESIGN MIX	BC 1905.3 TR3

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DOB BSCAN

ISS/REV	DATE	DESCRIPTION
1	10–14–13	PERMIT ISSUED TO

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GENERAL NOTES

SEAL & SIGNATURE

STATE OF NEW YORK · JOSEPH RAPPAPORT · LICENSED PROFESSIONAL ENGINEER

DATE:	09/26/2013
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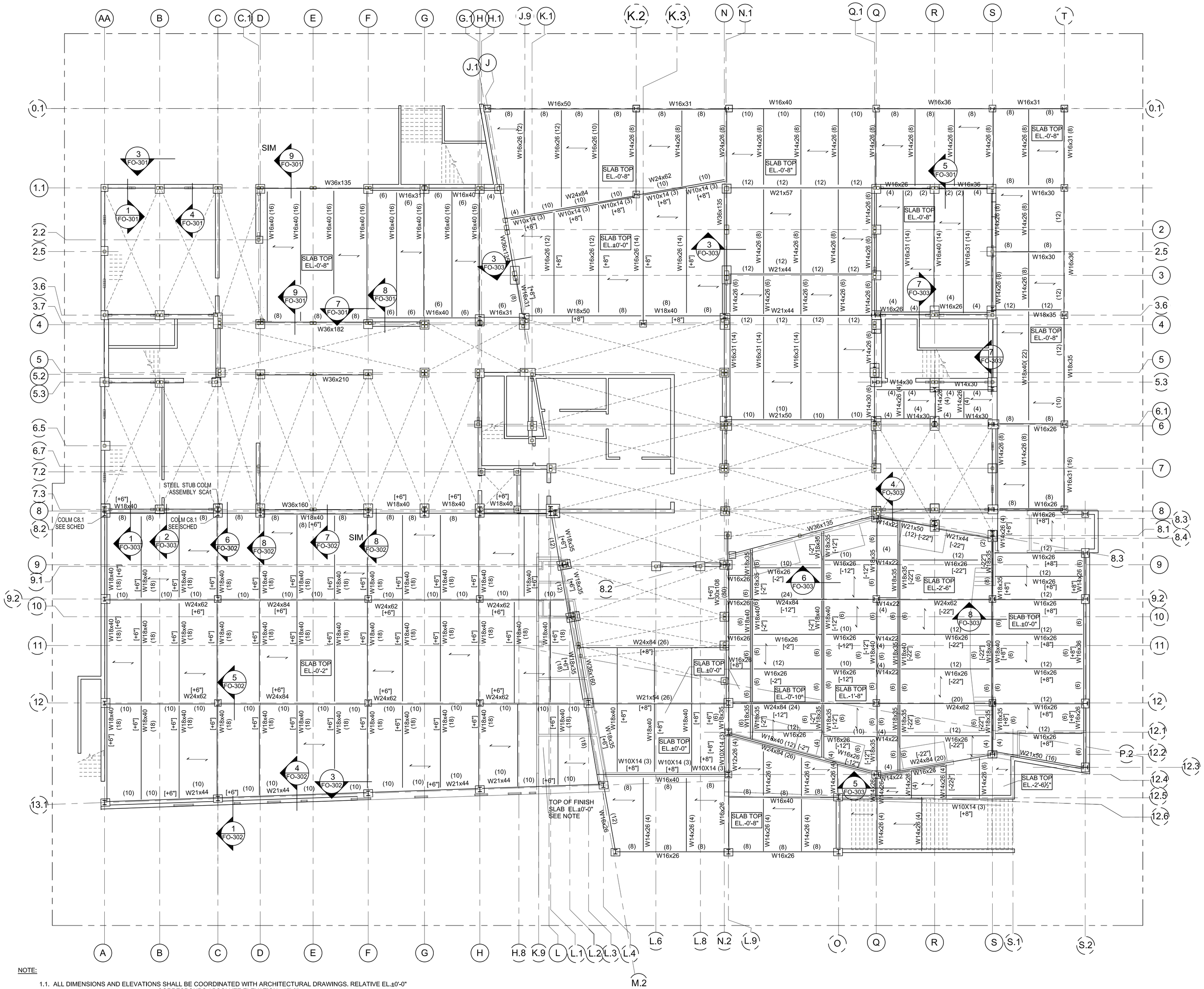


NOTE:

1.1. ALL DIMENSIONS AND ELEVATIONS SHALL BE COORDINATED WITH ARCHITECTURAL DRAWINGS. RELATIVE EL.±0'-0" CORRESPONDS ABSOLUTE ELEVATION +17'-9"

2. ⟷ DENOTES ORIENTATION OF 3" 20 GAGE COMPOSITE STEEL DECK (MINIMUM DOUBLE SPAN CONDITION). FLOOR CONSTRUCTION IS 3¼"ᵐᵐ LIGHT WEIGHT CONCRETE REINFORCED WITH 6x6 W2.0x2.0 WWF. TOTAL FLOOR THICKNESS 6½".

3. T.O.S. EL.-1'-4½" UNLESS NOTED OTHERWISE AS EL. +X"

4. [+6"] DENOTES T.O.S. ELEVATION RELATIVE TO T.O.S. ELEVATION -1'-4½".

1 S-101 PODIUM FRAMING PLAN

SCALE: ⅛"=1'-0"

B.G.M.ENGINEERING, LLC
CONSULTING ENGINEERS
2123 45TH ROAD, LONG ISLAND CITY, NY 11101
52 ASCOLESE ROAD, TRUMBULL, CT 06611
TEL: 203.452.9408 FAX: 203.452.9105
E-MAIL: bgmconsult@charter.net

DOB BSCAN

NYC DOB DESCRIPTION	ISSUED TO	DATE
1 ISS/REV	PROGRESS	10-18-13

PARTNERS FOR ARCHITECTURE
48 UNION STREET,
STAMFORD, CT 06906
P 203/708.0047
F 203/348.4165
WWW.PFARCH.NET

NORTH

NEW SCHOOL FOR: BASIS INDEPENDENT SCHOOLS

556 COLUMBIA STREET
BROOKLYN, NY 11231

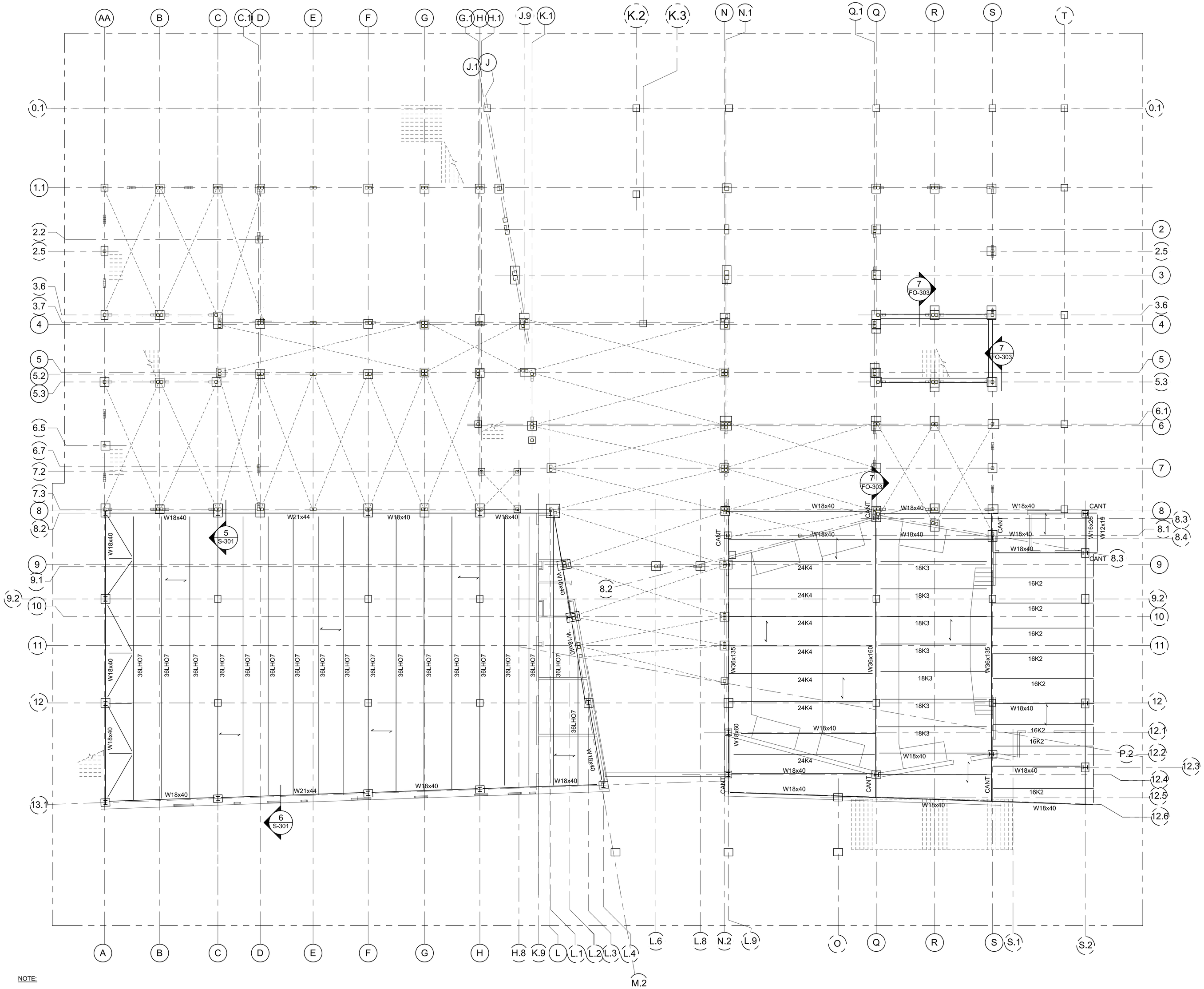
FIRST FLOOR FRAMING PLAN

SEAL & SIGNATURE

STATE OF NEW YORK · JOSEPH BARRETT · PROFESSIONAL ENGINEER

DATE:	09/26/2013
PROJECT NO:	13-607
DRAWN BY:	BT
CHECKED BY:	RS
DRAWING NO:	S-101.00

CAD FILE NO.
C:\Users\bbt\Documents\13-607 Basis Brooklyn-PFA-S-CENTRAL_bbt.rvt



NOTE:

1. ALL DIMENSIONS AND ELEVATIONS SHALL BE COORDINATED WITH ARCHITECTURAL DRAWINGS.
2. ⟷ DENOTES ORIENTATION OF 2" 20 GAGE ROOF STEEL DECK .
3. T.O.S. EL. +25'-3"

1 S-102 ROOF FRAMING PLAN
SCALE: 1/8" = 1'-0"

NO
1.
2.
3.

NYC DOB
DESCRIPTION

PROGRESS
ISSUED TO

ISS/REV | DATE
1 | 10-18-13

DOB BSCAN

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NEW SCHOOL FOR: BASIS INDEPENDENT SCHOOLS

556 COLUMBIA STREET
BROOKLYN, NY 11231

ROOF FRAMING PLAN

SEAL & SIGNATURE

STATE OF NEW YORK
JOSEPH BADWAN
LICENSED PROFESSIONAL ENGINEER

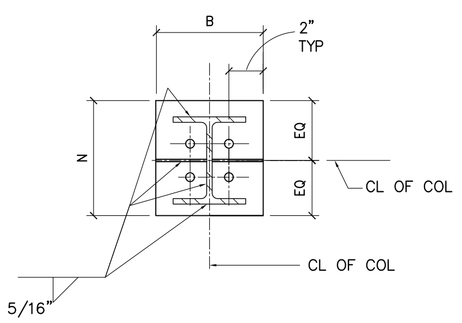
DATE:	09/26/2013
PROJECT NO:	13-607
DRAWN BY:	BT
CHECKED BY:	RS
DRAWING NO:	S-102.00
CADD FILE NO:	C:\Users\jbart\Documents\13-607 BASIS Brooklyn-PFA-vS-CENTRAL_jabat.rvt

COLUMN SCHEDULE

COLUMN / FLOOR	13.1 A	12 A	8.2A	13.1 C	8.2C	13.1 F	8.2 F	13.1 H		8.2 H	8.2 L.1	10 L.2	12 L.3	13.1 L.4	9 L.9	12.1 L.9	12.4 L.9		8.3 Q	12.4 Q	8.3 Q	12.2 Q	8.4 S	12.2 S	8 S.2	8.3 S.2	12 S.2		12.3 S.2
ROOF EL. ?'-?"																													
GIRDER EL. ?'-?"	W12x40	W12x40	W12x40	W12x40	W12x40	W12x40	W12x40	W12x40	W12x40	W12x40	W12x40	W12x40	W12x40	W12x40	W12x40	W12x40	W12x40	W12x40	W12x40	W12x40	W12x40	W12x40	W12x40	W12x40	W12x40	W12x40	W12x40	W12x40	W12x40
FIRST FLOOR EL. 0'-0"																													
BASE PLATE N x B	PL 1½" 14"x14"	PL 1½" 14"x14"	PL 1½" 14"x14"	PL 1½" 14"x14"	PL 1½" 14"x14"	PL 1½" 14"x14"	PL 1½" 14"x14"	PL 1½" 14"x14"	PL 1½" 14"x14"	PL 1½" 14"x14"	PL 1½" 14"x14"	PL 1½" 14"x14"	PL 1½" 14"x14"	PL 1½" 14"x14"	PL 1½" 14"x14"	PL 1½" 14"x14"	PL 1½" 14"x14"	PL 1½" 14"x14"	PL 1½" 14"x14"	PL 1½" 14"x14"	PL 1½" 14"x14"	PL 1½" 14"x14"	PL 1½" 14"x14"	PL 1½" 14"x14"	PL 1½" 14"x14"	PL 1½" 14"x14"	PL 1½" 14"x14"	PL 1½" 14"x14"	PL 1½" 14"x14"
BASEPLATE TYPE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ANCHOR BOLTS QANTITY MATERIAL	(4) 3/4"ø F1554	(4) 3/4"ø F1554	(4) 3/4"ø F1554	(4) 3/4"ø F1554	(4) 3/4"ø F1554	(4) 3/4"ø F1554	(4) 3/4"ø F1554	(4) 3/4"ø F1554	(4) 3/4"ø F1554	(4) 3/4"ø F1554	(4) 3/4"ø F1554	(4) 3/4"ø F1554	(4) 3/4"ø F1554	(4) 3/4"ø F1554	(4) 3/4"ø F1554	(4) 3/4"ø F1554	(4) 3/4"ø F1554	(4) 3/4"ø F1554	(4) 3/4"ø F1554	(4) 3/4"ø F1554	(4) 3/4"ø F1554	(4) 3/4"ø F1554	(4) 3/4"ø F1554	(4) 3/4"ø F1554	(4) 3/4"ø F1554	(4) 3/4"ø F1554	(4) 3/4"ø F1554	(4) 3/4"ø F1554	(4) 3/4"ø F1554

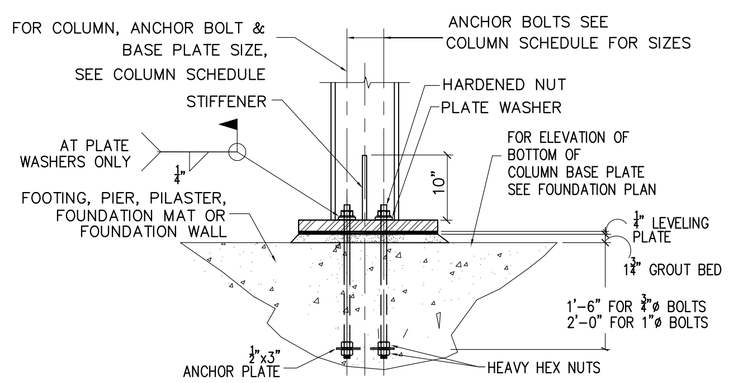
NOTES:

1. BOTTOM BASE PLATE ELEVATION ALL COLUMNS SHALL BE COORDINATED WITH CONCRETE PIER TOP ELEVATION.
2. IF REQUIRED BY CONSTRUCTION CONSTRAINT OTHER SPLICE CONNECTIONS SHALL BE PLACED AT 48" DISTANCE FROM THE FLOOR FRAMING. SPLICE CONNECTION DESIGN SHALL FOLLOW AISC RECOMMENDATIONS.
3. PROVIDE STIFFENER PLATES PL ½" AT BOTH SIDES OF TRANSFER BEAM FLANGE. STIFFENER PLATE SHALL BE ALIGNED WITH CENTER LINE OF COLUMN ABOVE.



TYPE "1"

1 TYPICAL BASE PLATE DETAILS
S-201 SCALE:N.T.S.



NOTE:
SEE COLUMN SCHEDULE FOR INFORMATION NOT SHOWN

2 TYPICAL COLUMN BEARING DETAIL
S-201 SCALE:N.T.S.

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DOB BSCAN

ISS/REV	DATE	ISSUED TO	DESCRIPTION
1	10-18-13	PROGRESS	NYC DOB

PARTNERS FOR ARCHITECTURE
48 UNION STREET,
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NEW SCHOOL FOR:
BASIS INDEPENDENT
SCHOOLS
556 COLUMBIA STREET
BROOKLYN, NY 11231

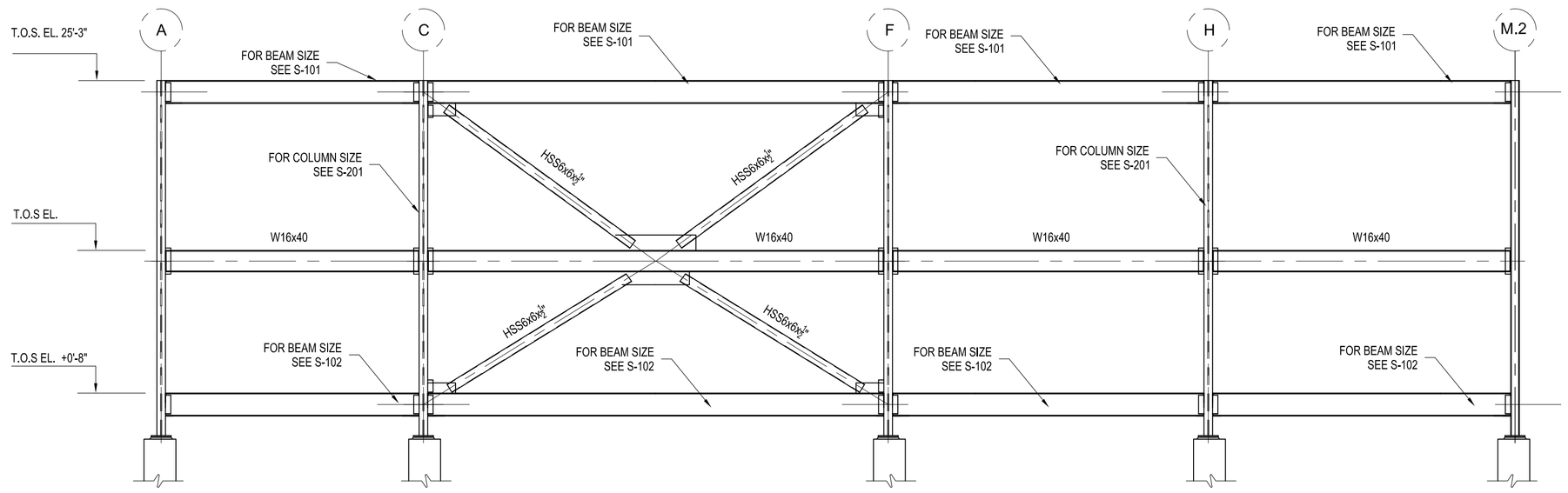
COLUMN SCHEDULE
AND DETAILS

SEAL &
SIGNATURE

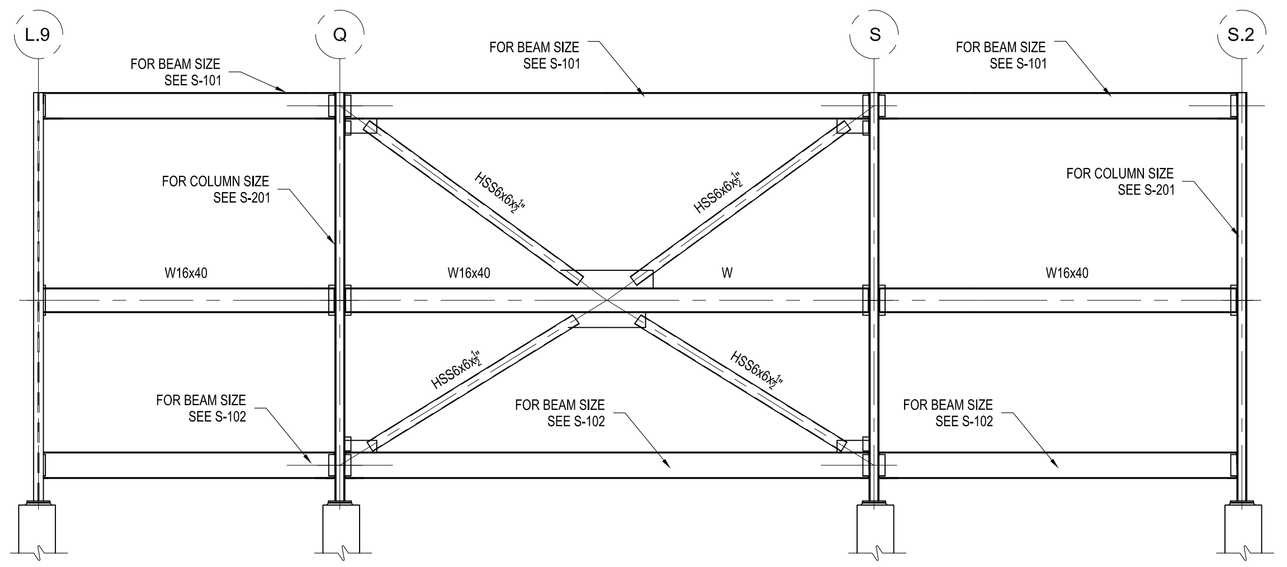
JOSEPH BADINTER
NO. 081675

DATE: 09/26/2013
PROJECT NO:13-607
DRAWN BY: BT
CHECKED BY:RS
DRAWING NO:
S-201.00

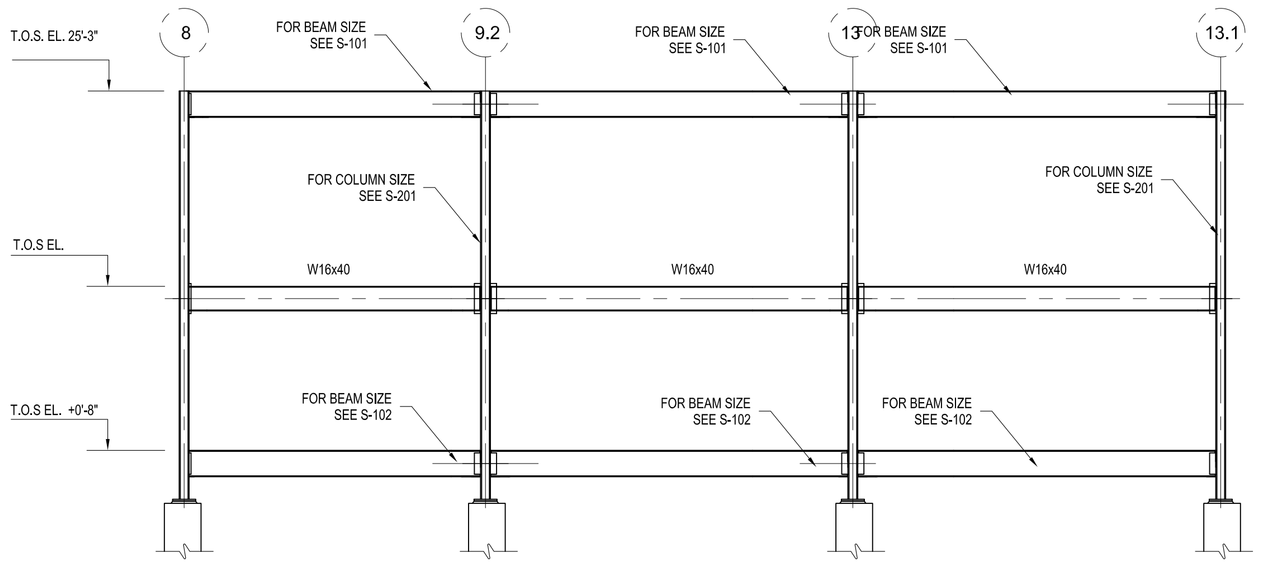
CADO FILE NO:
C:\Users\bilalt\Documents\13-607 BASIS Brooklyn-PFA-v5-CENTRAL_bilalt.rvt



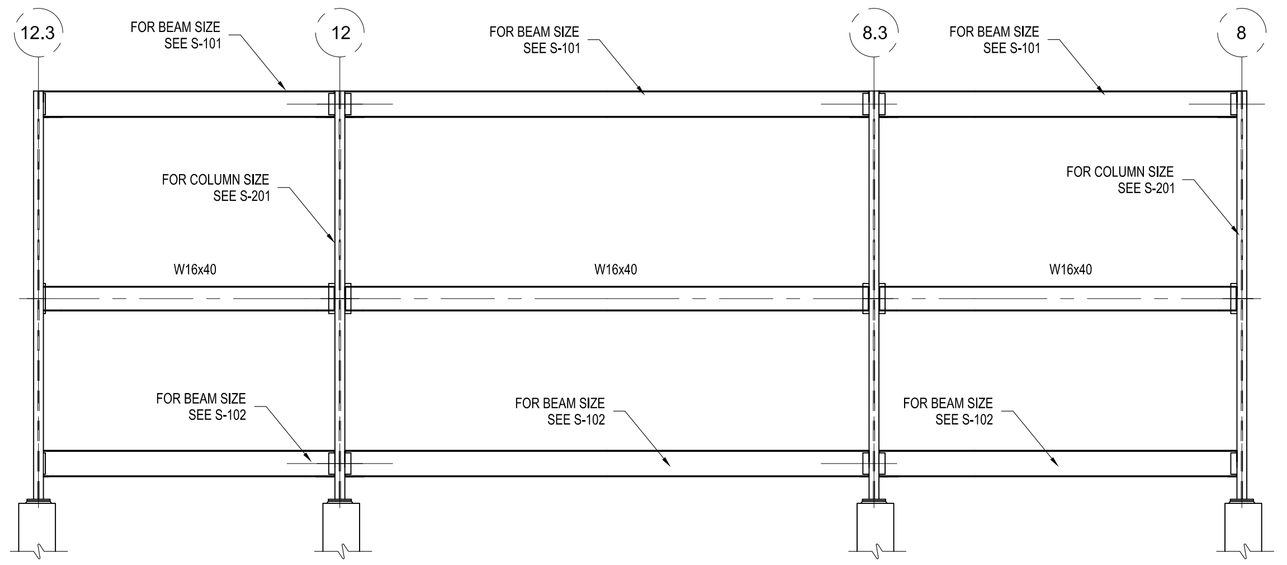
1 S-301 TYPICAL COLUMN ELEVATION AT GYM
SCALE: N.T.S.



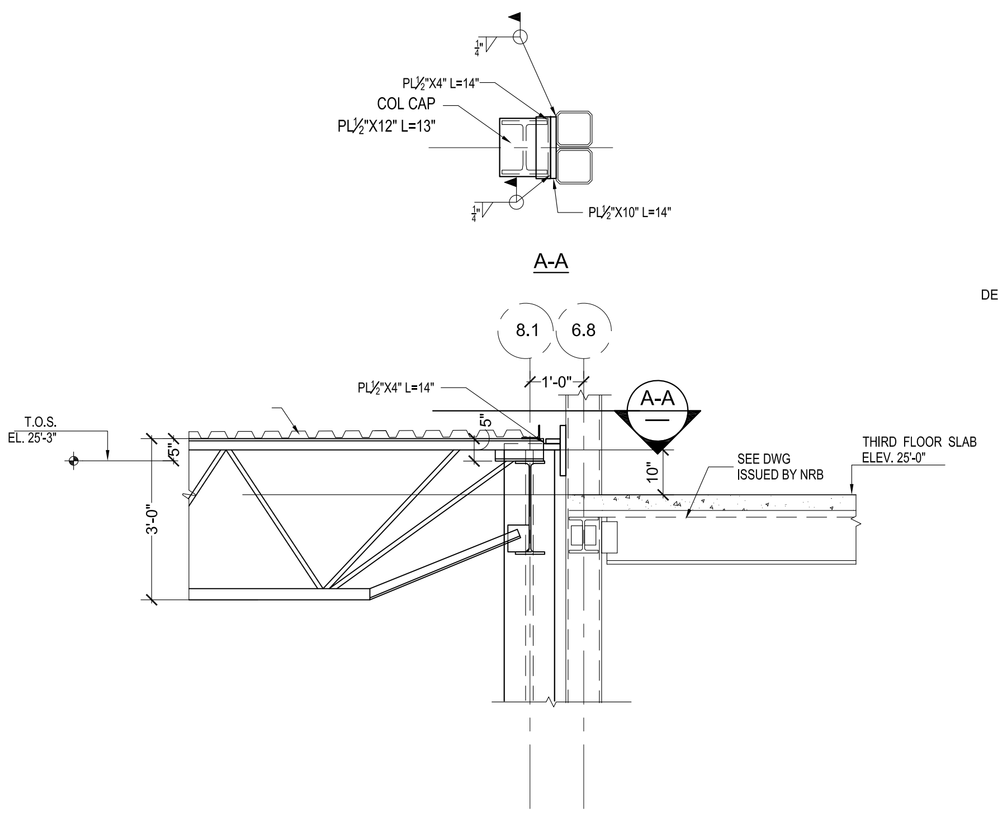
2 S-301 TYPICAL COLUMN ELEVATION AT THEATRE
SCALE: N.T.S.



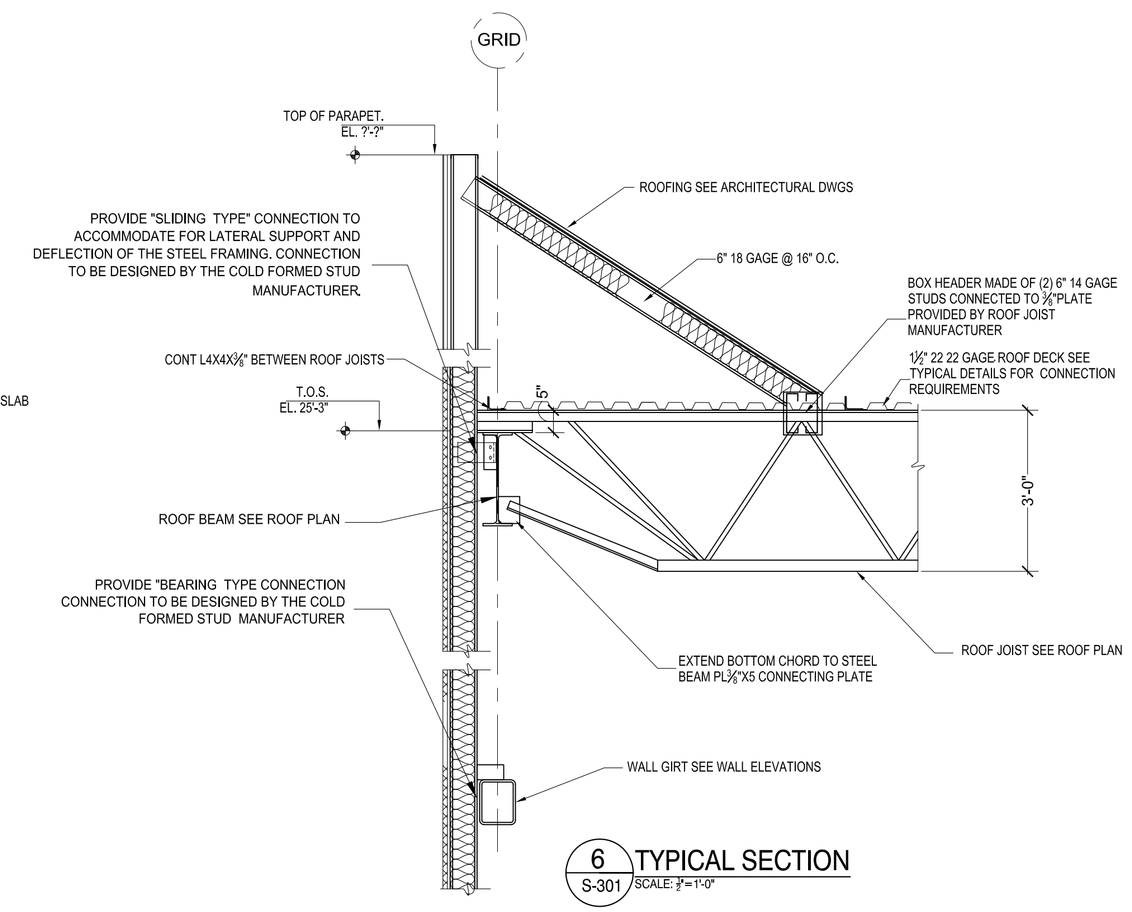
3 S-301 TYPICAL COLUMN ELEVATION AT GYM
SCALE: N.T.S.



4 S-301 TYPICAL COLUMN ELEVATION AT THEATRE
SCALE: N.T.S.



5 S-301 TYPICAL SECTION
SCALE: 3/4"=1'-0"



6 S-301 TYPICAL SECTION
SCALE: 3/4"=1'-0"

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DOB BSCAN

ISS/REV	DATE	DESCRIPTION
1	10-18-13	NYC DOB PROGRESS ISSUED TO

PARTNERS FOR ARCHITECTURE
48 UNION STREET,
STAMFORD, CT 06906
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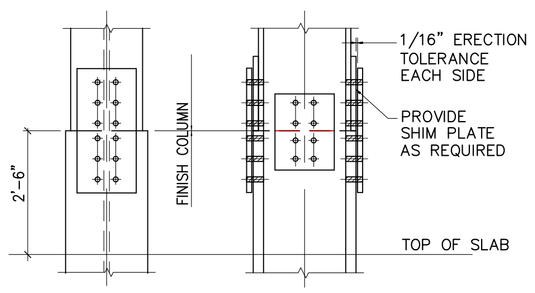
NEW SCHOOL FOR:
BASIS INDEPENDENT SCHOOLS
556 COLUMBIA STREET
BROOKLYN, NY 11231

FRAMING SECTIONS AND DETAILS

SEAL & SIGNATURE

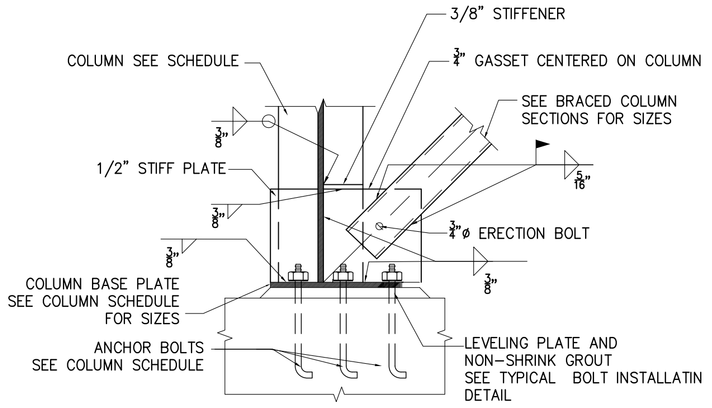
STATE OF NEW YORK · JOSEPH BABINSKY · PROFESSIONAL ENGINEER

DATE:	09/26/2013
PROJECT NO:	13-607
DRAWN BY:	BT
CHECKED BY:	RS
DRAWING NO:	S-301.00
CADD FILE NO:	S:\Users\JOSEPH\Documents\13-607 BASIS Brooklyn-PFA-v5-CENTRAL_bt.rvt

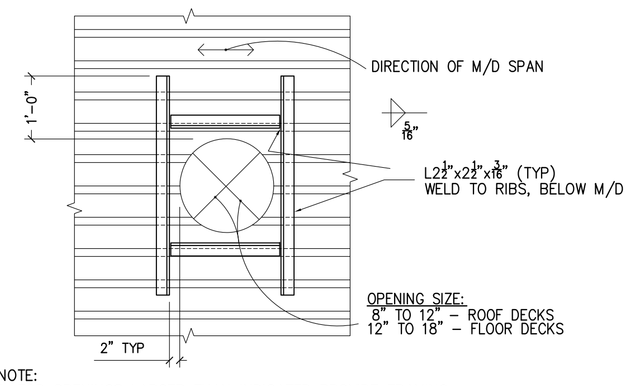


NOTE:
DETAIL SPLICE AND PROVIDE MATERIALS IN ACCORDANCE AISC ENGINEERING FOR STEEL CONSTRUCTION HANDBOOK.

1 TYPICAL COLUMN SPLICE CONNECTION DETAIL
S-302 SCALE: N.T.S.

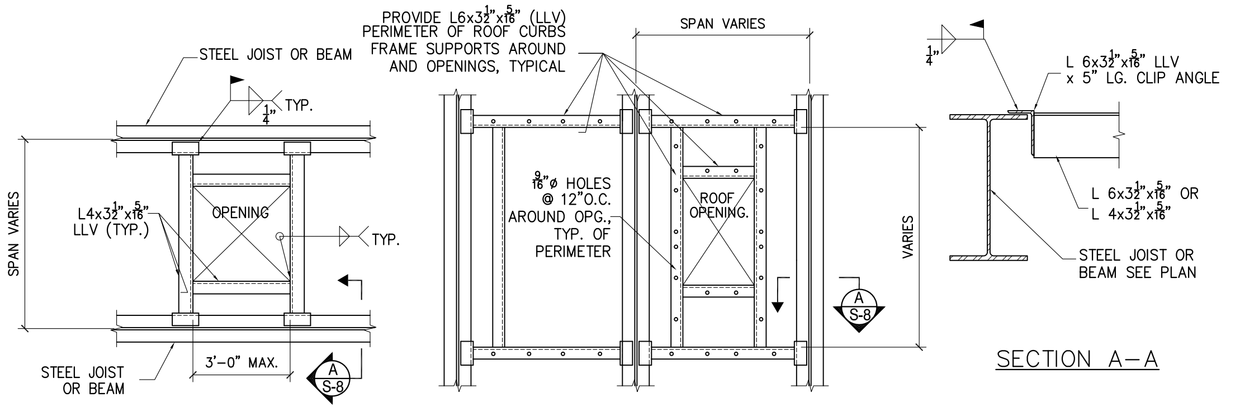


2 TYPICAL BRACE INSTALLATION DETAIL
S-302 SCALE: N.T.S.



NOTE:
1. FOR OPENINGS LARGER THAN INDICATED PROVIDE FRAMING.
2. NO REINFORCING IS REQUIRED FOR SMALLER OPENINGS.

7 TYPICAL METAL DECK REINFORCING DETAIL
S-302 SCALE: N.T.S.



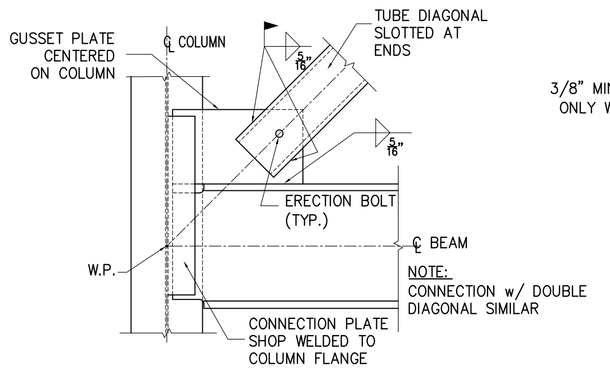
AT ROOF DRAINS

AT ROOF TOP UNITS & OTHER OPENINGS

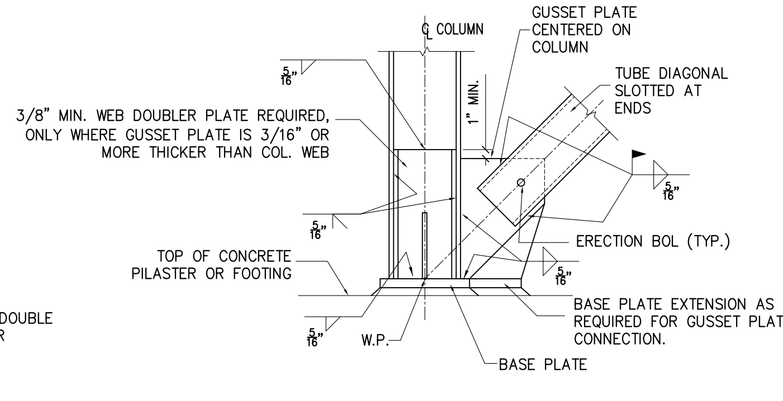
SECTION A-A

NOTE:
1. CONTRACTOR TO ESTABLISH FRAME DIMENSIONS BASED ON EQUIPMENT SUPPLIED.
2. PROVIDE JOIST REINFORCING AT FRAME SUPPORT LOCATIONS IN ACCORDANCE WITH "TYPICAL JOIST REINFORCING DETAIL AT CONCENTRATED LOADS".

