REMEDIAL ACTION WORK PLAN

for
159 BOERUM STREET
BROOKLYN, NEW YORK

Block 3071, Lot 40
NYSDEC BCP Site No. C224291

Prepared For:

SPG Boerum LLC
c/o Slate Property Group
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LANGAN

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Langan Project No. 170552901

CERTIFICATION

I, Jason Hayes, PE, certify that I am currently a NYS registered professional engineer and that this Remedial Action Work Plan was prepared in accordance with applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

I certify that all information and statements in this certification are true. I understand that a false statement made herein is punishable as Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

Jason Hayes

NYS Professional Engineer #089491 Date Signature

It is a violation of Article 145 of New York State Education Law for any person to alter this document in any way without the express written verification of adoption by any New York State licensed engineer in accordance with Section 7209(2), Article 145, New York State Education Law.

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LIST OF ACRONYMS

Acronym	Definition
AAI	All Appropriate Inquiry
AOC	Area of Concern
AGV	Air Guideline Values
ASP	Analytical Services Protocol
AST	Aboveground Storage Tank
ASTM	American Society for Testing and Materials International
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
bgs	below grade surface
BUD	Beneficial Use Determination
C&D	Construction and Demolition
CAMP	Community Air Monitoring Plan
CFR	Code of Federal Regulations
CHASP	Construction Health and Safety Plan
COC	Contaminant of Concern
CP	Commissioner's Policy
CPP	Citizen Participation Plan
CQAP	Construction Quality Assurance Plan
CSM	Conceptual Site Model
CVOC	Chlorinated Volatile Organic Compound
DER	Division of Environmental Remediation
DMM	Division of Materials Management
DUSR	Data Usability Summary Report
E-Designation	Environmental Designation
EC	Engineering Control
EDD	Electronic Data Deliverable
EE	Environmental Easement
el	Elevation
ELAP	Environmental Laboratory Approval Program
ESA	Environmental Site Assessment
eV	electron volt
FEMA	Federal Emergency Management Agency
FER	Final Engineering Report
FIRM	Flood Insurance Rate Map
FWRIA	Fish and Wildlife Resources Impact Analysis

Acronym	Definition
GPR	Ground-Penetrating Radar
GQS	Groundwater Quality Standards
HASP	Health and Safety Plan
Hazmat	Hazardous Materials
IC	Institutional Control
L/min	liters per minute
LTANK	Leaking Tank
µg/m^3	Micrograms per cubic meter
µg/L	Micrograms per liter
mg/kg	Milligrams per kilogram
MS/MSD	Matrix Spike/Matrix Spike Duplicate
NAVD88	North American Vertical Datum of 1988
NYC	New York City
NYSDEC	New York State Department of Environmental Conservation
NYCDEP	New York City Department of Environmental Protection
NYCDOB	New York City Department of Buildings
NYCDOT	New York City Department of Transportation
NYCDPC	New York City Department of City Planning
NYCRR	New York Codes, Rules, and Regulations
NYS	New York State
NYSDOH	New York State Department of Health
NYSDOT	New York State Department of Transportation
OER	Office of Environmental Remediation
OSHA	Occupational Safety and Health Administration
PAH	Polycyclic Aromatic Hydrocarbon
PBS	Petroleum Bulk Storage
PCB	Polychlorinated Biphenyls
PCE	Tetrachloroethene
PFC	Perfluorinated Chemical
PFAS	Polyfluoroalkyl substances
PG	Protection of Groundwater
PID	Photoionization Detector
PM10	Particulates less than 10 microns in diameter
PPE	Personal Protective Equipment
ppm	parts per million
PVC	Polyvinyl Chloride

Acronym	Definition
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan
RCA	Recycled Concrete Aggregate
RCRA	Resource Conservation and Recovery Act
RE	Remediation Engineer
REC	Recognized Environmental Condition
RI	Remedial Investigation
RIR	Remedial Investigation Report
RIWP	Remedial Investigation Work Plan
RURR	Restricted Use – Restricted-Residential
SCG	Standards, Criteria, and Guidance
SCO	Soil Cleanup Objective
SDS	Safety Data Sheets
SEQRA	State Environmental Quality Review Act
SGV	Standards and Guidance Values
SMP	Site Management Plan
SMMP	Soil/Materials Management Plan
SOE	Support of Excavation
SPDES	State Pollutant Discharge Elimination System
SVOC	Semivolatile Organic Compound
SWPPP	Stormwater Pollution Prevention Plan
TAL	Target Analyte List
TCE	Trichloroethene
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TOGS	Technical and Operational Guidance Series
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UST	Underground Storage Tank
UU	Unrestricted Use
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

This Remedial Action Work Plan (RAWP) was prepared on behalf of SPG Boerum LLC (the Volunteer) for the proposed development located at 159 Boerum Street (Block 3071, Lot 40) in the East Williamsburg neighborhood of Brooklyn, New York (the site). The Volunteer executed a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC) on July 30, 2019 and Brownfield Cleanup Program (BCP) Site No. C224291was assigned. The Volunteer proposes to remediate the site for residential use.

This RAWP summarizes the nature and extent of contamination as determined from data gathered during the remedial investigation (RI), performed in September 2019. It provides an evaluation of a Track 1 cleanup and other applicable remedial action alternatives, their associated costs, and the recommended and preferred remedy. The remedy described in this document is consistent with the procedures defined in NYSDEC Division of Environmental Remediation (DER) Program Policy: Technical Guidance for Site Investigation and Remediation (DER-10) and complies with applicable federal, state, and local laws, regulations, and requirements. The Remedial Investigation Report (RIR) is being submitted to the NYSDEC and New York State Department of Health (NYSDOH) concurrently with this RAWP. The NYSDEC and NYSDOH have not determined if this site poses a significant threat to human health and the environment. Based on the findings of the RI, a fish and wildlife resources impact analysis was not required for this site.

SITE DESCRIPTION/PHYSICAL SETTING/SITE HISTORY

The site is located at 159 Boerum Street in the East Williamsburg neighborhood of Brooklyn, New York and is identified as Block 3071, Lot 40, on the Brooklyn Borough Tax Map. The site encompasses an area of about 11,180 square feet (0.26 acres) and is occupied by an open air asphalt parking lot surrounded by landscaped areas to the north, east, and west. There is no environmental "E"-designation assigned to the site.

A review of available Sanborn® Fire Insurance Maps, historic aerial photographs, and City Directory records indicate the site was developed as early as 1887 with four multi-story commercial/residential buildings (labeled as tailor shop, synagogue, candy packaging, and warehouse), parking, and residential dwellings until about 1965. The previous mixed commercial/residential buildings were demolished around 1974, and the site was used as an open-air parking lot as early as 1981. Test pits excavated on-site revealed buried solid waste, including glass, organic fibers, fabric, plastic, automobile tires, coal, ceramics, metal, brick and concrete as deep as 7.5 feet below ground surface (bgs), suggesting that undocumented dumping occurred at some point after the buildings were demolished in 1974.

SUMMARY OF THE REMEDIAL INVESTIGATION FINDINGS

The RI findings summarized herein are based on qualitative data (field observations and instrumental readings) and laboratory analytical soil, groundwater, and soil vapor sample results.

1. Stratigraphy: The site stratigraphy consists of a historic fill layer beneath concrete-paved or landscaped surfaces consisting of buried solid waste within a brown, fine to medium sand and gravel matrix. Fill material was heterogeneous and consisted of random distributions of glass, organic fibers, fabric, plastic, automobile tires, coal, ceramics, metal, brick and concrete from depths ranging from about 5 to 14 feet bgs. There is an area within the northeast corner of the site (SB06) where fill material was encountered that is uncharacteristic of historic fill material, suggesting that this area may have been previously excavated and backfilled. Fill material was underlain by a native tan to brown fine to coarse sand with trace silt and fine gravel observed to depths ranging from 5 to at least 25 feet bgs (about el 26.75 and el 1.79, respectively). Bedrock was not encountered in any of the soil borings.

2. Hydrogeology: Depth to groundwater was measured between about 21.0 and 23.39 feet bgs. Groundwater elevations range from about el 5.04 to el 5.36 North American Vertical Datum of 1988 (NAVD88). Based on documented elevations, groundwater is inferred to flow from the southeast to northwest with a hydraulic gradient of about 0.0025 feet/foot.

3. Historic Fill and Buried Solid Waste: Laboratory analytical results indicate that the historic fill and buried solid waste contain semivolatile organic compounds (SVOCs), metals, pesticides and polychlorinated biphenyls (PCBs) at concentrations above the 6 New York Codes, Rules, and Regulations (NYCRR) Part 375 Unrestricted Use (UU), Protection of Groundwater (PG), and/or Restricted Use Restricted-Residential (RURR) soil cleanup objectives (SCOs) in samples collected throughout the site. The detected concentrations are generally typical of historic fill material in New York City. Polycyclic aromatic hydrocarbon (PAH) concentrations were 1 to 2 orders of magnitude higher in areas where buried solid waste was encountered.

4. Tar-Like Impacts to Soil: Evidence of tar-like impacts (including odors, photoionization detector [PID] readings above background levels and staining) was identified during the May 2019 Limited Subsurface Investigation in soil samples collected from two borings located in the northern region of the site to depths of up to 5 feet bgs. SVOC concentrations in historic fill material from samples collected during the September 2019 RI were one to two orders of magnitude less in areas where tar-like material was not encountered. An on-site source of tar was not identified.

5. Groundwater: Concentrations of SVOCs and pesticides identified above the NYSDEC Technical Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values for Class GA Water (NYSDEC SGVs) are attributed to historic fill material, buried solid waste and/or tar-like material. Dissolved metals in groundwater samples above SGVs and are characteristic of regional groundwater conditions.
6. Sufficient analytical data were gathered during the RI, together with previous studies, to establish soil cleanup levels and to develop a remedy for the site. The final remedy will be detailed in the forthcoming RAWP to be prepared in accordance with NYS BCP guidelines. The remedy will need to address historic fill impacted with SVOCs, pesticides, PCBs, and metals.

QUALITATIVE HUMAN HEALTH EXPOSURE ASSESSMENT

Based on the conceptual site model and review of environmental data, complete on-site exposure pathways appear to be present in current, construction-phase, and future conditions. The complete exposure pathways indicate there is a risk of exposure to humans from site contaminants via exposure to soil, groundwater, and soil vapor if appropriate measures, including institutional and engineering controls as necessary, are not implemented. A qualitative human health exposure assessment was performed to evaluate the exposure pathways, and the following conclusions were developed:

1. Under current conditions, there is a marginal risk for exposure. The primary exposure pathways are dermal contact, ingestion and/or inhalation of soil, soil vapor, or groundwater by site visitors in instances where the integrity of the impermeable site cover is compromised. The exposure risks can be avoided or minimized by following the appropriate Health and Safety Plan (HASP) and Community Air Monitoring Program (CAMP) during any intrusive activities.
2. In the absence of institutional and engineering controls, there is a moderate risk of exposure during the construction and remediation activities. The primary exposure pathways are:
    a. Dermal contact, ingestion and/or inhalation of contaminated soil, groundwater or soil vapor by construction workers.
    b. Dermal contact, ingestion and inhalation of soil (dust) and inhalation of soil vapor by the community in the vicinity of the site.

These can be avoided or minimized by performing community air monitoring and by following the appropriate health and safety, vapor and dust suppression, and site security measures outlined in a site-specific HASP.

3. The existence of a complete exposure pathway for site contaminants to human receptors under future conditions is unlikely, as contaminant sources will likely be removed during site development, and if any residual soil remains, the impermeable foundation cover and other paved areas would serve as a cap. Regional groundwater is not used as a potable water source in New York City, so exposure to regional groundwater contaminants is unlikely. Soil vapor concentrations at the site do not warrant vapor mitigation.
4. It is unlikely that a complete exposure pathway exists for the migration of site contaminants to off-site human receptors for current, construction phase, or future conditions. Monitoring and control measures would be used during investigation and construction to prevent completion of this pathway. Under future conditions, the site will be remediated and, if necessary, engineering controls may be implemented (e.g. site-wide cap) to prevent completion of this pathway.

SUMMARY OF THE REMEDY

The selected Track 1 remedy will include the following:

- Development and implementation of a Construction HASP (CHASP) and CAMP for the protection of on-site workers, community/residents, and environment during remediation and construction activities
- Construction of a support of excavation (SOE) system to facilitate the Track 1 remediation
- Implementation of soil erosion, pollution and sediment control measures in compliance with applicable laws and regulations
- Excavation, stockpiling, off-site transport, and disposal of about 4,100 cubic yards of historic fill, solid waste, and native soil that exceeds UU SCOs as defined by 6 NYCRR Part 375-6.8. These excavations include soil impacted with lead identified during the RI and preliminary waste characterization in areas centered on soil borings SB01, SB07, and on soil boring WCB-06.
- If encountered, removal of any encountered underground storage tanks (USTs) and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) and decommissioning and off-site disposal during redevelopment in accordance with DER-10, 6 NYCRR Part 613.9, NYSDEC CP-51, and other applicable NYSDEC UST closure requirements.

- Screening for indications of contamination (by visual means, odor, and monitoring with PIDs) of excavated material during intrusive site work
- As necessary, backfilling of remediated areas to development sub-grade with certified-clean material (i.e., material meeting UU SCOs), virgin stone, or recycled concrete aggregate (RCA)
- Collection and analysis of documentation soil samples in accordance with DER-10 to confirm a Track 1 remedy was achieved
- Collection and analysis of groundwater samples in accordance with DER-10 following remedial excavation activities to document groundwater quality beneath the site

Remedial activities will be performed in accordance with this RAWP and the Department-issued Decision Document. Deviations from the RAWP and/or Decision Document will be promptly reported to the NYSDEC for approval and fully explained in the Final Engineering Report (FER).

1.0 INTRODUCTION

This Remedial Action Work Plan (RAWP) was prepared on behalf of SPG Boerum Street LLC (the Volunteer) for the proposed development located at 159 Boerum Street (Block 3071, Lot 40) in the East Williamsburg neighborhood of Brooklyn, New York (the site). The Volunteer entered into a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC) on July 3, 2019 and Brownfield Cleanup Program (BCP) Site No. C224291 was assigned. The Volunteer proposes to remediate the site for residential use.

This RAWP summarizes the nature and extent of contamination as determined from data gathered during the Remedial Investigation (RI), performed in September 2019. It provides an evaluation of a Track 1 cleanup and other applicable remedial action alternatives, their associated costs, and the recommended and preferred remedy. The remedy described in this document is consistent with the procedures defined in NYSDEC Division of Environmental Remediation (DER) Program Policy: Technical Guidance for Site Investigation and Remediation (DER-10) and complies with applicable federal, state, and local laws, regulations, and requirements.

The Remedial Investigation Report (RIR) is being submitted to the NYSDEC and New York State Department of Health (NYSDOH) concurrently with this RAWP. The NYSDEC and NYSDOH have not determined if this site poses a significant threat to human health and the environment. Based on the findings of the RI, a fish and wildlife resources impact analysis was not required for this site.

1.1 Site Location and Description

The site is located at 159 Boerum Street, in the East Williamsburg neighborhood of Brooklyn, New York, and is identified as Tax Block 3071, Lot 40 on the Brooklyn Borough Tax Map. The site encompasses an area of about 11,180 square-feet (0.26 acres) and is occupied by an open air asphalt parking lot surrounded by landscaped areas to the north, east and west. The site is situated on the south-central part of the tax block that is bound by Johnson Avenue to the north, Humboldt Street to the east, Boerum Street to the south, and Graham Avenue (Avenue of Puerto Rico) to the west.

A Site Location Map, which includes a United States Geological Survey (USGS) topographical quadrangle map, is included as Figure 1. The metes and bounds of the site are detailed on the Boundary Survey included in Appendix A. A site plan is included as Figure 2.

1.2 Redevelopment Plan

The proposed redevelopment includes construction of a new 19-story residential and affordable housing development with at-grade outdoor parking and landscaped areas along Boerum Street.

The new development will also include one cellar level encompassing about 10,670 square feet of the 11,180 square foot site. The future cellar level will include parking, bicycle storage, a compactor room, fire pump room, elevator and staircase access, a detention tank room, water and sewer room, gas meter room, and electrical meter room. The first floor of the new development will include about 5,245 square feet of open air parking beneath the building along the western region of the site, an access ramp to the below-grade parking garage, a parking attendant booth, residential lobby, mailroom, amenity spaces, elevators, a mechanical room, telecommunications room, and package room. The second through 19th floors of the new development will be occupied by 161 residential units, 33 of which will be designated for affordable housing. Proposed redevelopment plans are provided in Appendix B.

1.3 Description of Surrounding Property

The site is located in a mixed-use area with commercial, residential, and institutional uses. The following is a summary of surrounding property usage:

Direction	Block	Lot	Adjoining Properties	Surrounding Properties
North	3071	10	One, three-story residential building and landscaped areas	Johnson Avenue followed by multiple-story industrial, commercial, residential, and institutional buildings
East	3071	10	Two, three-story residential buildings and landscaped areas	Humboldt Street followed by multiple-story residential buildings and an open air parking lot
South	Boerum Street (public street)			Multiple-story industrial, commercial, residential, and institutional buildings
	3080	10	One, seven-story residential building with an open air parking lot	
West	3071	4	One, four-story residential building	Graham Avenue (Avenue of Puerto Rico) followed by multiple-story industrial, commercial, and residential buildings
		3	One, four-story mixed-use residential and commercial building	
		2	One, four-story mixed-use residential and commercial building	
		1	One, four-story residential building and one three-story residential building	

Public infrastructure (storm drains, sewers, and underground utility lines) exists within the streets surrounding the site.

Land use within a half-mile radius is urban and includes residential, commercial, institutional, and light industrial buildings and public parks. The nearest ecological receptor is Sternberg Park, located about 1,200 feet west of the site. Sensitive receptors, as defined in DER-10, located within a half mile of the site include those listed below:

Number	Name (Approximate distance from site)	Address
1	P.S. 257 John F. Hylan (about 0.1 miles southeast of the site)	60 Cook Street Brooklyn, NY 11206
2	P.S. 147 Isaac Remsen (about 0.2 miles east of the site)	325 Bushwick Avenue Brooklyn, NY 11206
3	P.S. 250 George H. Lindsey (about 0.2 miles northwest of the site)	108 Montrose Avenue Brooklyn, NY 11206
4	P.S. 196 Ten Eyck (about 0.2 miles east of the site)	207 Bushwick Avenue Brooklyn, NY 11206
5	Young Women's Leadership School of Brooklyn (about 0.2 miles east of the site)	325 Bushwick Avenue Brooklyn, NY 11206
6	M.S. 582 (about 0.2 miles northeast of the site)	207 Bushwick Avenue Brooklyn, NY 11206
7	The Williamsburg High School of Art and Technology (about 0.3 miles north of the site)	223 Graham Avenue Brooklyn, NY 11206
8	Graham Child Care Center (about 0.24 miles northeast of the site)	222 Graham Avenue Brooklyn, NY 11206
9	Creative Academy of NY LLC (about 0.3 miles northeast of the site)	228 Bushwick Avenue Brooklyn, NY 11206
10	Stagg Street Center for Children (about 0.3 miles northwest of the site)	77 Stagg Street Brooklyn, NY 11206
11	Lyons Community School (about 0.3 miles north of the site)	223 Graham Avenue Brooklyn, NY 11206
12	Tender Tots Day Care, Preschool & After School Programs (about 0.4 miles south of the site)	810 Flushing Avenue Brooklyn, NY 11206
13	I.S. 318 Eugenio Maria De Hostos (about 0.4 miles southwest of the site)	101 Walton Street Brooklyn, NY 11206

Number	Name (Approximate distance from site)	Address
14	Williamsburg Charter High School (about 0.4 miles southeast of the site)	198 Varet Street Brooklyn, NY 11206
15	Bushwick United HDFC 9 (about 0.4 miles south of the site)	741 Flushing Avenue Brooklyn, NY 11206
16	Bushwick United HDFC 4 (about 0.4 miles north of the site)	178 Leonard Street Brooklyn, NY 11206
17	P.S. 120 Carlos Tapia (about 0.4 miles southeast of the site)	18 Beaver Street Brooklyn, NY 11206
18	East Williamsburg Academy (about 0.5 miles northeast of the site)	850 Grand Street Brooklyn, NY 11211
19	The High School for Enterprise, Business and Technology (about 0.5 miles northeast of the site)	850 Grand Street Brooklyn, NY 11211
20	P.S. 018 Edward Bush (about 0.5 miles northwest of the site)	101 Maujer Street Brooklyn, NY 11206
21	PROGRESS High School for Professional Careers (about 0.5 miles northeast of the site)	850 Grand Street Brooklyn, NY 11211
22	Young Garden Day Care (about 0.5 miles west of the site)	11 Meserole Street Brooklyn, NY 11206

2.0 DESCRIPTION OF REMEDIAL INVESTIGATION FINDINGS

The RI was completed in accordance with Title 6 of the New York Codes, Rules, and Regulations (6 NYCRR) Part 375, DER-10, the NYSDEC Draft BCP Guide (May 2004), and the NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006 and subsequent updates). The RI was completed from September 9, 2019 to September 19, 2019 to investigate the potential Areas of Concern (AOCs) and to determine, to the extent practical, the nature and extent of contamination in soil, groundwater, and soil vapor.

2.1 Remedial Investigation

The RI consisted of the following:

- A geophysical survey to identify potential underground storage tanks (USTs), underground structures, and utilities
- Advancement of nine soil borings to about 20 to 25 feet below grade surface (bgs) from which 29 soil samples (including two quality assurance/quality control [QA/QC] duplicate samples) were collected
- Installation of five groundwater monitoring wells at five soil boring locations and collection of seven groundwater samples (including two QA/QC duplicate samples)
- Survey and gauging of monitoring wells to evaluate groundwater elevation and flow direction
- Installation of five temporary soil vapor probes and collection of six soil vapor samples (including one duplicate sample) and one ambient air sample

2.1.1 Geophysical Investigation

On September 9, 2019, NOVA Geophysical Services Inc. (NOVA) of Douglaston, New York completed a geophysical survey under the supervision of a Langan field scientist. NOVA used ground-penetrating radar (GPR) to identify potential USTs and locate buried utilities near each boring location. Borings were relocated as necessary to avoid subsurface utilities and anomalies (other subsurface impediments).

2.1.2 Soil Investigation

Nine soil borings (SB01 through SB09) were installed during the RI by AARCO Environmental Services Corp. (AARCO) of Lindenhurst, New York. Boring locations were selected to evaluate the potential AOC listed in Section 3.4. Soil borings were advanced with direct push drilling methodologies using an AMS 9580-VTR PowerProbe™ track-mounted rig to about 20 to 25 feet bgs as summarized below:

- Borings SB02, SB06, SB07, SB08 and SB09 was advanced to 20 feet bgs;
- Borings SB01, SB03 and SB05 were advanced to 24 feet bgs; and
- Boring SB04 was advanced to 25 feet bgs.

Discrete soil samples were collected from the surface to the final depth of each boring in 4-foot or 5-foot long acetate liners from the direct push AMS VTR-9580 PowerProbe™. To ensure sufficient soil volume necessary for sample analysis, and to facilitate per- and polyfluoroalkyl substances (PFAS) sampling, two adjoining soil boings were advanced at each location.