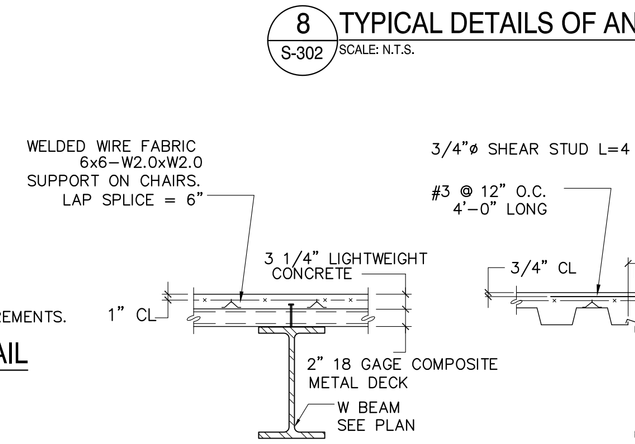
8 TYPICAL DETAILS OF ANGEL FRAMES AT ROOF OPENINGS AND CURBS
S-302 SCALE: N.T.S.



3 TYPICAL CONNECTION DETAIL
S-302 SCALE: N.T.S.

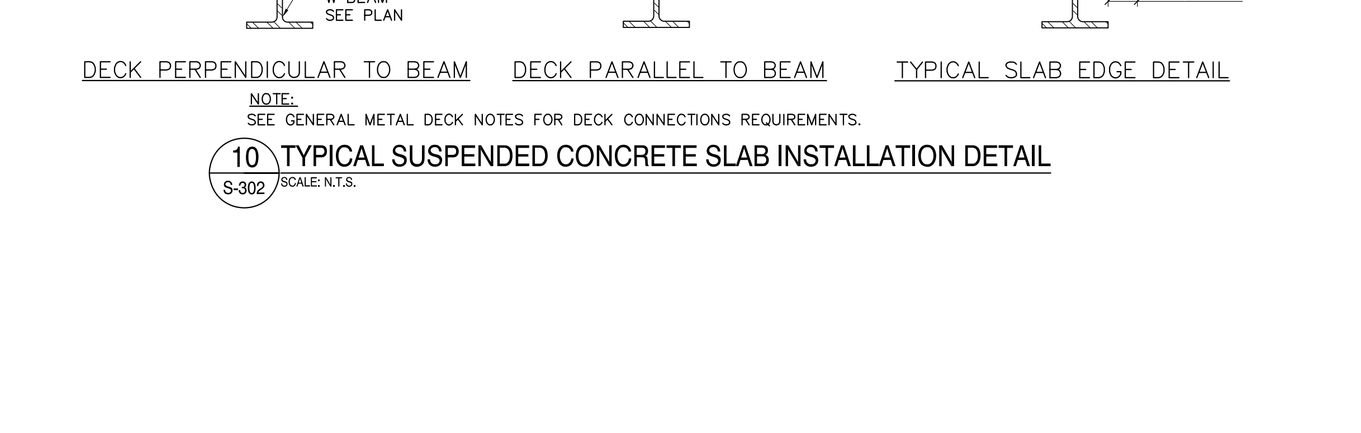


4 BASE CONNECTION TO COLUMN FLANGE
S-302 SCALE: N.T.S.



NOTE:
SEE GENERAL METAL DECK NOTES FOR DECK CONNECTIONS REQUIREMENTS.

9 TYPICAL ROOF DECK INSTALLATION DETAIL
S-302 SCALE: N.T.S.



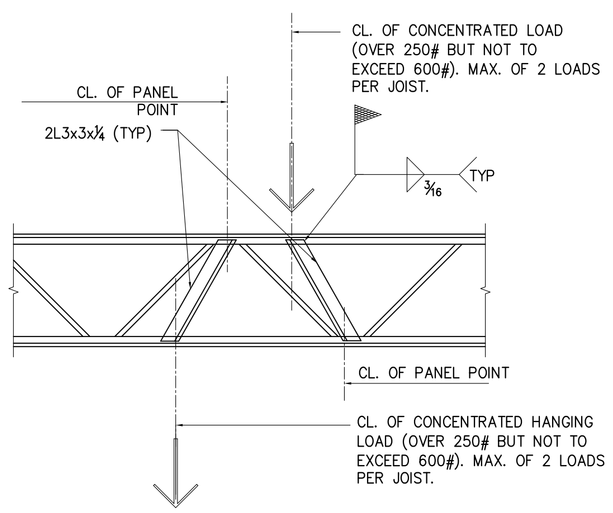
DECK PERPENDICULAR TO BEAM

DECK PARALLEL TO BEAM

TYPICAL SLAB EDGE DETAIL

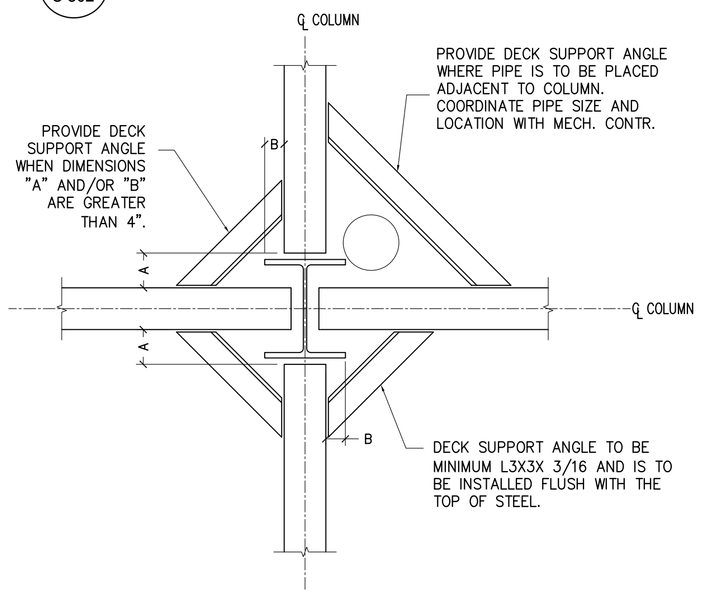
NOTE:
SEE GENERAL METAL DECK NOTES FOR DECK CONNECTIONS REQUIREMENTS.

10 TYPICAL SUSPENDED CONCRETE SLAB INSTALLATION DETAIL
S-302 SCALE: N.T.S.

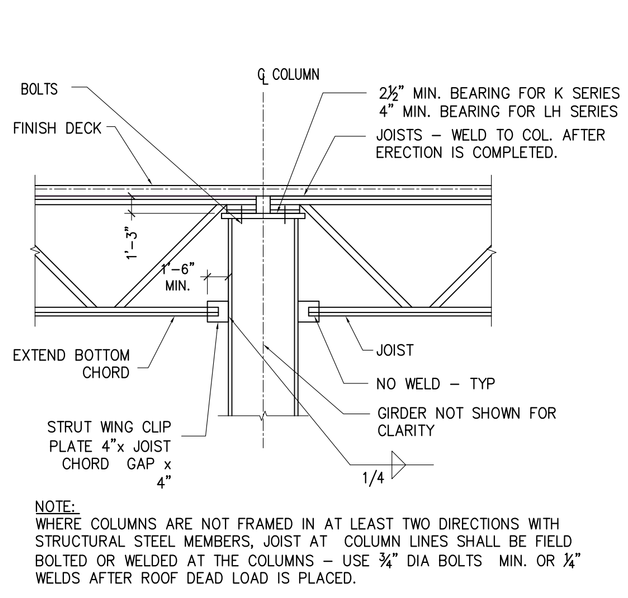


THIS DETAIL APPLIES TO "LH" AND "DLH" SERIES JOISTS.

12 CONCENTRATED LOAD REINFORCING
S-302 SCALE: N.T.S.

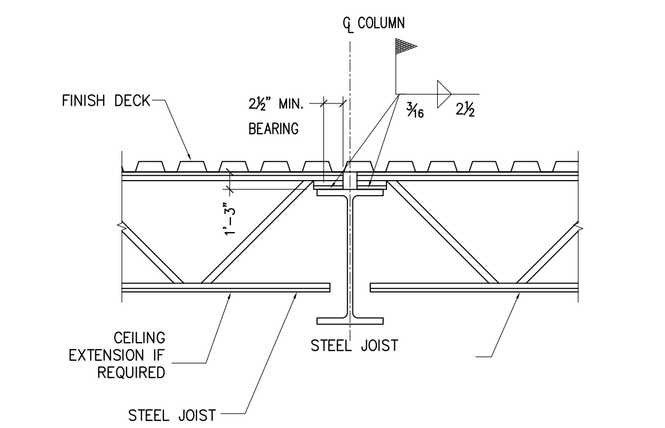


13 TYPICAL DECK SUPPORT AT COLUMN
S-302 SCALE: N.T.S.



NOTE:
WHERE COLUMNS ARE NOT FRAMED IN AT LEAST TWO DIRECTIONS WITH STRUCTURAL STEEL MEMBERS, JOIST AT COLUMN LINES SHALL BE FIELD BOLTED OR WELDED AT THE COLUMNS — USE ¾" DIA BOLTS MIN. OR ¼" WELDS AFTER ROOF DEAD LOAD IS PLACED.

14 JOIST CONNECTION AT COLUMN
S-302 SCALE: N.T.S.



11 "K" SERIES JOIST BEARING ON STEEL BEAM
S-302 SCALE: N.T.S.

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DOB BSCAN

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PARTNERS FOR ARCHITECTURE
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NORTH

NEW SCHOOL FOR:
BASIS INDEPENDENT SCHOOLS
556 COLUMBIA STREET
BROOKLYN, NY 11231

FRAMING SECTIONS AND DETAILS

SEAL & SIGNATURE

STATE OF NEW YORK — JOSEPH BARRETTA — PROFESSIONAL ENGINEER

DATE:	09/26/2013
PROJECT NO:	13-607
DRAWN BY:	BT
CHECKED BY:	RS
DRAWING NO:	S-302.00

CAD FILE NO:
C:\Users\User\Documents\13-607 Basis Brooklyn-PFA-15-CENTRAL_p5dtl.vt

BASEMENT EGRESS		
CODE REF	COMPONENT	(AS PER CODE)
NYCBC 1004.1.2	OCCUPANT LOAD	0 OCCUPANTS - PARKING, LOBBY, STORAGE, MECHANICAL ROOMS
NYCBC 1005.1	DOORS	
	REQUIRED	N/A
	PROPOSED	4 DOORS @ 36 INCHES EACH = **144 INCHES**
NYCBC 1005.1	STAIRWAYS	
	REQUIRED	NOT AT GRADE STREET LEVEL
	PROPOSED	N/A

EGRESS WITH DATA		
	MINIMUM INCHES / OCC. REQUIRED	INCHES / OCC. PROPOSED
STAIR WIDTH	NONE - FLOOR AT STREET LEVEL	NONE
DOOR WIDTH	0.2"/OCC.	4 DOORS AT 36" EACH = 144"

TOTAL CAPACITY OF DOORS
4 DOORS AT 36" WIDE EACH TOTAL OCCUPANTS ALLOWED = 720 OCCUPANTS
TOTAL OCCUPANTS PROPOSED = 0 OCCUPANTS (PARKING + STORAGE)

FLOOR AREA CALC.	
FLOOR	**AREA**
BASEMENT	1,923 S.F.
LEVEL 1	23,741 S.F.
LEVEL 2	13,524 S.F.
LEVEL 3	14,977 S.F.
LEVEL 4	13,606 S.F.
LEVEL 5	15,124 S.F.
TOTAL AREA	82,895 S.F.

BAY STREET
NARROW STREET - 50 FEET

TRAFFIC DIRECTION

241'-9"

100'-10"

99'-2"

244'-6"

PARKING ENTRY

CURB CUT

PLAZA
+12'-00"

99' - 0"
11 SPACES @ 9'-0" X 18'-0"

SES/ UTILITY
734 SF | S-2 | - | 3B

PROPOSED NON-COMBUSTIBLE
5 STORIED BUILDING
(OFF-SITE CONSTRUCTION)
+75'-00"

PROPOSED NON-COMBUSTIBLE
5 STORIED BUILDING
72' - 0"
8 SPACES @ 9'-0"
+75'-00"

PROPOSED NON-COMBUSTIBLE
5 STORIED BUILDING
(OFF-SITE CONSTRUCTION)
+75'-00"

4" C.I. and vented above roof line

4" Schedule 40 PVC 20-slot pipe located beneath slab, backfilled in crushed stone

LOBBY
526 SF | E | - | 3

SECURITY
407 SF | B | 2 | 3B

VESTIBULE
122 SF | E | - | 3

M.R.
135 SF | F-2 | - | 3B

UP

63' - 0"
7 SPACES @ 9'-0" X 18'-0"

56' - 4"
6 SPACES @ 9'-0" X 18'-0"

27' - 0"
3 SPACES @ 9'-0" X 18'-0"

TOTAL PARKING SPACES: 60

PROPOSED NON-COMBUSTIBLE
1 STORIED BUILDING
+38'-00"

PROPOSED NON-COMBUSTIBLE
1 STORIED BUILDING
+35'-00"

90' - 0"
9 SPACES @ 9'-0" X 18'-0"

45' - 0"
5 SPACES @ 9'-0" X 18'-0"

PROPOSED NON-COMBUSTIBLE
1 STORIED BUILDING
+30'-00"

+12'-00"

EXISTING TWO STORY CONCRETE BLOCK BUILDING

EXISTING ONE STORY CONCRETE BLOCK BLDG

PROPERTY LINE

CONCRETE SIDEWALK

EARTH

CONCRETE CURB

SIDEWALK

CONCRETE

STONE CURB

STEEL CURB

FENCE 0.2'S

FENCE 0.8'W WALL 0.5'E

NCE 0.6'W ALL 0.5'E

COLUMBIA STREET
WIDE STREET - 80 FEET

SIGOURNEY STREET
NARROW STREET - 50 FEET

1 GROUND LEVEL PLAN

SCALE 3/32" = 1'-0"

BASIS INDEPENDENT SCHOOLS

DESCRIPTION	ISSUED TO	DATE	ISS/REV

PARTNERS FOR ARCHITECTURE
48 UNION STREET,
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NEW CONSTRUCTION FOR: BASIS INDEPENDENT SCHOOLS

556 COLUMBIA STREET
BROOKLYN, NY 11231

BASEMENT FLOOR PLAN

SEAL & SIGNATURE

DATE:	08.19.2013
PROJECT NO.:	13-607
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Table 1A. **Volatile Organic Compounds (VOCs) in Soil Boring Samples;** USEPA Method 8260; collected **July 31, August 1, and October 1-2, 2013**; 556 Columbia Street, Brooklyn, New York; PVE Sheffler File #560896

				Sample Identification																							
Chemical Constituent	CAS Number	NYSDEC Limit[1]	NYSDEC Limit[3]	GB-1 (0-6')	GB-2 (0-4')	GB-3 (0-4')	GB-4 (0-1.5')	GB-5 (0-4')	GB-6 (0-4')	GB-7 (0-4')	GB-8 (0-4')	GB-9 (0-6')	GB-10 (0-8')	GB-11 (0-4')	GB-12 (0-4')	GB-13 S-1 (1-3')	GB-13 S-2 (4-6')	GB-18 S-1 (1-3')	GB-18 S-2 (4-6')	GB-23 S-1 (1-3')	GB-23 S-2 (4-6')	GB-43 S-1 (1-3')	GB-43 S-2 (4-6')	GB-44 S-1 (1-3')	GB-44 S-2 (4-6')	GB-45 S-1 (1-3')	GB-45 S-2 (4-6')
Volatile Organic Compounds																											
1,1,1,2-Tetrachloroethane	630-20-6	NE	NE	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
1,1,1-Trichloroethane	71-55-6	680	100,000	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
1,1,2-Trichloroethane	79-00-5	NE	NE	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
1,1-Dichloroethane	75-34-3	270	26,000	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
1,1-Dichloroethene	75-35-4	330	100,000	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
1,2,4-Trichlorobenzene	120-82-1	NE	NE	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
1,2,4-Trimethylbenzene	95-63-6	3,600	52,000	1.1 U	4.1	2.2 U	1.2 U	1.6	1.1 U	1.4 U	1.9	1.2 U	1.1 U	2.2	1.5	1.2 U	1.9 U	2.3 U	2.8	1.2 U	6.9	39	5.6	4.8	1.2	6	1.6 U
1,2-Dichlorobenzene	95-50-1	1,100	100,000	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
1,2-Dichloroethane	107-06-2	20	3,100	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
1,2-Dichloropropane	78-87-5	NE	NE	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
1,3,5-Trimethylbenzene	108-67-8	8.4	52	1.1 U	2.3	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.7	1.1 U	1.2 U	1.9 U	2.3 U	2.4	1.2 U	5.4	**25**	4.3	2.1 U	1.1 U	4.4	1.6 U
1,3-Dichlorobenzene	541-73-1	2,400	49,000	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
1,4-Dichlorobenzene	106-46-7	1,800	13,000	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
2-Butanone (MEK)	78-93-3	120	100,000	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	16	4.4	21	5.5	**130**	21	**140**	9.2	27	45
2-Chloroethyl vinyl ether	110-75-8	NE	NE	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
2-Chlorotoluene	95-49-8	NE	NE	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
2-Hexanone	591-78-6	NE	NE	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	17	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
4-Methyl-2-pentanone (MIBK)	108-10-1	NE	NE	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	12	1.2 U	10	1.1 U	2.7 U	1.6 U
Acetone	67-64-1	50	100,000	**160**	**1,900**	**170**	**110**	**96**	**140** E	6.9 U	**200**	6.2 U	5.7 U	**350**	**190**	**61**	9.6 U	**130**	**140**	**130** D	**160**	**680** D	**61** D	**2500** D	**620** D	**290** D	22 D
Benzene	71-43-2	60	4,800	1.1 U	1.6	2.2 U	1.2 U	1.4	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	3.7	1.2 U	8.5	2.7 U	1.2 U	3	3.5	2.7 U	1.6 U
Benzyl chloride	100-44-7	NE	NE	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
Bromobenzene	108-86-1	NE	NE	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
Bromodichloromethane	75-27-4	NE	NE	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
Bromoform	75-25-2	NE	NE	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
Bromomethane	74-83-9	NE	NE	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
Carbon disulfide	75-15-0	NE	NE	4.6	14.0	2.2 U	1.9	1.4	6.6	1.4 U	9.5	1.2 U	1.3	4.2	2.0	1.2 U	1.9 U	2.3 U	2.4	1.2 U	31	8.7	14	2.1 U	3.7	4.6	3
Carbon tetrachloride	56-23-5	760	2,400	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
Chlorobenzene	108-90-7	1,100	100,000	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
Chlorobromomethane	74-97-5	NE	NE	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
Chlorodibromomethane	124-48-1	NE	NE	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
Chloroethane	75-00-3	NE	NE	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
Chloroform	67-66-3	370	49,000	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	5.4	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
Chloromethane	74-87-3	NE	NE	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
cis-1,2-Dichloroethene	156-59-2	250	100,000	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
cis-1,3-Dichloropropene	10061-01-5	NE	NE	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
Dibromomethane	74-95-3	NE	NE	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
Dichlorodifluoromethane	75-71-8	NE	NE	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
Ethyl methacrylate	97-63-2	NE	NE	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
Ethylbenzene	100-41-4	1,000	41,000	1.1 U	1.6	2.2 U	1.2 U	2.4	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	3	9.6	1.2 U	2.2	1.1 U	2.7 U	1.6 U
Hexachlorobutadiene	87-68-3	NE	NE	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
Isopropylbenzene	98-82-8	NE	NE	1.1 U	4.1	2.2 U	1.2 U	1.7	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	3.5	21	3.6	1.2 U	12	1.3	9.2	1.6 U
Methyl tert-butyl ether	1634-04-4	930	100,000	1.1 U	13.0	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	64.0	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	21	8.3	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
Methylene Chloride	75-09-2	50	100,000	1.1 U	1.3 U	2.2 U	1.2 U	1.3	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	16	1.2 U	5.1	9.3	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
m-Xylene & p-Xylene	136777-61-2	260	100,000	2.3 U	3.9	4.3 U	2.4 U	3.7	2.3 U	2.8 U	2.5 U	2.5 U	2.3 U	2.7 U	2.3 U	2.4 U	3.8 U	4.7 U	4.4 U	2.3 U	12	27	3	16	2.3 U	5.5 U	3.3 U
Naphthalene	91-20-3	12,000	100,000	1.1 U	25.0	2.2 U	9.8	10.0	14.0	1.4 U	9.9	1.2 U	1.1 U	29.0	16.0	1.2 U	1.9 U	2.3 U	26	1.2 U	15	28	3.9	7.5	1.1 U	15	7.1
n-Butylbenzene	104-51-8	12,000	100,000	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	5.1	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
N-Propylbenzene	103-65-1	3,900	100,000	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	5.5	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
o-Xylene	95-47-6	260	100,000	2.3 U	3.0	4.3 U	2.4 U	2.4 U	2.9	2.8 U	2.5 U	2.5 U	2.3 U	2.7 U	2.3 U	2.4 U	3.8 U	4.7 U	4.4 U	2.3 U	5.4	26	3.5	12	2.3 U	5.5 U	3.3 U
p-Isopropyltoluene	99-87-6	NE	NE	1.1 U	4.5	2.2 U	2.3	3.5	1.1 U	1.4 U	2.2	1.2 U	1.1 U	2.4	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	20	8.9	2.8	33	12	17	1.6 U
sec-Butylbenzene	135-98-8	11,000	100,000	1.1 U	1.3 U	2.2 U	1.2 U	1.3	1.1 U	1.4 U	1.3	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	3.1	5.4	1.8	2.1 U	1.1 U	2.7 U	1.6 U
Styrene	100-42-5	NE	NE	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
tert-Butylbenzene	98-06-6	5,900	100,000	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
Tetrachloroethene	127-18-4	1,300	19,000	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
Toluene	108-88-3	700	100,000	1.1 U	2.6	2.2 U	1.2 U	1.8	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	5.6	1.2 U	11	3.7	1.2 U	13	2.7	8.7	1.6 U
trans-1,2-Dichloroethene	156-60-5	190	100,000	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
trans-1,3-Dichloropropene	10061-02-6	NE	NE	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
Trichloroethene	79-01-6	470	21,000	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
Trichlorofluoromethane	75-69-4	NE	NE	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
Vinyl acetate	108-05-4	NE	NE	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
Vinyl chloride	75-01-4	20	900	1.1 U	1.3 U	2.2 U	1.2 U	1.2 U	1.1 U	1.4 U	1.3 U	1.2 U	1.1 U	1.3 U	1.1 U	1.2 U	1.9 U	2.3 U	2.2 U	1.2 U	2.1 U	2.7 U	1.2 U	2.1 U	1.1 U	2.7 U	1.6 U
Xylenes, Total	1330-20-7	260	100,000	2.3 U	7.0	4.3 U	2.4	4.9	3.8	2.8 U	2.5 U	2.5 U	2.3 U	4.0	2.3 U	2.4 U	3.8 U	4.7 U	4.4 U	2.3 U	17	53	6.5	28	2.3 U	6.3	3.3 U

Notes:

1 - Standards are for soils according NYSDEC Part 375, *Unrestricted Use Soil Cleanup Objectives* ;

3 - Standards are for soils according NYSDEC Part 375, *Restricted-Residential Use Soil Cleanup Objectives* ;

All concentrations are in ug/kg (ppb) unless otherwise indicated;

Boldface type designates those compounds detected at concentrations exceeding NYSDEC Unrestricted Use standards;

Boldface and gray-highlighted type designates those compounds detected at concentrations exceeding NYSDEC Restricted-Residential Limits;

NE = No standard established;

MDL = Method Detection Limit.

U = The analyte was analyzed for but not detected at or above the □stated limit.

J = Result is less than the RL but greater than or equal to the MDL□and the concentration is an approximate value.

D = Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution may be flagged with a D.

* = LCS or LCSD exceeds the control limits

Table 1B. **Semi-Volatile Organic Compounds (SVOCs) in Soil Boring Samples:** USEPA Method 8270
collected **July 31, August 1, and October 2-3, 2013**: 556 Columbia Street, Brooklyn, New York
PVE Sheffler File #560896

Sample Identification

Chemical Constituent	CAS Number	NYSDEC Limit[1]	NYSDEC Limit[3]	GB-1 (0-6')	GB-2 (0-4')	GB-3 (0-4')	GB-4 (0-1.5')	GB-5 (0-4')	GB-6 (0-4')	GB-7 (0-4')	GB-8 (0-4')	GB-9 (0-6')	GB-10 (0-6')	GB-11 (0-4')	GB-12 (0-4')
Semi-Volatile Organic Compounds															
1,2,4-Trichlorobenzene	120-82-1	NE	NE	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
2,2'-oxybis[1-chloropropane]	108-60-1	NE	NE	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
2,4,5-Trichlorophenol	95-95-4	NE	NE	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
2,4,6-Trichlorophenol	88-06-2	NE	NE	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
2,4-Dichlorophenol	120-83-2	NE	NE	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
2,4-Dimethylphenol	105-67-9	NE	NE	390 U	420 U	420 U	370 U	370 U	810	440 U	390 U	430 U	380 U	1,200	240 J
2,4-Dinitrophenol	51-28-5	NE	NE	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
2,4-Dinitrotoluene	121-14-2	NE	NE	390 U	420 U	420 U	370 U	370 U	230 J	440 U	390 U	430 U	380 U	390 U	410 U
2,6-Dinitrotoluene	606-20-2	NE	NE	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
2-Chloronaphthalene	91-58-7	NE	NE	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
2-Chlorophenol	95-57-8	NE	NE	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
2-Methylnaphthalene	91-57-6	NE	NE	720	1,700	420 U	370 U	370 U	6,800 E	440 U	350 J	430 U	560	6,300 E	1,900
2-Methylphenol	95-48-7	330	100,000	390 U	420 U	420 U	370 U	370 U	**540**	440 U	390 U	430 U	380 U	580	410 U
2-Nitroaniline	88-74-4	NE	NE	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
2-Nitrophenol	88-75-5	NE	NE	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
3 & 4 Methylphenol	15831-10-4	NE	NE	230 J	420 U	420 U	370 U	370 U	1,800	440 U	390 U	430 U	380 U	1,900	530
3,3'-Dichlorobenzidine	91-94-1	NE	NE	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
4,6-Dinitro-2-methylphenol	534-52-1	NE	NE	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
4-Bromophenyl phenyl ether	101-55-3	NE	NE	309 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
4-Chloro-3-methylphenol	59-50-7	NE	NE	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
4-Chloroaniline	106-47-8	NE	NE	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
4-Chlorophenyl phenyl ether	7005-72-3	NE	NE	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
4-Nitroaniline	100-01-6	NE	NE	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
4-Nitrophenol	100-02-7	NE	NE	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
Acenaphthene	83-32-9	20,000	100,000	1,500	840	500 U	270 J	370 U	15,000 J	440 U	550	150 J	1,000	6,000 J	2,500
Acenaphthylene	208-96-8	100,000	100,000	340 J	420 U	420 U	220 J	370 U	2,300	440 U	200 J	430 U	320 J	970	600
Anthracene	120-12-7	100,000	100,000	3,600	420 U	570	1,000	370 U	380 U	160 J	2,200	530	2,800	390 U	8,000 J
Benzo[a]anthracene	56-55-3	1,000	1,000	**11,000**	**8,000**	**1,600**	**3,100**	130 J	**100,000**	480	**6,000**	**1,200**	**8,600**	**40,000**	**22,000**
Benzo[a]pyrene	50-32-8	1,000	1,000	**11,000**	**6,700**	**1,400**	**3,500**	120 J	**86,000**	520	**5,900**	**1,100**	**8,800**	**35,000**	**20,000**
Benzo[b]fluoranthene	205-99-2	1,000	1,000	**11,000**	**8,100**	**1,700**	**3,800**	370 U	380 U	510	**5,300**	**1,000**	**8,500**	390 U	**20,000**
Benzo[g,h,i]perylene	191-24-2	100,000	100,000	2,200	1,800	440	820	370 U	32,000 J	330 J	1,700	540	2,400	14,000	7500 J
Benzo[k]fluoranthene	207-08-9	800	3,900	**9,600**	**6,500**	**1,000**	**3,500**	370 U	**85,000**	400 J	**5,700**	**1,100**	**8,200**	**26,000**	**15,000**
Bis(2-chloroethoxy)methane	111-91-1	NE	NE	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
Bis(2-chloroethyl)ether	111-44-4	NE	NE	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
Bis(2-ethylhexyl) phthalate	117-81-7	NE	NE	240 J	420 U	420 U	370 U	370 U	390,000	340 J	930	430 U	2,000	390 U	2200
Butyl benzyl phthalate	85-68-7	NE	NE	390 U	420 U	420 U	370 U	370 U	380 U	440 U	150 J	430 U	380 U	390 U	410 U
Carbazole	86-74-8	NE	NE	2,000	420 U	160 J	460	370 U	18000 J	440 U	890	190 J	1,400	9,500	4,200
Chrysene	218-01-9	1,000	3,900	**12,000**	**9,700**	**2,000**	**3,300**	130 J	**100,000**	550	**6,200**	**1,400**	**9,400**	**39,000**	**22,000**
Dibenz(a,h)anthracene	53-70-3	330	330	250 J	360 J	420 U	**410**	370 U	**2,700**	440 U	**760**	430 U	**1,700**	**4,300**	**2,900**
Dibenzofuran	132-64-9	7,000	59,000	1,200	880	420 U	320 J	370 U	**17,000** J	440 U	620	270 J	840	**7,600** J	3,100
Diethyl phthalate	84-66-2	NE	NE	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
Dimethyl phthalate	131-11-3	NE	NE	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
Di-n-butyl phthalate	84-74-2	NE	NE	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	130 J	110 J	390 U	410 U
Di-n-octyl phthalate	117-84-0	NE	NE	180 J	420 U	420 U	370 U	370 U	660	440 U	390 U	430 U	380 U	390 U	410 U
Fluoranthene	206-44-0	100,000	100,000	25,000	21,000 U	3,900	5,700	240 J	**240,000**	820	12,000	3,000	19,000	86,000	48,000
Fluorene	86-73-7	30,000	100,000	1,700	900	300 J	320 J	370 U	25,000 J	440 U	830	190 J	1,100	10,000	3,900 J
Hexachlorobenzene	118-74-1	330	1,200	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
Hexachlorobutadiene	87-68-3	NE	NE	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
Hexachlorocyclopentadiene	77-47-4	NE	NE	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
Hexachloroethane	67-72-1	NE	NE	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
Indeno[1,2,3-cd]pyrene	193-39-5	500	500	**3,000**	**2,000**	**510**	**1,100**	370 U	**40,000**	440 U	**2,100**	**580**	**3,100**	**16,000**	**8,900**
Isophorone	78-59-1	NE	NE	390 U	420 U	420	370 U	370 U	380 U	440 U	390 U	430 U	380	390 U	410 U
Naphthalene	91-20-3	12,000	100,000	1,600	2,900	350 J	460	370 U	**13,000** E	440 U	860	800	11,00	**12,000**	3,900
Nitrobenzene	98-95-3	NE	NE	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
N-Nitrosodi-n-propylamine	621-64-7	NE	NE	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
N-Nitrosodiphenylamine	86-30-6	NE	NE	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
Pentachlorophenol	87-86-5	800	6,700	**2,900**	**3,200**	3,100 U	**2,800**	2,800 U	2,900 U	3,300 U	3,000 U	3,200 U	2800 U	2,900 U	3,000 U
Phenanthrene	85-01-8	100,000	100,000	18,000	18,000	1,900	3,500	180 J	**190,000**	590	6,800	2,400	11,000	81,000	36,000
Phenol	108-95-2	330	100,000	390 U	420 U	420 U	370 U	370 U	380 U	440 U	390 U	430 U	380 U	390 U	410 U
Pyrene	129-00-0	100,000	100,000	20,000	16,000	3,300	5,000	180 J	**190,000**	680	9,200	2,500	15,000	69,000	38,000 U
TOTAL SVOCs	-	-	-	99,220	11,760	16,800	37,810	980	1,556,840	5,220	76,920	17,080	106,210	465,380	233,370

Chemical Constituent	GB-13 S-1 (1-3')	GB-13 S-2 (4-6')	GB-14 S-1 (1-3')	GB-14 S-2 (4-6')	GB-15 S-1 (1-3')	GB-15 S-2 (4-6')	GB-16 S-1 (1-3')	GB-16 S-2 (4-6')	GB-17 S-1 (1-3')	GB-17 S-2 (4-6')	GB-18 S-1 (1-3')	GB-18 S-2 (4-6')	GB-19 S-1 (1-3')	GB-19 S-2 (4-6')
Semi-Volatile Organic Compounds														
1,2,4-Trichlorobenzene	400 U	350 U	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	460 U	570 U	400 U
2,2'-oxybis[1-chloropropane]	400 U	350 U	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	460 U	570 U	400 U
2,4,5-Trichlorophenol	400 U	350 U	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	460 U	570 U	400 U
2,4,6-Trichlorophenol	400 U	350 U	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	460 U	570 U	400 U
2,4-Dichlorophenol	400 U	350 U	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	460 U	570 U	400 U
2,4-Dimethylphenol	400 U	350 U	240 J	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	460 U	570 U	400 U
2,4-Dinitrophenol	400 U*	350 U*	390 U*	1900 U*	380 U*	380 U*	400 U	670 U	2000 U*	490 U*	470 U*	460 U*	570 U*	400 U*
2,4-Dinitrotoluene	400 U*	350 U*	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U*	460 U*	570 U	400 U
2,6-Dinitrotoluene	400 U	350 U	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	460 U	570 U	400 U
2-Chloronaphthalene	400 U	350 U	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	460 U	570 U	400 U
2-Chlorophenol	400 U	350 U	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	460 U	570 U	400 U
2-Methylnaphthalene	210 J	280 J	1900	1900 U	380 U	350 J	300 J	670 U	1700 J	490 U	360 J	2500	290 J	400 U
2-Methylphenol	400 U	350 U	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	460 U	570 U	400 U
2-Nitroaniline	400 U	350 U	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	460 U	570 U	400 U
2-Nitrophenol	400 U*	350 U*	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U*	460 U*	570 U	400 U
3 & 4 Methylphenol	400 U	350 U	380 J	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	460 U	570 U	400 U
3,3'-Dichlorobenzidine	400 U	350 U	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	460 U	570 U	400 U
4,6-Dinitro-2-methylphenol	400 U*	350 U*	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U*	460 U*	570 U	400 U
4-Bromophenyl phenyl ether	400 U	350 U	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	460 U	570 U	400 U
4-Chloro-3-methylphenol	400 U	350 U	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	460 U	570 U	400 U
4-Chloroaniline	400 U	350 U	390 E	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	460 U	570 U	400 U
4-Chlorophenyl phenyl ether	400 U	350 U	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	460 U	570 U	400 U
4-Nitroaniline	400 U	350 U	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	460 U	570 U	400 U
4-Nitrophenol	400 U*	350 U*	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U*	540 *	570 U	400 U
Acenaphthene	410	420	2600	630 J	380 U	540	400 U	670 U	2700	200 J	470 U	13000 D	570 U	400 U
Acenaphthylene	190 J	350 U	450	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	400 J	410 J	400 U
Anthracene	1500	940	6000 J D	1500 J	380 U	1200	400 U	670 U	6400	400 J	3600	15000 D	810	400 U
Benzo[a]anthracene	**4400** D	**3000**	**15000** D	**4100**	380 U	**3400** J D	180 J	1000	**15000**	**1100**	**1500**	**8200** D	**3000**	310 J
Benzo[a]pyrene	**4000** D	**2800**	**14000** D	**3900**	380 U	**3700**	160 J	1000	**13000**	**1000**	**1300**	**7200** D	**3200**	350 J
Benzo[b]fluoranthene	**2900** J * D	**3500** * D	**15000** D	**3800**	380 U	**3300** J D	140 J	910	**17000**	**1200**	**1500** *	**9000** * D	**5600**	370 J
Benzo[g,h,i]perylene	1300	810	2500	870 J	380 U	730	400 U	440 J	2100	280 J	330 J	1800	840	200 J
Benzo[k]fluoranthene	**4100** * D	**3200** *	**16000** D	**4000**	380 U	**3600**	160 J	1000	**14000**	**1200**	**1000** *	**7900** * D	**4500**	340 J
Bis(2-chloroethoxy)methane	400 U	350 U	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	460 U	570 U	400 U
Bis(2-chloroethyl)ether	400 U	350 U	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	460 U	570 U	400 U
Bis(2-ethylhexyl) phthalate	2800 *	700 *	300 J	1900 U	380 U	400	400 U	670 U	2100	380 J	470 U*	230 J*	570 U	400 U
Butyl benzyl phthalate	400 U*	350 U*	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U*	460 U*	570 U	400 U
Carbazole	660	400	3900	1000 J	380 U	830	400 U	670 U	2600	200 J	470 U	7500 D	330 J	400 U
Chrysene	**4600** D	**2800**	**16000** D	**4200**	120 J	**3600** J D	260 J	**1100**	**15000**	**1100**	**1600**	**8800** D	**3500**	390 J
Dibenz(a,h)anthracene	**580**	**410**	**1600**	1900 U	380 U	210 J	400 U	670 U	**1400** J	490 U	470 U	**960**	**440** J	400 U
Dibenzofuran	370 J	250 J	2600	620 J	380 U	540	400 U	670 U	2100	160 J	470 U	**9400** D	420 J	400 U
Diethyl phthalate	400 U	350 U	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	460 U	570 U	400 U
Dimethyl phthalate	400 U	350 U	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	460 U	570 U	400 U
Di-n-butyl phthalate	400 U	350 U	120 J	1900 U	380 U	380 U	400 U	670 U	850 J	490 U	470 U	460 U	570 U	400 U
Di-n-octyl phthalate	400 U*	350 U*	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U*	460 U*	570 U	400 U
Fluoranthene	9400 D	6600 D	33000 D	9200	170 J	7400 D	290 J	2300	35000 D	2300	2100	30000 D	5200	680
Fluorene	500	330 J	3100	730 J	380 U	660	400 U	670 U	3800	220 J	470 U	17000 D	160 J	400 U
Hexachlorobenzene	400 U	350 U	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	460 U	570 U	400 U
Hexachlorobutadiene	400 U	350 U	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	460 U	570 U	400 U
Hexachlorocyclopentadiene	400 U*	350 U*	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U*	460 U*	570 U	400 U
Hexachloroethane	400 U	350 U	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	460 U	570 U	400 U
Indeno[1,2,3-cd]pyrene	**1500**	**950**	**3300**	1900 U	380 U	**930**	400 U	670 U	**2900**	490 U	470 U	**2200**	**1000**	400 U
Isophorone	400 U	350 U	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	460 U	570 U	400 U
Naphthalene	320 J	350 U	3600	1900 U	380 U	790	400 U	670 U	3300	310 J	1300	2600	700	400 U
Nitrobenzene	400 U	350 U	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	460 U	570 U	400 U
N-Nitrosodi-n-propylamine	400 U	270 J	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	460 U	570 U	400 U
N-Nitrosodiphenylamine	400 U	350 U	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	460 U	570 U	400 U
Pentachlorophenol	3000 U*	2700 U*	3000 U	14000 U	2800 U	2800 U	3000 U	5000 U	15000 U	3700 U	3500 U*	3500 U*	4200 U	3000 U
Phenanthrene	6600 D	4900 D	26000 D	6700	250 J	5600 D	590	340 J	30000 D	1700	880	54000 D	3200	310 J
Phenol	400 U	350 U	390 U	1900 U	380 U	380 U	400 U	670 U	2000 U	490 U	470 U	460 U	570 U	400 U
Pyrene	7200 * D	5600 * D	27000 D	7800	120 J	6000 D	240 J	1800	29000 D	1900	1200 *	21000 * D	4800 D	580
TOTAL SVOCs	54,340	38,160	194,980	49,050	660	43,780	2,300	9,900	199,950	13,650	16,670	219,230	38,400	3,530

Chemical Constituent	GB-20 S-1 (1-3')	GB-20 S-2 (4-6')	GB-21 S-1 (1-3')	GB-21 S-2 (4-6')	GB-22 S-1 (1-3')	GB-22 S-2 (4-6')	GB-23 S-1 (1-3')	GB-23 S-2 (4-6')	GB-24 S-1 (1-3')	GB-24 S-2 (4-6')	GB-25 S-1 (1-3')	GB-25 S-2 (4-6')	GB-26 S-1 (1-3')	GB-26 S-2 (4-6')
Semi-Volatile Organic Compounds														
1,2,4-Trichlorobenzene	420 U	460 U	390 U	2000 U	350 U	830 U	360 U	370 U	400 U	370 U	470 U	370 U	420 U	380 U
2,2'-oxybis[1-chloropropane]	420 U	460 U	390 U	2000 U	350 U	830 U	360 U	370 U	400 U	370 U	470 U	370 U	420 U	380 U
2,4,5-Trichlorophenol	420 U	460 U	390 U	2000 U	350 U	830 U	360 U	370 U	400 U	370 U	470 U	370 U	420 U	380 U
2,4,6-Trichlorophenol	420 U	460 U	390 U	2000 U	350 U	830 U	360 U	370 U	400 U	370 U	470 U	370 U	420 U	380 U
2,4-Dichlorophenol	420 U	460 U	390 U	2000 U	350 U	830 U	360 U	370 U	400 U	370 U	470 U	370 U	420 U	380 U
2,4-Dimethylphenol	420 U	460 U	390 U	2000 U	350 U	830 U	360 U	290 J	400 U	370 U	470 U	210 J	420 U	380 U
2,4-Dinitrophenol	420 U*	460 U*	390 U*	2000 U*	350 U*	830 U*	360 U*	370 U*	400 U*	370 U*	470 U*	370 U*	420 U*	380 U*
2,4-Dinitrotoluene	420 U	460 U	390 U	2000 U	350 U	830 U	360 U*	370 U*	400 U	370 U	470 U	370 U	420 U	380 U
2,6-Dinitrotoluene	420 U	460 U	390 U	2000 U	350 U	830 U	360 U	370 U	400 U	370 U	470 U	370 U	420 U	380 U
2-Chloronaphthalene	420 U	460 U	390 U	2000 U	350 U	830 U	360 U	370 U	400 U	370 U	470 U	370 U	420 U	380 U
2-Chlorophenol	420 U	460 U	390 U	2000 U	350 U	830 U	360 U	370 U	400 U	370 U	470 U	370 U	420 U	380 U
2-Methylnaphthalene	420 U	820	560	8900	240 J	830 U	360 U	490	400 U	370 U	530	1500	420 U	1200
2-Methylphenol	420 U	460 U	390 U	2000 U	350 U	830 U	360 U	370 U	400 U	370 U	470 U	370 U	420 U	380 U
2-Nitroaniline	420 U	460 U	390 U	2000 U	350 U	830 U	360 U	370 U	400 U	370 U	470 U	370 U	420 U	380 U
2-Nitrophenol	420 U	460 U	390 U	2000 U	350 U	830 U	360 U*	370 U*	400 U	370 U	470 U	370 U	420 U	380 U
3 & 4 Methylphenol	470	2000	390 U	2000 U	350 U	2900	970	370 J	400 U	370 U	470 U	440	550	1700
3,3'-Dichlorobenzidine	420 U	460 U	390 U	2000 U	350 U	830 U	360 U	370 U	400 U	370 U	470 U	370 U	420 U	380 U
4,6-Dinitro-2-methylphenol	420 U*	460 U*	390 U	2000 U	350 U	830 U	360 U*	370 U*	400 U	370 U*	470 U*	370 U*	420 U*	380 U*
4-Bromophenyl phenyl ether	420 U	460 U	390 U	2000 U	350 U	830 U	360 U	370 U	400 U	370 U	470 U	370 U	420 U	380 U
4-Chloro-3-methylphenol	420 U	460 U	390 U	2000 U	350 U	830 U	360 U	370 U	400 U	370 U	470 U	370 U	420 U	380 U
4-Chloroaniline	420 U	460 U	390 U	2000 U	350 U	830 U	360 U	370 U	400 U	370 U	470 U	370 U	420 U	380 U
4-Chlorophenyl phenyl ether	420 U	460 U	390 U	2000 U	350 U	830 U	360 U	370 U	400 U	370 U	470 U	370 U	420 U	380 U
4-Nitroaniline	420 U	460 U	390 U	2000 U	350 U	830 U	360 U	370 U	400 U	370 U	470 U	370 U	420 U	380 U
4-Nitrophenol	420 U	460 U	390 U	2000 U	350 U	830 U	360 U*	370 U*	400 U	370 U	470 U	370 U	420 U	380 U
Acenaphthene	420 U	2000	270 J	11000	160 J	460 J	170 J	340 J	400 U	370 U	500	3700	310 J	3800 J D
Acenaphthylene	420 U	460 U	150 J	2000 U	190 J	830 U	360 U	370 U	400 U	370 U	470 U	540	420 U	450
Anthracene	420 U	4500	620	1300 J	120 J	830 U	410	370 U	160 J	170 J	620	7300 J D	430	7200 D
Benzo[a]anthracene	420 U	**5200** D	390 U	**1100** J	530	830 U	**1200**	260 J	360 J	340 J	**2800**	**18000** D	360 J	**14000** D
Benzo[a]pyrene	420 U	**4700** D	390 U	**1000** J	770	830 U	580	**1600**	310 J	380	**3600**	**17000** D	380 J	**12000** D
Benzo[b]fluoranthene	420 U	**3600** J D	390 U	**1100** J	590	830 U	540 *	**2400** *	400 J	400	**4600**	**16000** D	250 J	**8700** D
Benzo[g,h,i]perylene	420 U	1100	390 U	2000 U	140 J	830 U	160 J	660	400 U	120 J	440 J	2500	130 J	1600
Benzo[k]fluoranthene	420 U*	**4500** J * D	390 U	**1200** J	760	260 J	750 *	**2200** *	250 J	630 *	**4200** *	**20000** * D	510 *	**12000** * D
Bis(2-chloroethoxy)methane	420 U	460 U	390 U	2000 U	350 U	830 U	360 U	370 U	400 U	370 U	470 U	370 U	420 U	380 U
Bis(2-chloroethyl)ether	420 U	460 U	390 U	2000 U	350 U	830 U	360 U	370 U	400 U	370 U	470 U	370 U	420 U	380 U
Bis(2-ethylhexyl) phthalate	420 U	460 U	390 U	28000 D	350 U	830 U	360 U*	1100 *	400 U	370 U	470 U	480	420 U	380 U
Butyl benzyl phthalate	420 U	460 U	390 U	2000 U	350 U	830 U	360 U*	370 U*	400 U	370 U	470 U	370 U	420 U	380 U
Carbazole	420 U	1200	390 U	2000 U	350 U	830 U	360 U	370 U	400 U	370 U	280 J	3300 J D	420 U	2900
Chrysene	420 U	**5300** D	390 U	**1100** J	600	390 J	660	**1800**	540	720	**3200**	**19000** D	520	**14000** D
Dibenz(a,h)anthracene	420 U	**470**	140 J	2000 U	350 U	830 U	360 U	320 J	400 U	370 U	310 J	**1700**	420 U	**1300**
Dibenzofuran	420 U	2300	250 J	6400	350 U	830 U	360	240 J	400 U	370 U	540	3200	310 J	2800
Diethyl phthalate	420 U	460 U	390 U	2000 U	350 U	830 U	360 U	370 U	400 U	370 U	470 U	370 U	420 U	380 U
Dimethyl phthalate	420 U	460 U	390 U	2000 U	350 U	260 J	360 U	370 U	400 U	370 U	470 U	370 U	420 U	380 U
Di-n-butyl phthalate	420 U	460 U	390 U	2000 U	350 U	830 U	360 U	370 U	400 U	370 U	470 U	370 U	420 U	380 U
Di-n-octyl phthalate	420 U*	460 U*	390 U	2000 U	350 U	830 U	360 U*	370 U*	400 U	370 U*	470 U*	370 U*	420 U*	380 U*
Fluoranthene	420 U	15000 D	290 J	3300	400	490 J	2400	370 U	850	810	6200 D	42000 D	1200	38000 D
Fluorene	420 U	3000	320 J	5700	350 U	830 U	330 J	260 J	400 U	370 U	360 J	3600 J D	360 J	5200
Hexachlorobenzene	420 U	460 U	390 U	2000 U	350 U	830 U	360 U	370 U	400 U	370 U	470 U	370 U	420 U	380 U
Hexachlorobutadiene	420 U	460 U	390 U	2000 U	350 U	830 U	360 U	370 U	400 U	370 U	470 U	370 U	420 U	380 U
Hexachlorocyclopentadiene	420 U*	460 U*	390 U	2000 U	350 U	830 U	360 U*	370 U*	400 U	370 U*	470 U*	370 U*	420 U*	380 U*
Hexachloroethane	420 U	460 U	390 U	2000 U	350 U	830 U	360 U	370 U	400 U	370 U	470 U	370 U	420 U	380 U
Indeno[1,2,3-cd]pyrene	420 U	**1300**	390 U	2000 U	350 U	830 U	360 U	**720**	400 U	370 U	**600**	**3400**	420 U	**2200**
Isophorone	420 U	460 U	390 U	2000 U	350 U	830 U	360 U	370 U	400 U	370 U	470 U	370 U	420 U	380 U
Naphthalene	1100	5300 D	1300	2000 U	320 J	640 J	350 J	990	400 U	370 U	4700	3700	690	3000
Nitrobenzene	420 U	460 U	390 U	2000 U	350 U	830 U	360 U	370 U	400 U	370 U	470 U	370 U	420 U	380 U
N-Nitrosodi-n-propylamine	420 U	460 U	390 U	2000 U	350 U	830 U	360 U	370 U	400 U	370 U	470 U	370 U	420 U	380 U
N-Nitrosodiphenylamine	420 U	460 U	390 U	2000 U	350 U	830 U	360 U	370 U	400 U	370 U	470 U	370 U	420 U	380 U
Pentachlorophenol	3200 U	3500 U	2900 U	15000 U	2600 U	6200 U	2700 U*	2800 U*	3000 U	2800 U	3500 U	2800 U	3200 U	2900 U
Phenanthrene	420 U	14000 D	2500	9000	590	590 J	2100	370 U	650	800	2800	28000 D	940	30000 D
Phenol	420 U	460 U	390 U	2000 U	350 U	830 U	360 U	370 U	400 U	370 U	470 U	370 U	420 U	380 U
Pyrene	420 U	12000 D	390 U	2900	690	420 J	1400 *	370 U*	730	720	4400 D	34000 D	940	28000 D
TOTAL SVOCs	1,570	88,290	6,400	82,000	6,100	6,410	12,380	14,040	4,250	5,090	40,680	229,570	7,880	190,050

Chemical Constituent	GB-43 S-1 (1-3')	GB-43 S-2 (4-6')	GB-44 S-1 (1-3')	GB-44 S-2 (4-6')	GB-45 S-1 (1-3')	GB-45 S-2 (4-6')
Semi-Volatile Organic Compounds						
1,2,4-Trichlorobenzene	390 U	360 U	380 U	380 U	370 U	470 U
2,2'-oxybis[1-chloropropane]	390 U	360 U	380 U	380 U	370 U	470 U
2,4,5-Trichlorophenol	390 U	360 U	380 U	380 U	370 U	470 U
2,4,6-Trichlorophenol	390 U	360 U	380 U	380 U	370 U	470 U
2,4-Dichlorophenol	390 U	360 U	600	380 U	370 U	470 U
2,4-Dimethylphenol	390 U	360 U	230 J	380 U	370 U	470 U
2,4-Dinitrophenol	390 U*	360 U*	380 U*	380 U*	370 U*	470 U*
2,4-Dinitrotoluene	390 U	360 U	380 U	380 U*	370 U*	470 U*
2,6-Dinitrotoluene	390 U	360 U	380 U	380 U	370 U	470 U
2-Chloronaphthalene	390 U	360 U	380 U	380 U	370 U	470 U
2-Chlorophenol	390 U	360 U	380 U	380 U	370 U	470 U
2-Methylnaphthalene	210 J	360 U	2600	380 U	190 J	240 J
2-Methylphenol	390 U	360 U	320 J	380 U	370 U	470 U
2-Nitroaniline	390 U	360 U	380 U	380 U	370 U	470 U
2-Nitrophenol	390 U	360 U	380 U	380 U*	370 U*	470 U*
3 & 4 Methylphenol	380 J	200 J	1000	380 U	530	470 U
3,3'-Dichlorobenzidine	390 U	360 U	380 U	380 U	370 U	470 U
4,6-Dinitro-2-methylphenol	390 U*	360 U*	380 U*	380 U*	370 U*	470 U*
4-Bromophenyl phenyl ether	390 U	360 U	380 U	380 U	370 U	470 U
4-Chloro-3-methylphenol	390 U	360 U	380 U	380 U	370 U	470 U
4-Chloroaniline	390 U	360 U	380 U	380 U	370 U	470 U
4-Chlorophenyl phenyl ether	390 U	360 U	380 U	380 U	370 U	470 U
4-Nitroaniline	390 U	360 U	380 U	380 U	370 U	470 U
4-Nitrophenol	390 U	360 U	380 U	380 U*	370 U*	470 U*
Acenaphthene	200 J	360 U	380 U	380 U	370 U	470 U
Acenaphthylene	390 U	360 U	380 U	380 U	370 U	470 U
Anthracene	1000	360 U	3800 D	380 U	370 U	390 J
Benzo[a]anthracene	**1800**	360 U	380 U	260 J	370 U	340 J
Benzo[a]pyrene	**1900**	880	380 U	380 U	370 U	490
Benzo[b]fluoranthene	**3400**	360 U	380 U	380 U*	370 U*	470 U*
Benzo[g,h,i]perylene	290 J	140 J	380 U	380 U	580	150 J
Benzo[k]fluoranthene	**2900** *	**2600** *	380 U*	**810** *	370 U*	**1400** *
Bis(2-chloroethoxy)methane	390 U	360 U	380 U	380 U	370 U	470 U
Bis(2-chloroethyl)ether	390 U	360 U	380 U	380 U	370 U	470 U
Bis(2-ethylhexyl) phthalate	390 U	360 U	380 U	410 *	370 U*	470 U*
Butyl benzyl phthalate	390 U	360 U	380 U	380 U*	370 U*	470 U*
Carbazole	390 U	360 U	380 U	380 U	370 U	470 U
Chrysene	**2000**	**1200**	380 U	380 J	370 U	890
Dibenz(a,h)anthracene	150 J	360 U	380 U	380 U	150 J	470 U
Dibenzofuran	250 J	130 J	380 U	380 U	180 J	470 U
Diethyl phthalate	390 U	360 U	380 U	380 U	370 U	470 U
Dimethyl phthalate	390 U	360 U	380 U	380 U	370 U	470 U
Di-n-butyl phthalate	390 U	360 U	100 J	380 U	370 U	470 U
Di-n-octyl phthalate	390 U*	360 U*	380 U*	380 U*	370 U*	470 U*
Fluoranthene	3800	1100	580	550	370 U	1000
Fluorene	260 J	170 J	380 U	380 U	370 U	470 U
Hexachlorobenzene	390 U	360 U	380 U	380 U	370 U	470 U
Hexachlorobutadiene	390 U	360 U	380 U	380 U	370 U	470 U
Hexachlorocyclopentadiene	390 U*	360 U*	380 U*	380 U*	370 U*	470 U*
Hexachloroethane	390 U	360 U	380 U	380 U	370 U	470 U
Indeno[1,2,3-cd]pyrene	370 J	360 U	380 U	380 U	**520**	470 U
Isophorone	390 U	360 U	380 U	380 U	370 U	470 U
Naphthalene	360 J	220 J	2200	380 U	220 J	300 J
Nitrobenzene	390 U	360 U	380 U	380 U	370 U	470 U
N-Nitrosodi-n-propylamine	390 U	360 U	380 U	380 U	370 U	470 U
N-Nitrosodiphenylamine	390 U	360 U	380 U	380 U	370 U	470 U
Pentachlorophenol	2900 U	2700 U	2800 U	2900 U*	2800 U*	3500 U*
Phenanthrene	2300	1200	380 U	400	850	1300
Phenol	390 U	360 U	380 U	380 U	370 U	470 U
Pyrene	2800 D	1100	380 U	870 *	370 U*	1600 *
TOTAL SVOCs	24,760	8,940	11,430	3,680	3,220	8,100

Notes:

1 - Standards are for soils according NYSDEC Part 375. *Unrestricted Use Soil Cleanup Objectives* :

3 - Standards are for soils according NYSDEC Part 375. *Restricted-Residential Use Soil Cleanup Objectives* :

All concentrations are in ug/kg (ppb) unless otherwise indicated;

Boldface type designates those compounds detected at concentrations exceeding NYSDEC Unrestricted Use standards;

Boldface and gray-highlighted type designates those compounds detected at concentrations exceeding NYSDEC Restricted-Residential Limits;

NE = No standard established;

MDL = Method Detection Limit.

U = The analyte was analyzed for but not detected at or above the stated limit.

J = Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

D = Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution may be flagged with a D.

* = LCS or LCSD exceeds the control limits

Table 1C. **Metals in Soil Samples;** USEPA Method 6010B and 7471A;
collected **October 2-3, 2013**; 556 Columbia Street, Brooklyn, New York;
PVE Sheffler File #560896

Chemical Constituent	CAS Number	NYSDEC Limit[1]	NYSDEC Limit[3]	GB-1 (0-6')	GB-2 (0-4')	GB-3 (0-4')	GB-4 (0-1.5')	GB-5 (0-4')	GB-6 (0-4')	GB-7 (0-4')	GB-8 (0-4')	GB-9 (0-6')	GB-10 (0-8')	GB-11 (0-4')	GB-12 (0-4')
				Sample Identification											
Inorganic Compounds															
Aluminum	7429-90-5	NE	NE	6,500	5,500	4,600	7,000	8,000	6,300	11,000	6,100	6,200	5,300	6,800	6,500
Antimony	7440-36-0	NE	NE	12 U	12 U	11 U	12 U	12 U	12 U	45 U	9.6 U	11 U	11 U	12 U	12 U
Arsenic	7440-38-2	13	16	**17**	**27**	**63**	**26**	5.9	**15**	**37**	**19**	**22**	12	**20**	**25**
Barium	7440-39-3	350	400	330	**2,900**	80	170	67	**670**	**1,100**	310	160	**690**	350	**380**
Beryllium	7440-41-7	7.2	72	0.99 U	1 U	0.94 U	0.98 U	1 U	0.98 U	3.7 U	0.8 U	0.95 U	0.91 U	1 U	0.99 U
Cadmium	7440-43-9	2.5	4.3	1.8	**11**	0.94 U	0.98 U	1 U	1.1	**4.1**	1 U	**10**	1.3	**2.9**	**2.7**
Calcium	7440-70-2	NE	NE	24,000	4,400	2,700	44,000	45,000	31,000	3,700 U	24,000	39,000	35,000	23,000	23,000
Chromium	7440-47-3	30*	180*	**37**	**37**	17	**44**	15	**33**	**100**	26	17	**31**	**35**	**44**
Cobalt	7440-48-4	NE	NE	9.9 U	14	9.4 U	9.8 U	10 U	9.8 U	37 U	8 U	9.5 U	9.1 U	10 U	9.9 U
Copper	7440-50-8	50	270	**280**	**290**	41	**110**	13	**160**	**40,000**	**210**	**9,000**	**280**	**350**	**430**
Iron	7439-89-6	NE	NE	20,000	36,000	33,000	14,000	12,000	14,000	120,000	15,000	20,000	25,000	28,000	28,000
Lead	7439-92-1	63	400	**690** V	**2,000**	**170**	**240**	33	**530**	**2,100**	**550**	**350**	**790**	**860**	**1,100**
Magnesium	7439-95-4	NE	NE	3,100	1,200	2,200	5,800	12,000	3,400	3,700 U	2,700	7,500	8,900	3,300	2,800
Manganese	7439-96-5	1,600	2,000	760	180	110	210	990	230	570	210	260	230	270	310
Total Mercury	7439-97-6	0.12**	5.8**	**1.6**	**4.3**	**0.2**	**0.47**	**0.73**	**1.2**	**3.9**	**0.89**	**2.2**	**1.2**	**2.8**	**1.8**
Nickel	7440-02-0	30	310	26	27	11	17	18	18	**69**	20	21	26	**32**	28
Potassium	7440-09-7	NE	NE	990	1,000 U	1,000	1,500	1,800	980 U	3,700 U	800 U	1,000	910 U	1,000 U	990 U
Selenium	7782-49-2	36	NE	2 U	2.4	1.9 U	2 U	2 U	2 U	7.5 U	1.6 U	1.9 U	1.8 U	2 U	2 U
Silver	7440-22-4	36	NE	2 U	2 U	1.9 U	2 U	2 U	2 U	8.5	1.6 U	1.9 U	1.8 U	2 U	2 U
Sodium	7440-23-5	NE	NE	990 U	1,000 U	940 U	980 U	1,000 U	980 U	3,700 U	800 U	950 U	910 U	1,000 U	990 U
Thallium	7440-28-0	NE	NE	2 U	2 U	1.9 U	2 U	2 U	2 U	7.5 U	1.6	1.9 U	1.8 U	2 U	2 U
Vanadium	7440-62-2	NE	NE	39	68	34	28	29	39	130	25	23	28	55	55
Zinc	7440-66-6	109	10,000	**660** V	**2,700**	53	**250**	40	**660**	**8,100**	**580**	**5,400**	**660**	**810**	**890**

Chemical Constituent	CAS Number	NYSDEC Limit[1]	NYSDEC Limit[3]	GB-13 S-1 (1-3')	GB-13 S-2 (4-6')	GB-14 S-1 (1-3')	GB-14 S-2 (4-6')	GB-15 S-1 (1-3')	GB-15 S-2 (4-6')	GB-16 S-1 (1-3')	GB-16 S-2 (4-6')	GB-17 S-1 (1-3')	GB-17 S-2 (4-6')	GB-18 S-1 (1-3')	GB-18 S-2 (4-6')	GB-19 S-1 (1-3')	GB-19 S-2 (4-6')
Inorganic Compounds																	
Arsenic	7440-38-2	13	16	**19**	8.9	**22**	**25**	7.1	6	**29**	**160**	**39**	**48**	**19**	**21**	**36**	11
Copper	7440-50-8	50	270	**310**	**210**	**420** V	**260**	**1900**	**93**	**190**	**20000**	**350**	**230**	**1000**	**700**	**200**	**55**
Lead	7439-92-1	63	400	**750**	**370**	**930** V	**680**	**1400**	**150**	**230**	**10000**	**830**	**790**	**2000**	**900**	**1100**	**200**
Total Mercury	7439-97-6	0.12**	5.8**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Chemical Constituent	CAS Number	NYSDEC Limit[1]	NYSDEC Limit[3]	GB-20 S-1 (1-3')	GB-20 S-2 (4-6')	GB-21 S-1 (1-3')	GB-21 S-2 (4-6')	GB-22 S-1 (1-3')	GB-22 S-2 (4-6')	GB-23 S-1 (1-3')	GB-23 S-2 (4-6')	GB-24 S-1 (1-3')	GB-24 S-2 (4-6')	GB-25 S-1 (1-3')	GB-25 S-2 (4-6')
Inorganic Compounds															
Arsenic	7440-38-2	13	16	**17**	**14**	**41**	5.2	6.5	**71**	**16**	**14**	**150**	**25**	**49**	**14**
Copper	7440-50-8	50	270	**220**	**520**	**400**	**480**	16	**200**	**210**	**160**	**580**	**450**	**230**	**260**
Lead	7439-92-1	63	400	**960**	**880**	**680**	**740**	**170**	**1600**	**420**	**330**	**1000**	**780**	**1500**	**490**
Total Mercury	7439-97-6	0.12**	5.8**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Chemical Constituent	CAS Number	NYSDEC Limit[1]	NYSDEC Limit[3]	GB-26 S-1 (1-3')	GB-26 S-2 (4-6')	GB-43 S-1 (1-3')	GB-43 S-2 (4-6')	GB-44 S-1 (1-3')	GB-44 S-2 (4-6')	GB-45 S-1 (1-3')	GB-45 S-2 (4-6')	GB-29 S-1 (1-3')	GB-29 S-2 (4-6')	GB-30 S-1 (1-3')	GB-30 S-2 (4-6')

Table 1C. **Metals in Soil Samples;** USEPA Method 6010B and 7471A;
collected **October 2-3, 2013**; 556 Columbia Street, Brooklyn, New York;
PVE Sheffler File #560896

Chemical Constituent	CAS Number	NYSDEC Limit[1]	NYSDEC Limit[3]	Sample Identification GB-1 (0-6')	GB-2 (0-4')	GB-3 (0-4')	GB-4 (0-1.5')	GB-5 (0-4')	GB-6 (0-4')	GB-7 (0-4')	GB-8 (0-4')	GB-9 (0-6')	GB-10 (0-8')	GB-11 (0-4')	GB-12 (0-4')
Inorganic Compounds															
Aluminum	7429-90-5	NE	NE	6,500	5,500	4,600	7,000	8,000	6,300	11,000	6,100	6,200	5,300	6,800	6,500
Antimony	7440-36-0	NE	NE	12 U	12 U	11 U	12 U	12 U	12 U	45 U	9.6 U	11 U	11 U	12 U	12 U
Arsenic	7440-38-2	13	16	**17**	**27**	**63**	**26**	5.9	**15**	**37**	**19**	**22**	12	**20**	**25**
Barium	7440-39-3	350	400	330	**2,900**	80	170	67	**670**	**1,100**	310	160	**690**	350	**380**
Beryllium	7440-41-7	7.2	72	0.99 U	1 U	0.94 U	0.98 U	1 U	0.98 U	3.7 U	0.8 U	0.95 U	0.91 U	1 U	0.99 U
Cadmium	7440-43-9	2.5	4.3	1.8	**11**	0.94 U	0.98 U	1 U	1.1	**4.1**	1 U	**10**	1.3	**2.9**	**2.7**
Calcium	7440-70-2	NE	NE	24,000	4,400	2,700	44,000	45,000	31,000	3,700 U	24,000	39,000	35,000	23,000	23,000
Chromium	7440-47-3	30*	180*	**37**	**37**	17	**44**	15	**33**	**100**	26	17	**31**	**35**	**44**
Cobalt	7440-48-4	NE	NE	9.9 U	14	9.4 U	9.8 U	10 U	9.8 U	37 U	8 U	9.5 U	9.1 U	10 U	9.9 U
Copper	7440-50-8	50	270	**280**	**290**	41	**110**	13	**160**	**40,000**	**210**	**9,000**	**280**	**350**	**430**
Iron	7439-89-6	NE	NE	20,000	36,000	33,000	14,000	12,000	14,000	120,000	15,000	20,000	25,000	28,000	28,000
Lead	7439-92-1	63	400	**690** V	**2,000**	**170**	**240**	33	**530**	**2,100**	**550**	**350**	**790**	**860**	**1,100**
Magnesium	7439-95-4	NE	NE	3,100	1,200	2,200	5,800	12,000	3,400	3,700 U	2,700	7,500	8,900	3,300	2,800
Manganese	7439-96-5	1,600	2,000	760	180	110	210	990	230	570	210	260	230	270	310
Total Mercury	7439-97-6	0.12**	5.8**	**1.6**	**4.3**	**0.2**	**0.47**	**0.73**	**1.2**	**3.9**	**0.89**	**2.2**	**1.2**	**2.8**	**1.8**
Nickel	7440-02-0	30	310	26	27	11	17	18	18	**69**	20	21	26	**32**	28
Potassium	7440-09-7	NE	NE	990	1,000 U	1,000	1,500	1,800	980 U	3,700 U	800 U	1,000	910 U	1,000 U	990 U
Selenium	7782-49-2	36	NE	2 U	2.4	1.9 U	2 U	2 U	2 U	7.5 U	1.6 U	1.9 U	1.8 U	2 U	2 U
Silver	7440-22-4	36	NE	2 U	2 U	1.9 U	2 U	2 U	2 U	8.5	1.6 U	1.9 U	1.8 U	2 U	2 U
Sodium	7440-23-5	NE	NE	990 U	1,000 U	940 U	980 U	1,000 U	980 U	3,700 U	800 U	950 U	910 U	1,000 U	990 U
Thallium	7440-28-0	NE	NE	2 U	2 U	1.9 U	2 U	2 U	2 U	7.5 U	1.6	1.9 U	1.8 U	2 U	2 U
Vanadium	7440-62-2	NE	NE	39	68	34	28	29	39	130	25	23	28	55	55
Zinc	7440-66-6	109	10,000	**660** V	**2,700**	53	**250**	40	**660**	**8,100**	**580**	**5,400**	**660**	**810**	**890**

Chemical Constituent	CAS Number	NYSDEC Limit[1]	NYSDEC Limit[3]	GB-13 S-1 (1-3')	GB-13 S-2 (4-6')	GB-14 S-1 (1-3')	GB-14 S-2 (4-6')	GB-15 S-1 (1-3')	GB-15 S-2 (4-6')	GB-16 S-1 (1-3')	GB-16 S-2 (4-6')	GB-17 S-1 (1-3')	GB-17 S-2 (4-6')	GB-18 S-1 (1-3')	GB-18 S-2 (4-6')	GB-19 S-1 (1-3')	GB-19 S-2 (4-6')
Inorganic Compounds																	
Inorganic Compounds																	
Arsenic	7440-38-2	13	16	**35**	**18**	**21**	**16**	**17**	11	**42**	8.9	Pending					
Copper	7440-50-8	50	270	**3300**	**790**	**420**	**130**	**140**	**77**	**1300**	**200**						
Lead	7439-92-1	63	400	**630**	**740**	**1200**	**2100**	**740**	**320**	**8200**	**460**						
Total Mercury	7439-97-6	0.12**	5.8**	NA	NA	**2.7**	**4.8**	**0.69**	**0.6**	**0.19 U**	**0.45**						

1 – Standards are for soils according NYSDEC Part 375, *Unrestricted Use Soil Cleanup Objectives* ;

3 - Standards are for soils according NYSDEC Part 375, *Restricted-Residential Use Soil Cleanup Objectives* ;

All concentratioNA are in mg/kg unless otherwise indicated;

Boldface type designates those compounds detected at concentrations exceeding NYSDEC Unrestricted Use Limit;

Boldface and gray-highlighted type designates those compounds detected at concentrations exceeding NYSDEC Restricted-Residential Limits;

U = Not detected, detection limit listed;

NE = No standard established.

U = The analyte was analyzed for but not detected at or above the stated limit.

J = Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

D = Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution may be flagged with a D.

Table 1C. **Metals in Soil Samples;** USEPA Method 6010B and 7471A;
collected **October 2-3, 2013**; 556 Columbia Street, Brooklyn, New York;
PVE Sheffler File #560896

Chemical Constituent	CAS Number	NYSDEC Limit[1]	NYSDEC Limit[3]	Sample Identification GB-1 (0-6')	GB-2 (0-4')	GB-3 (0-4')	GB-4 (0-1.5')	GB-5 (0-4')	GB-6 (0-4')	GB-7 (0-4')	GB-8 (0-4')	GB-9 (0-6')	GB-10 (0-8')	GB-11 (0-4')	GB-12 (0-4')
Inorganic Compounds															
Aluminum	7429-90-5	NE	NE	6,500	5,500	4,600	7,000	8,000	6,300	11,000	6,100	6,200	5,300	6,800	6,500
Antimony	7440-36-0	NE	NE	12 U	12 U	11 U	12 U	12 U	12 U	45 U	9.6 U	11 U	11 U	12 U	12 U
Arsenic	7440-38-2	13	16	**17**	**27**	**63**	**26**	5.9	**15**	**37**	**19**	**22**	12	**20**	**25**
Barium	7440-39-3	350	400	330	**2,900**	80	170	67	**670**	**1,100**	310	160	**690**	350	**380**
Beryllium	7440-41-7	7.2	72	0.99 U	1 U	0.94 U	0.98 U	1 U	0.98 U	3.7 U	0.8 U	0.95 U	0.91 U	1 U	0.99 U
Cadmium	7440-43-9	2.5	4.3	1.8	**11**	0.94 U	0.98 U	1 U	1.1	**4.1**	1 U	**10**	1.3	**2.9**	**2.7**
Calcium	7440-70-2	NE	NE	24,000	4,400	2,700	44,000	45,000	31,000	3,700 U	24,000	39,000	35,000	23,000	23,000
Chromium	7440-47-3	30*	180*	**37**	**37**	17	**44**	15	**33**	**100**	26	17	**31**	**35**	**44**
Cobalt	7440-48-4	NE	NE	9.9 U	14	9.4 U	9.8 U	10 U	9.8 U	37 U	8 U	9.5 U	9.1 U	10 U	9.9 U
Copper	7440-50-8	50	270	**280**	**290**	41	**110**	13	**160**	**40,000**	**210**	**9,000**	**280**	**350**	**430**
Iron	7439-89-6	NE	NE	20,000	36,000	33,000	14,000	12,000	14,000	120,000	15,000	20,000	25,000	28,000	28,000
Lead	7439-92-1	63	400	**690** V	**2,000**	**170**	**240**	33	**530**	**2,100**	**550**	**350**	**790**	**860**	**1,100**
Magnesium	7439-95-4	NE	NE	3,100	1,200	2,200	5,800	12,000	3,400	3,700 U	2,700	7,500	8,900	3,300	2,800
Manganese	7439-96-5	1,600	2,000	760	180	110	210	990	230	570	210	260	230	270	310
Total Mercury	7439-97-6	0.12**	5.8**	**1.6**	**4.3**	**0.2**	**0.47**	**0.73**	**1.2**	**3.9**	**0.89**	**2.2**	**1.2**	**2.8**	**1.8**
Nickel	7440-02-0	30	310	26	27	11	17	18	18	**69**	20	21	26	**32**	28
Potassium	7440-09-7	NE	NE	990	1,000 U	1,000	1,500	1,800	980 U	3,700 U	800 U	1,000	910 U	1,000 U	990 U
Selenium	7782-49-2	36	NE	2 U	2.4	1.9 U	2 U	2 U	2 U	7.5 U	1.6 U	1.9 U	1.8 U	2 U	2 U
Silver	7440-22-4	36	NE	2 U	2 U	1.9 U	2 U	2 U	2 U	8.5	1.6 U	1.9 U	1.8 U	2 U	2 U
Sodium	7440-23-5	NE	NE	990 U	1,000 U	940 U	980 U	1,000 U	980 U	3,700 U	800 U	950 U	910 U	1,000 U	990 U
Thallium	7440-28-0	NE	NE	2 U	2 U	1.9 U	2 U	2 U	2 U	7.5 U	1.6	1.9 U	1.8 U	2 U	2 U
Vanadium	7440-62-2	NE	NE	39	68	34	28	29	39	130	25	23	28	55	55
Zinc	7440-66-6	109	10,000	**660** V	**2,700**	53	**250**	40	**660**	**8,100**	**580**	**5,400**	**660**	**810**	**890**

Chemical Constituent	CAS Number	NYSDEC Limit[1]	NYSDEC Limit[3]	GB-13 S-1 (1-3')	GB-13 S-2 (4-6')	GB-14 S-1 (1-3')	GB-14 S-2 (4-6')	GB-15 S-1 (1-3')	GB-15 S-2 (4-6')	GB-16 S-1 (1-3')	GB-16 S-2 (4-6')	GB-17 S-1 (1-3')	GB-17 S-2 (4-6')	GB-18 S-1 (1-3')	GB-18 S-2 (4-6')	GB-19 S-1 (1-3')	GB-19 S-2 (4-6')
Inorganic Compounds																	

V = Serial Dilution exceeds the control limits

NA = Not Analyzed

** NYSDEC limit for Mercury (inorganic salts) is listed (see Technical Support Document Table 5.6-1);

Table 1D. **PCBs in Soil Samples;** USEPA Method 8082; collected **July 31, August 1, and October 1-2, 2013;**
556 Columbia Street, Brooklyn, New York.
PVE Sheffler File # 560896

Chemical Constituent	CAS Number	NYSDEC Limit[1]	NYSDEC Limit[3]	Sample Identification GB-1 (0-6')	GB-2 (0-4')	GB-3 (0-4')	GB-4 (0-1.5')	GB-5 (0-4')	GB-6 (0-4')	GB-7 (0-4')	GB-8 (0-4')	GB-9 (0-6')	GB-10 (0-8')	GB-11 (0-4')	GB-12 (0-4')	GB-43 S-1 (1-3')	GB-43 S-2 (4-6')	GB-44 S-1 (1-3')	GB-44 S-2 (4-6')	GB-45 S-1 (1-3')	GB-45 S-2 (4-6')
PCBs																					
PCB-1016	12674-11-2	NE	NE	77 U	85 U	83 U	74 U	78 U	74 U	87 U	77 U	85 U	74 U	78 U	77 U	78 U	72 U	76 U	370 U	74 U	93 U
PCB-1221	11104-28-2	NE	NE	77 U	85 U	83 U	74 U	78 U	74 U	87 U	77 U	85 U	74 U	78 U	77 U	78 U	72 U	76 U	370 U	74 U	93 U
PCB-1232	11141-16-5	NE	NE	77 U	85 U	83 U	74 U	78 U	74 U	87 U	77 U	85 U	297	78 U	77 U	78 U	72 U	76 U	370 U	74 U	93 U
PCB-1242	53469-21-9	NE	NE	77 U	85 U	83 U	74 U	78 U	74 U	87 U	77 U	85 U	74 U	78 U	77 U	78 U	72 U	76 U	370 U	74 U	93 U
PCB-1248	12672-29-6	NE	NE	77 U	85 U	83 U	74 U *	78 U *	74 U	87 U	77 U	85 U	74 U	78 U	77 U	78 U	72 U	76 U	370 U	74 U	93 U
PCB-1254	11097-69-1	NE	NE	77 U	85 U	83 U	74 U	78 U	74 U	87 U	77 U	85 U	74 U	78 U	77 U	78 U	72 U	76 U	370 U	74 U	93 U
PCB-1260	11096-82-5	NE	NE	77 U	85 U	83 U	74 U	78 U	74 U	87 U	77 U	85 U	74 U	78 U	77 U	78 U	72 U	76 U	370 U	74 U	93 U
PCB-1262	37324-23-5	NE	NE	77 U	85 U	83 U	74 U	78 U	74 U	87 U	77 U	85 U	74 U	78 U	77 U	78 U	72 U	76 U	370 U	74 U	93 U
PCB-1268	11100-14-4	NE	NE	77 U	85 U	83 U	74 U	78 U	74 U	87 U	77 U	85 U	74 U	78 U	77 U	78 U	72 U	76 U	370 U	74 U	93 U
Total PCBs	1336-36-3	100.0	1,000	U	U	U	U	U	U	U	U	U	**297**	U	U	U	U	U	U	U	U

Notes:

1 – Standards are for soils according NYSDEC Part 375, *Unrestricted Use Soil Cleanup Objectives* ;

3 - Standards are for soils according NYSDEC Part 375, *Restricted-Residential Use Soil Cleanup Objectives* ;

All concentrations are in ug/kg unless otherwise indicated;

Boldface type designates those compounds detected at concentrations exceeding NYSDEC Unrestricted Use Limit;

U = Not detected, detection limit listed;

NE = No standard established.