The soil was screened for visual, olfactory, and instrumental evidence of environmental impacts and was visually classified for soil type, grain size, texture, and moisture content. Instrumental screening for the presence of volatile organic compounds (VOCs) was performed with a photoionization detector (PID) equipped with a 10.6-electron volt (eV) lamp. A Langan scientist documented the work, logged the soil type, screened the soil samples for environmental impacts, and collected environmental samples for laboratory analyses. Following sample collection, five borings (SB01 through SB05) were converted to groundwater monitoring wells. Non-impacted soil cuttings were backfilled into the original boring locations that were not converted into permanent monitoring wells.

2.1.3 Groundwater Investigation

A Langan field scientist documented conversion of five soil borings into permanent groundwater monitoring wells by AARCO. Five of the borings (SB01, SB02, SB03, SB04 and SB05) were converted into groundwater monitoring wells MW01, MW02, MW03, MW04 and MW05. One groundwater sample was collected from each monitoring well to characterize groundwater conditions and to investigate potential groundwater impacts associated with the AOCs. One duplicate groundwater sample was also collected.

Following completion of soil borings, the monitoring wells were constructed using 2-inch diameter polyvinyl chloride (PVC) riser pipes attached to 10 to 15-foot-long 0.01-inch slotted screens. Monitoring wells were constructed so that the well screen straddled the observed groundwater table. The well annulus around the screen of each well was backfilled with No. 1 sand up to about 2 feet above the well screen. A minimum of about 1- to 2-foot thick hydrated bentonite seal was installed above the sand pack, and the borehole annulus was backfilled with soil cuttings to the surface. The monitoring wells were finished with flush-mount metal manhole covers encased in concrete.

Monitoring wells MW01, MW04 and MW05 were constructed using 2-inch diameter PVC riser pipes attached to 10-foot-long 0.01-inch slotted screens placed between 20 and 30 feet bgs. Monitoring wells MW02 and MW03 were constructed using 2-inch diameter PVC riser pipes

attached to 15-foot-long 0.01-inch slotted screens placed between 20 and 35 feet bgs. The annulus of the boreholes was backfilled to about 2 feet above the screen with No. 1 sand and a 2-foot hydrated bentonite seal above the pack. The remainder of the annulus was backfilled with soil cuttings and a hydrated bentonite seal at the surface.

Following installation, each well was purged and developed with a submersible pump until the water became clear (having turbidity less than 50 Nephelometric Turbidity Units [NTU]). Purged groundwater was stored in labeled 55-gallon drums and staged on-site for future disposal.

The top of casing elevations of monitoring wells MW01, MW02, MW03, MW04 and MW05 were surveyed by Langan on October 7, 2019. A Langan field scientist completed synoptic groundwater gauging on September 19, 2019 using a Solinst 122 oil/water interface probe. Groundwater elevations ranged from el 5.04 to el 5.36 (NAVD88).

2.1.4 Soil Vapor Investigation

NYSDEC DER-10 requires an assessment of soil vapor for contaminated sites to evaluate the health risk associated with potential exposure to VOCs through vapor intrusion into occupied spaces. Five soil vapor points (SV01 through SV05) were installed to assess soil vapor conditions. One duplicate soil vapor sample and one ambient air sample were collected for QA/QC purposes.

Soil vapor points SV01 through SV05 were installed by AARCO using an AMS VTR-9580 PowerProbeTM drill rig and advanced to a depth of about 15 feet bgs (i.e., the anticipated development depth). A polyethylene vapor implant (2 inches in diameter, and approximately 1-7/8th inches in length) was threaded to Teflon-lined, polyethylene tubing (1/4-inch diameter) and lowered to the bottom of the borehole in accordance with the NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York. A sand filter pack was installed around the screen implant by pouring No. 1 sand into the annulus. The remainder of the annulus was filled to grade surface with a hydrated bentonite seal.

2.2 Samples Collected

During implementation of the RI, 27 grab soil samples were collected for laboratory analysis. Additionally, two duplicates and one matrix spike/matrix spike duplicate (MS/MSD) samples were collected. A minimum of three grab soil samples were collected for laboratory analysis from each boring location to investigate the potential AOCs and to provide vertical and horizontal delineation of identified impacts. Samples were collected within the shallow historic fill layer (i.e., immediately below the surface cover up to 2 feet bgs), within the historic fill layer, and from

native material at the groundwater interface or from directly above the water table at around 20 feet bgs.

Five groundwater samples were collected in accordance with the procedures in the United States Environmental Protection Agency's (USEPA) low-flow groundwater sampling procedure ("Low Stress [low flow] Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells", EQASOP-GW 001, January 19, 2010) to allow for collection of a representative sample. Additionally, five QA/QC samples (including one duplicate from MW01, one MS/MSD sample from MW01, one field blank and two trip blanks) were collected. Monitoring wells were purged, and physical and chemical parameters (e.g., temperature, dissolved oxygen, oxygen reduction potential, and turbidity) were allowed to stabilize to ranges specified in the USEPA guidance before they were sampled.

Five soil vapor samples were collected into laboratory-supplied, batch-certified, 2.7-Liter Summa® canisters that were calibrated for a sampling rate of about 0.0225 liters per minute (L/min) over about 480 minutes of sampling. For QA/QC purposes, one exterior ambient air sample was collected in the vacant lot in Lot 8.

All soil, groundwater, and soil vapor samples were submitted for laboratory analysis to Alpha Analytical Inc., an NYSDOH Environmental Laboratory Approval Program (ELAP)-certified laboratory located in Westborough, Massachusetts.

2.3 Chemical Analysis

The laboratory analyses performed on the soil, groundwater, soil vapor, and ambient air samples collected are summarized below by media.

Soil samples were analyzed for the following parameters:

- Part 375-listed VOCs via USEPA Method 8260C
- Part 375-listed semivolatile organic compounds (SVOCs) via USEPA Method 8270D
- Polychlorinated biphenyls (PCBs) via USEPA Method 8082A
- Part 375-listed pesticides via USEPA Method 8081B
- Part 375-listed herbicides via USEPA Method 8151A
- Part 375-listed metals including hexavalent and trivalent chromium via USEPA Methods 6010C, 7471B, and 7196A
- Total cyanide via USEPA Method 9010C/9012B
- 1,4-dioxane via EPA Method 8270 Modified SIM

- Polyfluoroalkyl substances via USEPA Method 537

Groundwater samples collected were analyzed for the following parameters:

- TCL VOCs and 1,4-dioxane via USEPA Method 8260C
- TCL SVOCs via USEPA Method 8270D
- PCBs via USEPA Method 8082A
- Part 375-listed pesticides via USEPA Method 8081B
- Part 375-listed herbicides via USEPA Method 8151A
- TAL metals (total and dissolved) via USEPA Methods 6020A and 7470A
- PFASs via USEPA Method 537 (MW01, MW05A and MW07 only)

Soil vapor and ambient air samples were analyzed for VOCs via USEPA Method TO-15.

2.4 Remedial Investigation Findings Summary

The findings summarized herein are based on qualitative data (field observations and instrumental readings) and laboratory analytical soil, groundwater, and soil vapor sample results. Soil sample results are summarized on Figure 3, groundwater sample results are summarized on Figure 4, and soil vapor sample results are summarized on Figure 5.

1. Stratigraphy: The site stratigraphy consists of a historic fill layer beneath concrete-paved or landscaped surfaces consisting of buried solid waste within a brown, fine to medium sand and gravel matrix. Fill material was heterogeneous and consisted of random distributions of buried solid waste, including glass, organic fibers, fabric, plastic, automobile tires, coal, ceramics, metal, brick and concrete from depths ranging from about 5 to 14 feet bgs. There is an area within the northeast corner of the site (SB06) where fill material was encountered that is uncharacteristic of historic fill material, suggesting that this area may have been previously excavated and backfilled. Fill material was underlain by a native tan to brown fine to coarse sand with trace silt and fine gravel observed to depths ranging from 5 to at least 25 feet bgs (about el 26.75 and el 1.79, respectively). Bedrock was not encountered during the RI.
2. Hydrogeology: Depth to groundwater was measured between about 21.0 and 23.39 feet bgs. Groundwater elevations range from about el 5.04 to el 5.36 NAVD88. Based on documented elevations, groundwater is inferred to flow from the southeast to northwest with a hydraulic gradient of about 0.0025 feet/foot.

3. Historic Fill and Buried Solid Waste: Laboratory analytical results indicate that the historic fill and buried solid waste contain SVOCs, metals, pesticides and PCBs at concentrations above the 6 New York Codes, Rules, and Regulations (NYCRR) Part 375 Unrestricted Use (UU), Protection of Groundwater (PG), and/or Restricted Use Restricted-Residential (RURR) soil cleanup objectives (SCOs) in samples collected throughout the site. The detected concentrations are generally typical of historic fill material in New York City. Polycyclic aromatic hydrocarbon (PAH) concentrations were 1 to 2 orders of magnitude higher in areas where buried solid waste was abundant.

4. Tar-Like Impacts to Soil: Evidence of tar-like impacts (including odors, PID readings above background levels and staining) was identified during the May 2019 Limited Subsurface Investigation in soil samples collected from two borings located in the northern region of the site to depths of up to 5 feet bgs. SVOC concentrations in historic fill material from samples collected during the September 2019 RI were one to two orders of magnitude higher in areas where tar-impacted material was identified. An on-site source of tar was not identified.

5. Groundwater: Concentrations of SVOCs and pesticides identified above the SGVs are attributed to historic fill material, buried solid waste and/or tar-like material. Dissolved metals detected in groundwater above SGVs are characteristic of regional groundwater conditions.

6. Sufficient analytical data were gathered during the RI, together with previous studies, to establish soil cleanup levels and to develop a remedy for the site. The final remedy will be detailed in the RAWP and prepared in accordance with NYS BCP guidelines. The remedy will need to address historic fill impacted with SVOCs, pesticides, PCBs, and metals.

2.5 Significant Threat

The NYSDEC and NYSDOH have not determined whether this site poses a significant threat to human health and the environment.

2.6 Site History

2.6.1 Past Uses and Ownership

A review of available Sanborn® Fire Insurance Maps, historic aerial photographs, and City Directory records indicate the site was developed as early as 1887 with four multi-story commercial/residential buildings (labeled as tailor shop, synagogue, candy packaging, and warehouse), parking, and residential dwellings until about 1965. The previous mixed-use

commercial/residential buildings were demolished around 1974, and the site has been used as an open-air parking lot since as early as 1981. Test pits excavated on-site revealed buried solid waste, including glass, organic fibers, fabric, plastic, automobile tires, coal, ceramics, metal, brick and concrete as deep as 7.5 feet bgs, suggesting that undocumented dumping occurred at some point after the buildings were demolished in 1974.

2.6.2 Previous Environmental Reports

The following previous environmental reports and investigations were reviewed as part of this RIR and are summarized below. The reports are included in Appendix C.

- May 22, 2015 Phase I Environmental Site Assessment (ESA), prepared by Hydro Tech Environmental, Corp. (Hydro Tech)
- October 5, 2018 Test Pit Sampling – Test Pit Location Plan and Analytical Results, prepared by Langan
- February 8, 2019 Phase I ESA, prepared by Langan
- May 3, 2019 Limited Subsurface Investigation and Analytical Results, prepared by Langan

Phase I Environmental Site Assessment, prepared by Hydro Tech, Dated May 22, 2015

Hydro Tech prepared a Phase I ESA in April 2015 in conformance with ASTM International's (ASTM) Standard Practice for Environmental Site Assessments E1527-13 and the USEPA All Appropriate Inquiries (AAI) Rule, for the purpose of identifying recognized environmental conditions (RECs) in connection with the site. The Phase I ESA was prepared for two parking lots associated with 198 Johnson Avenue (Block 3072, Lot 1) and 157 Boerum Street (Block 3071, Lot 10).

The following REC was identified in the Hydro Tech Phase I:

- REC 1 – Historic Heating Oil Tanks: A review of available New York City Department of Buildings (NYCDOB) records identified oil burner permits associated with Block 3071, Lot 10. The suspect presence of heating oil tanks may indicate an adverse environmental impact.