Table 1E. **Pesticides in Soil Samples;** USEPA Method 8081;
collected **July 31, August 1, and October 1-2, 2013,** 556 Columbia Street, Brooklyn, New York,
PVE Sheffler File #560896

				Sample Identification																							
Chemical Constituent	CAS Number	NYSDEC Limit[1]	NYSDEC Limit[3]	GB-1 (0-6')	GB-2 (0-4')	GB-3 (0-4')	GB-4 (0-1.5')	GB-5 (0-4')	GB-6 (0-4')	GB-7 (0-4')	GB-8 (0-4')	GB-9 (0-6')	GB-10 (0-6')	GB-11 (0-4')	GB-12 (0-4')	GB-43 S-1 (1-3')		GB-43 S-2 (4-6')		GB-44 S-1 (1-3')		GB-44 S-2 (4-6')		GB-45 S-1 (1-3')		GB-45 S-2 (4-6')	
Pesticides																											
Delta-BHC	319-86-8	40	100,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.84	U	0.336	U	1.8	U	1.8	U	0.344	U	1.8	U
Lindane	58-89-9	100	1,300	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.75	U	0.319	U	1.72	U	1.72	U	0.327	U	1.71	U
Alpha-BHC	319-84-6	20	480	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.11	U	0.203	U	1.09	U	1.09	U	0.208	U	1.09	U
Beta-BHC	319-85-7	36	360	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.56	U	0.65	U	3.5	U	3.5	U	0.666	U	3.48	U
Heptachlor	76-44-8	42	2,100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.1	U	0.384	U	2.07	U	2.07	U	0.394	U	2.06	U
Aldrin	309-00-2	5	97	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.3	U	0.604	U	3.24	U	3.25	U	0.618	U	3.23	U
Heptachlor epoxide	1024-57-3	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.28	U	0.965	U	5.18	U	5.19	U	0.988	U	5.16	U
Endrin	72-20-8	14	11,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.6	U	0.293	U	1.57	U	1.58	U	0.3	U	1.57	U
Endrin ketone	7421-93-4	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.42	U	0.442	U	2.37	U	2.37	U	0.452	U	2.36	U
Dieldrin	60-57-1	5	200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.93	U	0.536	U	2.88	U	2.88	U	0.549	U	2.87	U
4,4'-DDE	72-55-9	3.3	8,900	**32.8 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**42.0 J**	2.17	U	0.397	U	2.13	U	2.13	U	0.406	U	2.12	U
4,4'-DDD	72-54-8	3.3	13,000	**39.5**	ND	ND	**21.2 J**	**16.2 J**	ND	ND	ND	ND	ND	**20 J**	**86.3 J**	9.94	P I	0.612	U	3.29	U	3.29	U	0.626	U	3.27	U
4,4'-DDT	50-29-3	3.3	7,900	ND	ND	ND	ND	ND	ND	**33.6**	ND	ND	ND	ND	ND	19.1	P I	1.38	U	7.41	U	7.42	U	1.41	U	7.38	U
Endosulfan I	959-98-8	2,400	24,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.22	U	0.405	U	2.18	U	2.18	U	0.415	U	2.17	U
Endosulfan II	33213-65-9	2,400	24,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.14	U	0.573	U	3.08	U	3.08	U	0.587	U	3.07	U
Endosulfan sulfate	1031-07-8	2,400	24,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.79	U	0.326	U	1.76	U	1.76	U	0.334	U	1.75	U
Methoxychlor	72-43-5	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.48	U	1	U	5.38	U	5.38	U	1.02	U	5.35	U
Toxaphene	8001-35-2	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	49.3	U	9	U	48.4	U	48.4	U	9.22	U	48.2	U
cis-Chlordane	5103-71-9	94	NE	ND	ND	ND	**264**	**271**	ND	45.7 J	24.7 J	ND	ND	ND	ND	7.82	J P I	0.597	U	3.21	U	3.2	U	0.612	U	3.2	U
trans-Chlordane	5103-74-2	NE	4,200	ND	ND	ND	235	247	ND	39.2 J	20.7 J	ND	ND	ND	ND	3.1	U	0.566	U	3.04	U	3.04	U	0.58	U	3.03	U
Chlordane	5103-71-9	94	4,200	ND	ND	ND	**3020**	**3130**	ND	**287 J**	**141 J**	ND	ND	ND	ND	31.1	U	5.68	U	30.5	U	30.5	U	5.82	U	30.4	U

Notes:

1 – Standards are for soils according NYSDEC Part 375, *Unrestricted Use Soil Cleanup Objectives* ;

3 - Standards are for soils according NYSDEC Part 375, *Restricted-Residential Use Soil Cleanup Objectives* ;

All concentrations are in ug/kg unless otherwise indicated;

Boldface type designates those compounds detected at concentrations exceeding NYSDEC Unrestricted Use Limit;

Boldface and gray-highlighted type designates those compounds detected at concentrations exceeding NYSDEC Restricted-Residential Limits;

ND = Not detected;

NE Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit

J = ' (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

P = The RPD between the results for the two columns exceeds the method-specified criteria.

I = The lower value for the two columns has been reported due to obvious interference.

U = Not detected, method detection limit listed;

Table 1F. **Volatile Organic Compounds (VOCs) in Monitoring Well Soil Samples;** USEPA Method 8260; collected **October 3, 2013**; 556 Columbia Street, Brooklyn, New York; PVE Sheffler File #560896

Chemical Constituent	CAS Number	NYSDEC Limit[1]	NYSDEC Limit[3]	Sample Identification MW-5-S (WATERTABLE)	MW-6-S (WATERTABLE)	MW-7-S (WATERTABLE)
Volatile Organic Compounds						
1,1,1,2-Tetrachloroethane	630-20-6	NE	NE	2.1 U	3600 U	1.2 U
1,1,1-Trichloroethane	71-55-6	680	100,000	2.1 U	3600 U	1.2 U
1,1,2-Trichloroethane	79-00-5	NE	NE	2.1 U	3600 U	1.2 U
1,1-Dichloroethane	75-34-3	270	26,000	2.1 U	3600 U	1.2 U
1,1-Dichloroethene	75-35-4	330	100,000	2.1 U	3600 U	1.2 U
1,2,4-Trichlorobenzene	120-82-1	NE	NE	2.1 U	3600 U	1.2 U
1,2,4-Trimethylbenzene	95-63-6	3,600	52,000	2.1 U	3600 U	1.2 U
1,2-Dichlorobenzene	95-50-1	1,100	100,000	2.1 U	3600 U	1.2 U
1,2-Dichloroethane	107-06-2	20	3,100	2.1 U	3600 U	1.2 U
1,2-Dichloropropane	78-87-5	NE	NE	2.1 U	3600 U	1.2 U
1,3,5-Trimethylbenzene	108-67-8	8.4	52	2.1 U	3600 U	1.2 U
1,3-Dichlorobenzene	541-73-1	2,400	49,000	2.1 U	3600 U	1.2 U
1,4-Dichlorobenzene	106-46-7	1,800	13,000	2.1 U	3600 U	1.2 U
2-Butanone (MEK)	78-93-3	120	100,000	42	3600 U	15
2-Chloroethyl vinyl ether	110-75-8	NE	NE	2.1 U	3600 U	1.2 U
2-Chlorotoluene	95-49-8	NE	NE	2.1 U	3600 U	1.2 U
2-Hexanone	591-78-6	NE	NE	2.1 U	3600 U	1.2 U
4-Methyl-2-pentanone (MIBK)	108-10-1	NE	NE	2.1 U	3600 U	1.2 U
Acetone	67-64-1	50	100,000	**160** D	18000 U	**110**
Benzene	71-43-2	60	4,800	2.1 U	3600 U	1.2 U
Benzyl chloride	100-44-7	NE	NE	2.1 U	3600 U	1.2 U
Bromobenzene	108-86-1	NE	NE	2.1 U	3600 U	1.2 U
Bromodichloromethane	75-27-4	NE	NE	2.1 U	3600 U	1.2 U
Bromoform	75-25-2	NE	NE	2.1 U	3600 U	1.2 U
Bromomethane	74-83-9	NE	NE	2.1 U	3600 U	1.2 U
Carbon disulfide	75-15-0	NE	NE	3.1	3600 U	2.4
Carbon tetrachloride	56-23-5	760	2,400	2.1 U	3600 U	1.2 U
Chlorobenzene	108-90-7	1,100	100,000	2.1 U	3600 U	1.2 U
Chlorobromomethane	74-97-5	NE	NE	2.1 U	3600 U	1.2 U
Chlorodibromomethane	124-48-1	NE	NE	2.1 U	3600 U	1.2 U
Chloroethane	75-00-3	NE	NE	2.1 U	3600 U	1.2 U
Chloroform	67-66-3	370	49,000	2.1 U	3600 U	1.2 U
Chloromethane	74-87-3	NE	NE	2.1 U	3600 U	1.2 U
cis-1,2-Dichloroethene	156-59-2	250	100,000	2.1 U	3600 U	1.2 U
cis-1,3-Dichloropropene	10061-01-5	NE	NE	2.1 U	3600 U	1.2 U
Dibromomethane	74-95-3	NE	NE	2.1 U	3600 U	1.2 U
Dichlorodifluoromethane	75-71-8	NE	NE	2.1 U	3600 U	1.2 U
Ethyl methacrylate	97-63-2	NE	NE	2.1 U	3600 U	1.2 U
Ethylbenzene	100-41-4	1,000	41,000	2.1 U	3600 U	1.2 U
Hexachlorobutadiene	87-68-3	NE	NE	2.1 U	3600 U	1.2 U
Isopropylbenzene	98-82-8	NE	NE	2.1 U	11000	1.2 U
Methyl tert-butyl ether	1634-04-4	930	100,000	2.1 U	3600 U	1.2 U
Methylene Chloride	75-09-2	50	100,000	2.1 U	3600 U	1.2 U
m-Xylene & p-Xylene	136777-61-2	260	100,000	4.2 U	7300 U	2.4 U
Naphthalene	91-20-3	12,000	100,000	2.1 U	7500	1.2 U
n-Butylbenzene	104-51-8	12,000	100,000	2.1 U	3600 U	1.2 U
N-Propylbenzene	103-65-1	3,900	100,000	2.1 U	3600 U	1.2 U
o-Xylene	95-47-6	260	100,000	4.2 U	7300 U	2.4 U
p-Isopropyltoluene	99-87-6	NE	NE	2.1 U	19000	1.2 U
sec-Butylbenzene	135-98-8	11,000	100,000	2.1 U	3600 U	1.2 U
Styrene	100-42-5	NE	NE	2.1 U	3600 U	1.2 U
tert-Butylbenzene	98-06-6	5,900	100,000	2.1 U	**3900**	1.2 U
Tetrachloroethene	127-18-4	1,300	19,000	2.1 U	3600 U	1.2 U
Toluene	108-88-3	700	100,000	2.1 U	3600 U	1.2 U
trans-1,2-Dichloroethene	156-60-5	190	100,000	2.1 U	3600 U	1.2 U
trans-1,3-Dichloropropene	10061-02-6	NE	NE	2.1 U	3600 U	1.2 U
Trichloroethene	79-01-6	470	21,000	2.1 U	3600 U	1.2 U
Trichlorofluoromethane	75-69-4	NE	NE	2.1 U	3600 U	1.2 U
Vinyl acetate	108-05-4	NE	NE	2.1 U	3600 U	1.2 U
Vinyl chloride	75-01-4	20	900	2.1 U	3600 U	1.2 U
Xylenes, Total	1330-20-7	260	100,000	4.2 U	**10000**	2.4 U

Notes:

1 - Standards are for soils according NYSDEC Part 375, *Unrestricted Use Soil Cleanup Objectives*;

3 - Standards are for soils according NYSDEC Part 375, *Restricted-Residential Use Soil Cleanup Objectives*;

All concentrations are in ug/kg (ppb) unless otherwise indicated;

Boldface type designates those compounds detected at concentrations exceeding NYSDEC Unrestricted Use standards;

Boldface and gray-highlighted type designates those compounds detected at concentrations exceeding NYSDEC Restricted-Residential Limits;

NE = No standard established;

MDL = Method Detection Limit.

U = The analyte was analyzed for but not detected at or above the stated limit.

J = Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

D = Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution may be flagged with a D.

* = LCS or LCSD exceeds the control limits

Table 1G .

Semi-Volatile Oroanic Comoounds (SVOCs) in Monitorino Well Soil Samoles: USEPA Method 8270
collected **October 3, 2013**: 556 Columbia Street. Brooklvn. New York
PVE Shieffler File #560896

Chemical Constituent	CAS Number	NYSDEC Limit[a]	NYSDEC Limit[b]	Sample Identification MW-5-S (WATER TABLE)	MW-6-S (WATER TABLE)	MW-7-S (WATER TABLE)
Semi-Volatile Organic Compounds						
1,2,4-Trichlorobenzene	120-82-1	NE	NE	490 U	920 U	410 U
2,2'-oxybis(1-chloropropane)	108-60-1	NE	NE	490 U	920 U	410 U
2,4,5-Trichlorophenol	95-95-4	NE	NE	490 U	920 U	410 U
2,4,6-Trichlorophenol	88-06-2	NE	NE	490 U	920 U	410 U
2,4-Dichlorophenol	120-83-2	NE	NE	490 U	920 U	410 U
2,4-Dimethylphenol	105-67-9	NE	NE	490 U	360 J	410 U
2,4-Dinitrophenol	51-28-5	NE	NE	490 U	920 U	410 U
2,4-Dinitrotoluene	121-14-2	NE	NE	490 U	920 U	410 U
2,6-Dinitrotoluene	606-20-2	NE	NE	490 U	920 U	410 U
2-Chloronaphthalene	91-58-7	NE	NE	490 U	920 U	410 U
2-Chlorophenol	95-57-8	NE	NE	490 U	920 U	410 U
2-Methylnaphthalene	91-57-6	NE	NE	490 J	920 U	260 J
2-Methylphenol	95-48-7	330	100,000	490 U	**1300**	410 U
2-Nitroaniline	88-74-4	NE	NE	490 U	920 U	410 U
2-Nitrophenol	88-75-5	NE	NE	490 U	920 U	410 U
3 & 4 Methylphenol	15831-10-4	NE	NE	490 U	2200	390 J
3,3'-Dichlorobenzidine	91-94-1	NE	NE	490 U	920 U	410 U
4,6-Dinitro-2-methylphenol	534-52-1	NE	NE	490 U	920 U	410 U
4-Bromophenyl phenyl ether	101-55-3	NE	NE	490 U	920 U	410 U
4-Chloro-3-methylphenol	59-50-7	NE	NE	490 U	920 U	410 U
4-Chloroaniline	106-47-8	NE	NE	490 U	920 U	410 U
4-Chlorophenyl phenyl ether	7005-72-3	NE	NE	490 U	920 U	410 U
4-Nitroaniline	100-01-6	NE	NE	490 U	920 U	410 U
4-Nitrophenol	100-02-7	NE	NE	490 U	920 U	410 U
Acenaphthene	83-32-9	20,000	100,000	210 J	920 U	510
Acenaphthylene	208-96-8	100,000	100,000	220 J	920 U	410 U
Anthracene	120-12-7	100,000	100,000	580	920 U	1600
Benzo[a]anthracene	56-55-3	1,000	1,000	**1700**	920 U	**3400**
Benzo[a]pyrene	50-32-8	1,000	1,000	**1800**	920 U	**3400**
Benzo[b]fluoranthene	205-99-2	1,000	1,000	**2500**	920 U	**2800**
Benzo[g,h,i]perylene	191-24-2	100,000	100,000	630	920 U	1200
Benzo[k]fluoranthene	207-08-9	800	3,900	**1700**	920 U	**2800**
Bis(2-chloroethoxy)methane	111-91-1	NE	NE	490 U	920 U	410 U
Bis(2-chloroethyl)ether	111-44-4	NE	NE	490 U	920 U	410 U
Bis(2-ethylhexyl) phthalate	117-81-7	NE	NE	490 U	920 U	410 U
Butyl benzyl phthalate	85-68-7	NE	NE	490 U	920 U	410 U
Carbazole	86-74-8	NE	NE	490 U	920 U	500
Chrysene	218-01-9	1,000	3,900	**1800**	210 J	**3600**
Dibenz(a,h)anthracene	53-70-3	330	330	580	920 U	510
Dibenzofuran	132-64-9	7,000	59,000	190 J	920 U	490
Diethyl phthalate	84-66-2	NE	NE	490 U	920 U	410 U
Dimethyl phthalate	131-11-3	NE	NE	490 U	920 U	410 U
Di-n-butyl phthalate	84-74-2	NE	NE	490 U	920 U	410 U
Di-n-octyl phthalate	117-84-0	NE	NE	490 U	920 U	410 U
Fluoranthene	206-44-0	100,000	100,000	2900	920 U	5100 D
Fluorene	86-73-7	30,000	100,000	220 J	400 J	680
Hexachlorobenzene	118-74-1	330	1,200	490 U	920 U	410 U
Hexachlorobutadiene	87-68-3	NE	NE	490 U	920 U	410 U
Hexachlorocyclopentadiene	77-47-4	NE	NE	490 U	920 U	410 U
Hexachloroethane	67-72-1	NE	NE	490 U	920 U	410 U
Indeno[1,2,3-cd]pyrene	193-39-5	500	500	680	920 U	1200
Isophorone	78-59-1	NE	NE	490 U	1100	410 U
Naphthalene	91-20-3	12,000	100,000	260 J	1200	550
Nitrobenzene	98-95-3	NE	NE	490 U	920 U	410 U
N-Nitrosodi-n-propylamine	621-64-7	NE	NE	490 U	920 U	410 U
N-Nitrosodiphenylamine	86-30-6	NE	NE	490 U	920 U	410 U
Pentachlorophenol	87-86-5	800	6,700	3700 U	3800 U	3100 U
Phenanthrene	85-01-8	100,000	100,000	1800	920 U	4800 D
Phenol	108-95-2	330	100,000	490 U	920 U	410 U
Pyrene	129-00-0	100,000	100,000	3400 D	1400	5400 D
TOTAL SVOCs				20,900	4,310	39,450

Notes:

1 - Standards are for soils accordina NYSDEC Part 375. Unrestricted Use Soil Cleanup Objectives:

3 - Standards are for soils accordina NYSDEC Part 375. Restricted-Residential Use Soil Cleanup Objectives:

All concentrations are in ug/kg (ppb) unless otherwise indicated.

Boldface type designates those compounds detected at concentrations exceeding NYSDEC Unrestricted Use standards;

Boldface and gray-highlighted type designates those compounds detected at concentrations exceeding NYSDEC Restricted-Residential Limits;

NE = No standard established.

MDL = Method Detection Limit

U = The analyte was analyzed for but not detected at or above the stated limit.

J = Result is less than the RL but greater than or equal to the MDL ; and the concentration is an approximate value.

D = Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution may be flagged with a D.

* = LCS or LCSD exceeds the control limits

E = Result exceeded calibration range, secondary dilution required

Table 1H. **PCBs in Monitoring Well Soil Samples;** USEPA Method 8082; collected **October 3, 2013;**
556 Columbia Street, Brooklyn, New York.
PVE Sheffler File # 560896

Chemical Constituent	CAS Number	NYSDEC Limit[1]	NYSDEC Limit[3]	Sample Identification MW-5-S (WATERTABLE)		MW-6-S (WATERTABLE)		MW-7-S (WATERTABLE)	
PCBs									
PCB-1016	12674-11-2	NE	NE	94	U	100	U	82	U
PCB-1221	11104-28-2	NE	NE	94	U	100	U	82	U
PCB-1232	11141-16-5	NE	NE	94	U	100	U	82	U
PCB-1242	53469-21-9	NE	NE	94	U	100	U	82	U
PCB-1248	12672-29-6	NE	NE	94	U	100	U	82	U
PCB-1254	11097-69-1	NE	NE	94	U	100	U	82	U
PCB-1260	11096-82-5	NE	NE	94	U	100	U	82	U
PCB-1262	37324-23-5	NE	NE	94	U	100	U	82	U
PCB-1268	11100-14-4	NE	NE	94	U	100	U	82	U
Total PCBs	1336-36-3	100.0	1,000		U		U		U

Notes:

1 – Standards are for soils according NYSDEC Part 375, *Unrestricted Use Soil Cleanup Objectives*;

3 - Standards are for soils according NYSDEC Part 375, *Restricted-Residential Use Soil Cleanup Objectives*;

All concentrations are in ug/kg unless otherwise indicated;

Boldface type designates those compounds detected at concentrations exceeding NYSDEC Unrestricted Use Limit;

U = Not detected, detection limit listed;

NE = No standard established.

Table 1I. **Pesticides in Monitoring Well Soil Samples;** USEPA Method 8081; collected **October 3, 2013,** 556 Columbia Street, Brooklyn, New York, PVE Sheffler File #560896

				Sample Identification		
Chemical Constituent		NYSDEC Limit[1]	NYSDEC Limit[3]	MW-5-S (WATERTABLE)	MW-6-S (WATERTABLE)	MW-7-S (WATERTABLE)
Pesticides						
Delta-BHC	319-86-8	40	100,000	ND<20.5	ND<0.530	ND<3.98
Lindane	58-89-9	100	1,300	ND<19.5	ND<0.504	ND<3.78
Alpha-BHC	319-84-6	20	480	ND<12.4	ND<0.320	ND<2.40
Beta-BHC	319-85-7	36	360	ND<39.7	ND<1.03	ND<7.70
Heptachlor	76-44-8	42	2,100	ND<23.5	ND<0.607	ND<4.55
Aldrin	309-00-2	5	97	ND<36.9	ND<0.954	ND<7.15
Heptachlor epoxide	1024-57-3	NE	NE	ND<59	ND<1.52	ND<11.4
Endrin	72-20-8	14	11,000	ND<17.9	ND<0.463	ND<3.47
Endrin ketone	7421-93-4	NE	NE	ND<27	ND<0.698	ND<5.23
Dieldrin	60-57-1	5	200	ND<32.8	ND<0.846	ND<6.34
4,4'-DDE	72-55-9	3.3	8,900	ND<24.2	ND<0.626	ND<4.70
4,4'-DDD	72-54-8	3.3	13,000	ND<37.4	ND<0.966	ND<7.24
4,4'-DDT	50-29-3	3.3	7,900	ND<84.3	ND<2.18	ND<16.3
Endosulfan I	959-98-8	2,400	24,000	ND<24.8	ND<0.640	ND<4.80
Endosulfan II	33213-65-9	2,400	24,000	ND<35	ND<0.905	ND<6.78
Endosulfan sulfate	1031-07-8	2,400	24,000	ND<20	ND<0.516	ND<3.87
Methoxychlor	72-43-5	NE	NE	ND<61.1	ND<1.58	ND<11.8
Toxaphene	8001-35-2	NE	NE	ND<550	ND<14.2	ND<107.
cis-Chlordane	5103-71-9	94	NE	ND<36.5	ND<0.944	ND<7.07
trans-Chlordane	5103-74-2	NE	4,200	ND<34.6	ND<0.894	ND<6.70
Chlordane		94	4,200	ND<347	ND<8.97	ND<67.3

Notes:

1 – Standards are for soils according NYSDEC Part 375, *Unrestricted Use Soil Cleanup Objectives*;

3 - Standards are for soils according NYSDEC Part 375, *Restricted-Residential Use Soil Cleanup Objectives*;

All concentrations are in ug/kg unless otherwise indicated;

Boldface type designates those compounds detected at concentrations exceeding NYSDEC Unrestricted Use Limit;

ND<= Not detected, detection limit listed;

NE = No standard established.

J = ⅂ Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Identified Compounds (TICs).

Table 1J. **TAL Metals in Monitoring Well Soil Samples;** USEPA Method 7471A; collected October 3, 2013; 556 Columbia Street, Brooklyn, New York; PVE Sheffler File #560896

Chemical Constituent	CAS Number	NYSDEC Limit[1]	NYSDEC Limit[3]	Sample Identification MW-5-S (WATERTABLE)	MW-6-S (WATERTABLE)	MW-7-S (WATERTABLE)
Inorganic Compounds						
Aluminum	7429-90-5	NE	NE	5500	9300	5800
Antimony	7440-36-0	NE	NE	24 U	12 U	12 U
Arsenic	7440-38-2	13	16	**68**	**16**	**55**
Barium	7440-39-3	350	400	310	**390**	**2400**
Beryllium	7440-41-7	7.2	72	2 U	0.96 U	0.96 U
Cadmium	7440-43-9	2.5	4.3	2 U	0.96 U	0.96 U
Calcium	7440-70-2	NE	NE	4700	11000	6100
Chromium	7440-47-3	30*	180*	24	**32**	**120**
Cobalt	7440-48-4	NE	NE	20 U	9.6 U	9.6 U
Copper	7440-50-8	50	270	**320**	**93**	**210**
Iron	7439-89-6	NE	NE	49000	18000	15000
Lead	7439-92-1	63	400	**1100**	**3900**	**1100**
Magnesium	7439-95-4	NE	NE	2000 U	1000	1600
Manganese	7439-96-5	1,600	2,000	1400	240	160
Total Mercury	7439-97-6	0.12**	5.8**	**3.1**	**3.5**	**1.3**
Nickel	7440-02-0	30	310	**53**	18	25
Potassium	7440-09-7	NE	NE	2000 U	1200	960 U
Selenium	7782-49-2	36	NE	4.1	1.9 U	1.9 U
Silver	7440-22-4	36	NE	4 U	1.9 U	1.9 U
Sodium	7440-23-5	NE	NE	2000 U	960 U	960 U
Thallium	7440-28-0	NE	NE	4 U	1.9 U	1.9 U
Vanadium	7440-62-2	NE	NE	38	27	24
Zinc	7440-66-6	109	10,000	**1300**	**700**	**760**

Notes:

1 – Standards are for soils according NYSDEC Part 375, *Unrestricted Use Soil Cleanup Objectives*;

3 - Standards are for soils according NYSDEC Part 375, *Restricted-Residential Use Soil Cleanup Objectives*;

All concentrations are in mg/kg unless otherwise indicated;

* NYSDEC limit for trivalent Chromium is listed;

** NYSDEC limit for Mercury (inorganic salts) is listed (see Technical Support Document Table 5.6-1);

Table 1J. **TAL Metals in Monitoring Well Soil Samples;** USEPA Method 7471A; collected October 3, 2013; 556 Columbia Street, Brooklyn, New York; PVE Sheffler File #560896

Chemical Constituent	CAS Number	NYSDEC Limit[1]	NYSDEC Limit[3]	Sample Identification MW-5-S (WATERTABLE)	MW-6-S (WATERTABLE)	MW-7-S (WATERTABLE)
Inorganic Compounds						

Boldface type designates those compounds detected at concentrations exceeding NYSDEC Unrestricted Use Limit;

Boldface and gray-highlighted type designates those compounds detected at concentrations exceeding NYSDEC Restricted-Residential Limits;

U = Not detected, detection limit listed;

NE = No standard established.

Table 2A. **Volatile Organic Compounds (VOCs) in Water Samples;** USEPA Method 8260; collected **August 1 and October 16, 2013**; 556 Columbia Street, Brooklyn, New York; PVE Sheffler File #560896

Chemical Constituent	CAS Number	NYSDEC Limit[1]	Sample ID MW-1 8/1/2013	MW-2 8/1/2013	MW-3 8/1/2013	MW-4 8/1/2013	MW-3 10/16/2013	MW-5 10/16/2013	MW-6 10/16/2013
Volatile Organic Compounds									
1,1,1-Trichloroethane	71-55-6	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	79-34-5	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	79-00-5	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	75-34-3	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	75-35-4	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,4-Trimethylbenzene	95-63-6	5	1 U	1 U	1 U	1 U	1 U	1 U	1.1
1,2-Dichlorobenzene	95-50-1	3	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	107-06-2	0.6	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	78-87-5	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	108-67-8	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	541-73-1	3	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	106-46-7	3	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone	78-93-3	NE	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Chloroethyl vinyl ether	110-75-8	NE	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone	591-78-6	NE	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone	108-10-1	NE	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Acetone	67-64-1	NE	1 U	2.8	4.3	2.6	5.7	1.5	3.2
Benzene	71-43-2	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane	75-27-4	NE	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	75-25-2	NE	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	74-83-9	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon disulfide	75-15-0	60	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	56-23-5	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	108-90-7	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorodibromomethane	124-48-1	NE	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	75-00-3	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	67-66-3	7	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	74-87-3	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1, 2-Dichloroethene	156-59-2	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene	10061-01-5	0.4	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	100-41-4	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Isopropylbenzene	98-82-8	5	1 U	1 U	1 U	1 U	1 U	1 U	**62**
Methyl tert-butyl ether	1634-04-4	NE	1 U	1.2	1.6	1 U	1	2.4	1
Methylene chloride	75-09-2	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m/p-Xylene	136777-61-2	5	1 U	1 U	1 U	1 U	1 U	1 U	3.2
Naphthalene	91-20-3	NE	5 U	5 U	5 U	5 U	5 U	5 U	5 U
n-Butylbenzene	104-51-8	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
n-propylbenzene	103-65-1	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	95-47-6	5	1 U	1 U	1 U	1 U	1 U	1 U	4.6
p-Isopropyltoluene	99-87-6	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
sec-Butylbenzene	135-98-8	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Styrene	100-42-5	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	98-06-6	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	127-18-4	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	108-88-3	5	1 U	1 U	1 U	1 U	1 U	1 U	4.2
trans-1,2-Dichloroethene	156-60-5	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	10061-02-6	0.4	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,4-Dichloro-2-butene	110-57-6	5	5 U *	5 U *	5 U *	5 U *	5 U	5 U	5 U
Trichloroethene	79-01-6	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichlorofluormethane	75-69-4	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl acetate	108-05-4	NE	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl Chloride	75-01-4	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Total Xylenes	1330-20-7	5**	1 U	1 U	1 U	1 U	1 U	1 U	**7.8**

Notes:

1 - Standards are for Class GA groundwater according to 6NYCRR Part 700-705;

All concentrations are in ppb (ug/L) unless otherwise indicated;

NE=Not Established;

Boldface type designates those compounds detected at concentrations exceeding NYSDEC standard;

E = Exceeded calibration range of instrumentation.

NE = No standard established;

U = The analyte was analyzed for but not detected at or above the stated limit.

J = Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

D = Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution may be flagged with a D.

** Standard for individual xylenes

* = LCS or LCSD exceeds the control limits

Table 2B. **Semi-Volatile Organic Compounds (SVOCs) in Water Samples;** USEPA Method 8270; collected October 16, 2013; 556 Columbia Street, Brooklyn, New York; PVE Sheffler File #560896

			Sample ID							
Chemical	CAS	NYSDEC	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-3	MW-7
Constituent	Number	Limit[1]	(8-1-13)	(8-1-13)	(8-1-13)	(8-1-13)	(10-16-13)	(10-16-13)	(10-16-13)	(10-28-13)
Semi-Volatile Organic Compounds										
1,2,4-Trichlorobenzene	120-82-1	5	10 U	10 U	10 U	10 U	10 U *	10 U *	10 U *	10 U
1,2-Dichlorobenzene	95-50-1	3	10 U	10 U	10 U	10 U	10 U *	10 U *	10 U *	10 U
2,4,5-Trichlorophenol	95-95-4	1**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	88-06-2	1**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	120-83-2	1**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	105-67-9	1**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	51-28-5	1**	10 U *	10 U *	10 U *	10 U *	10 U	10 U	10 U	10 U *
2,4-Dinitrotoluene	121-14-2	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	606-20-2	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Chloronapthalene	91-58-7	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	95-57-8	1**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnapthalene	91-57-6	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol	95-48-7	1*	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline	88-74-4	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol	88-75-5	1**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
3&4-Methylphenol	15831-10-4	1**	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	91-94-1	5	50 U	50 U	50 U	50 U	50 U	50 U	50 U	51 U
4,6-Dinitro-2-methylphenol	534-52-1	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl phenyl ether	101-55-3	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol	59-50-7	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline	106-47-8	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl phenyl ether	7005-72-3	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline	100-01-6	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitrophenol	100-02-7	1	10 U *	10 U *	10 U *	10 U *	10 U *	10 U *	10 U *	10 U *
Acenaphthene	83-32-9	20	10 U	10 U	10 U	10 U	10 U	10 U	4.1 J	3.2 J
Acenaphthylene	208-96-8	20	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	120-12-7	50	10 U	10 U	10 U	10 U	10 U	10 U	4.3 J	7.1 J
Benzo(a)anthracene	56-55-3	0.002	10 U	10 U	10 U	10 U	10 U	10 U	**8.2** J	**15**
Benzo(a)pyrene	50-32-8	50	10 U	10 U	10 U	10 U	10 U	10 U	7 J	13
Benzo(b)fluoranthene	205-99-2	0.002	10 U	10 U	10 U	10 U	10 U	10 U	**12**	**16**
Benzo(g,h,i)perylene	191-24-2	50	10 U	10 U	10 U	10 U	10 U	10 U	2.3 J	3.8 J
Benzo(k)fluoranthene	207-08-9	0.002	10 U	10 U	10 U	10 U	10 U	10 U	**5.1** J	**7.3** J
Benzyl alcohol	100-51-6	NE	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Bis(2-chloroisopropyl)ether	108-60-1	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bis(2-chloroethoxy)methane	111-91-1	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bis(2-chloroethyl)ether	111-44-4	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bis(2-ethylhexyl)phthalate	117-81-7	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	3.7 J
Butyl benzyl phthalate	85-68-7	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbazole	86-74-8	NE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	218-01-9	0.002	10 U	10 U	10 U	10 U	10 U	10 U	**9.9** J	**16**
Dibenz(a,h)anthracene	53-70-3	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibenzofuran	132-64-9	5	10 U	10 U	10 U	10 U	10 U	10 U	2.4 J	2 J
Diethyl phthalate	84-66-2	50	10 U	10 U	10 U	10 U	10 U *	10 U *	10 U *	10 U
Dimethyl phthalate	131-11-3	50	10 U *	10 U *	10 U *	10 U *	10 U *	10 U *	10 U *	10 U *
Di-n-butylphthalate	84-74-2	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-octylphthalate	117-84-0	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene	206-44-0	50	10 U	10 U	2.2 J	10 U	10 U	10 U	19	28
Fluorene	86-73-7	50	10 U	10 U	10 U	10 U	10 U	10 U	5.7 J	3.7 J
Hexachlorobenzene	118-74-1	0.004	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	87-68-3	50	10 U	10 U	10 U	10 U	10 U *	10 U *	10 U *	10 U
Hexachlorocyclopentadiene	77-47-4	5	30 U	30 U	30 U	30 U	30 U *	30 U *	30 U *	30 U *
Hexachloroethane	67-72-1	5	10 U	10 U	10 U	10 U	10 U *	10 U *	10 U *	10 U
Indeno(1,2,3-cd)pyrene	193-39-5	0.002	10 U	10 U	10 U	10 U	10 U	10 U	**2** J	**4.1** J
Isophorone	78-59-1	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Napthalene	91-20-3	10	10 U	10 U	10 U	10 U	10 U	10 U	4.5 J	10 U
Nitrobenzene	98-95-3	0.4	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

N-Nitrosodiethylamine	55-18-5	NE	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
N-Nitrosodimethylamine	62-75-9	NE	50	U	50	U	50	U	50	U	50	U	50	U	50	U	51	U
N-Nitroso-di-n-propylamine	621-64-7	NE	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
N-Nitrosodiphenylamine	86-30-6	50	15	U	15	U	15	U	15	U	15	U	15	U	15	U	15	U
N-Nitrosopyrrolidine	930-55-2	NE	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Pentachlorophenol	87-86-5	1	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Phenanthrene	85-01-8	50	10	U	10	U	4.2	J	10	U	10	U	10	U	20		27	
Phenol	108-95-2	1	10	U	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Pyrene	129-00-0	50	10	U	10	U	1.9	J	10	U	10	U	10	U	14		30	
Pyridine	110-86-1	50	10	U *	10	U *	10	U *	10	U *	10	U	10	U	10	U	10	U

Notes:

1 - Standards are for Class GA groundwater according to 6NYCRR Part 700-705.

All concentrations are in ug/L (ppb) unless otherwise indicated;

Boldface type designates those compounds detected at concentrations exceeding NYSDEC standards;

NE = No standard established

** Total phenol concentration may not exceed 1.0

U = The analyte was analyzed for but not detected at or above thestated limit.

J = Result is less than the RL but greater than or equal to the MDLand the concentration is an approximate value.

D = Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution may be flagged with a D.

* = LCS or LCSD exceeds the control limits

Table 2C. **TAL Metals in Groundwater Samples;** USEPA Method 7471A;
collected **August 1 and October 16, 2013**; 556 Columbia Street, Brooklyn, New York;
PVE Sheffler File #560896

Chemical	CAS	NYSDEC	Sample Identification																	
			MW-1 (8-1-13)		MW-2 (8-1-13)		MW-3 (8-1-13)		MW-4 (8-1-13)		MW-5 (10-16-13)		MW-6 (10-16-13)		MW-3 (10-16-13)		MW-7 (10-28-13)	
Constituent	Number	Limit[1]	Unfiltered		Unfiltered		Unfiltered		Unfiltered		Filtered	Unfiltered	Filtered	Unfiltered	Filtered	Unfiltered	Filtered	Unfiltered
Inorganic Compounds																		
Aluminum	7429-90-5	NE	200	U	200	U	390		200	U	200 U	200 U	200 U	200 U	6000	6000	200 U	6000
Antimony	7440-36-0	3	60	U	60	U	60	U	60	U	60 U	60 U	60 U	60 U	60 U	60 U	60 U	60 U
Arsenic	7440-38-2	25	10	U	13		**37**		**200**		10 U	10 U	10 U	10 U	**34**	**110**	13	**34**
Barium	7440-39-3	1,000	870		680		**2,000**		580		250	250	730	710	**2,100**	**4,100**	**3,800**	**5,500**
Beryllium	7440-41-7	3	5	U	5	U	5	U	5	U	5 U	5 U	5 U	5 U	5 U	5 U	**8.5**	5 U
Cadmium	7440-43-9	5	5	U	5	U	5	U	5	U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Calcium	7440-70-2	NE	170,000		200,000		180,000		220,000		63,000	61,000	170,000	170,000	180,000	180,000	290,000	310,000
Chromium	7440-47-3	50	7	U	7	U	12		7	U	7 U	7 U	7 U	7 U	7 U	**150**	7.7	110
Cobalt	7440-48-4	NE	50	U	50	U	50	U	50	U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Copper	7440-50-8	200	25	U	25	U	25	U	25	U	25 U	25 U	25 U	25 U	7 U	**320**	25 U	**160**
Iron	7439-89-6	300	**11,000**		**28,000**		**32,000**		**14,000**		**6,400**	**6,200**	**28,000**	**27,000**	**29,000**	**46,000**	**48,000**	**81,000**
Lead	7439-92-1	25	12		**60**		**110**		14		5 U	9.5	5 U	5.9	5 U	**1,600**	11	**4,500**
Magnesium	7439-95-4	35,000	**39,000**		32,000		23,000		29,000		9,600	9,300	25,000	24,000	25,000	25,000	53,000	52,000
Manganese	7439-96-5	300	**750**		**910**		**1,600**		**740**		**400**	**400**	**930**	**920**	**1,200**	**1,400**	**1,500**	**1,800**
Total Mercury	7439-97-6	7	0.2	U	0.2	U	0.2	U	0.2	U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	2.5	0.2 U	0.45
Nickel	7440-02-0	100	40	U	40	U	40	U	40	U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U
Potassium	7440-09-7	NE	27,000		25,000		28,000		25,000		12,000	12,000	18,000	18,000	28,000	28,000	37,000	37,000
Selenium	7782-49-2	10	10	U	10	U	10	U	10	U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Silver	7440-22-4	50	10	U	10	U	10	U	10	U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Sodium	7440-23-5	NE	290,000		280,000		150,000		210,000		160,000	150,000	270,000	260,000	170,000	160,000	490,000	520,000
Thallium	7440-28-0	5	10	U	10	U	10	U	10	U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Vanadium	7440-62-2	NE	50	U	50	U	50	U	50	U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Zinc	7440-66-6	NE	30		20	U	79		20	U	20 U	20 U	20 U	20 U	20 U	1,100	20 U	1400

Notes:

1 - Standards are for Class GA groundwater according to 6NYCRR Part 700-705.

All concentrations are in ug/L unless otherwise indicated;

Boldface type designates those compounds detected at concentrations exceeding NYSDEC standards;

NE = No standard established

U = The analyte was analyzed for but not detected at or above the stated limit.