Following further review of the May 22, 2015 Phase I ESA and NYCDOB online query system, the suspected heating oil tanks are likely associated with the properties adjoining the site to the north and east (Block 3071, Lot 10).

Due Diligence Sampling, prepared by Langan, Dated October 5, 2018

Langan completed a limited sampling event to investigate soil quality in conjunction with a geotechnical investigation conducted by the Volunteer. The investigation was conducted on October 5, 2018, and included excavation of two test pits to about 8 feet bgs and collection of

soil samples. A total of five soil samples were collected from the test pits. Field observations and laboratory analytical results are summarized below:

- Site Geology and Hydrogeology: Beneath the landscaped areas observed throughout the west and northern portions of the site, fill material consisting of buried solid waste within a brown, fine to medium sand and gravel matrix was identified. Solid waste material was heterogeneous and consisted of random distributions of glass, organic fibers, fabric, plastic, automobile tires, coal, ceramics, metal, brick and concrete was observed from surface grade to about 7.5 feet bgs. Groundwater was not encountered during the test pit excavation, but was identified between about 7 to 10 feet bgs at a property located 400 feet southeast of the site during a subsurface investigation performed by Langan.
- Soil: Metals including barium, cadmium, mercury, lead, and zinc were detected at concentrations above Title 6 NYCRR Part 375 UU SCOs in soil, with barium, cadmium, lead and mercury exceeding the RURR SCOs. Barium concentrations also exceeded the Commercial Use SCOs in three soil samples collected from Test Pit 1.

  Several SVOCs exceeded the RURR and UU SCOs in soil samples collected from surface grade to 7.5 feet bgs in Test Pit 1. In addition, concentrations of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene were detected in Test Pit 1 at concentrations exceeding both Commercial and Industrial Use SCOs from about 4 to 7.5 feet bgs.

  Total PCBs in two samples collected from shallow fill (Test Pit 1) exceeded UU SCOs. In addition, several pesticides exceeded the UU SCOs in all soil samples collected from the two test pits.

  While these detected contaminants are typical of historic fill material, the concentrations at which they were detected are not. The source of contaminant concentrations identified within the soil appears to be the buried solid waste.

Phase I Environmental Site Assessment, prepared by Langan, Dated February 8, 2019

Langan completed a Phase I ESA in February 2019 for the site (Block 3071, Lot 40) in conformance with ASTM International's Standard Practice for Environmental Site Assessments E1527-13 and the USEPA AAI Rule, for the purpose of identifying RECs in connection with the site.

The following RECs were identified in the Phase I:

- REC 1 – SVOC-Impacted Fill at the Subject Property: Langan's October 2018 test pit sampling within the western part of the Subject Property identified fill material consisting of buried solid waste within a brown, fine to medium sand and gravel matrix. Solid waste

material was heterogeneous and consisted of random distributions of glass, organic fibers, fabric, plastic, automobile tires, coal, ceramics, metal, brick and concrete. The fill contained SVOCs, pesticides, PCBs, and metals at concentrations above the NYSDEC Part 375 UU and RURR SCOs.

- REC 2 – Historical Use of Surrounding Properties: One dry cleaner, Top Hat Cleaners, was identified as a New York State Hazardous Waste Site (SHWS) about 200 feet north and hydraulically up gradient of the Subject Property. The site previously operated as a dry cleaning facility from as early as 1969. Chlorinated volatile organic compounds (CVOCs) were identified in soil and groundwater at this facility and in sub-slab soil vapor samples collected at an off-site property. Impacted groundwater and/or soil vapor may have migrated to the site.

May 3, 2019 Limited Subsurface Investigation and Analytical Results, prepared by Langan

Langan completed a limited subsurface sampling event to further investigate PAH-impacted soil that was identified during due diligence sampling completed in October 2018. The investigation was conducted on May 3, 2019, and included the advancement of 10 soil boings to depths ranging between 12 and 32 feet bgs, installation of one temporary monitoring well at soil boring SB-01, and collection of soil and groundwater samples. A total of four soil samples and one groundwater sample were submitted for laboratory analysis to Alpha Analytical Inc., an NYSDOH ELAP-certified laboratory located in Westborough, Massachusetts. Field observations and laboratory analytical results are summarized below:

- Site Geology and Hydrogeology: Historic fill material was encountered beneath the site cover consisting of landscaped areas and/or asphalt and extends to depths varying from about 5 to 9 feet bgs. The historic fill material predominantly consists of gray, black, and brown to dark brown, fine to medium sand with varying amounts of brick, concrete, and silt. The fill layer is underlain by native soil typically consisting of tan to brown, fine- to coarse-grained sand with varying amounts of silt. Organic-like odors and PID readings above background (maximum 72.1 parts per million [ppm]) were observed in SB-06 from 1.5 to 2 feet bgs. Groundwater was encountered at about 23.5 feet bgs in the northeast region of the site.

- Soil: Metals, including barium, copper, lead, mercury, and zinc were detected at concentrations above UU SCOs in soil samples collected from historic fill, with barium and lead exceeding the RURR SCOs. Barium and lead concentrations also exceeded the Commercial Use SCOs in two samples collected from the northern part of the site.

  Several SVOCs exceeded the RURR and UU SCOs in soil samples collected from 2 to 4 feet bgs in borings collected from the western and northern part of the site.

Concentrations of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene exceeded both the Commercial and Industrial Use SCOs from about 2 to 4 feet bgs. In addition, benzo(k)fluoranthene, fluoranthene, and phenanthrene were detected at concentrations exceeding Commercial Use SCOs from about 2 to 4 feet bgs.

VOCs, including 1,2,4-trimethylbenzene, benzene, ethylbenzene, naphthalene, toluene, and total xylenes, exceeded the UU SCOs in soil samples collected from shallow fill (2 to 4 feet bgs) in the northern portion of the site. Concentrations of naphthalene were detected in borings SB-06 and SB-07 (maximum concentration of 3,400 mg/kg in SB-06) above the Commercial and Industrial Use SCOs from about 2 to 4 feet bgs. Naphthalene is classified as an SVOC in 6 NYCRR Part 375 and will be discussed as an SVOC. The elevated concentrations of naphthalene reported as a VOC versus SVOC are due to the laboratory method of sample extraction and analysis (USEPA Method 8260C versus 8270D, respectively).

While these detected contaminants are typical of historic fill material, the concentrations at which they were detected are not. The source of contaminant concentrations identified within the soil are indicative of contamination from historic site uses and/or buried solid waste.

- Groundwater Quality: Dissolved metals, including barium, beryllium, chromium, copper, iron, lead, magnesium, manganese, nickel, selenium, and sodium were detected at concentrations above the NYSDEC Title 6 of the Official Part 703.5 and the NYSDEC Technical Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values for Class GA Water (NYSDEC SGVs).

2.7 Geology and Hydrogeology

Geologic and hydrogeologic observations are described below. Soil boring logs, a groundwater contour map, and groundwater monitoring well construction logs are appended to the RIR.

2.7.1 Historic Fill Material

The asphalt parking lot and vegetated areas are underlain by a fill layer extending from surface grade to depths ranging from about 5 to 14 feet bgs (about el. 26.75 and el. 12.16, respectively). The fill layer is shallowest in the northeast region of the site and deepest in the southwest and central-east regions of the site. An area of fill material uncharacteristic of other fill encountered throughout the site was identified at boring SB06 within the northeast corner of the site, suggesting this area was previously excavated and backfilled. The historic fill predominantly consists of a brown, fine to medium sand and gravel matrix. The historic fill material is

heterogeneous and contains random distributions of buried solid waste, which includes various amounts of glass, organic fibers, wood, coal, ash, slag, metal, brick and concrete.

2.7.2 Native Soil

The historic fill material is underlain by a native tan to brown, fine- to coarse-grained sand with trace silt and fine gravel observed at depths of about 5 to at least 25 feet bgs (about el. 26.75 and el. 1.8, respectively).

2.7.3 Bedrock

According to the USGS Bedrock and Engineering Geologic Maps of New York County and Parts of Kings and Queens Counties, New York, dated 1994, bedrock beneath the site is the Hartland Formation. The Hartland Formation is comprised of 1) quartz-biotite-muscovite schist, 2) gray, fine-grained quartz-muscovite-biotite schist, 3) is white to pinkish-white, gneissic granite, 4) is a dark greenish-black amphibolite, and 5) gray, unevenly foliated gneissic schist. Bedrock was not encountered during this RI.

2.7.4 Hydrogeology

Synoptic groundwater level measurements were collected on September 19, 2019. Depth to groundwater was measured between about 21.0 to 23.29 feet bgs, and groundwater elevations ranged from el 5.04 to el 5.36 NAVD88. The groundwater elevation is highest in the southeast region of the site and lowest in the northwest region of the site. Based on documented elevations, groundwater is inferred to flow from the southeast to northwest with a hydraulic gradient of about 0.0025 feet/foot.

2.8 Contaminant Conditions

2.8.1 Conceptual Site Model

A conceptual site model (CSM) has been developed based on the findings of the RI. The purpose of the CSM is to develop a simplified framework for understanding the distribution of impacted materials, potential migration pathways, and potentially complete exposure pathways.

2.8.2 Potential Sources of Contamination

Potential sources of contamination have been identified and include historic fill, solid waste material that was buried at the site and historical site usage.

Historic fill material encountered beneath surface cover to depths ranging from about 5 to 14 feet bgs originated from unidentified source areas and was placed as backfill at an unknown time, prior to the development of the site as a parking lot. Solid waste material, consisting of random distributions of glass, organic fibers, fabric, plastic, automobile tires, coal, ceramics, metal, brick and concrete, was identified within the historic fill material. SVOCs, pesticides, PCBs, and metals

detected at concentrations above the Part 375 UU, PG and RURR SCOs, are generally related to the nature of the historic fill and/or buried solid waste.

Shallow soil in the northern part of the site is impacted with tar-related VOCs and SVOCs; however an on-site source was not identified.

Concentrations of SVOCs, metals and pesticides identified in groundwater above NYSDEC SGVs originate from overlying historic fill and buried solid waste, and not related to a release at the site.

Exposure Media and Contaminants of Concern

Impacted media include soil and groundwater. Analytical data suggests that historic fill contains SVOCs, pesticides, PCBs, and metals at concentrations above UU, RURR and/or PG SCOs in samples as deep as 11 feet bgs. Groundwater, which was observed at depths ranging from 21.0 to 23.39 feet bgs, is impacted with SVOCs, pesticides and metals that are likely attributed to entrained sediment derived from overlying historic fill. Soil vapor is impacted with VOCs at concentrations that do not require further action.

Receptor Populations

The site is currently developed with an active asphalt parking lot and surrounding vegetated areas. Occupants of the site are generally limited to those parking cars on the lot. Residential buildings are located adjacent to the site to the east and west. Under future conditions, human receptors may include construction and remediation workers, authorized guests visiting the site, and the public adjacent to the site, as well as potential future building occupants.

2.8.2 Description of AOCs

Based on site observations, site development history, and the findings of the previous environmental reports, two AOCs were identified. This section discusses the results of the RI with respect to the AOCs.

AOC 1: Buried Solid Waste and SVOC-Impacted Fill at the Site

Historic fill was encountered across the site from the surface grade to depths ranging from about 5 to 14 feet bgs. SVOCs, pesticides, PCBs, and metals were detected at concentrations above the Part 375 UU, PG and/or RURR SCOs in samples of historic fill to depths of up to 11 feet bgs. Concentrations of SVOCs, pesticides, PCBs, and metals identified during the RI are typical of those found in historic fill in New York City and are likely associated with the general quality of the fill placed at the site. SVOC concentrations are an order of magnitude greater in areas where buried solid waste was encountered, relative to typical historic fill material where buried solid waste was absent. The source of SVOCs in groundwater is historic fill and/or solid waste material that was dumped and buried at the site.