J = Result is less than the RL but greater than or equal to the MDLand the concentration is an approximate value.

D = Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution may be flagged with a D.

* = LCS or LCSD exceeds the control limits

F = Filtered sample

Table 2D. **Polychlorinated Biphenyls (PCBs) in Water Samples;** USEPA Method 8082; collected **August 1 and October 16, 2013**; 556 Columbia Street, Brooklyn, New York; PVE Sheffler File #560896

			Sample ID						
Chemical Constituent	CAS Number	NYSDEC Limit[1]	MW-1 (8-1-13)	MW-2 (8-1-13)	MW-3 (8-1-13)	MW-4 (8-1-13)	MW-5 (10-16-13)	MW-6 (10-16-13)	MW-3 (10-16-13)
PCBs									
PCB-1016	12674-11-2	0.09	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
PCB-1221	11104-28-2	0.09	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
PCB-1232	11141-16-5	0.09	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
PCB-1242	53469-21-9	0.09	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
PCB-1248	12672-29-6	0.09	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
PCB-1254	11097-69-1	0.09	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
PCB-1260	11096-82-5	0.09	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
PCB-1262	37324-23-5	0.09	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
PCB-1268	11100-14-4	0.09	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Total PCBs	1336-36-3	0.09	U	U	U	U	U	U	U

Notes:

All concentrations are in ug/L;

1 - Standards are for groundwater according 6NYCRR Part 700-705; Class GA Groundwater;

ND = Not detected, detection limit listed;

Boldface type designates those compounds detected at concentrations exceeding NYSDEC limit.

U = The analyte was analyzed for but not detected at or above the stated limit.

J = Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

D = Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution may be flagged with a D.

* = LCS or LCSD exceeds the control limits

Table 2E. **Pesticides in Groundwater Samples;** USEPA Method 8081; collected **October 21, 2013,** 556 Columbia Street, Brooklyn, New York, PVE Sheffler File #560896

			Sample Identification		
Chemical Constituent	CAS Number	NYSDEC Limit[1]	MW-5 (10-16-13)	MW-6 (10-16-13)	MW-3 (10-16-13)
Pesticides					
Delta-BHC	319-86-8	NE	ND 0.005	ND 0.005	ND 0.005
Lindane	58-89-9	NE	ND 0.004	ND 0.004	ND 0.004
Alpha-BHC	319-84-6	NE	ND 0.004	ND 0.004	ND 0.004
Beta-BHC	319-85-7	NE	ND 0.006	ND 0.006	ND 0.006
Heptachlor	76-44-8	42	ND 0.003	ND 0.003	ND 0.003
Aldrin	309-00-2	ND< MDL	ND 0.002	ND 0.002	ND 0.002
Heptachlor epoxide	1024-57-3	0.03	ND 0.004	ND 0.004	ND 0.004
Endrin	72-20-8	NE	ND 0.004	ND 0.004	ND 0.004
Endrin ketone	7421-93-4	5	ND 0.005	ND 0.005	ND 0.005
Dieldrin	60-57-1	0.004	ND 0.004	ND 0.004	ND 0.004
4,4'-DDE	72-55-9	0.2	ND 0.004	ND 0.004	ND 0.004
4,4'-DDD	72-54-8	0.3	ND 0.005	ND 0.005	ND 0.005
4,4'-DDT	50-29-3	0.2	ND 0.004	ND 0.004	ND 0.004
Endosulfan I	959-98-8	NE	ND 0.003	ND 0.003	ND 0.003
Endosulfan II	33213-65-9	NE	ND0.005	ND 0.005	ND 0.005
Endosulfan sulfate	1031-07-8	NE	ND0.005	ND 0.005	ND 0.005
Methoxychlor	72-43-5	35	ND 0.007	ND 0.007	ND 0.007
Toxaphene	8001-35-2	0.06	ND 0.063	ND 0.063	ND 0.063
cis-Chlordane	5103-71-9	0.05	ND 0.007	ND 0.007	ND 0.007
trans-Chlordane	5103-74-2	0.05	ND0.006	ND 0.006	ND 0.006
Chlordane	57-74-9	0.05	ND 0.046	ND 0.046	ND 0.046

Notes:

1 – Standards are for Class GA groundwater as established in 6NYCRR Part 700-705.

NE = Not Established

Boldface type indicates those parameters which exceed NYSDEC standards.

Units are in ug/l unless otherwise stated

U = The analyte was analyzed for but not detected at or above thestated limit.

J = Result is less than the RL but greater than or equal to the MDLand the concentration is an approximate value.

D = Surrogate or matrix spike recoveries were not obtained because the extract was diluted for analysis; also compounds analyzed at a dilution may be flagged with a D.

* = LCS or LCSD exceeds the control limits

ND = Not detected, detection limit listed

MDL = Method detection limit

Table 3. **Volatile Organic Compounds (VOCs) in Vapor Samples**
USEPA TO-15; collected **August 6 and October 2, 2013**
556 Columbia Street, Brooklyn, New York
PVE Sheffler File #560896

		NYSDOH 2003 Median Concentration (1)	NYSDOH 2003 99th Percentile Concentration (2)	Sample Identification																			
				SG-1			SG-2			SG-3			SG-4			SG-5			SG-6		
				(8-6-13)			(8-6-13)			(8-6-13)			(10-2-13)			(10-2-13)			(10-2-13)		
Constituent	CAS number			Result	Detection Limit	Qualifier	Result	Detection Limit	Qualifier	Result	Detection Limit	Qualifier	Result	Detection Limit	Qualifier	Result	Detection Limit	Qualifier	Result	Detection Limit	Qualifier
1,1,1-Trichloroethane	71-55-6	0.3	41	ND<	0.83		ND<	0.83		ND<	0.83		ND	0.83		ND	0.83		ND	0.83	
1,1,2,2-Tetrachloroethane	79-34-5	<0.25	0.8	ND<	1.0		ND<	1.0		ND<	1.0		ND	1.0		ND	1.0		ND	1.0	
1,1,2-Trichloroethane	79-00-5	<0.25	1	ND<	0.83		ND<	0.83		ND<	0.83		ND	0.83		ND	0.83		ND	0.83	
1,1-Dichloroethane	75-34-3	<0.25	0.4	ND<	0.62		ND<	0.62		ND<	0.62		ND	0.62		ND	0.62		ND	0.62	
1,1-Dichloroethene	75-35-4	<0.25	6.3	ND<	0.60		ND<	0.60		ND<	0.60		ND	0.60		ND	0.60		ND	0.60	
1,2,4-Trichlorobenzene	120-82-1	<0.25	26	ND<	1.1		ND<	1.1		ND<	1.1		ND	1.1		ND	1.1		ND	1.1	
1,2,4-Trimethylbenzene	95-63-6	1.9	35	ND<	0.75		**28**	7.5		**25**	7.5		**7.7**	0.75		**8.5**	7.5		**9.3**	0.75	
1,2-Dibromoethane	106-93-4	<0.25	<0.25	ND<	1.2		ND<	1.2		ND<	1.2		ND	1.2		ND	1.2		ND	1.2	
1,2-Dichlorobenzene	95-50-1	<0.25	2.3	ND<	0.92		ND<	0.92		ND<	0.92		ND	0.92		ND	0.92		ND	0.92	
1,2-Dichloroethane	107-06-2	<0.25	0.4	ND<	0.62		ND<	0.62		ND<	0.62		ND	0.62		ND	0.62		ND	0.62	
1,2-Dichloropropane	78-87-5	<0.25	9	ND<	0.70		ND<	0.70		ND<	0.70		ND	0.70		ND	0.70		ND	0.70	
1,3,5-Trimethylbenzene	108-67-8	0.6	25	ND<	0.75		**8.5**	7.5		**7.3**	0.75		**4.0**	0.75		**5.0**	0.75		**3.6**	0.75	
1,3-butadiene	106-99-0	NA	NA	ND<	0.34		ND<	0.34		ND<	0.34		ND	0.34		ND	0.34		ND	0.34	
1,3-Dichlorobenzene	541-73-1	<0.25	1.6	ND<	0.92		ND<	0.92		ND<	0.92		ND	0.92		ND	0.92		ND	0.92	
1,4-Dichlorobenzene	106-46-7	<0.25	25	ND<	0.92		ND<	0.92		ND<	0.92		ND	0.92		ND	0.92		ND	0.92	
1,4-Dioxane	123-91-1	NA	NA	ND<	1.1		ND<	1.1		ND<	1.1		ND	1.1		ND	1.1		ND	1.1	
2,2,4-trimethylpentane	540-84-1	NA	NA	9500	1700		2500	570		670	190		74	28		91	190		1600	190	
4-ethyltoluene	622-96-8	2.1	120	ND<	0.75		8.0	0.75		**4.6**	0.75		2.0	0.75		**3.5**	0.75		**2.4**	0.75	
Acetone	67-64-1	21	200	**1100**	180		**1300**	580		**980**	200		**210**	29		**500**	200		**210**	29	
Allyl chloride	107-05-1	NA	NA	ND<	0.48		ND<	0.48		ND<	0.48		ND	0.48		ND	0.48		ND	0.48	
Benzene	71-43-2	2.1	120	**20**	4.9		6.0	0.49		**4.5**	0.49		**6.4**	0.49		**2.9**	0.49		**3.6**	0.49	
Benzyl chloride	100-44-7	NA	NA	ND<	0.88		ND<	0.88		ND<	0.88		ND	0.88		ND	0.88		ND	0.88	
Bromodichloromethane	75-27-4	NA	NA	ND<	1.0		ND<	1.0		ND<	1.0		ND	1.0		ND	1.0		ND	1.0	
Bromoform	75-25-2	NA	NA	ND<	1.6		ND<	1.6		ND<	1.6		ND	1.6		ND	1.6		ND	1.6	
Bromomethane	74-83-9	<0.25	3.2	ND<	0.59		ND<	0.59		ND<	0.59		ND	0.59		ND	0.59		ND	0.59	
Carbon disulfide	75-15-0	NA	NA	1300	110		310	19		210	130		21	4.7		2.9	130		33	4.7	
Carbon tetrachloride	56-23-5	<0.25	3.2	ND<	0.96		ND<	0.96		ND<	0.96		ND	0.96		ND	0.96		ND	0.96	
Chlorobenzene	108-90-7	<0.25	3.2	ND<	0.70		ND<	0.70		ND<	0.70		ND	0.70		ND	0.70		ND	0.70	
Chloroethane	75-00-3	<0.25	0.9	ND<	0.40		ND<	0.40		ND<	0.40		ND	0.40		ND	0.40		ND	0.40	
Chloroform	67-66-3	<0.25	13	ND<	0.74		ND<	0.74		ND<	0.74		ND	0.74		ND	0.74		ND	0.74	
Chloromethane	74-87-3	0.5	14	ND<	0.31		ND<	0.31		ND<	0.31		ND	0.31		ND	0.31		ND	0.31	
cis-1,2-Dichloroethene	156-59-2	<0.25	4.6	ND<	0.60		ND<	0.60		**0.93**	0.60		ND	0.60		1.0	0.60		0.69	0.60	
cis-1,3-Dichloropropene	10061-01-5	<0.25	2.1	ND<	0.69		ND<	0.69		ND<	0.69		ND	0.69		ND	0.69		ND	0.69	
Cyclohexane	110-82-7	0.8	88	ND<	0.52		**330**	21		**240**	140		**210**	21		**20**	140		**74**	21	
Dibromochloromethane	124-48-1	NA	NA	ND<	1.3		ND<	1.3		ND<	1.3		ND	1.3		ND	1.3		ND	1.3	
Ethyl acetate	141-78-6	NA	NA	ND<	0.92		ND<	0.92		ND<	0.92		ND	0.92		ND	0.92		ND	0.92	
Ethylbenzene	100-41-4	1	26	ND<	0.66		ND<	0.66		**15**	6.6		**6.3**	0.66		**7.6**	6.6		**5.8**	0.66	
Freon 11	75-69-4	NA	NA	ND<	0.86		0.8	0.86		ND<	0.86		ND	0.86		ND	0.86		1.0	0.86	
Freon 113	76-13-1	NA	NA	ND<	1.2		ND<	1.2		ND<	23		ND	1.2		1.7	23		ND	1.2	
Freon 114	76-14-2	<0.25	23	ND<	1.1		ND<	1.1		ND<	1.1		ND	1.1		ND	1.1		ND	1.1	
Freon 12	75-71-8	<0.25	180	ND<	0.75		**0.85**	0.75		**2.4**	0.75		2.4	0.75		1.9	0.75		2.1	0.75	
Heptane	142-82-5	2.8	72	**620**	150		**200**	25		**370**	25		**79**	6.2		ND	25		**38**	6.2	
Hexachloro-1,3-butadiene	87-68-3	<0.25	29	ND<	1.6		ND<	1.6		ND<	1.6		ND	1.6		ND	1.6		ND	1.6	
Hexane	110-54-3	1.6	93	**850**	130		**390**	21		**190**	140		**200**	21		ND	140		**53**	21	
Isopropyl alcohol	67-63-0	NA	NA	ND<	0.37		ND<	0.37		ND<	0.37		ND	0.37		ND	0.37		ND	0.37	
m&p-Xylene	79601-23-1	1.5	46	ND<	1.3		ND<	1.3		**21**	1.3		**14**	1.3		**20**	1.3		**18**	1.3	
Methyl Butyl Ketone	591-78-6	0.3	16	ND<	1.2		ND<	1.2		ND<	1.2		ND	1.2		ND	1.2		ND	1.2	
Methyl Ethyl Ketone	78-93-3	3.4	79	ND<	0.90		ND<	0.90		ND<	0.90		ND	0.90		**14**	0.90		ND	0.90	
Methyl Isobutyl Ketone	108-10-1	0.3	16	ND<	1.2		ND<	1.2		ND<	1.2		ND	1.2		ND	1.2		ND	1.2	
Methyl tert-butyl ether	1634-04-4	0.8	230	**95**	22		**190**	22		500	22		**25**	5.5		ND	22		**15**	5.5	
Methylene chloride	75-09-2	1.4	310	ND<	0.53		ND<	0.53		ND<	0.53		ND	0.53		ND	0.53		ND	0.53	
o-Xylene	95-47-6	1.1	32	ND<	0.66		ND<	0.66		**4.9**	0.66		**5.4**	0.66		**8.3**	0.66		**6.1**	0.66	
Propylene	115-07-1	NA	NA	ND<	0.26		ND<	0.26		ND<	0.26		ND	0.26		ND	0.26		ND	0.26	
Styrene	100-42-5	0.3	6.2	ND<	0.65		ND<	0.65		ND<	0.65		**6.9**	0.65		**9.1**	0.65		ND	0.65	
Tetrachloroethylene	127-18-4	0.3	20	ND<	1.0		ND<	1.0		**1.6**	1.0		ND	1.0		2.5	1.0		ND	1.0	
Tetrahydrofuran	109-99-9	<0.25	19	ND<	0.45		ND<	0.45		ND<	0.45		ND	0.45		ND	0.45		ND	0.45	
Toluene	108-88-3	9.6	300	ND<	0.57		ND<	0.57		25	5.7		**16**	5.7		**15**	5.7		**16**	5.7	
trans-1,2-Dichloroethene	156-60-5	NA	NA	ND<	0.60		ND<	0.60		ND<	0.60		ND	0.60		ND	0.60		ND	0.60	
trans-1,3-Dichloropropene	10061-02-6	<0.25	<0.25	ND<	0.69		ND<	0.69		ND<	0.69		ND	0.69		ND	0.69		ND	0.69	
Trichloroethene	79-01-6	<0.25	7.4	ND<	0.82		ND<	0.82		**3**	0.82		4.5	0.82		7.4	0.82		4.2	0.82	
Vinyl acetate	108-05-4	NA	NA	ND<	0.54		ND<	0.54		ND<	0.54		ND	0.54		ND	0.54		ND	0.54	
Vinyl Bromide	593-60-2	NA	NA	ND<	0.67		ND<	0.67		ND<	0.67		ND	0.67		ND	0.67		ND	0.67	
Vinyl chloride	75-01-4	<0.25	0.8	ND<	0.39		ND<	0.39		ND<	0.39		ND	0.39		ND	0.39		ND	0.39	

Notes:
All units are µg/m^3 unless otherwise noted
Boldface type indicates exceedance of NYSDOH median concentration, October 2006, Appendix C
ND = Not detected at the reporting limit
J = Analyte detected at or below quantitation limits
B =Compound found in associated method blank
E = Estimated, concentration exceeds calibration range
S = Spike recovery outside accepted recovery limits
1- NYSDOH "Guidance for Evaluating Soil Vapor Intrusion in the State of New York," October 2006, Appendix C.1 NYSDOH 2003: Study of Volatile Organic Chemicals in Air of Fuel Oil Heated Homes, 1997-2003, Indoor Air- Median Result
2- NYSDOH "Guidance for Evaluating Soil Vapor Intrusion in the State of New York," October 2006, Appendix C.1 NYSDOH 2003: Study of Volatile Organic Chemicals in Air of Fuel Oil Heated Homes, 1997-2003, Indoor Air- 99th Percentile Result
NA = Analyte not analyzed in NYSDOH 2003 study

APPENDIX 1
CITIZEN PARTICIPATION PLAN

The NYC Office of Environmental Remediation and Highmark Schools 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, Highmark Schools 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, Rebecca Bub , who can be contacted about these issues or any others questions, comments or concerns that arise during the remedial process at (212) 788-8841

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

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

7 Wolcott Street
Brooklyn, NY 11231
(718) 935-0203

Mon	10:00 AM - 6:00 PM
Tue	1:00 PM - 8:00 PM
Wed	10:00 AM - 6:00 PM
Thu	10:00 AM - 6:00 PM
Fri	10:00 AM - 6:00 PM
Sat	Closed
Sun	Closed

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

Identify Issues of Public Concern. No issues of Public Concern are anticipated for this project.

Public Notice and Public Comment. Public notice to all members of the Project Contact List is required at three major steps during the performance of the cleanup program (listed below) and at other points that may be required by OER. Notices will include Fact Sheets with descriptive project summaries, updates on recent and upcoming project activities, repository information, and important phone and email contact information. All notices will be prepared by Highmark Schools, reviewed and approved by OER prior to distribution and mailed by Highmark Schools. Public comment is solicited in public notices for all work plans developed under the NYC Voluntary Cleanup Program. Final review of all work plans by OER will

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

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

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

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

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

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

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

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

APPENDIX 2
SUSTAINABILITY STATEMENT

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

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

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

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

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

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

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

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

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

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

Contaminated materials stockpiled on site pending waste characterization and off-site disposal will be covered with 6-mil poly sheeting and bermed to prevent transportation of contaminated particulate matter via stormwater. An estimate of the area of the Site that utilizes recontamination controls under this plan will be reported in the RAR in square feet.

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

An estimate of the enhanced storm-water retention capability of the redevelopment project will be included in the RAR.

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

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

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

Low-Energy Project Management Program. Highmark Schools 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 toNYC's environmental quality in a wide variety of ways. Native plant species and native habitat provide optimal support to local fauna, promote local biodiversity, and require less maintenance.

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

APPENDIX 3

SOIL/MATERIALS MANAGEMENT PLAN

1.1 SOIL SCREENING METHODS

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

1.2 STOCKPILE METHODS

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

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

1.3 CHARACTERIZATION OF EXCAVATED MATERIALS

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

1.4 MATERIALS EXCAVATION, LOAD-OUT AND DEPARTURE

The PE/QEP overseeing the remedial action will:

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

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

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

1.5 OFF-SITE MATERIALS TRANSPORT

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

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

1.6 MATERIALS DISPOSAL OFF-SITE

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

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

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

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

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

1.7 MATERIALS REUSE ON-SITE

Soil and fill that is derived from the property that meets the soil cleanup objectives established in this plan may be reused on-Site. The soil cleanup objectives for on-Site reuse are to be established by OER. Reuse on-Site' means material that is excavated during the remedy or development, does not leave the property, and is relocated within the same property and on comparable soil/fill material, and addressed pursuant to the NYC VCP agreement subject to Engineering and Institutional Controls. The PE/QEP will ensure that reused materials are segregated from other materials to be exported from the Site and that procedures defined for material reuse in this RAWP are followed. If excess material is generated during site construction, and it meets the soil cleanup objectives for on-Site reuse, it will be used as backfill for excavation areasdepicted in Figure 5.

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

1.8 DEMARCATION

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

remedy is complete. Demarcation may be established by one or any combination of these three methods. As appropriate, a map showing the method of demarcation for the Site and all associated documentation will be presented in the RAR.

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

1.9 IMPORT OF BACKFILL SOIL FROM OFF-SITE SOURCES

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

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

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

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

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

Source Screening and Testing

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

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

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

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

1.10 FLUIDS MANAGEMENT

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

groundwater meets the City's discharge criteria. The dewatering fluid will be pretreated as necessary to meet the NYC DEP discharge criteria. If discharge to the City sewer system is not appropriate, the dewatering fluids will be managed by transportation and disposal at an off-Site treatment facility.

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

1.11 STORM-WATER POLLUTION PREVENTION

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

1.12 CONTINGENCY PLAN

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

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

1.13 ODOR, DUST AND NUISANCE CONTROL

Odor Control

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

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

Dust Control

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

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

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

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

Other Nuisances

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

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

APPENDIX 4

HEALTH AND SAFETY PLAN

HEALTH AND SAFETY PLAN

Phase II Investigation Work Plan
BASIS Charter School
556 Columbia Street
Brooklyn, New York 11231
NYCDEP # TBD

Prepared by: Lawrence Environmental Group Date: September 5, 2013

Approved by: Gerard L. Baril, CIH Date: September 5, 2013
Health and Safety Manager

Approved by: Chris Brown, CPG Date: _____
Project Manager

EMERGENCY REFERENCES:

Ambulance:	Notify 911
Fire:	Notify 911
Police:	Notify 911
Hospital:	**NEW YORK METHODIST HOSPITAL** 506 6th St Brooklyn, NY 11215 (718) 780-3000

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1.0 Introduction

1.1 HASP Applicability

This site-specific Health and Safety Plan (HASP) has been developed by Lawrence Environmental Group and establishes the health and safety procedures to minimize potential risks to personnel involved with the Phase II Investigation activities at the future location of BASIS Charter School (BASIS) Site (the Site) located at 556 Columbia Street. Brooklyn, New York. This HASP applies to all personnel potentially exposed to safety and/or health hazards related to the activities described in Section 3.0 of this document.

This HASP has been prepared to comply with the applicable requirements of the Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120). Activities covered by this HASP must be conducted in complete compliance with this HASP and with all applicable Federal, State, and local health and safety regulations. Personnel covered by this HASP who cannot or will not comply will be excluded from site activities.

This HASP will be distributed to each person involved with investigative activities at the site. Each person must sign a copy of the attached HASP Receipt and Acceptance Form (see Attachment A).

1.2 Organization/Responsibilities

The implementation of health and safety at this project location will be the shared responsibility of the Project Manager (PM), the Health and Safety Manager (HSM), the Project Site Safety Officer (SSO) and all other personnel who conduct activities at the site.

- Project Manager (PM): Christopher Brown.
- Health and Safety Manager (HSM): Gerard Baril.
- Project Site Safety Officer (SSO): Tim Pagano.

1.2.1 Project Manager (PM)

The Project Manager (PM) has the primary responsibility for ensuring the overall health and safety of this project. As such, the PM is responsible for ensuring that the requirements of this HASP are implemented. Some of the PM's specific responsibilities include:

- Ensuring that all personnel to whom this HASP applies have received a copy of it;
- Providing the SSO with updated information regarding environmental conditions at the site and the scope of site work;
- Providing adequate authority and resources to the on-site SSO to allow for the successful implementation of all necessary safety procedures;
- Supporting the decisions made by the SSO;
- Maintaining regular communications with the SSO; and
- Coordinating the activities of all subcontractors and ensuring that they are aware of the pertinent health and safety requirements for this project.

1.2.2 Health and Safety Manager (HSM)

The Health and Safety Manager (HSM) is responsible for the preparation, interpretation and modification of this HASP. Modifications to this HASP which may result in less stringent precautions cannot be undertaken by the SSO without the approval of the HSM. Specific duties of the HSM include:

- Writing, approving and amending the HASP for this project;
- Advising the SSO on matters relating to health and safety on this site;
- Recommending appropriate personal protective equipment (PPE) and air monitoring instrumentation to protect personnel from potential site hazards; and
- Maintaining regular contact with the SSO to evaluate site conditions and new information which might require modifications to the HASP.

1.2.3 Site Safety Officer (SSO)

All field technicians are responsible for implementing the safety requirements specified in this HASP. One (1) technician will be designated to serve as the Site Safety Officer (SSO). The SSO will be appointed by the PM. The SSO will be on-site during all activities covered by this HASP. The SSO is responsible for enforcing the requirements of this HASP once work begins. The SSO has the authority to immediately correct all situations where non-compliance with this HASP is noted and to immediately stop work in cases where an immediate danger is perceived. Some of the SSO's specific responsibilities include:

- Ensuring that all personnel to whom this HASP applies have submitted a completed copy of the HASP Receipt and Acceptance Form (see Attachment A);
- Ensuring that all personnel to whom this HASP applies have attended a pre-entry briefing prior to entering the work zone;
- Maintaining a high level of health and safety consciousness among employees at the work site;
- Procuring and distributing the PPE needed for personnel involved with this project;
- Procuring the air monitoring instrumentation required and performing air monitoring for field activities;
- Verifying that all PPE and health and safety equipment is in good working order;
- Setting up and maintaining the work zones and ensuring proper cleanup of all site personnel;
- Notifying the PM of all non-compliance situations and stopping work in the event that an immediate danger situation is perceived;
- Monitoring and controlling the safety performance of all personnel within established restricted areas to ensure that required safety and health procedures are being followed;
- Conducting accident/incident investigations and preparing accident/incident investigation reports;
- Conducting the pre-entry briefing as required by Section 10.3 of this HASP; and
- Initiating emergency response procedures in accordance with Section 11.0 of this HASP.

1.2.4 Field Personnel and Covered Subcontractor Personnel

All field personnel covered by this HASP are responsible for following the health and safety procedures specified in this HASP and for performing their work in a safe and responsible manner. Some of the specific responsibilities of the field personnel are as follows:

- Reading this HASP in its entirety prior to the start of on-site work;
- Submitting a completed HASP Receipt and Acceptance Form (see Attachment A) and documentation of medical surveillance and training to the PM prior to the start of work;
- Attending the required pre-entry briefing prior to beginning on-site work;
- Bringing forth any questions or concerns regarding the content of this HASP to the PM or the SSO prior to the start of work;
- Reporting all accidents, injuries and illnesses, regardless of their severity, to the SSO; and
- Complying with the requirements of this HASP and the requests of the SSO.

1.2.5 Contractors

In addition to other requirements referenced in this HASP, all contractors are required to:

- Provide appropriate PPE for their employees;
- Ensure, via daily inspections, that their equipment is maintained in good working condition;
- Operate their equipment in a safe manner; and
- Appoint an on-site safety coordinator to interface with the SSO.

1.3 Modification of this HASP

The procedures in this HASP have been developed based on general knowledge of the site, proposed tasks, and anecdotal information from previous investigations at the site. Should additional information become available regarding potential on-site hazards, it may be necessary to modify this HASP. All proposed modifications to this HASP must be reviewed and approved by the HSM before such modifications are implemented.

Any significant modifications must be incorporated into the written document as addenda and the HASP must be re-issued. The PM will ensure that all personnel covered by this HASP receive copies of all issued addenda. Sign-off forms will accompany each addendum and must be signed by all personnel covered by the addendum. Sign-off forms will be submitted to the PM. The HASP addenda will be distributed during the regularly scheduled meetings so that they can be reviewed and discussed. Attendance forms will be collected during the meeting.

2.0 Site Description and History

Site Location and Current Usage

The Site is located at 556 Columbia Street in the Red Hook section of Brooklyn, New York and is identified as Block 601 and Lot 17 on the New York City Tax Map. Figure 1 shows the Site location. The Site is 48,800-square feet and is bounded by Bay Street to the north, Sigourney Street to the south, and Columbia Street to the east. It adjoins a building to the west. A map of the site boundary is shown in Figure 2. Currently, the Site is vacant but was previously used for manufacturing lithographic varnish and vehicle parking for a trucking company and other tenants. No site improvements remain, with the exception of an abandoned loading dock along the western property boundary.

Summary of Proposed Redevelopment Plan

The proposed future use of the Site will be a new charter school. Parking areas will cover the lot at the current grade. The new school will be constructed over the grade-level parking lot. The total square footage of the future school will be 80,000 square feet and will consist of five floors with no ground-level occupied spaces, with the exception of a small security outpost. Excavation depths will range from 0 to 4 feet below grade. Excavation is not anticipated below the groundwater table. The current zoning designation is MX-1 (M1-2/R6A), which is a Special Mixed Use District with mixed manufacturing and residential. The proposed use is consistent with existing zoning for the property, but will require a special use permit from the NYC Board of Standards and Appeals.

Summary of Past Uses of Site and Areas of Concern (AOC)

Historically, the Site has been operated as a lithographic varnish manufacturing facility and a parking area for a trucking company and other tenants. Currently, the Site is vacant.

The AOCs identified for this site include:

1. Potential releases of wastes or chemical products from lithographic varnish manufacturing.
2. Leakage from parked trucking or tenant's vehicles.

Summary of the Work Performed under the Remedial Investigation

In August 2013, PVE Sheffler performed the following scope of work for the enrollee, BASIS Charter School:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.)
2. Installed 12 soil borings across the project Site, and collected one soil sample from each of the12 soil borings to evaluate soil quality. Samples were analyzed for the following parameters:
    - Target Compound List (TCL) of volatile organic compounds (VOCs) via USEPA Method 8260.
    - Full semi-volatile organic compounds (SVOCs) via USEPA Methods 8270.
    - Target Analyte List (TAL) of Metals.
    - PCBs/Pesticides.
3. Installed four small-diameter groundwater monitoring wells and collected one groundwater sample from each of the four wells to evaluate groundwater quality; (elevations of the wells

were not surveyed, so groundwater flow direction was not established). Samples were analyzed for the following parameters:

- Target Compound List (TCL) of VOCs via USEPA Method 8260
- Full SVOCs via USEPA Methods 8270
- Target Analyte List (TAL) of Metals
- PCBs/Pesticides

4. Installed three sub-grade vapor sampling wells across the property. Samples submitted to for analysis of VOCs.

Summary of Soil Borings

A total of 12 soil borings (Figure 2) were completed at the site during August 2013. The borings were advanced, using a Geoprobe drilling rig, to the water table or to refusal, whichever was encountered. The soils encountered above the water table consist of fill composed of sand with lesser amounts of silt, clay, and gravel. Crushed pieces of brick and concrete were encountered in the fill. Organics were noted in some samples close to the water table. Two borings encountered refusal, prior to reaching the water table in the southeastern part of the site, which was likely caused by obstructions in the fill material. The water table was encountered at approximately 6 to 7 feet below ground surface.

Soil samples were screened for the presence of volatile organics with a photoionization detector (PID) upon opening the sample and by headspace analysis. No volatiles were detected from the samples using the PID when opening the sampling tube. About half of the fill samples registered a response for volatiles using the PID for headspace analysis, with values below 50 ppm.

At four of the test boring locations, monitoring wells were installed and screened across the water table to permit the collection of groundwater samples. The monitoring wells (Figure 2) were installed in soil borings GB-11(MW-1), GB-3 (MW-2), GB-2 (MW-3), and GB-6 (MW-4). Results of groundwater sampling are discussed below. Wells elevations were not surveyed, so groundwater flow direction was not determined.

Summary of Soil Analytical Data

Below, is a summary of the results of laboratory testing conducted on the soil samples obtained from the test boring. The tabulated results are provided in Tables 1 through 10.

Semi-Volatile Organic Compounds **-** Soil/fill samples collected during the RI contained several SVOCs at concentrations exceeding 6NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives (UUSCOs), and in some instances exceed 6NYCRR Part 375 Restricted Residential SCOs (RRSCOs). Higher SVOC concentrations were detected along the western section of the subject property. No SVOCs were detected in groundwater samples at concentration exceeding applicable standards.

Volatile Organic Compounds **-** Several VOCs were detected at trace levels with the exception of acetone, which was detected in all samples ranging from 96 to 1900 ppb, and was detected above Unrestricted Use SCOs. No VOCs were detected in groundwater samples at concentrations exceeding groundwater standards. However, based on the soil vapor results discussed below, possible volatile organic soil and groundwater contamination problem cannot be ruled out at this time. Further site characterization involving obtaining additional samples for analysis may be necessary to adequately define the extent of volatile organic contamination given that the results of this evaluation are only based on the limited data set of the 4 monitoring wells referenced above.

Metals **-** At many locations, certain metals exceeded only the Unrestricted Use SCOs. However, at many locations, certain metals exceeded both the Unrestricted Use SCOs and the Restricted Residential SCOs. Metals detected in groundwater samples at concentrations exceeding groundwater standards were iron (all wells), arsenic, (one well), barium (one well), and lead (two wells).

Pesticides and PCBs **-** Pesticides were detected at concentrations exceeding Unrestricted Use SCOs in several soil samples. None of the soil samples exceeded the Restricted Residential SCOs for pesticides. No pesticides were detected in groundwater samples at concentrations exceeding groundwater standards.

Total PCBs were detected at concentrations exceeding Unrestricted Use SCOs in only one sample. No PCBs were detected in groundwater samples at concentrations exceeding groundwater standards.

Summary of Soil Vapor Analytical Data

Preliminary data obtained from three subgrade vapor sampling well locations suggests that volatiles are present in the subsurface, which indicated the potential for a vapor intrusion condition.

Summary of Findings

1. Soils above the water table consist of a sandy fill material with lesser amounts of silt, clay, gravel, concrete fragments, and brick fragments.
2. Depth to groundwater ranges from 6 to 7 feet.
3. Groundwater flow direction beneath the site is unknown, but is inferred to be generally toward the south and west toward Red Hook Channel.
4. Semi-volatiles and metals in some samples of fill material above the water table exceeded both the Unrestricted Use SCOs and Restricted Residential SCOs.
5. No semi-volatiles, volatile organics, pesticides, or PCBs were detected in groundwater above State standards. Exceedances of State groundwater standards for metals were limited to only four parameters, occurring in only one or two wells, with the exception of iron, which exceeded the standard in all four wells.
6. Preliminary soil vapor data suggests that volatiles are present in the subsurface, which indicates the potential for a vapor intrusion condition. Given these results, additional sampling and analysis may be necessary to determine the extent of volatile organic contamination in the soil and groundwater.

3.0 SCOPE OF WORK

Based on the findings summarized above, it has been determined that supplemental soil and groundwater sampling and analysis is necessary to complete the evaluation of the subject property. The scope of work will consist of the following tasks:

1. Mark out of public utilities.
2. 40 Geoprobe soil borings to depth of 8 feet on a grid.
3. Installation, development and sampling of 4 2-inch PVC groundwater monitoring wells.
4. Data management/reporting.

Task 1 – Utility Mark-out

PVE Sheffler will request a mark-out of public utilities from the Underground Facilities Protective Organization (UFPO). To supplement the UFPO mark-out, PVE Sheffler will retain the services of a private mark-out company. Geophysical techniques (electromagnetics, GPR, etc.) will be used to determine if the previously identified fill-ports are connected to existing underground storage tanks (USTs). If tanks are identified, and can be accessed using hand tools, the contents of the USTs will be verified.

An addendum to this Work Plan will be submitted to NYCDEP if boring locations require significant alteration, or if field conditions necessitate additional tasks.

Task 2 - Soil Borings

A total of 34 soil borings (Figure 2) will be completed at the site during this phase of the investigation. The borings will be advanced using a Geoprobe drilling rig, and will be advanced to the water table or to refusal, whichever is encountered first. In the previous phase, the soils encountered above the water table consisted of fill composed of sand with lesser amounts of silt, clay, and gravel. Crushed pieces of brick and concrete were also encountered in the fill. The water table was encountered at approximately 6 to 7 feet below ground surface.

Soil samples will be screened for the presence of volatile organics with a photoionization detector (PID) upon opening the sample and by headspace analysis.

At a minimum, two soil samples will be collected from each test borings (for a total of 68 soil samples) for laboratory analysis. A surface soil sample (from the 0-2 feet bgs interval) and subsurface soil sample (from the two (2) foot interval beneath the proposed maximum excavation depth. Discrete (grab) samples will be taken from the aforementioned sampling intervals. The subsurface soil samples may also serve as in-situ post-excavation soil samples for the remedial plan. A third soil sample may be collected from each or several test boring(s) if 1) elevated PID readings and/or visual and olfactory observations are noted during borehole advancement and/or 2) field observations identify an upper fill layer underlain by native material the additional soil sample from the upper zone of the native layer will help delineate the vertical migration of impacts (if any), as well as determine a more detailed remedy and potentially provide a cost savings for disposal options.

Soil samples will be collected from up to two depths from each of the borings. If unconsolidated sediment is less than 3 feet thick, only one soil sample will be collected for analysis. Samples will be

dispensed into laboratory provided containers, packed on ice and shipped via overnight delivery to Paradigm Environmental Services (ELAP #10958) for analysis
Borings completed in bedrock will be plugged with bentonite to the top of bedrock and backfilled with sand to grade. Borings completed in unconsolidated material will be backfilled with sand and uncontaminated drill cuttings. Contaminated cuttings will be staged on site, pending waste characterization and off-site disposal. The surface will be restored with asphalt patch or concrete mix.

Task 3 – Monitoring Well Installation/Groundwater Sampling

Two 2 inch-diameter permanent groundwater monitoring wells will be installed. Representative groundwater samples will be collected using low-flow sampling techniques from all four on site wells (four small-diameter wells and the two new wells). Properly sized screen and silica sand pack will be used for noted site conditions. A representative groundwater sample will be collected from each well with a peristaltic pump and dedicated tubing. Sampling will be conducted in accordance with NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation, dated May 2010, and Sampling Guidelines and Protocols, dated March 1991. Groundwater wells will be gauged with a water level meter to record a depth to groundwater reading (1/100 foot), and if necessary, an interface meter to determine the thickness of LNAPL or DNAPL. The well casings will be surveyed by a trained QEP and/or NYS licensed surveyor to facilitate preparation of a groundwater contour map and determine the direction of groundwater flow.

Task 4 – Soil Vapor Sampling

Samples will be collected in accordance with the Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York (NYSDOH October 2006). Conditions in the field may require adjustment of sampling locations. Groundwater is expected to be encountered at a depth of 6 feet.

Two soil vapor samples will be collected from existing soil vapor implants set at a depth of approximately 3 feet. The soil vapor probe will be installed between one and two feet above the groundwater interface. The vapor implants were installed with a Geoprobe during previous investigations. Sampling will occur for the duration of 2 hours.

Sample Analysis

Soil, groundwater, and soil vapor samples will be submitted to a NYSDOH Environmental Laboratory Accreditation Program (ELAP)-certified laboratory for Full analysis:

- Volatile Organic Compounds by EPA Method 8260;
- Semi-volatile organic compounds by EPA Method 8270;
- Pesticides/PCBs by EPA Method 8081/8082;
- Target Analyte List metals by EPA Method 6010 and 7471; and
- Soil vapor samples will be analyzed for VOCs by using USEPA Method TO-15.

As depicted on the attached drawing, samples from 16 of the 34 borings will be analyzed during the first round of sample analysis. Results will be used to select samples for additional analysis from the remaining boring locations to fully delineate contaminants in soil.

All groundwater samples will be analyzed for both filtered (dissolved) and unfiltered (total) metals. 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. NYSDEC spills hotline) will be performed.

Quality Assurance/Quality Control Procedures

QA/QC procedures will be used to provide performance information with regard to accuracy, precision, sensitivity, representation, completeness, and comparability associated with the sampling and analysis for this investigation. Field QA/QC procedures will be used (1) to document that samples are representative of actual conditions at the Site and (2) identify possible cross-contamination from field activities or sample transit. Laboratory QA/QC procedures and analyses will be used to demonstrate whether analytical results have been biased either by interfering compounds in the sample matrix, or by laboratory techniques that may have introduced systematic or random errors to the analytical process. QA/QC samples (field and trip blanks, duplicates, etc.) will be collected and analyzed at an ELAP-certified laboratory.