AOC 2: Tar-Like Impacts to Soil in the Northern Part of Site

Evidence of tar-like impacts (including odors, PID readings above background levels and staining) was identified during the May 2019 Limited Subsurface Investigation in soil samples collected from two borings located in the northern region of the site to depths of up to 5 feet bgs. Concentrations of SVOCs identified in soil samples collected in AOC2 during the RI are consistent with concentrations identified across the site in historic fill. The concentrations of SVOCs identified in soil borings SB-06 and SB-07 (installed during the May 2019 investigation) were an order of magnitude greater than those identified elsewhere on the site, but appear to be confined to the upper five feet in their respective locations. VOCs identified in the upper five feet in previous investigation borings SB-06 and SB-07, were not identified in any of the surrounding RI borings. RI boring SB06, installed directly between previous investigation borings SB-06 and SB-07, contained no indications of tar-like impacts and VOCs and SVOCs were not detected. This area containing SB06 was covered by patched asphalt, indicating this area may have been excavated and backfilled at some time in the past. Additionally, RI borings SB02, SB03, SB05, SB08 and SB09 did not contain indications of tar-like impacts.

VOCs were not detected in groundwater samples. PAHs detected in groundwater may be related to the presence of tar or historic fill material.

2.8.3 Nature and Extent of Contamination

This section evaluates the nature and extent of soil, groundwater, and soil vapor contamination. The nature and extent of the contamination is derived from a combination of field observations and analytical data detailed in the RIR. Soil sample results are summarized on Figure 3, groundwater sample results are summarized on Figure 4, and soil vapor sample results are summarized on Figure 5.

Soil Contamination

Contaminants related to historic fill and buried solid waste material include SVOCs, pesticides, PCBs, and metals. Historic fill and buried solid waste material are present across the site to depths ranging from about 5 to 14 feet bgs. Twelve soil samples collected from the historic fill contained concentrations of SVOCs (including benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, dibenz[a,h]anthracene, and indeno[1,2,3-cd]pyrene) above the UU, RURR, and/or PG SCOs. Sixteen soil samples, predominantly from the fill material up to 14 feet bgs, contained concentrations of metals (including barium, trivalent chromium, copper, chromium, lead, mercury, nickel, and zinc) above the UU, RURR, and/or PG SCOs. Four pesticides, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, and dieldrin were detected in fifteen samples collected from six borings throughout the site above the UU SCO. Total PCBs were detected in one sample in historic fill in the central portion of the site exceeding the UU SCO.

Tar-related SVOCs, specifically PAHs, and VOCs were identified at concentrations that are atypical of historic fill in soil samples collected from two borings during the 2019 Limited Subsurface Investigation within the northern part of the site. Soil in these borings exhibited organic-like odors and PID readings above background, but these observations were limited to the upper 5 feet. Concentrations of SVOCs in historic fill material surrounding the shallow tar-like impacts exceed the UU and RURR SCOs, but are up to two orders of magnitude less than SVOC concentrations detected in the tar-impacted material. RI boring SB06, installed directly between previous investigation borings SB-06 and SB-07, contained no indications of tar-like impacts and VOCs and SVOCs were not detected. Fill material encountered at SB-06 was inconsistent with historic fill material that is present throughout the site, suggesting that this are may have been previously excavated and backfilled. RI borings SB02, SB03, SB05, SB08 and SB09 did not contain indications of tar-like impacts. SVOC concentrations in areas where buried solid waste was identified are an order of magnitude greater than those detected in typical historic fill material.

Groundwater Contamination

VOCs were not detected in groundwater samples. PAHs were detected in groundwater samples above the SGVs. Because tar-like impacts are limited to the top five feet of the soil column, groundwater was encountered at between 21 and 23 feet bgs, and due to the relative insolubility of PAHs, residual contamination within the northern portion of the site does not appear to have impacted groundwater. The source of PAHs in groundwater is likely historic fill material and buried solid waste.

Antimony, chromium, magnesium and selenium were not detected in groundwater samples at total concentrations; therefore, the detections of these metals as well as total PCBs in unfiltered samples are likely the result of entrained sediment in groundwater derived from historic fill. Iron, manganese, and sodium were detected in dissolved groundwater samples above SGVs and are characteristic of regional groundwater conditions.

Soil Vapor Contamination

Total VOCs in soil vapor samples ranged from 346 micrograms per cubic meter (µg/m³) in SV04 to 2,015 µg/m³ in SV05. Tetrachloroethene (PCE) concentrations detected in soil vapor ranged from about 1.48 µg/m^3 in SV02 to 5.81 µg/m^3 in SV05. The chlorinated VOC 1,1,1-TCA was identified at a concentration of 7.58 µg/m^3 in SV05. PCE's daughter products, trichloroethene (TCE), cis-1,2-dichloroethene and vinyl chloride were not detected in soil vapor samples. Benzene, toluene, ethylbenzene, and xylenes (BTEX) were detected at total concentrations ranging from about 17.71 µg/m^3 in SV04 to 42.5 µg/m^3 in SV03.

2.9 Qualitative Human Exposure Assessment

Human health exposure risk was evaluated for both current and future site and off-site conditions, in accordance with DER-10. The assessment includes an evaluation of potential sources and migration pathways of site contamination, potential receptors, exposure media, and receptor intake routes and exposure pathways.

In addition to the human health exposure assessment, DER-10 requires an on-site and off-site Fish and Wildlife Resources Impact Analysis (FWRIA) if certain criteria are met. Based on the requirements stipulated in Section 3.10 and Appendix 3C of DER-10, there was no need to prepare an FWRIA for the site. The same qualitative human health exposure assessment for the site is also presented in the RIR.

2.9.1 Potential Exposure Pathways – On-Site

Current Conditions

Human exposure to contaminated soil is limited to the vegetated areas to the north, east and west of the asphalt parking lot. Access from the street is restricted by a chain link fence; however the area to the north is accessible via walkway from the property to the north. The potential pathway is through dermal absorption and ingestion.

Groundwater in this area of New York City is not used as a potable water source. There is a potential exposure pathway during groundwater sampling associated with site investigation. The potential pathway is through dermal absorption, inhalation and ingestion.

Construction/Remediation Condition

Construction and remediation may result in potential exposures to site contaminants in the absence of a Health and Safety Plan (HASP) and a Community Air Monitoring Plan (CAMP). Construction and remedial activities will likely include excavation and off-site disposal of impacted soil, and construction of foundation components. In the absence of a HASP and CAMP, this scenario presents the potential for exposure of soil contaminants to construction and remediation workers via dermal absorption ingestion, and inhalation of vapors and particulate matter. This exposure pathway will be marginalized through the implementation of the HASP, CAMP, and vapor and dust suppression techniques.

Proposed Future Conditions

Currently, the contemplated project includes construction of a new 19-story residential and affordable housing development with one cellar level.

There is no pathway for ingesting groundwater contaminants of concern (COCs), since the site and surrounding areas obtain their drinking water supply from surface water reservoirs located upstate and not from groundwater.

If necessary, institutional controls will require maintenance of engineering controls and will serve to further mitigate exposure under future conditions.

2.9.2 Potential Exposure Pathways – Off-Site

Soil vapor may migrate off-site vertically through the subsurface and dissipate and dilute with ambient air in instances where the surface is compromised or during site construction/remediation.

The potential off-site migration of site soil contaminants is not expected to result in a complete exposure pathway for current, construction and remediation, or future conditions for the following reasons:

- The site is located in an urban area and predominantly covered with continuous relatively impervious surface covering (i.e. building foundations and concrete paving)
- During site redevelopment remediation and construction, the following protective measures will be implemented:
    - A site-specific HASP including a CAMP will be implemented to protect on-site personnel and to monitor the perimeter of the site to mitigate off-site migration of particulates and VOCs during construction
    - Air monitoring will be conducted for particulates (i.e., dust) and VOCs during intrusive activities as part of a CAMP. Dust and/or vapor suppression techniques will be employed to limit potential for off-site migration of soil and vapors.
    - Vehicle tires and undercarriages will be washed as necessary prior to leaving the site to prevent tracking material off-site
    - A soil erosion/sediment control plan will be implemented during construction to control off-site migration of soil

2.9.3 Evaluation of Human Health Exposure

Based upon the CSM and the review of environmental data, partial on-site exposure pathways appear to be present under current conditions, and in the absence of institutional and engineering controls, complete on-site exposure pathways could potentially exist in construction/remediation and future conditions.

Complete exposure pathways have the following five elements: 1) a contaminant source; 2) a contaminant release and transport mechanism; 3) a point of exposure; 4) a route of exposure; and 5) a receptor population.

Current Conditions

Contaminant sources include historic fill with elevated levels of SVOCs, pesticides, PCBs, and metals; PAH, pesticide and metal-impacted groundwater; and VOC-impacted soil vapor.

Contaminant release and transport mechanisms include contaminated soil transported as dust (dermal, ingestion, inhalation), and existing soil vapor contaminants (inhalation). Under current conditions, the likelihood of human exposure is limited, as 1) site access is restricted to ownership and authorized visitors; and 2) impermeable concrete surfaces cover a portion of the site. Pervious site surfaces are covered with vegetation, which provides an additional barrier between receptor populations and contaminated historic fill.

Construction/Remediation Activities

During development and remediation, the contaminant sources are the same as for current conditions. Points of exposure include disturbed and exposed soil during excavation, dust and organic vapors generated during excavation, and contaminated groundwater that may be encountered during excavation and/or dewatering operations. Routes of exposure include ingestion and dermal absorption of contaminated soil and groundwater, inhalation of organic vapors arising from contaminated soil and groundwater, and inhalation of dust arising from contaminated soil. The receptor population includes construction and remediation workers and, to a lesser extent, the public adjacent to the site.

The potential for completed exposure pathways is present since all five elements exist; however, the risk will be minimized by the implementation of appropriate health and safety measures, such as monitoring the air for organic vapors and dust, using vapor and dust suppression measures, cleaning truck undercarriages before they leave the site to prevent off-site soil tracking, maintaining site security, and wearing the appropriate personal protective equipment (PPE).

Proposed Future Conditions

For the proposed future conditions, residual contaminants may remain on-site, depending on the selected remedy, and would, to a lesser extent, include those listed under current conditions. If institutional and/or engineering controls are not implemented, points of exposure include potential cracks in the foundation or lower-level slab of the proposed development, and exposure during any future soil-disturbing activities. The possible routes of exposure can be avoided or mitigated by the installation of engineering controls, such as a site capping system, and the implementation of institutional controls, such as a Site Management Plan (SMP).

2.9.4 Human Health Exposure Assessment Conclusions

1. Under current conditions, there is a marginal risk for exposure. The primary exposure pathways are dermal contact, ingestion and inhalation of soil, soil vapor, or groundwater by site visitors in instances where the integrity of the impermeable site cover is compromised. The exposure risks can be avoided or minimized by following the appropriate HASP and CAMP during any intrusive activities.
2. In the absence of institutional and engineering controls, there is a moderate risk of exposure during the construction and remediation activities. The primary exposure pathways are:
    a. Dermal contact, ingestion and inhalation of contaminated soil, groundwater or soil vapor by construction workers.
    b. Dermal contact, ingestion and inhalation of soil (dust) and inhalation of soil vapor by the community in the vicinity of the site.

    These can be avoided or minimized by performing community air monitoring and by following the appropriate health and safety, vapor and dust suppression, and site security measures outlined in a site-specific HASP.
3. The existence of a complete exposure pathway for site contaminants to human receptors under future conditions is unlikely, as contaminant sources will likely be removed during site development, and if any residual soil remains, the impermeable foundation cover would serve as a cap. Regional groundwater is not used as a potable water source in New York City, so exposure to regional groundwater contaminants is unlikely. Soil vapor concentrations at the site do not warrant vapor mitigation.
4. It is unlikely that a complete exposure pathway exists for the migration of site contaminants to off-site human receptors for current, construction phase, or future conditions. Monitoring and control measures would be used during investigation and construction to prevent completion of this pathway. Under future conditions, the site will be remediated and, if necessary, engineering controls may be implemented (e.g. site-wide cap) to prevent completion of this pathway.

2.10 Remedial Action Objectives

The following Remedial Action Objectives (RAO) have been identified for this site.

2.10.1 Soil

RAOs for Public Health Protection:

- Prevent ingestion/direct contact with contaminated soil

- Prevent inhalation of, or exposure to, contaminants volatilizing from contaminated soil or contaminated soil in particulate form

RAOs for Environmental Protection:

- Prevent migration of contaminants that would result in groundwater or surface water contamination

2.10.2 Groundwater

RAOs for Public Health Protection:

- Prevent ingestion of groundwater with contamination levels exceeding drinking water standards
- Prevent contact with, or inhalation of, volatiles from contaminated groundwater

2.10.3 Soil Vapor

RAOs for Public Health Protection:

- Mitigate the risk of impacts to public health resulting from existing, or the potential for, soil vapor intrusion into building(s) at the site

3.0 SUMMARY OF REMEDIAL ACTION

This Section presents an analysis of two remedial actions that can potentially be achieved under the BCP. The proposed SCOs will be the Track 1 Part 375 UU SCOs for Alternative I and Track 4 RURR SCOs for Alternative II.

3.1 Alternative I – Technical Description

Alternative I, a Track 1 remedy, will include the following tasks:

- Development and implementation of a CHASP and CAMP for the protection of on-site workers, community/residents, and environment during remediation and construction activities
- Design and construction of a support of excavation (SOE) system to facilitate the Track 1 remediation
- Implementation of soil erosion, pollution and sediment control measures in compliance with applicable laws and regulations
- Excavation, stockpiling, off-site transport, and disposal of about 4,100 cubic yards of historic fill, solid waste, and native soil that exceeds UU SCOs as defined by 6 NYCRR Part 375-6.8. These excavations include soil impacted with lead identified during the RI and preliminary waste characterization in areas centered on soil borings SB01, SB07, and on soil boring WCB-06.
- If encountered, removal of any encountered USTs and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) and decommissioning and off-site disposal during redevelopment in accordance with DER-10, 6 NYCRR Part 613.9, NYSDEC CP-51, and other applicable NYSDEC UST closure requirements
- Screening for indications of contamination (by visual means, odor, and monitoring PIDs) of excavated material during intrusive site work
-
- Collection and analysis of documentation soil samples in accordance with DER-10 to confirm a Track 1 remedy was achieved; over-excavation will be completed if necessary to meet UU SCOs
- Collection and analysis of groundwater samples in accordance with DER-10 following remedial excavation activities to document groundwater quality beneath the site

The Alternative I remediation extent is shown on Figure 6 and is based on data presented in the RIR. The requirements for each of the Alternative I tasks are described below.

On-Site Worker, Public Health, and Environmental Protection

A site-specific CHASP is appended to this RAWP (Appendix D) and will be enforced during excavation and foundation construction to protect site workers from accidents and acute and chronic exposures to the identified contaminated media. Public health will be protected by implementing and enforcing dust, odor, and organic vapor control and monitoring procedures included in the CAMP. The CAMP will include continuous perimeter monitoring of dust and organic vapor using DustTrak aerosol monitors and PIDs capable of recording data and calculating 15-minute averages. Field personnel will monitor site perimeters for visible dust and odors. The environment will be protected by implementing and enforcing the appropriate soil erosion prevention measures.

Fill and Soil Removal

SVOCs, metals, PCBs, and pesticides were detected in historic fill, buried solid waste and tar-impacted material at concentrations that exceed the UU SCOs. To achieve Track 1, soil removal and disposal will extend from surface grade (about el 25.7 to 28.5) to about 9 feet bgs (about el 16.7 to 19.5) across the 11,180 square foot site footprint, with additional excavations to about 14 feet bgs (about el 13.2) in areas centered on soil borings SB05 and SB08 from the September 2019 RI. The estimated volume of material requiring removal and off-site disposal for a Track 1 cleanup is about 4,100 cubic yards, including about 40 cubic yards of Resource Conservation and Recovery Act (RCRA) hazardous lead-impacted soil identified during the September 2019 preliminary waste characterization. The soil will be screened for visual, olfactory, and instrumental evidence of environmental impacts. Excavation is not expected to extend below the water table during remedial excavation or construction; therefore, installation of a dewatering system or localized dewatering is not anticipated.

UST Removal

If encountered, any USTs and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) would be decommissioned in accordance with applicable NYSDEC tank closure requirements, including DER-10 Section 5.5 and 6 NYCRR Part 613.9, and NYSDEC CP-51. USTs and/or associated appurtenances would be registered and administratively closed with the NYSDEC Petroleum Bulk Storage (PBS) unit. Petroleum-impacted soil would be excavated and disposed of off-site at a permitted disposal facility in accordance with applicable regulations. Closure documentation, such as contractor affidavits, bills of lading for sludge disposal, and tank disposal receipts, would be provided as appendices in the Final Engineering Report (FER).

Backfill

As required for construction purposes, imported material will consist of clean fill that meets the UU SCOs or other acceptable fill material such as virgin stone from a quarry or RCA. If RCA is

imported to the site, it will come from a NYSDEC-registered facility in compliance with 6 NYCRR Part 360 registration and permitting requirements for the period of RCA acquisition. RCA imported from compliant facilities will not require chemical testing, unless required by NYSDEC under its terms for operation of the facility. Imported RCA must be derived from recognizable and uncontaminated concrete (less than 10% by weight passing through a No. 80 sieve). RCA is not acceptable for, and will not be used as, site cover or drainage material.

Confirmation Soil Sampling

Per NYSDEC DER-10, confirmation soil samples will be collected from the excavation base at a frequency of one per 900 square feet. Sidewall samples will not be collected from the site perimeter because excavation will extend across the site footprint and SOE measures (e.g., sheeting and lagging) will preclude access to soil sidewalls. An estimated 12 confirmation soil samples, plus QA/QC samples, would be collected and analyzed for the Part 375 list of VOCs, SVOCs, pesticides, metals including hexavalent and trivalent chromium, per- and PFAS and 1,4-dioxane.

Post-Remedy Groundwater Sampling

Concentrations of SVOCs and pesticides above the NYSDEC SGVs were identified in groundwater samples collected from monitoring wells MW01, MW03, and MW05 during the September 2019 RI. These contaminant concentrations are likely attributed to the historic fill material, buried solid waste and/or tar-like material observed throughout the site. Following remedial excavations throughout the site, groundwater samples will be collected for SVOC and pesticide analysis to document residual groundwater quality at the site. An estimated three groundwater samples, plus QA/QC samples, would be collected and analyzed for SVOCs and pesticides.

3.2 Alternative II – Technical Description

Alternative II, a Track 4 remedy, will include the following tasks:

- Development and implementation of a CHASP and CAMP for the protection of on-site workers, community/residents, and environment during remediation and construction activities
- Construction of a SOE system to facilitate the Track 4 remediation
- Implementation of soil erosion, pollution and sediment control measures in compliance with applicable laws and regulations
- Excavation, stockpiling, off-site transport, and disposal of about 3,800 cubic yards of historic fill that exceeds RURR SCOs as defined by 6 NYCRR Part 375-6.8. These

excavations include soil impacted with lead identified during the RI and preliminary waste characterization in areas centered on soil borings SB01, SB07, and on soil boring WCB-06.

- If encountered, removal of any encountered USTs and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) and decommissioning/ disposal off-site during site redevelopment in accordance with DER-10, 6 NYCRR Part 613.9, NYSDEC CP-51, and other applicable NYSDEC UST closure requirements
- Screening for indications of contamination (by visual means, odor, and monitoring with PIDs) of excavated material during intrusive site work
- Appropriate off-site disposal of material removed from the site in accordance with federal, state and local rules and regulations for handling, transport, and disposal
- Backfilling of excavated areas, as necessary for development, with certified-clean material (i.e., meeting both the PG and RURR SCOs), RCA, or virgin, native crushed stone
- Collection and analysis of documentation soil samples in accordance with DER-10 to confirm RURR SCOs were achieved. If a Track 2 Residential cleanup is achieved, a cover system will not be a required element of the remedy and NYSDEC will issue a Track 2 Certificate of Completion.
- Collection and analysis of groundwater samples in accordance with DER-10 following remedial excavation activities to document groundwater quality beneath the site
- 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 in residual site soil, to eliminate future exposure pathways
- Recording of an Environmental Easement (EE) to memorialize the remedial action and the engineering and institutional controls to ensure that future owners of the site continue to maintain these controls as required

The Alternative II remediation extent is shown on Figure 7 and is based on data presented in the RIR and the proposed development plans. The requirements for each of the Alternative II tasks are described below.

<u>On-Site Worker, Public Health, and Environmental Protection</u>

A site-specific CHASP is appended to this RAWP (Appendix D) and will be enforced during excavation and foundation construction to protect on-site workers from accidents and acute and chronic exposures to the identified contaminated media. Public health will be protected by implementing and enforcing dust, odor, and organic vapor control and monitoring procedures

included in the CAMP. The CAMP will include continuous perimeter monitoring of dust and organic vapor using DustTrak aerosol monitors and PIDs capable of recording data and calculating 15-minute averages. Langan personnel will monitor site perimeters for visible dust and odors. The environment will be protected by implementing and enforcing the appropriate soil erosion prevention measures.

Fill and Soil Removal

SVOCs, metals, and pesticides were detected in historic fill at concentrations that exceed the RURR SCOs. To achieve Track 4, soil removal and disposal will extend from surface grade (about el 25.7 to 28.5) to about 9 feet bgs (about el 16.7 to 19.5) across the 11,180 square foot site footprint, with additional excavation to 11 feet bgs (about el 15.9) in an area centered on soil boring SB05 from the September 2019 RI. The estimated volume of material requiring removal and off-site disposal for a Track 4 cleanup is about 3,800 cubic yards cubic yards, including about 40 cubic yards of RCRA hazardous lead-impacted soil identified during the September 2019 preliminary waste characterization. The soil was screened for visual, olfactory, and instrumental evidence of environmental impacts. Excavation is not expected to extend below the water table during remedial excavation or construction; therefore, installation of a dewatering system or localized dewatering is not anticipated.

UST Removal

If encountered, any USTs and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) would be decommissioned in accordance with applicable NYSDEC tank closure requirements, including DER-10 Section 5.5 and 6 NYCRR Part 613.9, and NYSDEC CP-51. USTs and/or associated appurtenances would be registered and administratively closed with the NYSDEC PBS unit. Petroleum-impacted soil would be excavated and disposed of off-site at a permitted disposal facility in accordance with applicable regulations. Closure documentation, such as contractor affidavits, bills of lading for sludge disposal, and tank disposal receipts, would be provided as appendices in the FER.

Backfill

Imported material will consist of clean fill that meets the lower of the PG or RURR SCOs or other acceptable fill material such as virgin stone from a quarry or RCA. If RCA is imported to the site, it will come from a NYSDEC-registered facility in compliance with 6 NYCRR Part 360 registration and permitting requirements for the period of RCA acquisition. RCA imported from compliant facilities will not require chemical testing, unless required by NYSDEC under its terms for operation of the facility. Imported RCA must be derived from recognizable and uncontaminated concrete (less than 10% by weight passing through a No. 80 sieve). RCA is not acceptable for, and will not be used as, site cover or drainage material.

Confirmation Soil Sampling

Per NYSDEC DER-10, confirmation soil samples will be collected from the excavation base at a frequency of one per 900 square feet. Sidewall samples will not be collected from the site perimeter because excavation will extend across the site footprint and SOE measures (e.g., sheeting and lagging) will preclude access to soil sidewalls. An estimated 12 confirmation soil samples, plus QA/QC samples, would be collected and analyzed for the Part 375 list of VOCs, SVOCs, pesticides, metals including hexavalent and trivalent chromium, PFAS and 1,4-dioxane.