Investigation Derived Waste

Cuttings may be disposed at the site within the borehole that generated them to within 24 inches of the surface unless:

- Free product or grossly contaminated soil, are present in the cuttings;
- The borehole has penetrated an aquitard, aquiclude or other confining layer; or extends significantly into bedrock;
- Backfilling the borehole with cuttings will create a significant path for vertical movement of contaminants. Soil additives (bentonite) may be added to the cuttings to reduce permeability;
- The soil cannot fit into the borehole.

Those soil cuttings needing to be managed on-site will be containerized in properly labeled DOT approved 55-gallon drums for future off-site disposal at a permitted facility. All boreholes which require drill cuttings disposal would ultimately be filled with bentonite chips (hydrated) and asphalt/concrete capping. Disposable sampling equipment including, spoons, gloves, bags, paper towels, etc. that came in contact with environmental media will be double bagged and disposed as municipal trash in a facility trash dumpster as non-hazardous trash.

Reporting

A Phase II Investigation Report (template version) will be prepared following completion of the field activities and receipt of the laboratory data. The report will provide detailed summaries of the investigative findings. Soil, groundwater and soil vapor analytical results will be compared to the NYSDEC Part 375-6.8(a) Unrestricted Used Soil Cleanup Objectives, appropriate Part 375-6.8(b) Restricted Soil Cleanup Objectives and NYSDEC Part 703 Groundwater Quality Standards (GQS) (class GA) or Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards (AWQS), and NYSDOH October 2006 Final Guidance for Evaluating Soil Vapor Intrusion Matrices. The report will include an updated sampling plan, spider diagrams, analytical data tables for all reported constituent compounds (including non-detectable concentrations) and remedial recommendations, as warranted.

4.0 Chemical Hazard Assessment and Controls

4.1 Chemical Hazards

The predominant contaminants potentially encountered during the subsurface investigation in soil and groundwater include: volatile and semi-volatile organic compounds (VOCs and SVOCs); and inorganic metals including arsenic, barium, cadmium, chromium, copper, lead, magnesium, manganese, mercury, nickel, vanadium, and zinc. Chemical Hazard and MSDS Sheets are provided in Attachment D.

4.1.1 Table: Occupational Exposure Limits and Ionization Potentials of VOCs and SVOCs

VOCS								
Name	**Skin Absorption**	**PEL (1) (PPM)**	**REL(2) (PPM)**	**STEL (PPM)**	**IDLH (PPM)**	**TLV (3) (PPM)**	**IP (eV)**	**Carcinogen**
Methyl-tert butyl ether	Yes	NA	NA	NA	NA	50	NA	Suspected
1,2,4-Trimethylbenzene	Yes	NA	25	NA	NA	25	8.27	
1,3,5- Trimethylbenzene	Yes	25	NA	NA	NA	25	NA	
Benzene	Yes	1	0.1	1 (2)	500	0.5	9.24	X
Ethylbenzene	Yes	100	100	125 (2)	800	20	8.76	
Isopropylbenzene	Yes	NA	NA	NA	NA	50	NA	
n-butylbenzene	Yes	NA	NA	NA	NA	NA	NA	
n-propylbenzene	Yes	NA	NA	NA	NA	NA	NA	
p-isopropyltoluene	NA	NA	NA	NA	NA	NA	NA	
Sec-butylbenzene	Yes	NA	NA	NA	NA	NA	NA	
Tert-butylbenzene	Yes	NA	NA	NA	NA	NA	NA	
m & p-xylene	Yes	100	100	150 (2)	900	100	8.56	
Methylene chloride	Yes	25	NA	125 (1)	2300	50	11.32	X
Naphthalene	Yes	10	10	15 (2)	250	10	8.12	
o-xylene	Yes	100	100	150 (2)	900	100	8.56	
Toluene	Yes	200	100	150 (2)	500	20	8.82	
Acetone	Yes	1000	250	NA	2500	500	9.69	
Tetrachloroethylene	Yes	100	NA	NA	150	25	NA	X
SVOCs								
Name	**Skin Absorption**	**PEL (1) (PPM)**	**REL(2) (PPM)**	**STEL (PPM)**	**IDLH (PPM)**	**TLV (3) (PPM)**	**IP (eV)**	**Carcinogen**
Acenaphthylene (4)	NA	NA	NA	NA	NA	NA	NA	
Acenaphthene (4)	Yes	NA	NA	NA	NA	NA	NA	
Anthracene (4)	Yes	0.2(5) mg/m3	0.1(6)mg/m3	NA	80 mg/m3	NA	NA	
Benzo(a)anthracene (4)	No	NA	NA	NA	NA	L	NA	X
Benzo(a)pyrene (4)	Yes	0.2(5) mg/m3	0.1(6)mg/m3	NA	80 mg/m3	L	NA	X
Benzo(b)fluoranthene (4)	Yes	NA	NA	NA	NA	L	NA	X
Benzo(g,h,I) perylene (4)	Yes	NA	NA	NA	NA	NA	NA	
Benzo(k)fluoranthene (4)	Yes	NA	NA	NA	NA	NA	NA	X
Chrysene (4)	Yes	0.2(5) mg/m3	0.1(6)mg/m3	NA	80 mg/m3	L	NA	X
Coal Tar Pitch Volatiles	NA	0.2 (5) mg/m3	0.1 (6)mg/m3	NA	80 mg/m3	0.2(7) mg/m3	NA	X
Dibenzo(a,h)Anthracene (4)	Yes	NA	NA	NA	NA	NA	NA	X
Fluoranthene (4)	Yes	NA	NA	NA	NA	NA	NA	Suspected

Fluorene (4)	Yes	NA	NA	NA	NA	NA	NA	Suspected
Indeno(1,2,3-cd)pyrene (4)	Yes	NA	NA	NA	NA	NA	NA	X
Phenanthrene (4)	Yes	0.2[(5)] mg/m3	0.1[(6)]mg/m3	NA	80 mg/m3	NA	NA	X
Pyrene (4)	Yes	0.2[(5)] mg/m3	0.1[(6)]mg/m3	NA	80 mg/m3	NA	NA	X

1 -OSHA (Occupational Safety and Health Administration)
PEL - Permissible Exposure Limit (OSHA Standard)
STEL -Short Term Exposure Limit
2 - NIOSH (National Institutes for Occupational Safety and Health)
REL - Recommended Exposure Limit
IDLH – Immediately Dangerous to Life and Health
STEL -Short Term Exposure Limit
3 - ACGIH (formerly American Conference of Governmental Industrial Hygienists)
TLV - Threshold Limit Value
STEL -Short Term Exposure Limit
L – exposure by all routes should be as carefully controlled to levels as low as possible
4 - PELs are listed for these items under Coal Tar Pitch Volatiles
5 - Benzene Soluble fraction
6 – Cyclohexane-extractable fraction
7 - Benzene Soluble Aerosol
NA – not applicable
PPM – parts of airborne contaminant per million parts of air (by volume)
mg/m^3 – milligrams of airborne contaminant per cubic meter of air
IP – ionization potential
eV – electron volt

OSHA PELs, ACGIH TLVs, and NIOSH RELs are time-weighted averages (TWAs), which are defined as concentrations for a normal 8-hour work day(NIOSH RELS are based on 10 hours) and 40-hour work week to which almost all workers can be exposed repeatedly without suffering adverse health effects.

Per ACGIH, a STEL is defined as the concentration to which "workers can be exposed for short time periods without irritation, chronic or irreversible tissue damage, dose-rate-dependent toxic effects, or narcosis sufficient to be likely to increase the likelihood of accidental injury, impaired self-rescue or materially reduced work efficiency." The STEL is a 15-minute TWA. STELs are used by OSHA, ACGIH, and NIOSH.

IP refers to ionization potential which is the amount of energy required to remove an electron from an atom or molecule. Air sampling devices known as photo ionization detectors (PIDs) use ultraviolet (UV) light to ionize gas molecules in order to measure the presence of volatile organic compounds (VOCs). The most common light source used in PIDs is a 10.6 eV (electron volt) lamp.

4.1.2 Chemical Hazards of Metals of Concern

The metals detected in on-site soils and associated potential health effects are presented below. If dust control measures implemented during excavation cannot maintain dust levels at an acceptable level, the SSO will notify site workers of the condition. Personal Protective Equipment (PPE) summarized in Section 4.2.2 will be utilized.

Arsenic:

Exposure Routes: Inhalation, skin absorption, skin and/or eye contact.

Symptoms: Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuropathy, respiratory irritation, hyperpigmentation of skin, potential carcinogen.

Target Organs: Liver, kidneys, skin, lungs, *and lymphatic* system.

Cancer Site: Lung & lymphatic cancer.

OSHA PEL: 0.01 mg/m^3 as an 8-hour time-weighted average (TWA).

Barium:

Exposure Routes: Inhalation, skin and/or eye contact.

Symptoms: Irritation of eyes, skin, upper respiratory system; skin burns; gastroenteritis; muscle spasm; slow pulse; extrasystoles; hypokalemia.

Target Organs: Eyes, skin, respiratory system, heart, and central nervous system.

OSHA PEL: 0.5 mg/m^3 as an 8-hour TWA.

Cadmium:

Exposure Routes: Inhalation, skin and/or eye contact.

Symptoms: Pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, substernal (occurring beneath the sternum) pain; headache; chills, muscle aches; nausea; vomiting; diarrhea; anosmia (loss of the sense of smell), emphysema; proteinuria; mild anemia; potential carcinogen.

Target Organs: Respiratory system, kidneys, prostate, and blood.

Cancer Site: Prostatic & lung cancer.

OSHA PEL: 0.005 mg/m^3 as an 8-hour TWA.

Chromium:

Exposure Routes: Inhalation, skin and/or eye contact.

Symptoms: Irritation eyes, skin; lung fibrosis.

Target Organs: Eyes, skin, and respiratory system.

OSHA PEL: 1 mg/m^3 as an 8-hour TWA.

Copper:

Exposure Routes: Inhalation skin and/or eye contact.

Symptoms: Contact can irritate and burn the eyes and skin. Inhalation can irritate the nose and throat causing coughing and wheezing.

Target Organs: Eye, skin and respiratory system.

OSHA PEL: 1 mg/m^3 as an 8-hour TWA

Lead:

Exposure Routes: Inhalation, ingestion, skin and/or eye contact.

Symptoms: Lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation eyes; hypotension.

Target Organs: Eyes, gastrointestinal tract, central nervous system, kidneys, blood, and gingival tissue.

OSHA PEL: 0.050 mg/M^3 as an 8-hour TWA.

Magnesium:

Exposure Routes: Inhalation, skin and/or eye contact.
Symptoms: Inhaling this substance can irritate the nose, throat and lungs causing tightness in the chest and difficulty in breathing.
Target Organs: Nose, throat and lungs.

OSHA PEL: 15 mg/M^3 as an 8-hour TWA.

Manganese:

Exposure Routes: Inhalation.
Symptoms: The aerosol is irritating to the respiratory tract. The substance may have effects on the lungs and central nervous system, resulting in increased susceptibility to bronchitis, pneumonitis and neurologic, neuropsychiatric disorders
Target Organs: Respiratory tract and central nervous system.

OSHA PEL: 5 mg/M^3 as a Ceiling.

Mercury:

Exposure Routes: inhalation, skin absorption, ingestion, skin and/or eye contact.
Symptoms: Irritation of eyes and skin; cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis; tremor, insomnia, irritability, indecision, headache, lassitude (weakness, exhaustion); stomatitis, salivation; gastrointestinal disturbance, anorexia, weight loss; proteinuria.
Target Organs: Eyes, skin, respiratory system, central nervous system, kidneys.

OSHA PEL: 0.1mg/m^3 as an 8-hour TWA.

Nickel

Exposure Routes: inhalation, skin absorption, ingestion, skin and/or eye contact.
Symptoms: Irritation and burning of eyes and skin; skin allergy; irritation of nose, throat and lungs; headache, dizziness and vomiting; probable lung carcinogen; asthma-like allergy; chronic bronchitis and scarring of the lungs.

Target Organs: Eyes, skin, respiratory system, kidneys and liver.

OSHA PEL: 1.0mg/m^3 as an 8-hour TWA

Vanadium:

Exposure Routes: Inhalation, skin and/or eye contact.

Symptoms: The aerosol can irritate the nose, throat and lungs causing coughing, wheezing, and/or shortness of breath. Exposure can cause headache, tremors, and dizziness. Exposure may cause an asthma-like allergy. Exposure may damage the kidneys.

Target Organs: Respiratory tract, kidneys, eyes and skin and central nervous system.

OSHA PEL: 0.5 mg/M^3 as a Ceiling.

Zinc:

Exposure Routes: Inhalation, skin and/or eye contact.

Symptoms: The aerosol can irritate the nose and throat resulting in wheezing.

Target Organs: Eyes, skin, nose and throat.

OSHA PEL: 15 mg/M^3 as a Ceiling.

4.2 Chemical Exposure and Control

4.2.1 Activities with Chemical Exposure Potential

The primary route of exposure during site activities in areas contaminated with VOCs, SVOCs and inorganic metals is direct dermal contact, accidental or incidental ingestion, and inhalation of contaminant laden dust. The following work areas and site related activities are areas where chemical exposure is possible:

- Areas where drilling activities will be conducted.
- Contact with soil boring cores and samples.
- Contact with purge water from soil borings and samples.

4.2.2 Potential Chemical Exposures and Exposure Action Levels

4.2.2.1 Metals

Exposure potential exists during excavation of soils. Airborne dust can be an issue during soil excavation operations and skin contact can be anticipated during handling. Potential worker exposures exist, through accidental ingestion and direct skin contact, during the excavation task, as airborne dusts can be generated. Semi-volatile organic compounds typically adhere to the airborne soil particles while metals are liberated as well. Of the metals identified in the soil samples, Arsenic and Cadmium possess the lowest Threshold Limit Values (TLVs) at 0.01 mg/m^3 (10 ug/m^3). The highest level of Arsenic detected in the soil samples was 63 ug/kg. The highest level of Cadmium detected in the soil samples was 10 ug/kg. Assuming an uniform distribution and applying a safety factor, worker exposure can be controlled by establishing **an action level of 0.5 mg/m^3** total airborne dust, through engineering controls such as dust control. A direct reading dust monitor (e.g. TSI DustTrak) will be used as a surrogate to obtain real time data to aid in monitoring the effectiveness of dust controls. The dust monitor will be set to sample

aerosols at PM_{10} (10 micron size particles) Exposures above the action level on 0.5 mg/m^3, will require the use of a NIOSH approved half-face respirator with an N or P, 100 filter.

4.2.2.2 Mercury Vapor

Soil data indicates the possibility of mercury exposures during performance of work at the site. The highest Mercury concentration measured in the soil was 4.3 ug/kg. Therefore, usage of a direct reading Mercury vapor analyzer will be required. The TLV for Mercury, 25 ug/m^3, will serve as the site's action level. Exposures above the Mercury TLV will require the use of a half face respirator with a NIOSH approved combination Mercury Vapor cartridge (with end of service life indicator) and P-100 pre-filter or a supplied air respirator. . PPE will be discussed in section 10.

Engineering controls such as wetting with an airless sprayer will be utilized as a control measure to suppress dust levels.

4.2.2.3 VOCs

The VOC detected in the soil borings with the lowest Threshold Limit Value level (TLV) is benzene, which has a 8 hour time weighted average (TWA) TLV of 0.5 ppm and a short term exposure limit (STEL) of 2.5 ppm. However, benzene was detected in only one of the twelve soil borings. The most frequently detected VOC with the lowest TLV was Naphthalene, which has measured in six of the twelve soil borings. The naphthalene TLV of 10 ppm will be used as the site's VOC action level. PPE will be upgraded to include NIOSH approved half-face respirators with organic vapor cartridges, if airborne concentrations of VOCs, as measured with a direct reading Photo Ionization Detector (PID) exceed 10 ppm or are above background level during on-site activities.

If PID readings in the areas above and surrounding the work area exceed 250 ppm, all on-site activities will be suspended. Future PPE selected will depend on the identity and concentrations of the contaminants encountered. PPE will be discussed in section 10.

First aid equipment will be available based on MSDS requirements.

To summarize, dust generated during excavation activities will be monitored continuously using a particulate air monitoring instrument. VOC levels during excavation activities will be continuously monitored using a PID. In the western parking area, the above monitoring activities will, be supplemented by usage of a mercury vapor analyzer. Exposure monitoring will be further discussed in section 9.

4.2.3 Exposure Control

A combination of PPE and engineering controls will be utilized to control skin contact and airborne exposures. Engineering controls will consist of demarcating areas to be bored and allow required personnel only in the work areas. Dust suppression will be used whenever possible to keep dust from becoming airborne. PPE will be discussed in section 7.

The following chemical exposure control measures will be implemented during the proposed site investigations:

- The SSO will perform air monitoring (see Section 6.1) in the worker's breathing zone to determine exposure to VOCs during field activities. If exposures exceed the action levels, respiratory protection, as discussed in Section 7.2, will be donned.

- To avoid direct dermal contact with potentially contaminated media, chemical protective clothing, as described in Section 7.1, will be required when collecting samples and decontaminating sampling equipment.
- Although highly unlikely, exposure to all of the contaminants of concern may occur via ingestion (hand-to-mouth transfer). The decontamination procedures described in Section 9.0 address personal hygiene issues that will limit the potential for contaminant ingestion.

5.0 Physical Hazards and Controls

5.1 Utility Hazards

5.1.1 Underground Utilities

New York law requires that, at least 48 hours prior to initiation of any subsurface work, a utility clearance be performed at the site. The driller will contact New York City One Center (1-800-272-4480) to request a mark-out of underground utilities in the proposed sampling areas. Work will not begin until the required utility clearances have been performed. Public utility clearance organizations typically do not mark-out underground utility lines that are located on private property. As such, the driller must exercise due diligence and try to identify the location of any private utilities on the properties being investigated. This requirement can be fulfilled in several ways, including:

- obtaining as-built drawings for the areas being investigated from the property owner;
- visually reviewing each proposed excavation location with the property owner or knowledgeable site representative;
- identifying a no-drilling/digging zone; or
- hand digging in the proposed drilling/excavation locations if insufficient data is available to accurately determine the location of the utility lines.

Natural gas and municipal water transmission and service lines are likely to be in Bay Street, Columbia Street and/or Sigourney Street. The exact location of these utilities is not known at this time. A mark-out of utilities leading to the subject property will be requested from the Underground Facilities Protection Organization.

5.1.2 Overhead Utilities

Be particularly aware of overhead power lines in the work area. Any vehicle or mechanical equipment capable of having parts of its structure elevated (drill rig, crane, etc.) near energized overhead lines shall be operated so that a clearance of at least ten (10) feet is maintained. If the voltage is higher than 50kV, the clearance shall be increased four (4) inches for every 10kV over that voltage. Overhead utility lines are located along the south side of Main Street and cross a portion of the parking lot on to the north of the building on the site.

5.2 Traffic Concerns

Work is being performed at exterior locations where traffic may be a concern (i.e. Columbia Street and intersecting cross streets). The following precautions should be followed. All are designed to draw attention to the work and to warn other people of the activities.

- Notify the property owner of your work location, dates of work and the anticipated work times. Suggest the possibility of a detour around the work area.
- Wear an orange safety vest. If work is being performed at dawn, dusk or evening, the vests must have reflective tape.
- Set up traffic cones 50 feet in front of the work area. “Work Zone” signs should also be placed in a conspicuous area to warn others of your presence.

5.3 Drilling Hazards

Use of a conventional drilling rig to complete soil borings will require all personnel in the vicinity of the operating rig to wear steel-toed boots, hardhats, hearing protection and safety eyewear. Personnel shall not remain in the vicinity of operating equipment unless it is required for their work responsibilities. Additionally, the following safety requirements must be adhered to:

- All drill probes and other machinery with exposed moving parts must be equipped with an operational emergency stop device. Drillers and geologists must be aware of the location of this device. This device must be tested prior to job initiation and periodically thereafter. The driller and helper shall not simultaneously handle augers unless there is a standby person to activate the emergency stop.
- The driller must never leave the controls while the tools are operating unless all personnel are kept clear of operating equipment.
- Drillers, helpers and geologists must secure all loose clothing when in the vicinity of drilling operations.
- Only equipment that has been approved by the manufacturer may be used in conjunction with site equipment and specifically to attach sections of drilling tools together.

5.4 Noise Exposure

The use of the drilling rig will generate noise levels that will require the use of hearing protection in the immediate vicinity. Appropriate earmuffs or earplugs (i.e., with an NRR greater than 25 dB) should be worn to prevent overexposure. The general rule of thumb is that if you have to raise your voice to be understood by someone who is standing 3 to 5 feet away from you, the noise levels are likely to be above 85 dB and therefore require the use of hearing protection.

5.5 Back Safety

Using the proper techniques to lift and move heavy pieces of equipment, such as drums of investigation-derived wastes, are important to reduce the potential for back injury. The following precautions should be implemented when lifting or moving heavy objects.

- Use mechanical devices to move objects, such as drums of investigation derived wastes, that are too heavy to be moved manually.
- If mechanical devices are not available, ask another person to assist you.
- Bend at the knees, not the waist. Let your legs do the lifting.
- Do not twist while lifting.
- Bring the load as close to you as possible before lifting.
- Be sure the path you are taking while carrying a heavy object is free of obstructions and slip, trip and fall hazards.

5.6 Electrical Safety

If using portable tools that are electrically powered, follow the safety precautions listed below:

- Check to see that electrical outlets used to supply power during field operations is of the three (3) wire grounding type.

- Extension cords used for field operations should be of the three (3) wire grounding type and designed for hard or extra-hard usage. This type of cord uses insulated wires within an inner insulated sleeve and will be marked S, ST, STO, SJ, SJO or SJTO.
- NEVER remove the ground plug blade to accommodate ungrounded outlets.
- Do not use extension cords as a substitute for fixed or permanent wiring. Do not run extension cords through openings in walls, ceilings or floors.
- Protect the cord from becoming damaged if the cord is run through doorways, windows or across pinch points.
- Examine extension and equipment cords and plugs prior to each use. Damaged cords with frayed insulation or exposed wiring and damaged plugs with missing ground blades must be removed from service immediately.
- All portable or temporary wiring which is used outdoors or in other potentially wet or damp locations must be connected to a circuit that is protected by a ground fault circuit interrupter (GFCI). GFCI's are available as permanently installed outlets, as plug-in adapters and as extension cord outlet boxes. Do not continue to use a piece of equipment or extension cord that causes a GFCI to trip.
- When working in flammable atmospheres, be sure that the electrical equipment being used is approved for use in Class I, Division I atmospheres.
- Do not touch a victim who is still in contact with current. Separate the victim from the source using a dry, non-metallic item such as a broom stick or cardboard box. Be sure your hands are dry and you are standing on a dry surface. Turn off the main electrical power switch and then begin rescue efforts.

5.7 Thermal Stress

The hazards of both heat and cold stress are addressed in this HASP.

5.7.1 Heat Stress

Types of Heat Stress

Heat related problems include heat rash, fainting, heat cramps, heat exhaustion and heat stroke. Heat rash can occur when sweat isn't allowed to evaporate, leaving the skin wet most of the time and making it subject to irritation. Fainting may occur when blood pools to lower parts of the body and as a result, does not return to the heart to be pumped to the brain. Heat related fainting often occurs during activities that require standing erect and immobile in the heat for long periods of time. Heat cramps are painful spasms of the muscles due to excessive salt loss associated with profuse sweating. Heat exhaustion results from the loss of large amounts of fluid and excessive loss of salt from profuse sweating. The skin will be clammy and moist and the affected individual may exhibit giddiness, nausea and headache.

Heat stroke occurs when the body's temperature regulatory system has failed. The skin is hot, dry, red and spotted. The affected person may be mentally confused and delirious. Convulsions could occur. Early recognition and treatment of heat stroke are the only means of preventing brain damage or death. A person exhibiting signs of heat stroke should be removed from the work area to a shaded area. The person should be soaked with water to promote evaporation. Fan the person's body to increase cooling. Immediate medical assistance is needed in case of heat stroke. Dial 911 to request an ambulance.

Increased body temperature and physical discomfort also promote irritability and a decreased attention to the performance of hazardous tasks.

Early Symptoms of Heat-Related Health Problems:

- decline in task performance
- incoordination
- decline in alertness
- unsteady walk
- excessive fatigue
- reduced vigilance
- muscle cramps
- dizziness

Susceptibility to Heat Stress Increases due to:

- lack of physical fitness
- lack of acclimation
- increased age
- dehydration
- obesity
- drug or alcohol use
- sunburn
- infection

People unaccustomed to heat are particularly susceptible to heat fatigue. First timers in PPE need to gradually adjust to the heat.

The Effect of Personal Protective Equipment

Sweating normally cools the body as moisture is removed from the skin by evaporation. However, the wearing of certain personal protective equipment (PPE), particularly chemical protective coveralls (e.g., Tyvek), reduces the body's ability to evaporate sweat and thereby regulate heat buildup. The body's efforts to maintain an acceptable temperature can therefore become significantly impaired by the wearing of PPE.

Measures to Avoid Heat Stress:

The following guidelines should be adhered to when working in hot environments:

- Establish work-rest cycles (short and frequent are more beneficial than long and seldom).
- Identify a shaded, cool rest area.
- Rotate personnel, alternate job functions.
- Water intake should be equal to the sweat produced. Most workers exposed to hot conditions drink less fluids than needed because of an insufficient thirst. Do not depend on thirst to signal when and how much to drink. For an 8-hour work day, 50 ounces of fluids should be consumed.
- Eat lightly salted foods or drink salted drinks such as Gatorade to replace lost salt.
- Save most strenuous tasks for non-peak heat hours such as the early morning or at night.
- Avoid alcohol during prolonged periods of heat. Alcohol will cause additional dehydration.
- Avoid double shifts and/or overtime.

The implementation and enforcement of the above-mentioned measures will be the joint responsibility of the PM and SSO. Potable water and fruit juices should be made available each day for the field team.

Heat Stress Monitoring Techniques

Site personnel should regularly monitor their heart rate as an indicator of heat strain by the following method:

Check radial pulse rates by using fore- and middle fingers and applying light pressure to the pulse in the wrist for one (1) minute at the beginning of each rest cycle. If the pulse rate exceeds 110 beats/minute,

shorten the next work cycle by one-third and keep the rest period the same. If, after the next rest period, the pulse rate still exceeds 110 beats/minute, shorten the work cycle again by one-third.

5.7.2 Cold Stress

Types of Cold Stress

Cold injury is classified as either localized, as in frostbite, frostnip or chilblain; or generalized, as in hypothermia. The main factors contributing to cold injury are exposure to humidity and high winds, contact with wetness and inadequate clothing.

The likelihood of developing frostbite occurs when the face or extremities are exposed to a cold wind in addition to cold temperatures. The freezing point of the skin is about 30^{o}F. The fluids around the cells of the body tissue freeze, causing the skin to turn white. This freezing is due to exposure to extremely low temperatures. As wind velocity increases, heat loss is greater and frostbite will occur more rapidly.

Symptoms of Cold Stress

The first symptom of frostbite is usually an uncomfortable sensation of coldness, followed by numbness. There may be a tingling, stinging or aching feeling in the effected area. The most vulnerable parts of the body are the nose, cheeks, ears, fingers and toes.

Symptoms of hypothermia, a condition of abnormally low body temperature, include uncontrollable shivering and sensations of cold. The heartbeat slows and may become irregular, the pulse weakens and the blood pressure changes. Pain in the extremities and severe shivering can be the first warning of dangerous exposure to cold.

Maximum severe shivering develops when the body temperature has fallen to 95^{o}F. This must be taken as a sign of danger and exposure to cold must be immediately terminated. Productive physical and mental work is limited when severe shivering occurs.

Methods to Prevent Cold Stress

When the ambient temperature, or a wind chill equivalent, falls to below 40^{o}F, site personnel who must remain outdoors should wear insulated coveralls, insulated boot liners, hard hat helmet liners and insulated hand protection. Wool mittens are more efficient insulators than gloves. Keeping the head covered is very important, since 40% of body heat can be lost when the head is exposed. If it is not necessary to wear a hard hat, a wool knit cap provides the best head protection. A face mask may also be worn.

Persons should dress in several layers rather than one single heavy outer garment. The outer piece of clothing should ideally be wind and water proof. Clothing made of thin cotton fabric or synthetic fabrics such as polypropylene is ideal since it helps to evaporate sweat. Polypropylene is best at wicking away moisture while still retaining its insulating properties. Loosely fitting clothing also aids in sweat evaporation. Denim is not a good protective fabric. It is loosely woven which allows moisture to penetrate. Socks with a high wool content are best. If two pairs of socks are worn, the inner sock should be smaller and made of cotton, polypropylene or a similar type of synthetic material that wicks away moisture. If clothing becomes wet, it should be taken off immediately and a dry set of clothing put on.

If wind conditions become severe, it may become necessary to shield the work area temporarily. The SSO and the PM will determine if this type of action is necessary. Heated break trailers or a designated area that is heated should be available if work is performed continuously in the cold at temperatures, or equivalent wind chill temperatures of 20^{o}F.

Dehydration occurs in the cold environment and may increase the susceptibility of the worker to cold injury due to significant change in blood flow to the extremities. Drink plenty of fluids, but limit the intake of caffeine.

6.0 Air Monitoring

6.1 Monitoring Parameters and Action Levels

Based on the existing Site data, it is not expected that significant levels of organic vapors will be encountered during the Site work. However, air monitoring will be conducted for VOCs. Air monitoring of the breathing zone will be conducted periodically or continuously during excavation activities to assure proper health and safety protection for the team, workers, and passersby.

VOCs will be monitored with a PID in accordance with the C-HASP with an action level of 10 ppm in the absence of benzene. If the action level is exceeded and adequate ventilation cannot be provided, work will cease and the potential affected portion of the work area will be evacuated, until adequate mechanical ventilation can be setup to reduce the VOC exposure. Level C respiratory protection may be donned in accordance with the C-HASP, if the action level is exceeded.

Fugitive dust generation that could affect Site workers, Site occupants, or the public is not expected because the majority of work will be conducted in moist soil. Soil that is not moist will be wetted as appropriate to minimize visible dust emissions. Particulate monitoring will be conducted at the perimeter of the Site. If dust levels exceed the action level of 0.5 mg/m^3 or background levels (whichever is highest), based on PM-10 size for a duration exceeding 15 or more minutes, work activities will be suspended until dust levels are diminished to an acceptable level.

During the performance of site work, mercury vapor will be monitored using a factory calibrated direct instrument such as the Jerome 431-X. If mercury vapor levels exceed the action level of 0.025 mg/m^3 for a duration exceeding 15 or more minutes, work activities will be suspended until mercury levels diminish to an acceptable level.

All monitoring instruments must be calibrated and maintained periodically. Calibration and on-site maintenance records will be kept in the field log book. The operator must understand the limitations and possible sources of errors for each instrument. It is important that the operator checks that the instrument responds properly to the substances it was designed to monitor. Portable air quality monitoring equipment that measures total volatile organic compounds present such as the Rae Systems MiniRae 2000 (or equivalent) photo ionization detector (PID) must be calibrated at least once per week. Dust monitors must be calibrated at least once a week. The specific instructions for calibration and maintenance provided for each instrument should be followed.

Site air monitoring data will be reviewed weekly by a Certified Industrial Hygienist (CIH). Electronic copies of all air monitoring data will be maintained by the CIH.

Air monitoring results will be recorded in the field book during site activities and made available for NYCDEP and New York State Department of Health (NYSDOH) review.

The following table summarizes **air monitoring action levels** established for the site:

Contaminants	Action level	Actions
Organic Vapor		Measure and record the upwind background concentration.
	Reading **less than 10 ppm** above background for a sustained period of 15 minutes in WBZ.	Continue work in Level D protection.
	Reading **greater than 10 ppm** above background for a sustained period of 15 minutes in the WBZ	Discontinue work, allow work area to ventilate, collect additional PID readings. If concentrations remain greater than 10 ppm, work can resume in Level C protection with respiratory protection equipped with organic vapor cartridges.
	Readings **greater than 100 ppm** above background for a sustained period of 15 minutes in the WBZ.	Discontinue work, allow work area to ventilate, collect additional PID readings until concentrations are below 100 ppm before work can resume.
Dusts		Measure and record the upwind background concentration.
	Reading **less than 0.5 mg/m3**, based on PM-10, above background for a sustained period of 15 minutes in the WBZ.	Continue work in level D protection.
	Reading **greater than 0.5 mg/m3, based on PM-10,** above background for a sustained period of 15 minutes in the WBZ	Discontinue work. Employ dust suppression using a water spray, collect additional airborne dust measurements. If concentrations remain greater than 0.5 mg/m^3, work can resume in Level C protection with respiratory protection equipped with P-100 cartridges.
Mercury Vapor		Measure and record the upwind background concentration.
	Reading **less than 0.025 mg/m3** above background for a sustained period of 15 minutes in the WBZ.	Continue work in level D protection.
	Reading **greater than 0.25 mg/m3** above background for a sustained period of 15 minutes in the WBZ	Discontinue work, allow work area to ventilate, collect additional Hg vapor readings. If concentrations remain greater than 1.0 mg/m^3, work can resume in Level C protection with respiratory protection equipped with mercury vapor cartridges with HEPA pre-filter.
	Readings **greater than 2.5 mg/m^3** above background for a sustained period of 15 minutes in the WBZ.	Discontinue work, allow work area to ventilate, collect additional Hg vapor readings until concentrations are below **2.5 mg/m^3** before work can resume.

6.2 Direct Reading Instruments

A PID such as the RAE MiniRAE 2000, equipped with a 10eV lamp, shall be used to monitor total VOCs during soil excavation activities. The PID is an appropriate direct-read monitoring instrument given the suspected presence of VOC contamination in on-site soil.

Dust levels will be monitored using a particulate air monitoring instrument (PM10).

Mercury vapor will be monitored using a factory calibrated direct instrument such as the Jerome 431-X or an equivalent device.

6.3 Personal Air Sampling

OSHA does not require the collection of personal air sampling during the proposed activities. As such, this type of monitoring will not be conducted by personnel during any of the proposed tasks.

6.4 Record Keeping

Air monitoring results will be recorded in the field book during construction activities and made available for NYCDEP and New York State Department of Health (NYSDOH) review.

Site air monitoring data will be reviewed weekly by the HSM. Electronic copies of all air monitoring data will be maintained by the HSM.

7.0 Personal Protective Equipment

Personal protective equipment (PPE) will be worn during site activities to prevent on-site personnel from being injured by the safety hazards posed by the site and/or the activities being performed. In addition, chemical protective clothing will be worn to prevent direct dermal contact with the site's chemical contaminants.

In general, field activities will be conducted in Level D PPE, as described in the table below. PPE will be upgraded to Level C if air monitoring demonstrates VOCs, dust or mercury vapor concentrations in the breathing zone exceeding the action levels outlined in Section 4.2.2. Level C will only be considered during task 1 if tanks are identified and an attempt is made to identify the contents.

If the concentration of volatile organics which can be detected with a PID equals or exceeds the specified action level (100 ppm) or mercury levels exceed 2.5 ppm, all field personnel associated with the project will immediately retreat to a location up-wind of the source of contamination. At this point the SSO must consult with the HSM, who will review the condition with PVE Sheffler home office staff to discuss appropriate actions.

7.1 Chemical Protective Clothing

The following tables describe the Level D and Level C PPE and chemical protective clothing to be worn for general site activities and for certain specific tasks.

Level D PPE

PPE Item	Task 1	Task 2	Task 3	Task 4
Hard Hat	✓	✓	✓	
Steel Toed Safety Shoes	✓	✓	✓	
Safety Glasses with Side shields		✓	✓	
Traffic Vests	*	*	*	
Inner PVC/Outer Nitrile Gloves		✓	✓	
Hearing Protection		✓		

Level C PPE

PPE Item	Task 1	Task 2	Task 3	Task 4
Hard Hat	✓	✓	✓	
Steel Toed Safety Shoes	✓	✓	✓	
Safety Glasses with Side shields	✓	✓	✓	
Traffic Vests	*	*	*	
Inner PVC/Outer Nitrile Gloves	✓	✓	✓	
Hearing Protection		✓		
Half-Face Respirator	✓	✓	✓	
Tyvek Protective Suit	✓	✓	✓	

Task 1 – Utility mark-out/UST Investigation (* - when working in or near streets)
Task 2 – Soil Borings (* - when working in or near streets)
Task 3 –Groundwater Sampling (* - when working in or near street)

7.2 Respiratory Protection

Level D PPE: No respiratory protection required. Air monitoring devices will be used to determine when PPE will be upgraded to include respiratory protection (Section 4.2.2 and 6.0).

Level C PPE: Half-mask, air-purifying respirator equipped with organic vapor/PM100 cartridges.

Respiratory protection will also be worn if odors become objectionable at any time, if respiratory tract irritation is noticed, or if VOCs are detected in the breathing zone as discussed in Section 4.2.2. All on-site personnel who are expected to wear respiratory protection must have successfully passed a qualitative or quantitative fit-test within the past year for the brand, model and size respirator they plan to wear during the proposed activities.

7.3 Other Safety Equipment

The field team will bring the following additional safety items to the site for use as necessary:

- Portable, hand-held eyewash bottles
- First aid kit
- Portable communications equipment
- Fire Extinguisher

8.0 Site Control

8.1 Work Zones

To prevent both exposure of unprotected personnel and migration of contamination due to tracking by personnel or equipment, work areas along with personal protective equipment requirements will be clearly identified. Work areas or zones will be designated as suggested in the "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities," NIOSH/OSHA/USCG/EPA, November, 1985. They recommend the areas surrounding each of the work areas to be divided into three zones:

- Exclusion or "hot" Zone
- Contamination Reduction Zone (CRZ)
- Support Zone

8.1.1 Exclusion Zone

An exclusion zone (work zone) will be established around each boring location. This zone will move as work progresses to each boring location. This zone should be large enough (i.e. 20 foot radius) to protect unprotected personnel from contact with vapors or dusts that may arise from these operations as well as the physical hazards associated with the operation of heavy equipment. Traffic cones or tape will be used to demarcate the active exclusion zone.

All personnel entering the exclusion zone must be trained in accordance with the requirements defined in Section 10.2 of this HASP and must wear the prescribed level of personal protective equipment.

8.1.2 Contamination Reduction Zone

The decontamination zone will be established adjacent to the exclusion zone. Personnel will remove contaminated gloves and other disposable items in this area and place them in a plastic bag until they can be properly disposed of. Reusable equipment, if any, will be decontaminated with tap water, deionized water, methanol, nitric acid and a liquid detergent solution. A complete description of decontamination procedures is presented in Appendix A to the Remedial Investigation Work Plan.

8.1.3 Support Zone

At this site, the support zone will include the area outside of the decontamination zone.

8.2 Safety Practices

The following measures are designed to augment the specific health and safety guidelines provided in this plan.

- Eating, drinking, chewing gum or tobacco, smoking or any practice that increases the probability of hand-to-mouth transfer and ingestion of materials is prohibited in the immediate work area and the decontamination zone.
- Smoking is prohibited in all work areas. Matches and lighters are not allowed in these areas.
- Hands and face must be thoroughly washed upon leaving the work area and before eating, drinking or any other activities.
- Beards or other facial hair that interfere with respirator fit are prohibited.
- The use of alcohol or illicit drugs is prohibited during the conduct of field operations.
- All equipment must be decontaminated or properly discarded before leaving the site in accordance with the project work plan.

9.0 Decontamination

9.1 Personal Decontamination

Proper decontamination is required of all personnel before leaving the site. Decontamination will occur within the contamination reduction zone. Disposable PPE will be removed in the decontamination zone and placed in lined garbage bags.

If worn, respirators will be cleaned after each use with respirator wipe pads and will be stored in plastic bags after cleaning.

Regardless of the type of decontamination system required, a container of potable water and liquid soap will be made available so employees can wash their hands before leaving the site for lunch or for the day.

9.2 Equipment Decontamination

Reusable equipment, if any, will be decontaminated with tap water, deionized water, methanol, nitric acid and a liquid detergent solution. A complete description of decontamination procedures is presented in Appendix A to the Remedial Investigation Work Plan.

10.0 Medical Monitoring and Training Requirements

10.1 Medical Monitoring

Medical monitoring (29 CFR 1910.1020(f)) is not a requirement of this HASP.

10.2 Health and Safety Training

Although not a requirement for the activities at this site, personnel performing activities covered by this HASP are recommended to have completed the appropriate training requirements specified in 29 CFR 1910.120(e). Each individual should have completed an annual 8-hour refresher-training course and/or initial 40-hour training course within the last year prior to performing any work on the sites covered by this HASP.

10.3 Pre-Entry Briefing

The SSO will conduct a pre-entry briefing before site activities begin. HASP receipt and acceptance sheets will be collected at this meeting. Short safety refresher meetings will be conducted, as needed, throughout the duration of the project. Attendance of the pre-entry meeting is mandatory and will be documented by the SSO. An attendance form is presented in Attachment B.

11.0 Emergency Response

OSHA defines emergency response as any "response effort by employees from outside the immediate release area or by other designated responders (i.e., mutual-aid groups, local fire departments, etc.) to an occurrence which results, or is likely to result in an uncontrolled release of a hazardous substance." On-site personnel shall not participate in any emergency response where there are potential safety or health hazards (i.e., fire, explosion, or chemical exposure). Response actions will be limited to evacuation and medical/first aid as described within this section below. As such this section is written to comply with the requirements of 29 CFR 1910.38 (a).

The basic elements of an emergency evacuation plan include:

- employee training,
- alarm systems,
- escape routes,
- escape procedures,
- critical operations or equipment,
- rescue and medical duty assignments,
- designation of responsible parties,
- emergency reporting procedures and
- methods to account for all employees after evacuation.

11.1 Employee Training

Employees must be instructed in the site-specific aspects of emergency evacuation. On-site refresher or update training is required anytime escape routes or procedures are modified or personnel assignments are changed. The SSO must verify the specific evacuation procedures that the facility prefers contractors follow in the event of a facility-related emergency. This information will be communicated to the field team during the pre-entry briefing.

11.2 Alarm Systems/Emergency Signals

An emergency communication system must be in effect at all sites. The most simple and effective emergency communication system in many situations will be direct verbal communication. Each site must be assessed at the time of initial site activity and periodically as the work progresses. Verbal communication must be supplemented anytime voices can not be clearly perceived above ambient noise levels (i.e., noise from drilling probe) and anytime a clear line-of-sight can not be easily maintained among all personnel because of distance, terrain or other obstructions.

Verbal communication will be adequate to warn on-site personnel of hazards associated with the immediate work area. However, the two person sampling team may be split up during the day to expedite sampling. Each team member will be equipped with a cellular phone to ensure immediate communication can occur between each other. These phones can also be used to contact local emergency responders.

11.3 Escape Routes and Procedures

The SSO will verify the escape routes from each work area with a facility representative. Assembly areas must also be identified. The escape routes and assembly areas will be reviewed during the pre-entry briefing. All personnel on site are responsible for knowing the escape route from the site and where to assemble after evacuation.

11.4 Rescue and Medical Duty Assignments

The phone numbers of the police and fire departments, ambulance service, local hospital, and project representatives are provided in the emergency reference sheet and on the cover of this HASP. This sheet will be posted in the site vehicle.

In the event an injury or illness requires more than first aid treatment, the SSO will accompany the injured person to the medical facility and will remain with the person until release or admittance is determined. The SSO will relay all appropriate medical information to the on-site project manager and the HSM.

If the injured employee can be moved from the accident area, he or she will be brought to the contamination reduction zone where their PPE will be removed. If the person is suffering from a back or neck injury the person will not be moved and the requirements for decontamination do not apply. The SSO must familiarize the responding emergency personnel about the nature of the site and the injury. If the responder feels that the PPE can be cut away from the injured person's body, this will be done on-site. If this not feasible, decontamination will be performed after the injured person has been stabilized.

11.5 Designation of Responsible Parties

The SSO is responsible for initiating emergency response. In the event the SSO can not fulfill this duty, the PM or HSO will take charge.

11.6 Employee Accounting Method

The SSO is responsible for identifying all personnel on-site at all times. On small, short duration jobs this can be done informally as long as accurate accounting is possible.

11.7 Accident Reporting and Investigation

Any incident (other than minor first aid treatment) resulting in injury, illness or property damage requires an accident investigation and report. The investigation should be conducted as soon as emergency conditions are under control. The purpose of the investigation is not to attribute blame but to determine the pertinent facts so that repeat or similar occurrences can be avoided. An accident investigation form is presented in Attachment C of this HASP. The Supervisor of the injured personnel and the HSM should be notified immediately of the injury.

If a subcontractor personnel is injured, they are required to notify the SSO. Once the incident is under control, the subcontractor will submit a copy of their company's accident investigation report to the SSO.

Emergency references

Project Representatives:

Timothy Pagano, PG (SSO)	Office:	845/454-2544
PVE Sheffler	Cell:	845/702-0786
One Civic Center Plaza Suite 501		
Poughkeepsie, New York 12601		

Drilling Contractor:

Aquifer Drilling and Testing	Office	(845) 266-8322
Dennis Mayer	Cell	(914) 456-2290
HydroEnvironmental Solutions	Office	(914) 276-2560

ATTACHMENT A

Health and Safety Plan Receipt and Acceptance Form

Health and Safety Plan Receipt and Acceptance Form

Remedial Investigation Work Plan
BASIS Charter School
556 Columbia Street
Brooklyn, New York, 11231
NYCDEP # TBD

I have received a copy of the Health and Safety Plan prepared for the above-referenced site and activities. I have read and understood its contents and I agree that I will abide by its requirements.

Name/Signature	Organization	Date

ATTACHMENT B

Health and Safety Plan Pre-Entry Briefing Attendance Form

Health and Safety Plan Pre-Entry Briefing Attendance Form

Remedial Investigation Work Plan
BASIS Charter School
556 Columbia Street
Brooklyn, New York, 11231
NYCDEP # TBD

Briefing Conducted By: _____

Date Performed: _____

Printed Name	Signature	Representing

ATTACHMENT C

Supervisor's Accident Investigation Report Form

SUPERVISOR'S ACCIDENT INVESTIGATION REPORT

Injured Employee _____ Job Title _____

Home Office _____ Division/Department _____

Date/Time of Accident _____

Location of Accident _____

Witnesses to the Accident _____

Injury Incurred? _____ Nature of Injury _____

_____

Engaged in What Task When Injured? _____

_____

Will Lost Time Occur? ____ How Long? _____ Date Lost Time Began _____

Were Other Persons Involved/Injured? _____

_____

How Did the Accident Occur? _____

_____

_____

_____

_____

What Could Be Done to Prevent Recurrence of the Accident? _____

_____

_____

What Actions Have You Taken Thus Far to Prevent Recurrence? _____

_____

_____

Supervisor's Signature _____ Title _____ Date _____

Reviewer's Signature _____ Title _____ Date _____

Note: If the space provided on this form is insufficient, provide additional information on a separate page and attach. The completed accident investigation report must be submitted to the Health and Safety Manager within two days of the occurrence of the accident.

ATTACHMENT D

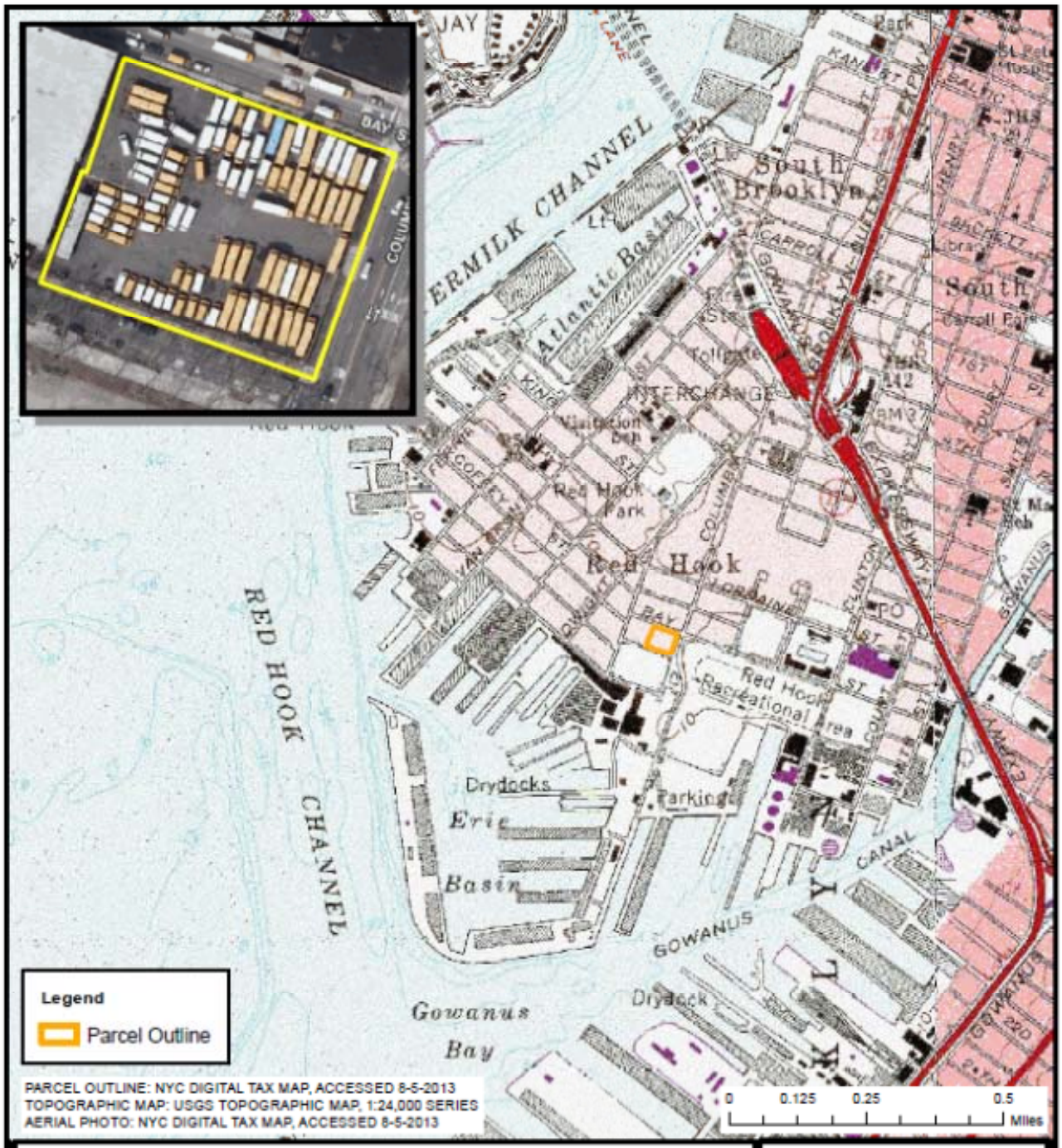
Chemical Hazard and MSDS Sheets

RCRA Metals

Volatile Organic Compounds

Semi-Volatile Organic Compounds

FIGURES



SITE LOCATION MAP

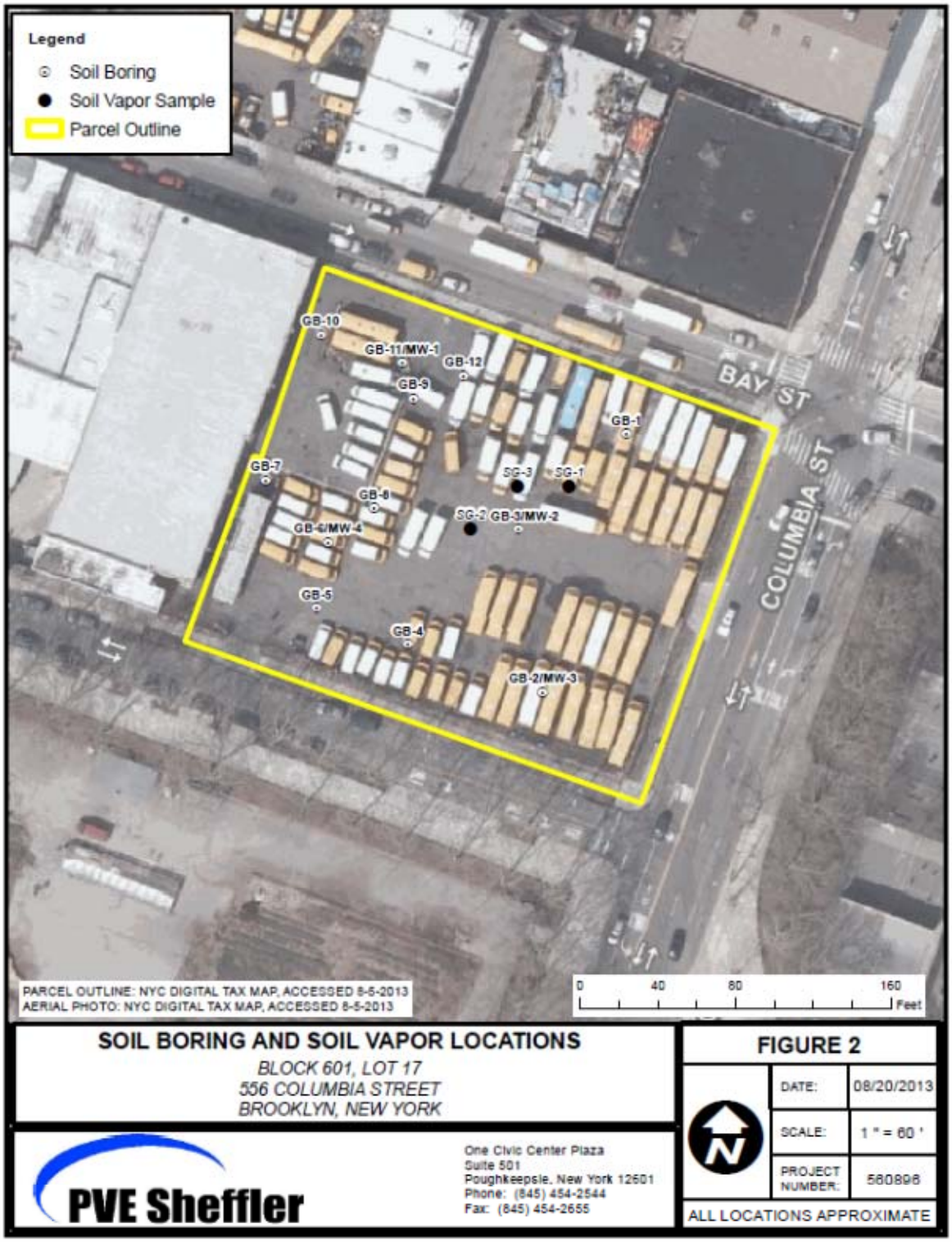
BLOCK 601, LOT 17
556 COLUMBIA STREET
BROOKLYN, NEW YORK

FIGURE 1

DATE:	08/05/2013
SCALE:	As Indicated
PROJECT NUMBER:	560896

ALL LOCATIONS APPROXIMATE

PVE Sheffler
One Civic Center Plaza
Suite 501
Poughkeepsie, New York 12601
Phone: (845) 454-2544
Fax: (845) 454-2655



SOIL BORING AND SOIL VAPOR LOCATIONS

BLOCK 601, LOT 17
556 COLUMBIA STREET
BROOKLYN, NEW YORK

FIGURE 2

DATE:	08/20/2013
SCALE:	1 " = 60 '
PROJECT NUMBER:	560896

ALL LOCATIONS APPROXIMATE

PVE Sheffler
One Civic Center Plaza
Suite 501
Poughkeepsie, New York 12601
Phone: (845) 454-2544
Fax: (845) 454-2655

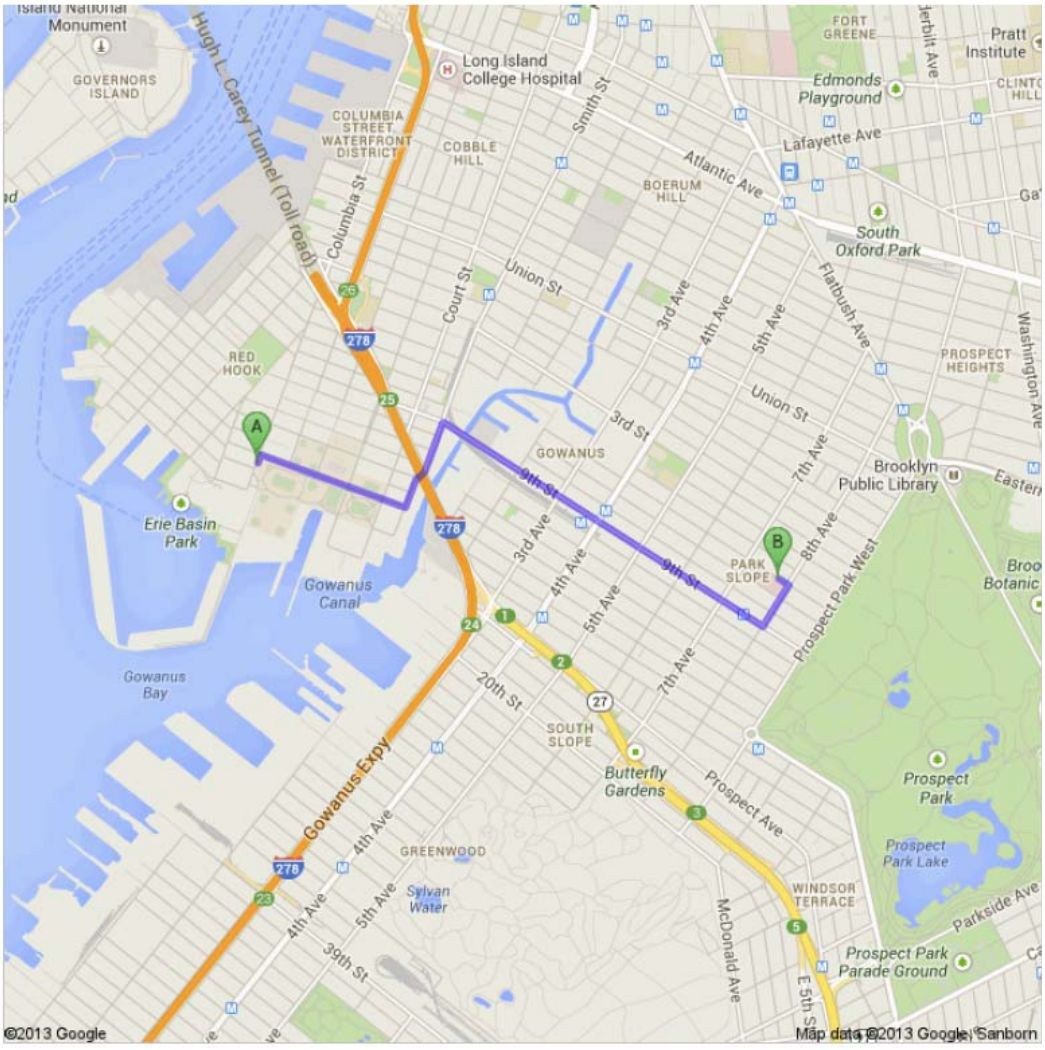
Figure 3
Route to Nearest Hospital

Directions to Hospital

A 556 Columbia St, Brooklyn, NY 11231

1.	Head **north** on **Columbia St** toward **Bay St**	go 141 ft total 141 ft
2.	Take the 1st right onto **Bay St** About 2 mins	go 0.5 mi total 0.5 mi
3.	Turn left onto **Smith St** About 1 min	go 0.3 mi total 0.8 mi
4.	Take the 2nd right onto **9th St** About 4 mins	go 1.2 mi total 1.9 mi
5.	Turn left onto **8th Ave** About 54 secs	go 0.1 mi total 2.1 mi
6.	Turn left at the 3rd cross street onto **6th St** Destination will be on the left	go 194 ft total 2.1 mi

B 506 6th St, Brooklyn, NY 11215



PARTNERS FOR ARCHITECTURE

13-607

NEW CONSTRUCTION FOR: BASIS INDEPENDENT SCHOOLS

556 COLUMBIA STREET
BROOKLYN, NY 11231

Issued to:
BUILDING DEPARTMENT

Issued for:
PERMIT

Issued on:
08/19/13

48 UNION STREET,
STAMFORD, CT 06906
P 203/708.0047, F203/348.4165
WWW.PFARCH.NET

ZONING :

SITE: 556 COLUMBIA STREET, BROOKLYN, NY 11231

BLOCK NO.: 601 LOTS: 17

COMMUNITY PLANNING BOARD: 306

ZONE DISTRICT: M1-1 (page 16a)

LOT AREA: 48,623.00 SF

PROPOSED USE: SCHOOL - USE GROUP 3

(42-31) SCHOOL PERMITTED BY SPECIAL PERMIT OF THE BOARD OF STANDARDS AND APPEALS.

MAXIMUM ALLOWABLE FLOOR AREA

(41-122) MAXIMUM FLOOR AREA FOR COMMUNITY FACILITY BUILDING SCHOOL)

MAXIMUM PERMITTED FLOOR AREA RATIO (FAR): 2.40

(LA)43,623.00 SF x (FAR)2.40 = **104,695.20 SF MAXIMUM ALLOWABLE FLOOR AREA**

PROPOSED FLOOR AREA: 82,895 SF

REFER TO FLOOR AREA PLANS ON THIS SHEET.

FLOOR AREA SCHEDULE	
FLOOR	FLOOR AREA
5	15,124 SF
4	13,606 SF
3	14,977 SF
2	13,524 SF
1	23,741 SF
*BASEMENT	1,923 SF
**BASEMENT	0 SF
TOTAL FLOOR AREA	82,895 SF

* STAIR AND ELEVATOR ENCLOSURES

** 12-10 (b)(IV)
FLOOR AREA OF A BUILDING SHALL NOT INCLUDE FLOOR SPACE USED FOR ACCESSORY OFF-STREETPARKING SPACES PROVIDED IN ANY STORY LOCATED NOT MORE THAN 23 FEET ABOVE CURB LEVEL.

(43-25) MINIMUM REQUIRED SIDE YARDS:

NO SIDE YARD REQUIRED - IF PROVIDED, MINIMUM 8 FEET WIDE.

SIDE YARD PROVIDED - REFER TO SITE PLAN

(43-26) MINIMUM REQUIRED REAR YARDS

MINIMUM 20 FEET REAR YARD REQUIRED.

(43-28 (b)) THROUGH LOT PORTION:

- PROVIDED TWO OPEN AREAS ADJOINING STREET LINE A DEPTH OF 20 FEET PROVIDED AT EACH STREET LINE. REFER TO SITE PLAN.

(43-311) WITHIN 100 FEET OF CORNERS: NO REAR YARD REQUIRED

(12-10) CORNER LOT PORTION: REFER TO SITE PLAN

(43-46) SIGOURNEY ST. - PARK ACROSS THE STREET?

BC 1106.1 - H.C. CAR SPACES - 5% OF TOTAL CARS.

BC 1106.5 - VAN SPACE FOR EVERY 6 H.C. SPACES (SEE ICCA 117.1 + SEC.502 B.C.)

BC 1106.5 - VAN SPACE FOR EVERY 6 H.C. SPACES 11' WIDE - ACCESSABLE 5' WIDE

(44-20) (44-21) PARKING FOR COMMUNITY FACILITY USE - NOT REQUIRED

PROPOSED = 66 PARKING SPACES

(44-42) MIN DIMENSIONS OF CAR SPACE = 18'-00" LONG x 8'-6" WIDE

(43-02) STREET TREE PLANTING REQUIRED

(37-90) COMMUNITY FACILITY PARKING TO COMPLY WITH SECTION 37-90 - N/A

AVERAGE CURB ELEVATION

BAY ST. L.G. 7.2+6.0 = 13.2÷2= 6.6 AVG.

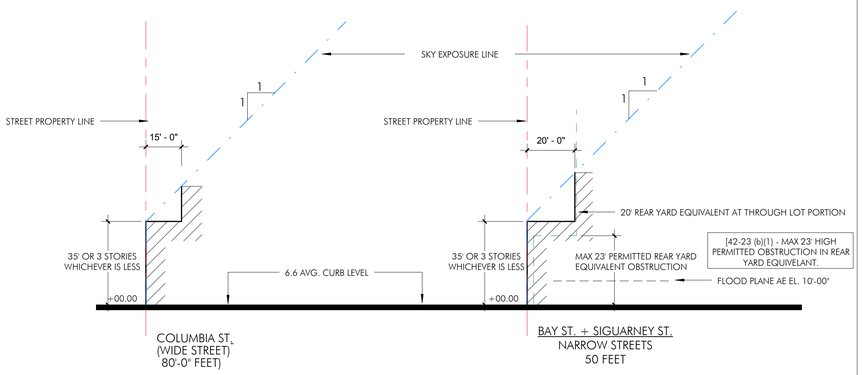
COLUMBIA ST. L.G. 6.0÷6.0 = 6.0 AVG.

SIGOURNEY ST. L.G. 6.1 + 8.3 = 14.4 = 7.2 AVG.

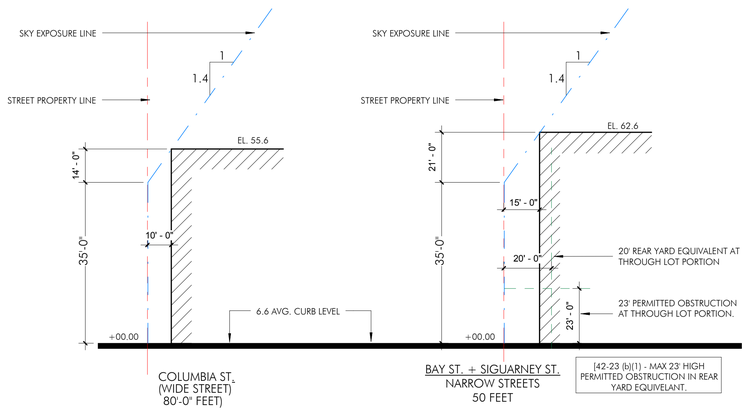
19.8 / 3 = 6.60 AVG. CURB LEVEL

(43-40) HEIGHTS & SETBACKS:

(43-43) MAXIMUM HEIGHT OF FRONT WALL AND REQUIRED SETBACKS: REFER TO ZD1 ZONING DIAGRAM



FRONT SETBACKS (REQUIRED)



(43-44) ALTERNATE FRONT SETBACKS (REQUIRED)

BUILDING CODE DATA:

SITE : 556 COLUMBIA STREET, BROOKLYN, NY 11231

PROPOSED: SCHOOL - USE GROUP 3

USE CLASSIFICATION: EDUCATIONAL GROUP 3 - SCHOOL

(TABLE 503) ALLOWABLE BUILDING HEIGHTS & AREAS
GROUP : E
CONSTRUCTION CLASSIFICATION: 1B
MAXIMUM HEIGHT: 160 FEET - PROPOSED :75'
MAXIMUM STORIES: UNLIMITED - PROPOSED: BASEMENT + FLOORS
MAXIMUM BUILDING AREA: UNLIMITED- REFER TO FLOOR AREA SCHEDULE

(TABLE 601/602) FIRE RESISTANCE RATING REQUIREMENTS:

CONSTRUCTION TYPE:	REQUIRED	PROPOSED
STRUCTURAL FRAME	2 HRS	2 HRS
BEARING WALLS		
EXTERIOR	2 HRS	N/A
INTERIOR	2 HRS	N/A
NON-BEARING WALLS AND PARTITIONS		
EXTERIOR (TABLE 602)	1 HR (AT WEST WALL)	1 HR
INTERIOR	0 HRS	AS APPLICABLE TO OTHER BLDG AREAS
FLOOR CONSTRUCTION	2 HRS	2 HRS
ROOF CONSTRUCTION	1 HR	1 HR

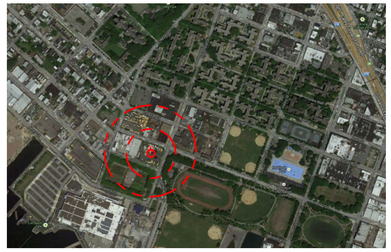
(910.5) SMOKE VENTING OF SHAFTS:

SHAFTS GREATER IN AREA OF 4 SQ. FT. - MIN VENT OF 3.5% OF SHAFT AREA

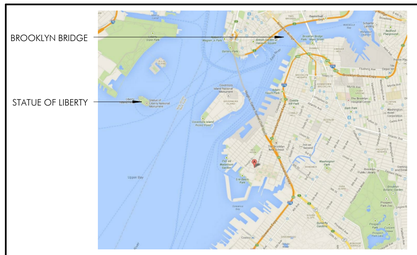
ENTIRE BUILDING IS SPRINKLERED AT ALL FLOORS.

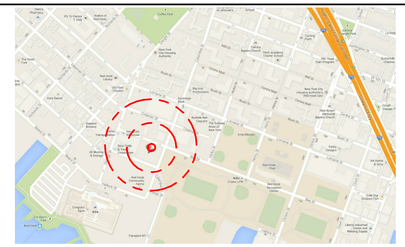
(1002.0) GROUP E - CORRIDOR IS DEFINED AS AN INTERIOR CORRIDOR SERVING ONLY ONE TENANT

SPECIAL INSPECTIONS REQUIREMENTS:	CODE/SECTION
FLOOD ZONE COMPLIANCE	G105
EMERGENCY POWER SYSTEMS	1704.13 / 2702
STRUCTURAL STEEL - ERECTION & BOLTING	1704.3.2,.3
STRUCTURAL COLD-FORMED STEEL	1704.3.4
CONCRETE - CAST-IN-PLACE	1704.4
SOILS - INVESTIGATIONS (BORINGS/TEST PITS0	1704.7.4
CONCRETE TEST CYLINDERS	1905.6
CONCRETE DESIGN MIX	1905.3
MECHANICAL SYSTEMS	1704.15
SPRINKLER SYSTEMS	1704.21
STANDPIPE SYSTEMS	1704.22
HEATING SYSTEMS	1704.23



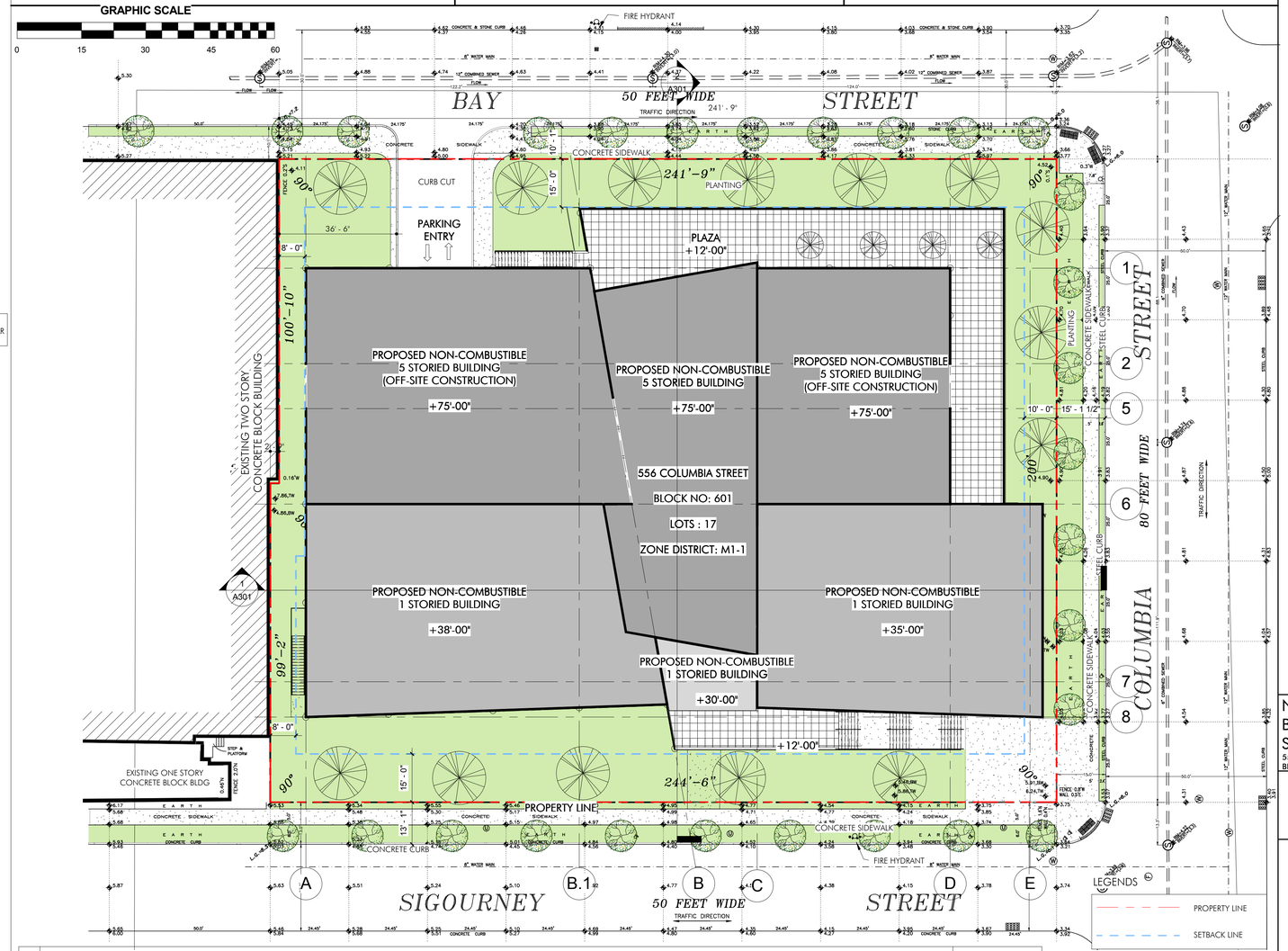
SATELLITE VIEW





MAP VIEW

GRAPHIC SCALE
0 15 30 45 60



1 SITE PLAN — SCALE 1" = 20'-0"

ISSUED TO | DATE | ISS/REV | DESCRIPTION

PARTNERS FOR ARCHITECTURE
48 UNION STREET,
STAMFORD, CT 06906
P 203/708.0047
F 203/348.4165
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NORTH

NEW CONSTRUCTION FOR:
BASIS INDEPENDENT SCHOOLS
556 COLUMBIA STREET
BROOKLYN, NY 11231

GENERAL INFORMATION

SEAL & SIGNATURE

DATE: 08.19.2013
PROJECT NO.: 13-607
DRAWN BY: BT
CHECKED BY: VG
DRAWING NO: G101

CADD FILE NO:
C:\Users\Staff\Documents\13-607 BASIS Brooklyn-PTA-r2-CENTRAL_bhatt.rvt

BASEMENT EGRESS		
CODE REF	COMPONENT	(AS PER CODE)
NYCBC 1004.1.2	OCCUPANT LOAD	0 OCCUPANTS - PARKING, LOBBY, STORAGE, MECHANICAL ROOMS
NYCBC 1005.1	DOORS	
	REQUIRED	N/A
	PROPOSED	4 DOORS @ 36 INCHES EACH = **144 INCHES**
NYCBC 1005.1	STAIRWAYS	
	REQUIRED	NOT AT GRADE STREET LEVEL
	PROPOSED	N/A

EGRESS WITH DATA		
	MINIMUM INCHES / OCC. REQUIRED	INCHES / OCC. PROPOSED
STAIR WIDTH	NONE - FLOOR AT STREET LEVEL	NONE
DOOR WIDTH	0.2"/OCC.	4 DOORS AT 36" EACH = 144"

TOTAL CAPACITY OF DOORS
4 DOORS AT 36" WIDE EACH TOTAL OCCUPANTS ALLOWED = 720 OCCUPANTS
TOTAL OCCUPANTS PROPOSED = 0 OCCUPANTS (PARKING + STORAGE)

FLOOR AREA CALC.	
FLOOR	**AREA**
BASEMENT	1,923 S.F.
LEVEL 1	23,741 S.F.
LEVEL 2	13,524 S.F.
LEVEL 3	14,977 S.F.
LEVEL 4	13,606 S.F.
LEVEL 5	15,124 S.F.
TOTAL AREA	82,895 S.F.