Post-Remedy Groundwater Sampling

Concentrations of SVOCs and pesticides above the NYSDEC SGVs were identified in groundwater samples collected from monitoring wells MW01, MW03, and MW05 during the September 2019 RI. These contaminant concentrations are likely attributed to the historic fill material, buried solid waste and/or tar-like material observed throughout the site. Following remedial excavations throughout the site, groundwater samples will be collected for SVOC and pesticide analysis to document groundwater quality at the site. An estimated 3 groundwater samples, plus QA/QC samples, would be collected and analyzed for SVOCs and pesticides

Site Management Plan and Environmental Easement

An EE would be recorded referencing Institutional Controls (ICs) that are part of the selected remedy, which would be binding upon all subsequent owners and occupants of the property. The ICs would: 1) restrict the site's use to restricted residential, commercial and industrial uses, although land use is subject to local zoning laws; 2) restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDEC or NYSDOH; 3) require the completion and submission to the NYSDEC a periodic certification of ICs in accordance with Part 375; and 4) include notice-of-use restrictions of the site's soil.

3.3 Evaluation of Remedial Alternatives

The following is an evaluation of the proposed remedy based on the BCP remedy evaluation criteria listed below. The first two criteria are considered "threshold criteria" and the remaining criteria are "balancing criteria". A remedial alternative must meet the threshold criteria to be considered and evaluated further under the balancing criteria.

- Protection of human health and the environment
- Compliance with standards, criteria, and guidance (SCG)
- 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

3.3.1 Protection of Human Health and the Environment

Alternative I – The remedy would eliminate all pathways of exposure from on-site contaminated media. Remediating the site to Track 1 standards would result in the elimination of site soil that exceeds UU SCOs. Any encountered USTs would be decommissioned, removed and disposed off-site, and petroleum-impacted material, if encountered, would be excavated and disposed off-site. The RAOs for public health and environmental protection would be met through the removal of all contaminated media at the site, which would eliminate any possible ingestion, inhalation or dermal contact.

Since no engineering or institutional controls will be required for this remedy to maintain the site in the future, this remedy is the most protective of human health and the environment.

Alternative II – The Track 4 remedy will provide similar overall protection to public health and the environment as Alternative I. Remediating the site to Track 4 standards will result in the removal of all site soil that exceeds RURR SCOs.

Public health will be protected during remediation under both remedial alternatives by implementing and enforcing dust, odor, and organic vapor control and monitoring procedures when needed. The environment will be protected by implementing and enforcing soil management controls when needed during future site excavation and any other institutional controls through enforcement of the EE.

3.3.2 Compliance with Standards, Criteria, and Guidance

Both alternatives will be in compliance with applicable standards, criteria, and guidance listed in Section 4.1 by removing site sources of contamination to achieve the RAOs. While implementing either remedy, protection of public health and the environment will be maintained by enforcing a site-specific CHASP and CAMP. Occupational Safety and Health Administration (OSHA) requirements for on-site construction safety will be followed by site contractors performing work.

3.3.3 Short-Term Effectiveness and Impacts

Alternative I – The most significant short-term adverse impacts and risks to the community will be the potential complications and risk involved with designing and constructing SOE and underpinning for the building and structures adjoining the site. Potential impositions on roadway

and pedestrian traffic associated with construction may be a result of the remedial excavation to achieve a Track 1 cleanup. Increased truck traffic and construction-related noise levels may be necessary to haul out soil that exceeds UU SCOs to achieve Track 1 standards, relative to Alternative II.

The excavated soil and fill would require about 210, 20-cubic-yard truck trips. Implementing the Alternative I concept would require approximately 2 months of effort (assuming normal work hours). 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. Waiting times associated with analysis of confirmation sampling and resampling may delay construction, leaving soil exposed for a longer time resulting in a potential increase in dust, odors, and/or organic vapor from the excavation and construction-related noise. The effects of these potential adverse impacts to the community, workers, and the environment will be minimized by implementing the respective control plans.

Alternative II – Alternative II will result in similar, if not the same, short-term adverse impacts and risks to the community. The excavated soil and fill would require approximately 190, 20-cubic-yard truck trips. Implementing the Alternative II concept would require approximately 1 month of effort (assuming normal work hours).

Under both remedial alternatives, dust will be controlled by the on-site application of water spray as needed. Engineering controls, such as slowing the pace of work, applying foam and/or dust suppressant, and/or covering portions of the excavation will be used to suppress odors/dust when required. Work will be modified or stopped according to the action levels defined in the CAMP. Therefore, short term impacts are the same for both alternatives.

3.3.4 Long-Term Effectiveness and Permanence

Both remedial alternatives will remove all contaminated media from the site exceeding UU (Alternative I) or RURR (Alternative II) SCOs for soil and soil vapor beneath the site was not identified at concentrations that warrant mitigation. In addition, groundwater in New York City is not used for drinking water. Therefore, the long-term effectiveness of this remedy would eliminate risks and satisfy the objectives of the Alternative I and II criterion.

3.3.5 Reduction of Toxicity, Mobility, or Volume of Contaminated Material

Both remedial alternatives would permanently and significantly reduce the toxicity, mobility, and volume of contamination through removal of contaminated fill and buried solid waste through excavation and off-site disposal.

3.3.6 Implementability

Alternative I – Implementing a Track 1 remedy will be technically challenging because of SOE requirements associated with protection of the neighboring buildings and streets; however, the SOE hardship is not significant as it will not extend beyond that which is required for construction. This remedy will consist primarily of excavation with standard bucket excavators. The availability of local contractors, personnel, and equipment suitable to working in a structurally challenging environment is high due to the frequency of this type of remediation in the region. It is not expected to require schedule extensions or additional costs associated with the excavation and SOE. However, if deeper contamination above UU SCOs is encountered below development depth and requires over-excavation, the cost is marginal compared to the benefit of achieving an unrestricted use remediation and elimination of long-term engineering and institutional controls. Additional coordination between trades may be required. This alternative is considered feasible.

Alternative II – The technical feasibility of implementing the Alternative II remedy is similar to Alternative I as significant excavation is still required to achieve the Track 4 RURR SCOs. This alternative will consist mostly of excavation with standard bucket excavators. The availability of local contractors, personnel, and equipment suitable to working in a structurally challenging environment is high due to the frequency of this type of remediation in the region. Additional coordination between trades may be required. This alternative is considered feasible.

3.3.7 Cost Effectiveness

Alternative I – Based on the assumptions detailed for Alternative I, the estimated remediation cost of a Track 1 cleanup is approximately $1.8 million. Because the site will be remediated to UU SCOs, there are no long-term operation, maintenance, or monitoring costs associated with the proposed remedy. Table 1 details the individual cost components used to arrive at this cost estimate.

Alternative II – Based on the assumptions detailed for Alternative II, the estimated remediation cost to achieve a Track 4 cleanup is approximately $1.6 million. Although Alternative II is more cost effective for remediation, additional excavation will be required to achieve development depth and therefore the overall quantity of soil excavation will be the same as Alternative I. In addition, ICs in the form of an EE will be required for Alternative II. Table 2 outlines the individual cost-components used to arrive at this cost estimate.

3.3.8 Community Acceptance

Both remedial alternatives should be acceptable to the community because the potential exposure pathways to on-site contamination will be addressed upon completion of the respective remedies and the site will be remediated to allow for a higher level use. The selected remedy will be subject to a 45-day public comment period in accordance with the Citizen Participation

Plan (CPP), included as Appendix E. Any substantive public comments received will be addressed before the remedy is approved.

3.3.9 Land Use

The current, intended, and reasonably anticipated future residential land use of the site and its surroundings are compatible with both remedial alternatives. The proposed development will include construction of a residential building with one cellar level. The site borders a mixed-use residential and commercial building and other residential buildings. Mid-rise mixed-use commercial/residential, and multiple-story commercial and institutional buildings are located at properties surrounding the site.

3.4 Selection of the Preferred Remedy

Both alternatives will be protective of human health and the environment and meet the remedy selection criteria. Alternative I achieves all of the remedial action goals established for the redevelopment project, and is effective in the short-term. Alternative I effectively reduces contaminant mobility and toxicity and is a superior alternative in the reduction of contaminant toxicity and volume. Alternative I is more effective in the long-term because it achieves unrestricted land use that is free of long-term site management, institutional controls, an EE, and associated future costs that would be required under Alternative II. The excavation depths for both remedial alternatives are comparable and will produce similar remedial costs.

Alternative I is preferred over Alternative II if it can be feasibly and practically implemented at a similar cost while providing greater overall protection to human health and the environment. Therefore, Alternative I is the recommended remedial alternative for this site. However, if this Alternative is not achievable, Alternative II is similarly protective of human health and the environment.

Figure 6 depicts the Alternative I cleanup plan. Figure 7 depicts the Alternative II cleanup plan.

3.4.1 Zoning

The current site use conforms to applicable zoning laws and maps, as does the reasonably anticipated future residential use of the site.

3.4.2 Applicable Comprehensive Community Master Plans or Land Use Plans

According to the New York City Planning Commission, "R6 zoning districts are widely mapped in built-up, medium-density areas in Brooklyn, Queens and the Bronx. The character of R6 districts can range from neighborhoods with a diverse mix of building types and heights." The Site is not located in a special use district. A copy of the zoning map is included in Appendix F.

3.4.3 Surrounding Property Uses

The current, intended, and reasonably anticipated future land use of the site and its surroundings are compatible with the selected remedy. The reasonably anticipated future use of the site and the use of its surroundings have been documented by the Volunteer. The construction of a residential development conforms to recent development patterns in the area.

3.4.4 Citizen Participation

A CPP was developed for the site and is provided as Appendix E. In accordance with the CPP, the BCP application was made available for public review and comment. The RIR and RAWP Fact Sheets would be distributed to the contact list in the approved CPP.

3.4.5 Environmental Justice Concerns

Per the "Potential Environmental Justice Areas in Northern Brooklyn, Kings County, New York" The site is in a potential Environmental Justice area. NYSDEC's Office of Environmental Justice acts as an advocate on behalf of these areas, which are disproportionately affected by environmental burdens.

3.4.6 Land Use Designations

There are no federal or state land use designations.

3.4.7 Population Growth Patterns

The population growth patterns and projections support the current and reasonably anticipated future land use.

3.4.8 Accessibility to Existing Infrastructure

The site is accessible to existing infrastructure.

3.4.9 Proximity to Cultural Resources

The site is in close proximity to a registered landmark. The nearest registered landmark, the F.J. Berlenbach House, is located at 174 Meserole Street, about 550 feet north-northeast of the site.

3.4.10 Proximity to Natural Resources

The site is not located in close proximity to important federal, state, or local natural resources including waterways, wildlife refuges, wetlands, and critical habitats of endangered or threatened species. The nearest ecological receptor is Newtown Creek, which is located about 0.65 miles to the east-northeast.

3.4.11 Off-Site Groundwater Impacts

Municipal water supply wells are not present in this area of New York City; therefore, groundwater from the site does not affect municipal water supply wells or recharge areas.

3.4.12 Proximity to Floodplains

According to the FEMA Preliminary Flood Insurance Rate Map (FIRM) dated September 05, 2007 (Map Number 3604970204F), the site is located in Zone X, which is designated for area of 0.2 percent annual chance flood; area of one percent annual chance flood with average depths of less than one foot or with drainage areas less than one square mile; and areas protected by levees from one percent annual chance flood.

3.4.13 Geography and Geology of the Site

The site geology is described in Section 2.4.

3.1.14 Current Institutional Controls

There are no ICs on-site.