BAY STREET
NARROW STREET - 50 FEET

TRAFFIC DIRECTION

PARKING ENTRY

CURB CUT

PLAZA
+12'-00"

99' - 0"
11 SPACES @ 9'-0" X 18'-0"

241'-9"

100'-10"

SES/ UTILITY
734 SF | S-2 | - | 3B

PROPOSED NON-COMBUSTIBLE
5 STORIED BUILDING
(OFF-SITE CONSTRUCTION)
+75'-00"

PROPOSED NON-COMBUSTIBLE
5 STORIED BUILDING
72' - 0"
8 SPACES @ 9'-0"
+75'-00"

PROPOSED NON-COMBUSTIBLE
5 STORIED BUILDING
(OFF-SITE CONSTRUCTION)
+75'-00"

LOBBY
526 SF | E | -

SECURITY
407 SF | B | 2

VESTIBULE
122 SF | E | -

M.R.
135 SF | F-2 | -

4 SPACES @ 9'-0" X 18'-0"

7 SPACES @ 9'-0" X 18'-0"

6 SPACES @ 9'-0" X 18'-0"

3 SPACES @ 9'-0" X 18'-0"

PROPOSED NON-COMBUSTIBLE
1 STORIED BUILDING
+38'-00"

TOTAL PARKING SPACES: 60

PROPOSED NON-COMBUSTIBLE
1 STORIED BUILDING
+35'-00"

9 SPACES @ 9'-0" X 18'-0"

PROPOSED NON-COMBUSTIBLE
1 STORIED BUILDING
+30'-00"

+12'-00"

99'-2"

244'-6"

EXISTING ONE STORY
CONCRETE BLOCK BLDG

EXISTING ONE STORY
CONCRETE BLOCK BUILDING

PROPERTY LINE

SIGOURNEY STREET
NARROW STREET - 50 FEET

COLUMBIA STREET
WIDE STREET - 80 FEET

CONCRETE SIDEWALK
EARTH
CONCRETE CURB
STEEL CURB
SIDEWALK
PLANTING
STONE CURB
FENCE 0.2'S
FENCE 0.8'W
WALL 0.5'E
NCE 0.6'W
ALL 0.5'E

1 GROUND LEVEL PLAN

SCALE 3/32" = 1'-0"

BASIS INDEPENDENT SCHOOLS

DESCRIPTION	ISSUED TO	DATE	ISS/REV

PARTNERS FOR ARCHITECTURE
48 UNION STREET,
STAMFORD, CT 06906
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NEW CONSTRUCTION FOR:
BASIS INDEPENDENT SCHOOLS
556 COLUMBIA STREET
BROOKLYN, NY 11231

BASEMENT FLOOR PLAN

SEAL & SIGNATURE

DATE:	08.19.2013
PROJECT NO.:	13-607
DRAWN BY:	BT
CHECKED BY:	IO
DRAWING NO:	A101

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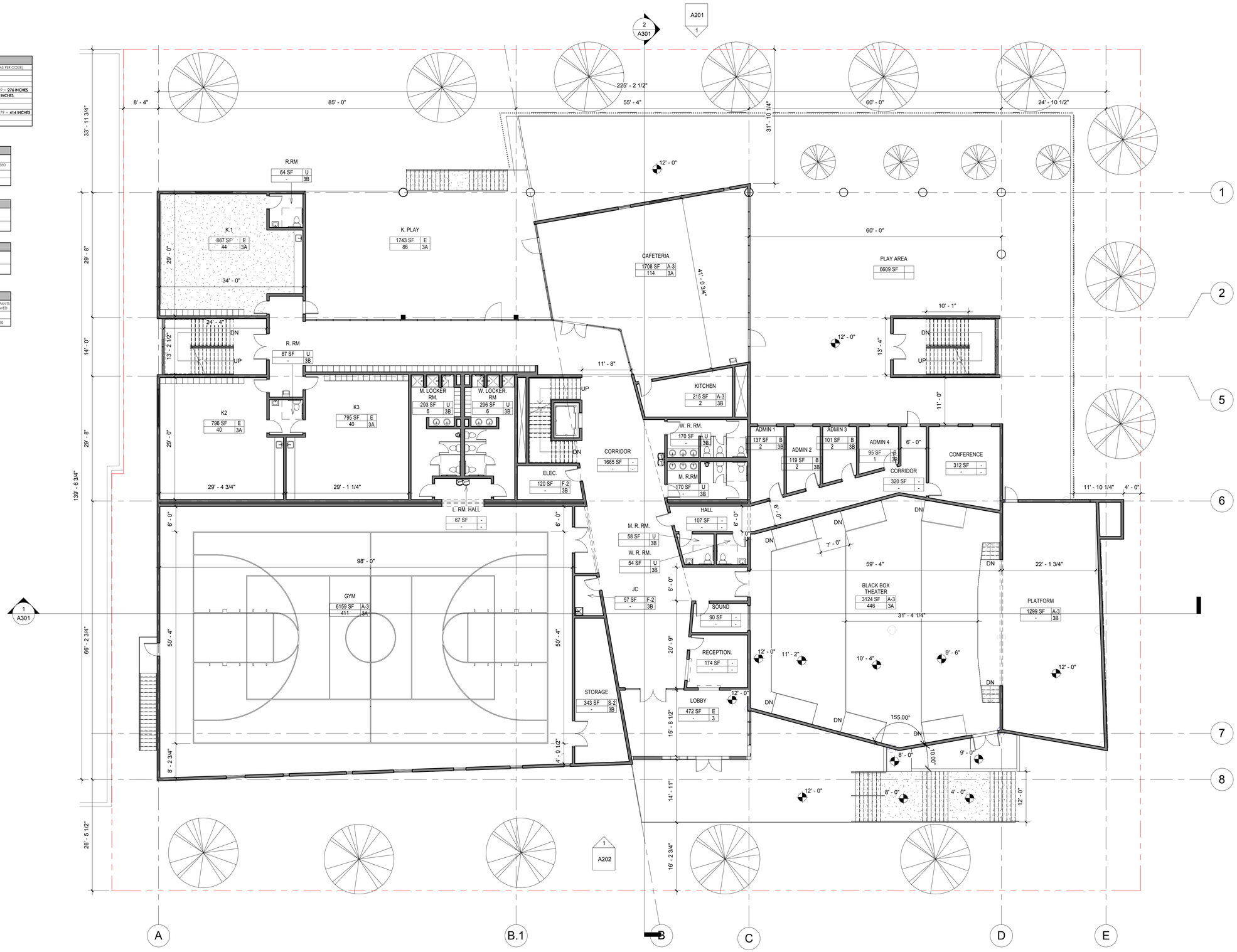
1st FLOOR EGRESS			
CODE REF.	COMPONENT		(AS PER CODE)
NYCBC 1004.1.2	OCCUPANT LOAD	1379 OCCUPANTS	
NYCBC 1005.1	DOORS		
	REQUIRED	0.2 INCHES x OCCUPANTS = 0.2 x 169 =	**276 INCHES**
	PROPOSED	9 DOORS @ 36 INCHES EACH =	**324 INCHES**
NYCBC 1005.1	STAIRWAYS		
	REQUIRED	0.3 INCHES x OCCUPANTS = 0.3 x 1379 =	**414 INCHES**
	PROPOSED	4 STAIRS = 426 INCHES	

EGRESS WITH DATA		
STAIRS AND DOORS		
	MINIMUM INCHES / OCC. REQUIRED	INCHES / OCC. PROPOSED
STAIR WIDTH	0.3"/OCC 414"	0.301"/OCC 414"
STAIR DOOR WIDTH	0.2"/OCC 276"	0.231"/OCC 324"

TOTAL CAPACITY OF STAIRS
414" WIDE STAIRS = 1,380 TOTAL OCCUPANTS ALLOWED = 1,380 OCCUPANTS
TOTAL OCCUPANTS PROPOSED = 1,379 OCCUPANTS

TOTAL CAPACITY OF DOORS
324" WIDE DOORS = 1,440 TOTAL OCCUPANTS ALLOWED = 1,620 OCCUPANTS
TOTAL OCCUPANTS PROPOSED = 1,379 OCCUPANTS

STAIRS			DOORS		
MAX. OCCUPANT PER TABLE 1005.1	"/OCC PROVIDED	OCCUPANTS ALLOWED	MAX. OCCUPANT PER TABLE 1005.1	"/OCC PROVIDED	OCCUPANTS ALLOWED
STAIRS					
0.3"/OCC.	0.3"/OCC.	1,380	0.2"/OCC.	0.23"/OCC	1620



BASIS INDEPENDENT SCHOOLS

DESCRIPTION

ISSUED TO

DATE

ISS/REV

PARTNERS FOR ARCHITECTURE

48 UNION STREET,
STAMFORD, CT 06906
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NEW CONSTRUCTION FOR: BASIS INDEPENDENT SCHOOLS

556 COLUMBIA STREET
BROOKLYN, NY 11231

FIRST FLOOR PLAN

SEAL & SIGNATURE

DATE: **08.19.2013**
PROJECT NO.: **13-607**
DRAWN BY: **BT**
CHECKED BY: **IO**
DRAWING NO:

A102

CADD FILE NO:
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1 LEVEL 1 FLOOR PLAN

SCALE 3/32" = 1'-0"

2nd FLOOR EGRESS			
NYCBC 1004.1.2	**OCCUPANT LOAD**	314 OCCUPANTS	(AS PER CODE)
NYCBC 1005.1	**DOORS**		
	REQUIRED:	0.2 INCHES x OCCUPANTS = 0.2 x 314 = **63 INCHES**	
	PROPOSED:	4 DOORS @ 36 INCHES = **144 INCHES**	
NYCBC 1005.1	**STAIRWAYS**		
	REQUIRED:	0.3 INCHES x OCCUPANTS = 0.3 x 314 = **94 INCHES**	
	PROPOSED:	2 STAIRS AT 75" EACH = 150 INCHES	

EGRESS WITH DATA		
STAIR A		
	MINIMUM INCHES / OCC. REQUIRED	INCHES / OCC. PROPOSED
STAIR WIDTH	0.3"/OCC. 44"	0.47/OCC. 75"
STAIR DOOR WIDTH	0.2"/OCC. 34"	0.46"/OCC. 72"
STAIR B		
	MINIMUM INCHES / OCC. REQUIRED	INCHES / OCC. PROPOSED
STAIR WIDTH	0.3"/OCC. 44"	0.47/OCC. 75"
STAIR DOOR WIDTH	0.2"/OCC. 34"	0.46"/OCC. 72"

TOTAL CAPACITY OF STAIRS A+B
75" WIDE STAIR A = 250 OCCUPANTS ALLOWED
75" WIDE STAIR B = 250 OCCUPANTS ALLOWED
TOTAL OCCUPANTS ALLOWED = 500 OCCUPANTS
TOTAL OCCUPANTS PROPOSED = 314 OCCUPANTS

TOTAL CAPACITY OF DOORS @ STAIRS A+B
75" WIDE DOOR @STAIR A = 360 OCCUPANTS ALLOWED
75" WIDE DOOR @ STAIR B = 360 OCCUPANTS ALLOWED
TOTAL OCCUPANTS ALLOWED = 720 OCCUPANTS
TOTAL OCCUPANTS PROPOSED = 314 OCCUPANTS

STAIRS			DOORS		
MAX. OCCUPANT PER TABLE 1005.1	"/OCC PROVIDED	OCCUPANTS ALLOWED	MAX. OCCUPANT PER TABLE 1005.1	"/OCC PROVIDED	OCCUPANTS ALLOWED
STAIR A					
0.3"/OCC.	0.47"/OCC.	250	0.2"/OCC.	0.46"/OCC	360
STAIR B					
0.3"/OCC.	0.47"/OCC.	250	0.2"/OCC.	0.46"/OCC	360
TOTAL ALLOWED		500	TOTAL ALLOWED		720

BASIS INDEPENDENT SCHOOLS

DESCRIPTION	ISS/REV	DATE	ISSUED TO

PARTNERS FOR ARCHITECTURE
48 UNION STREET,
STAMFORD, CT 06906
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NEW CONSTRUCTION FOR: BASIS INDEPENDENT SCHOOLS

556 COLUMBIA STREET
BROOKLYN, NY 11231

SECOND FLOOR PLAN

SEAL & SIGNATURE

DATE: **08.19.2013**
PROJECT NO.: **13-607**
DRAWN BY: **BT**
CHECKED BY: **IO**
DRAWING NO:
A103

CADD FILE NO:
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1 LEVEL 2 FLOOR PLAN

SCALE 3/32" = 1'-0"

3rd FLOOR EGRESS			
NYCBC 1004.1.2	**OCCUPANT LOAD**	499 OCCUPANTS	(AS PER CODE)
NYCBC 1005.1	**DOORS**		
	REQUIRED	0.2 INCHES x OCCUPANTS = 0.2 x 499 = **100 INCHES**	
	PROPOSED	4 DOORS @ 36 INCHES = **144 INCHES**	
NYCBC 1005.1	**STAIRWAYS**		
	REQUIRED	0.3 INCHES x OCCUPANTS = 0.3 x 499 = **150 INCHES**	
	PROPOSED	2 STAIRS AT 75" EACH = 150 INCHES	

EGRESS WITH DATA		
STAIR A		
	MINIMUM INCHES / OCC. REQUIRED	INCHES / OCC. PROPOSED
STAIR WIDTH	0.3"/OCC. 44"	0.3"/OCC. 75"
STAIR DOOR WIDTH	0.2"/OCC. 30"	0.3"/OCC. 72"
STAIR B		
	MINIMUM INCHES / OCC. REQUIRED	INCHES / OCC. PROPOSED
STAIR WIDTH	0.3"/OCC. 44"	0.3"/OCC. 75"
STAIR DOOR WIDTH	0.2"/OCC. 30"	0.3"/OCC. 72"

STAIRS			DOORS		
MAX. OCCUPANT PER TABLE 1005.1	%OCC PROVIDED	OCCUPANTS ALLOWED	MAX. OCCUPANT PER TABLE 1005.1	%OCC PROVIDED	OCCUPANTS ALLOWED
STAIR A					
0.3"/OCC.	0.3"/OCC.	250	0.2"/OCC.	0.3"/OCC.	360
STAIR B					
0.3"/OCC.	0.3"/OCC.	250	0.2"/OCC.	0.3"/OCC.	360
TOTAL ALLOWED		500	TOTAL ALLOWED		720

TOTAL CAPACITY OF STAIRS A+B
75" WIDE STAIR A = 250 OCCUPANTS ALLOWED
75" WIDE STAIR B = 250 OCCUPANTS ALLOWED
TOTAL OCCUPANTS ALLOWED = 500 OCCUPANTS
TOTAL OCCUPANTS PROPOSED = 499 OCCUPANTS

TOTAL CAPACITY OF DOORS @ STAIRS A+B
72" WIDE DOOR @STAIR A = 360 OCCUPANTS ALLOWED
72" WIDE DOOR @ STAIR B = 360 OCCUPANTS ALLOWED
TOTAL OCCUPANTS ALLOWED = 720 OCCUPANTS
TOTAL OCCUPANTS PROPOSED = 499 OCCUPANTS

1 LEVEL 3 FLOOR PLAN

SCALE 3/32" = 1'-0"

BASIS INDEPENDENT SCHOOLS

ISS/REV	DATE	DESCRIPTION
		ISSUED TO

PARTNERS FOR ARCHITECTURE

48 UNION STREET,
STAMFORD, CT 06905
P 203/708.0047
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NEW CONSTRUCTION FOR: BASIS INDEPENDENT SCHOOLS

556 COLUMBIA STREET
BROOKLYN, NY 11231

THIRD FLOOR PLAN

SEAL & SIGNATURE

DATE: **08.19.2013**
PROJECT NO.: **13-607**
DRAWN BY: **BT**
CHECKED BY: **IO**
DRAWING NO:

A104

CADD FILE NO.:
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Basis
Brooklyn-PFA-v2-CENTRAL_bStaff.rvt

4th FLOOR EGRESS			
NYCBC 1004.1.2	**OCCUPANT LOAD**	407 OCCUPANTS	(AS PER CODE)
NYCBC 1005.1	**DOORS**		
	REQUIRED:	0.2 INCHES x OCCUPANTS = 0.2 x 407 = **81 INCHES**	
	PROPOSED:	4 DOORS @ 36 INCHES = **144 INCHES**	
NYCBC 1005.1	**STAIRWAYS**		
	REQUIRED:	0.3 INCHES x OCCUPANTS = 0.3 x 407 = **122 INCHES**	
	PROPOSED:	2 STAIRS AT 75" EACH = **150 INCHES**	

EGRESS WITH DATA		
STAIR A		
	MINIMUM INCHES / OCC. REQUIRED	INCHES / OCC. PROPOSED
STAIR WIDTH	0.3"/OCC. 44"	0.37"/OCC. 72"
STAIR DOOR WIDTH	0.2"/OCC. 29"	0.35"/OCC. 72"
STAIR B		
	MINIMUM INCHES / OCC. REQUIRED	INCHES / OCC. PROPOSED
STAIR WIDTH	0.3"/OCC. 44"	0.37"/OCC. 75"
STAIR DOOR WIDTH	0.2"/OCC. 29"	0.35"/OCC. 72"

STAIRS			DOORS		
MAX. OCCUPANT PER TABLE 1005.1	"/OCC. PROVIDED	OCCUPANTS ALLOWED	MAX. OCCUPANT PER TABLE 1005.1	"/OCC PROVIDED	OCCUPANTS ALLOWED
STAIR A					
0.3"/OCC.	0.37"/OCC.	250	0.2"/OCC.	0.35"/OCC	360
STAIR B					
0.3"/OCC.	0.37"/OCC.	250	0.2"/OCC.	0.35"/OCC	360
TOTAL ALLOWED		500	TOTAL ALLOWED		720

TOTAL CAPACITY OF STAIRS A+B
75" WIDE STAIR A = 250 OCCUPANTS ALLOWED
75" WIDE STAIR B = 250 OCCUPANTS ALLOWED
TOTAL OCCUPANTS ALLOWED = 500 OCCUPANTS
TOTAL OCCUPANTS PROPOSED = 407 OCCUPANTS

TOTAL CAPACITY OF DOORS @ STAIRS A+B
72" WIDE DOOR @STAIR A = 360 OCCUPANTS ALLOWED
72" WIDE DOOR @ STAIR B = 360 OCCUPANTS ALLOWED
TOTAL OCCUPANTS ALLOWED = 720 OCCUPANTS
TOTAL OCCUPANTS PROPOSED = 407 OCCUPANTS

1 LEVEL 4 FLOOR PLAN

SCALE 3/32" = 1'-0"

BASIS INDEPENDENT SCHOOLS

ISS/REV | DATE | DESCRIPTION

ISSUED TO

PARTNERS FOR ARCHITECTURE

48 UNION STREET,
STAMFORD, CT 06906
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NEW CONSTRUCTION FOR: BASIS INDEPENDENT SCHOOLS

556 COLUMBIA STREET
BROOKLYN, NY 11231

FOURTH FLOOR PLAN

SEAL & SIGNATURE

DATE: **08.19.2013**
PROJECT NO.: **13-607**
DRAWN BY: **BT**
CHECKED BY: **IO**
DRAWING NO:

A105

CADD FILE NO.:
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5th FLOOR EGRESS			
NYCBC 1004.1.2	**OCCUPANT LOAD**	263 OCCUPANTS	(AS PER CODE)
NYCBC 1005.1	**DOORS**		
	REQUIRED:	0.2 INCHES x OCCUPANTS = 0.2 x 263 = **53 INCHES**	
	PROPOSED:	4 DOORS @ 36 INCHES EACH = **144 INCHES**	
NYCBC 1005.1	**STAIRWAYS**		
	REQUIRED:	0.3 INCHES x OCCUPANTS = 0.3 x 263 = **79 INCHES**	
	PROPOSED:	2 STAIRS AT 75" EACH = **150 INCHES**	

EGRESS WITH DATA		
STAIR A		
	MINIMUM INCHES / OCC. REQUIRED	INCHES / OCC. PROPOSED
STAIR WIDTH	0.3"/OCC. 44"	0.57"/OCC. 75"
STAIR DOOR WIDTH	0.2"/OCC. 36"	0.54"/OCC. 72"
STAIR B		
	MINIMUM INCHES / OCC. REQUIRED	INCHES / OCC. PROPOSED
STAIR WIDTH	0.3"/OCC. 44"	0.57"/OCC. 75"
STAIR DOOR WIDTH	0.2"/OCC. 36"	0.54"/OCC. 72"

STAIRS			DOORS		
MAX. OCCUPANT PER TABLE 1005.1	"/OCC PROVIDED	OCCUPANTS ALLOWED	MAX. OCCUPANT PER TABLE 1005.1	"/OCC PROVIDED	OCCUPANTS ALLOWED
STAIR A					
0.3"/OCC.	0.57"/OCC.	250	0.2"/OCC.	0.54"/OCC.	360
STAIR B					
0.3"/OCC.	0.57"/OCC.	250	0.2"/OCC.	0.54"/OCC.	360
TOTAL ALLOWED		500	TOTAL ALLOWED		720

TOTAL CAPACITY OF STAIRS A+B
75" WIDE STAIR A = 250 OCCUPANTS ALLOWED
75" WIDE STAIR B = 250 OCCUPANTS ALLOWED
TOTAL OCCUPANTS ALLOWED = 500 OCCUPANTS
TOTAL OCCUPANTS PROPOSED = 263 OCCUPANTS

TOTAL CAPACITY OF DOORS @ STAIRS A+B
72" WIDE DOOR @STAIR A = 360 OCCUPANTS ALLOWED
72" WIDE DOOR @ STAIR B = 360 OCCUPANTS ALLOWED
TOTAL OCCUPANTS ALLOWED = 720 OCCUPANTS
TOTAL OCCUPANTS PROPOSED = 263 OCCUPANTS

BASIS INDEPENDENT SCHOOLS

ISS./REV	DATE	DESCRIPTION

ISSUED TO

PARTNERS FOR ARCHITECTURE

48 UNION STREET,
STAMFORD, CT 06906
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NORTH

NEW CONSTRUCTION FOR: BASIS INDEPENDENT SCHOOLS

556 COLUMBIA STREET
BROOKLYN, NY 11231

FIFTH FLOOR PLAN

SEAL & SIGNATURE

DATE: **08.19.2013**
PROJECT NO.: **13-607**
DRAWN BY: **BT**
CHECKED BY: **IO**
DRAWING NO:

A106

CADD FILE NO.:
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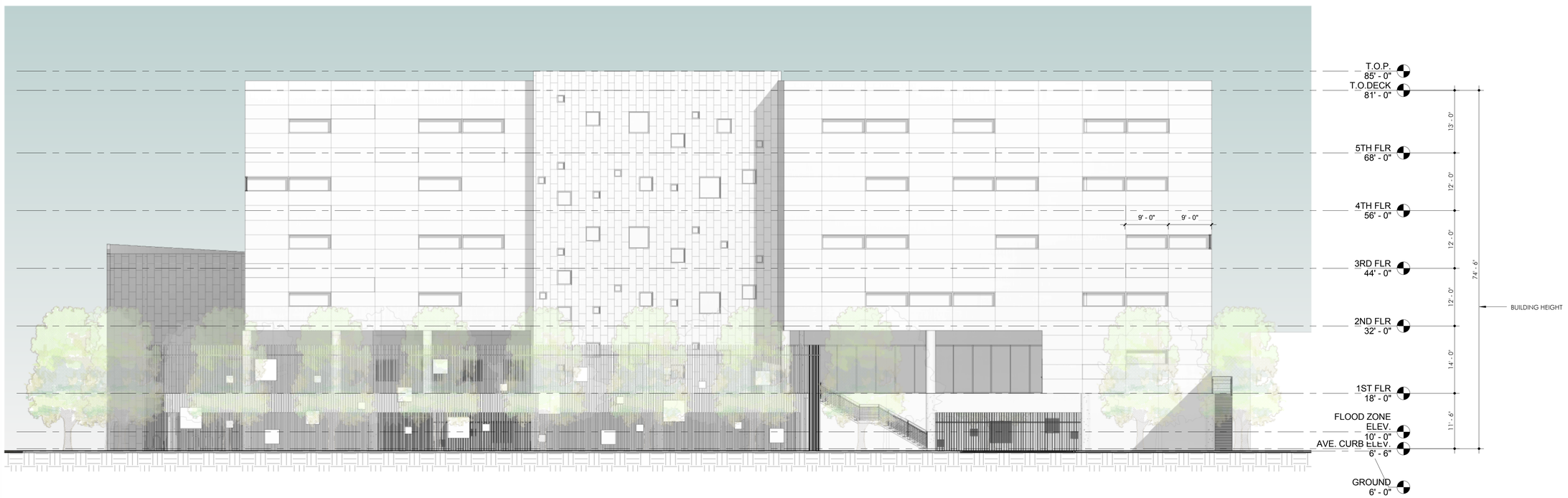
1 LEVEL 5 FLOOR PLAN

SCALE 3/32" = 1'-0"

2 EAST ELEVATION

SCALE 3/32" = 1'-0"



1 NORTH ELEVATION

SCALE 3/32" = 1'-0"

BASIS INDEPENDENT SCHOOLS

ISS/REV	DATE	ISSUED TO
		DESCRIPTION

PARTNERS FOR ARCHITECTURE
48 UNION STREET,
STAMFORD, CT 06906
P 203/708.0047
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NORTH

NEW CONSTRUCTION FOR: BASIS INDEPENDENT SCHOOLS

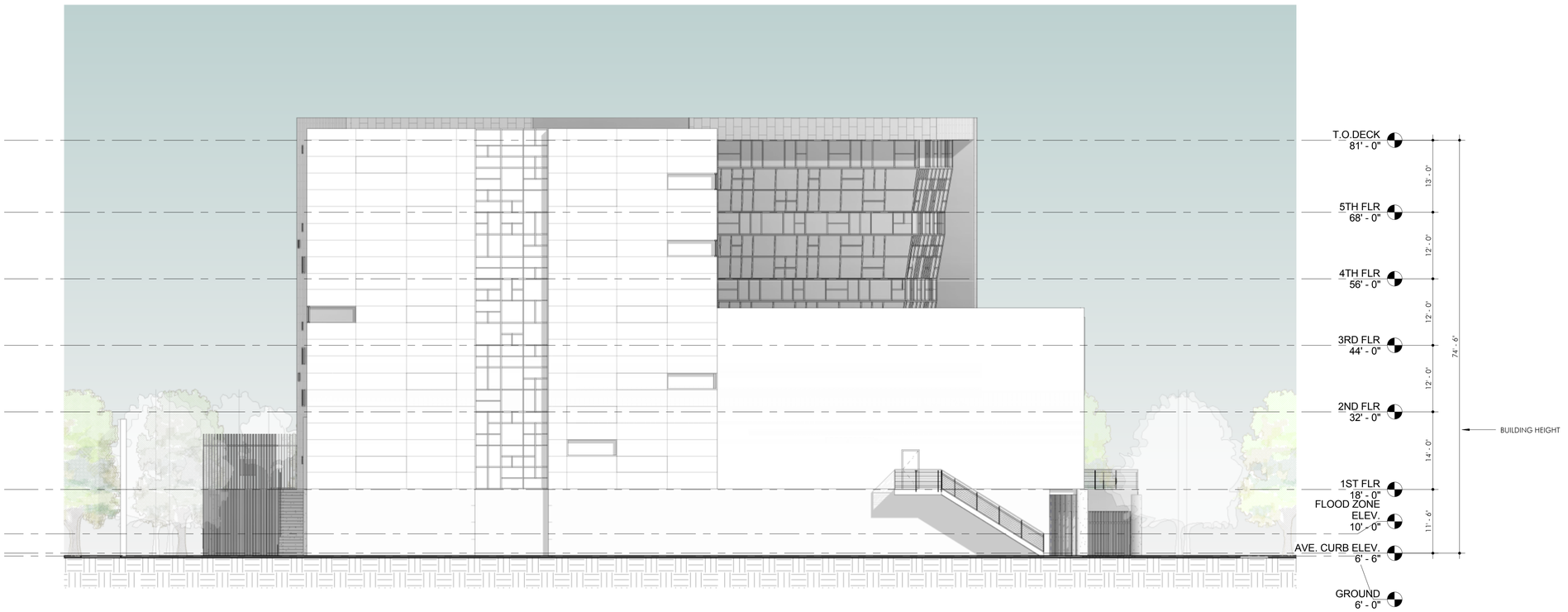
556 COLUMBIA STREET
BROOKLYN, NY 11231

EAST - NORTH ELEVATION

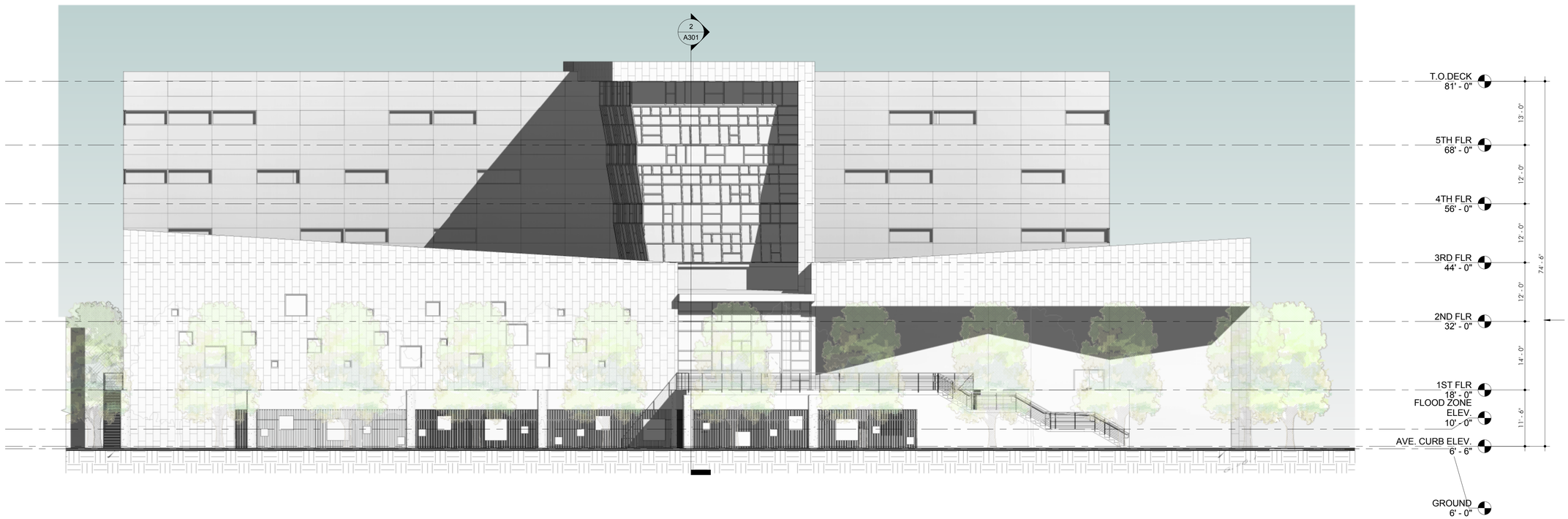
SEAL & SIGNATURE

DATE: 08.19.2013
PROJECT NO.: 13-607
DRAWN BY: BT
CHECKED BY: IO
DRAWING NO:
A201

CADD FILE NO.:
C:\Users\Staff\Documents\13-607 BASIS Brooklyn-PFA-v2-CENTRAL_bStaff.rvt



2 WEST ELEVATION SCALE 3/32" = 1'-0"



1 SOUTH ELEVATION SCALE 3/32" = 1'-0"

BASIS INDEPENDENT SCHOOLS

ISS/REV	DATE	ISSUED TO

DESCRIPTION

PARTNERS FOR ARCHITECTURE
48 UNION STREET,
STAMFORD, CT 06906
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NORTH

NEW CONSTRUCTION FOR: BASIS INDEPENDENT SCHOOLS

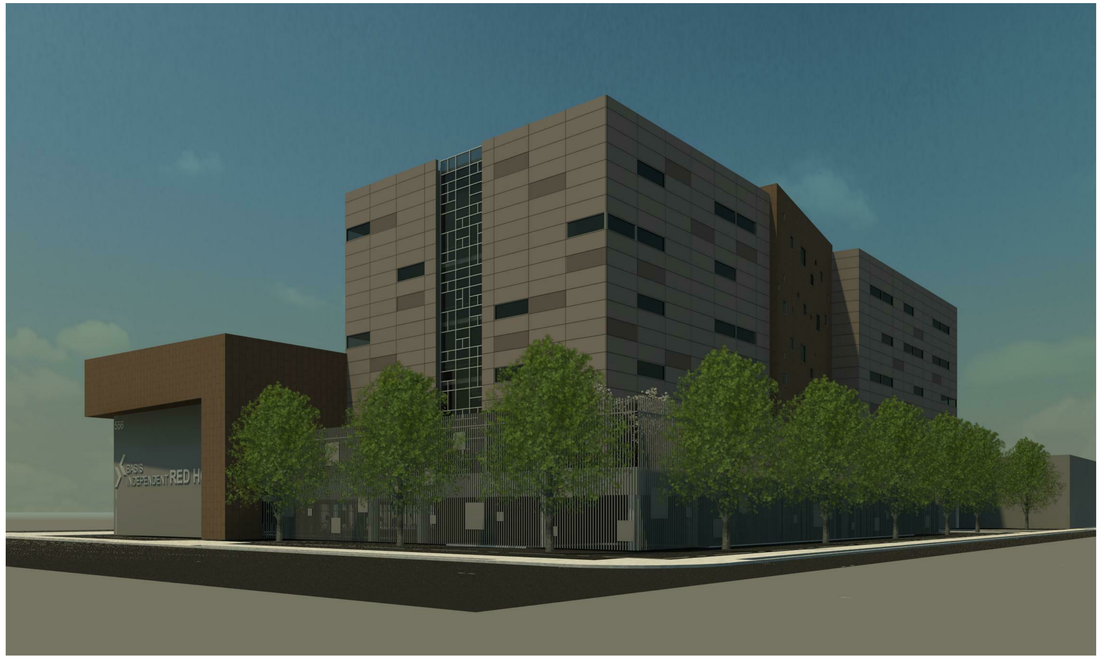
556 COLUMBIA STREET
BROOKLYN, NY 11231

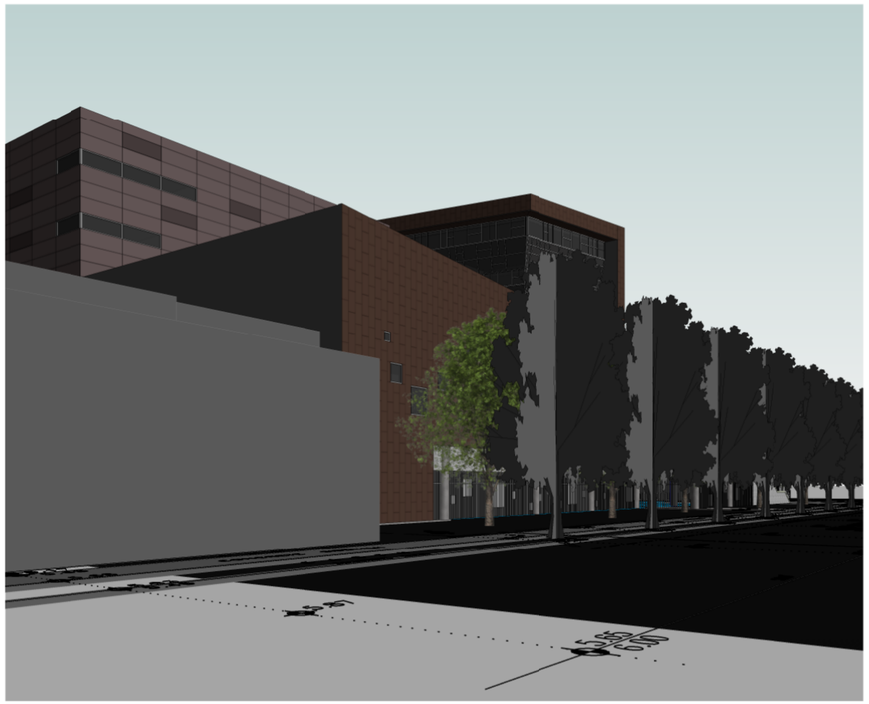
WEST - SOUTH ELEVATION

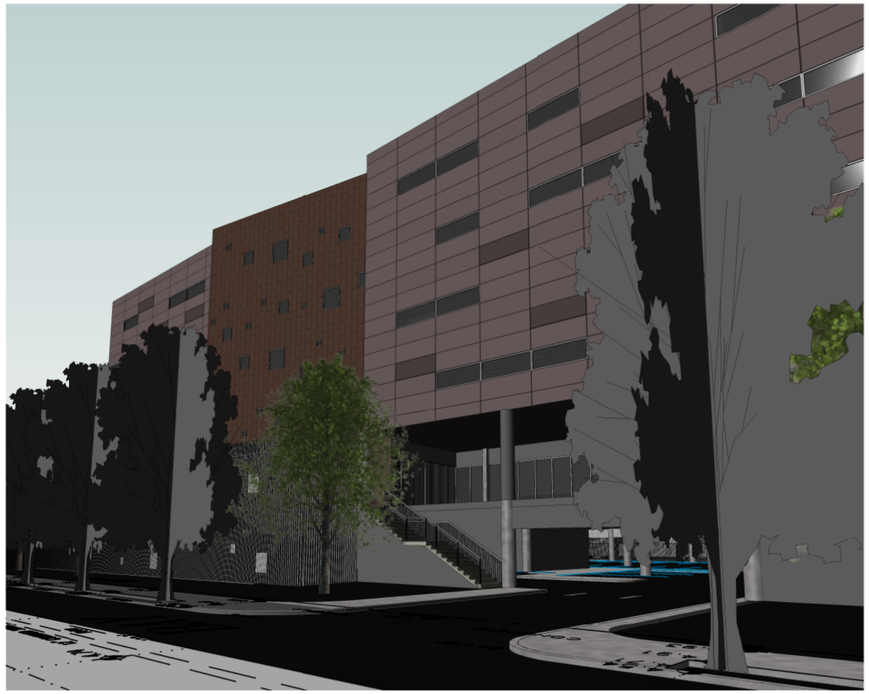
SEAL & SIGNATURE

DATE:	08.19.2013
PROJECT NO.:	13-607
DRAWN BY:	BT
CHECKED BY:	IO
DRAWING NO:	A202

CADD FILE NO:
E:\Users\bkoh\Documents\13-607 BASIS Brooklyn PTA v2 CENTRAL_bkoh1.rvt







ISS/REV	DATE	ISSUED TO

DESCRIPTION

PARTNERS FOR ARCHITECTURE

48 UNION STREET,
STAMFORD, CT 06906
P 203/708.0047
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WWW.PFARCH.NET

NORTH

NEW CONSTRUCTION FOR: BASIS INDEPENDENT SCHOOLS

556 COLUMBIA STREET
BROOKLYN, NY 11231

PERSPECTIVE

SEAL & SIGNATURE

DATE: **08.19.2013**

PROJECT NO.: **13-607**

DRAWN BY: **Author**

CHECKED BY: **Checker**

DRAWING NO:

A203

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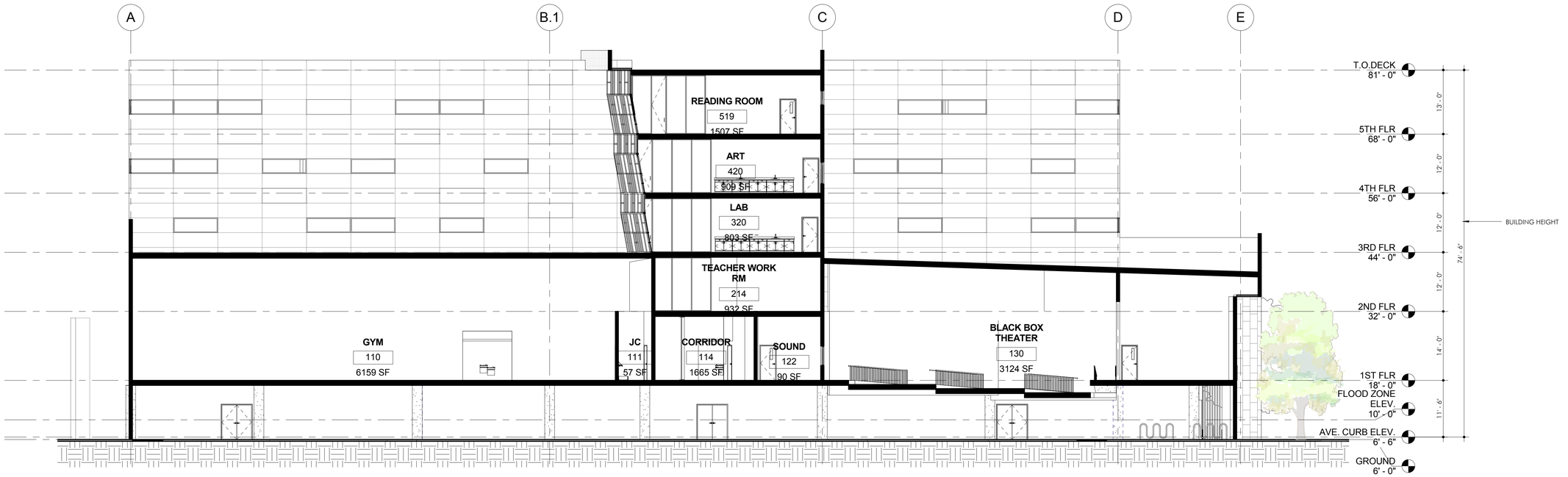
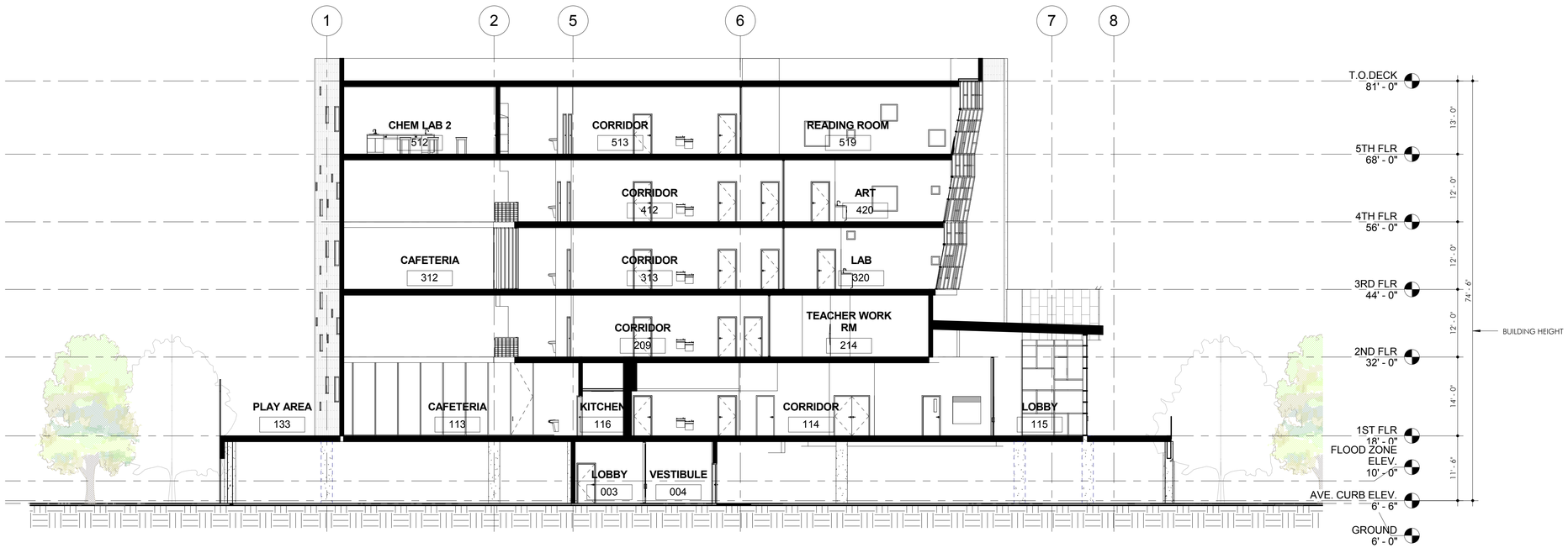


1 EAST-WEST SECTION — SCALE 3/32" = 1'-0"



2 NORTH - SOUTH SECTION — SCALE 3/32" = 1'-0"

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SECTION

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DATE: 08.19.2013
PROJECT NO.: 13-607
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DRAWING NO:

A301

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