3.5 Summary of the Selected Remedial Action

The selected Track 1 remedy will include the following:

- Development and implementation of a CHASP and CAMP for the protection of on-site workers, community/residents, and environment during remediation and construction activities
- Construction of a SOE system to facilitate the Track 1 remediation
- Implementation of soil erosion, pollution and sediment control measures in compliance with applicable laws and regulations
- Excavation, stockpiling, off-site transport, and disposal of about 4,100 cubic yards of historic fill, solid waste, and native soil that exceeds UU SCOs as defined by 6 NYCRR Part 375-6.8. These excavations include soil impacted with lead identified during the RI and preliminary waste characterization in areas centered on soil borings SB01, SB07, and on soil boring WCB-06.
- If encountered, removal of any encountered USTs and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) and decommissioning and off-site disposal during redevelopment in accordance with DER-10, 6 NYCRR Part 613.9, NYSDEC CP-51, and other applicable NYSDEC UST closure requirements

- Screening for indications of contamination (by visual means, odor, and monitoring with PIDs) of excavated material during intrusive site work
- As necessary, backfilling of remediated areas to development sub-grade with certified-clean material (i.e., material meeting UU SCOs), virgin stone, or RCA
- Collection and analysis of documentation soil samples in accordance with DER-10 to confirm a Track 1 remedy was achieved; over-excavation will be completed if necessary to meet UU SCOs
- Collection and analysis of groundwater samples in accordance with DER-10 following remedial excavation activities to document groundwater quality at the site

Remedial activities will be performed in accordance with this RAWP and the Department-issued Decision Document under the oversight of a New York State-Licensed Professional Engineer. Deviations from the RAWP and/or Decision Document will be promptly reported to the NYSDEC for approval and fully explained in the FER.

4.0 REMEDIAL ACTION PROGRAM

4.1 Governing Documents

The primary documents governing the remedial action are summarized in this section.

4.1.1 Standards, Criteria and Guidance

The following standards, criteria, and guidance are typically applicable to Remedial Action projects in New York State, and will be consulted and adhered to as applicable:

- 29 Code of Federal Regulations (CFR) Part 1910.120 – Hazardous Waste Operations and Emergency Response
- 6 NYCRR Part 371 – Identification and Listing of Hazardous Wastes
- 6 NYCRR Part 372 – Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities
- 6 NYCRR Subpart 373-4 – Facility Standards for the Collection of Household Hazardous Waste and Hazardous Waste from Conditionally Exempt Small Quantity Generators
- 6 NYCRR Subpart 374-1 – Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities
- 6 NYCRR Subpart 374-3 – Standards for Universal Waste
- 6 NYCRR Part 375 – Environmental Remediation Programs
- 6 NYCRR Part 376 – Land Disposal Restrictions
- 6 NYCRR Part 750 – State Pollutant Discharge Elimination System (SPDES) Permits
- CP-43 – Commissioner Policy on Groundwater Monitoring Well Decommissioning (December 2009)
- CP-51 – Soil Cleanup Guidance (2010)
- DER-10 – Technical Guidance for Site Investigation and Remediation (May 3, 2010)
- DER-23 – Citizen Participation Handbook for Remedial Programs (March, 2010)
- NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006)
- TOGS 1.1.1 – Ambient Water Quality Standards & Guidance Values and Groundwater Effluent Limitations
- Screening and Assessment of Contaminated Sediment (Division of Fish, Wildlife and Marine Resources, June 2014)

4.1.2 Site-Specific Construction Health & Safety Plan

The Remedial Engineer (RE) prepared a site-specific CHASP (Appendix D). The CHASP will apply to all remedial and construction-related work on site. The CHASP provides a mechanism for establishing on-site safe working conditions, safety organization, procedures, and PPE requirements during implementation of the remedy. The CHASP meets the requirements of 29 CFR 1910 and 29 CFR 1926 (which includes 29 CFR 1910.120 and 29 CFR 1926.65, respectively). The CHASP includes, but is not limited to, the following components:

- Organization and identification of key personnel
- Training requirements
- Medical surveillance requirements
- List of site hazards
- Excavation safety
- Drill rig safety
- Work zone descriptions and monitoring procedures
- Personal safety equipment and PPE requirements
- Decontamination requirements
- Standard operating procedures
- Contingency plan
- CAMP
- Safety data sheets (SDS)

The Volunteer and associated parties preparing the remedial documents submitted to the State and those performing the construction work are responsible for the preparation of a CHASP and for performance of the work according to the CHASP and applicable laws.

The CHASP and requirements defined in this RAWP pertain to remedial and ground-intrusive work performed at the site until the issuance of a Certificate of Completion. The Site Safety Coordinator will be William Bohrer, a resume for whom is included in Appendix G. If required, confined space entry will comply with OSHA requirements to address the potential risk posed by combustible and toxic gasses.

4.1.3 Quality Assurance Project Plan

The RE prepared a Quality Assurance Project Plan (QAPP) that describes the quality control components that will ensure that the proposed remedy accomplishes the remedial goals and

RAOs and is completed in accordance with the design specifications. The QAPP is provided as Appendix H and includes:

- Responsibilities of key personnel and their organizations for the proposed remedy
- Qualifications of the quality assurance officer
- Sampling requirements including methodologies, quantity, volume, locations, frequency, and acceptance and rejection criteria
- Description of the reporting requirements for quality assurance activities including weekly quality assurance review reports, periodic quality assurance and quality control audits, and other report and data submissions

4.1.4 Construction Quality Assurance Plan

The RE prepared a Construction Quality Assurance Plan (CQAP) that describes the quality control components that will ensure that the proposed remedy accomplishes the remedial goals and RAOs, and is completed in accordance with the design specifications. Because the remedy will be accomplished concurrently with building construction, the contractor and construction manager will have the primary responsibility to provide construction quality. A list of engineering personnel involved in implementation of the CQAP and procedures that will be carried out by the remedial engineering team are listed in Section 4.2.1. Project personnel resumes are provided in Appendix G.

4.1.5 Soil/Materials Management Plan

The RE prepared a Soil/Materials Management Plan (SMMP) that includes detailed plans for managing soils/materials that are disturbed at the site, including excavation, handling, storage, transport and disposal. The SMMP also includes controls that will be applied to these efforts to facilitate effective, nuisance-free performance in compliance with applicable federal, state and local laws and regulations (see Section 5.4).

4.1.6 Stormwater Pollution Prevention Plan

Erosion and sediment controls will be implemented as necessary in conformance with requirements presented in the New York State Guidelines for Urban Erosion and Sediment Control. Best management practices for soil erosion and sediment control will be selected to minimize erosion and sedimentation off-site from the onset of remediation to the completion of development. Stormwater pollution prevention will be implemented as described below in Section 5.4.9. A Stormwater Pollution Prevention Plan (SWPPP) is not necessary because the project will disturb less than one acre, and stormwater discharge will be to a combined sewer in accordance with the New York City generic SPDES permit.

4.1.7 Community Air Monitoring Program

A CAMP was prepared for the site as part of the CHASP (Appendix D of this RAWP). The CAMP is detailed in Section 5.4.11 below.

4.1.8 Contractors Site Operations Plan

The RE will review plans and submittals for this remedial project, and contractor and subcontractor document submittals, and will confirm that plans and submittals are in compliance with this RAWP. The RE is responsible to ensure that later document submittals for this remedial project, including contractor and sub-contractor document submittals, are in compliance with this RAWP. Remedial documents, including contractor and subcontractor document submittals, will be submitted to the NYSDEC and NYSDOH in a timely manner and prior to the start of work associated with the remedial document.

4.1.9 Citizen Participation Plan

Fact Sheets describing the Remedial Action proposed in the RAWP will be distributed through DEC Delivers, the NYSDEC's email listserv service. Additional Fact Sheets will be distributed to announce 1) the completion of the Remedial Action with a summary of the FER and 2) the issuance of the Certificate of Completion for the site.

No changes will be made to the approved Fact Sheets authorized for release by the NYSDEC without written consent of the NYSDEC. Other information, such as brochures and flyers, will not be included with the Fact Sheet mailing. The approved CPP for this project is included in Appendix E.

Document repositories were established at the following locations and contain the applicable project documents:

Brooklyn Community Board 1
Attn: Dealice Fuller, Chairperson
435 Graham Avenue
Brooklyn, NY 11211
Phone: (718) 389-0009

Brooklyn Public Library - Bushwick Branch
340 Bushwick Avenue
Brooklyn, NY 11206
Phone: (718) 602-1348
Hours (Call to verify):

Monday:	10:00 a.m. to 6:00 p.m.
Tuesday:	10:00 a.m. to 6:00 p.m.
Wednesday:	10:00 a.m. to 8:00 p.m.
Thursday:	01:00 p.m. to 8:00 p.m.
Friday:	10:00 a.m. to 6:00 p.m.
Saturday:	10:00 a.m. to 5:00 p.m.
Sunday:	Closed

4.2 General Remedial Construction Information

4.2.1 Project Organization

This section presents the anticipated project organization and associated roles, including key personnel, descriptions of duties, and lines of authority in the management of this RAWP. The following project personnel are anticipated for oversight of the RAWP implementation. Project personnel resumes are provided in Appendix G.

Remediation Engineer:	Jason J. Hayes, P.E.
Project Manager:	Brian Gochenaur, QEP
Langan Health & Safety Manager:	Tony Moffa, CHMM
Health & Safety Officer	William Bohrer, P.G.
Qualified Environmental Professional	Michael Burke, P.G., CHMM
Field Team Leader	Emily Snead, P.G.
Quality Assurance Officer	Robert Harris

Langan personnel under the direct supervision of the Qualified Environmental Professional and the RE will be on-site during implementation of the RAWP to monitor particulates and organic vapor in accordance with the CAMP. CAMP results that exceed specified action levels will be reported to the NYSDEC and NYSDOH in daily reports.

Langan personnel will meet with the Construction Superintendent on a daily basis to discuss the plans for that day and schedule upcoming activities. Langan personnel will document remedial activities in the daily report. This document will be forwarded to the Field Team Leader on a daily

basis and to the Qualified Environmental Professional, Project Manager, and the RE on a weekly basis.

Langan personnel will screen excavations with a PID during ground-intrusive work. PID readings, including specifically elevated readings, will be recorded in the project field book (or on separate logs) and reported to the NYSDEC and NYSDOH in the daily reports. Langan personnel under the direct supervision of the RE and Qualified Environmental Professional will collect confirmation samples from the base of excavation in accordance with this RAWP.

The project field book will be used to document sampling activities and how they correspond to this RAWP. Field observations and laboratory tests will be recorded in the project field book or on separate logs. Recorded field observations may take the form of notes, charts, sketches, and/or photographs. A photo log will be kept to document construction activities during remediation. The photo log may also be used to document those activities recorded in the daily reports.

The Field Team Leader will maintain the current field book and original field paperwork during performance of the remedy. Remedial activities will be documented in the monthly BCP progress reports. The Project Manager will maintain the field paperwork after completion and will maintain submittal document files.

4.2.2 Remediation Engineer

The RE for this project will be Jason J. Hayes, P.E. The RE is a registered professional engineer licensed by the State of New York. The RE will have primary direct responsibility for implementation of the remedial program at the site. The RE will certify in the FER that the remedial activities were observed by qualified environmental professionals under his supervision and that the remediation requirements set forth in this RAWP and any other relevant provisions of ECL 27-1419 have been achieved in accordance with the RAWP.

The RE will document the work of other contractors and subcontractors involved in aspects of the remedial construction, including soil excavation, stockpiling, confirmation sample collection, air monitoring, emergency spill response services, import of backfill, and management of waste transport and disposal. The RE will be responsible for appropriate communication with the NYSDEC and NYSDOH.

The RE will review the pre-remedial plans submitted by contractors and subcontractors for compliance with this RAWP and will certify compliance in the FER. The RE will provide the certifications listed below in Section 8.1.

4.2.3 Remedial Action Construction Schedule

The remedial action construction schedule is discussed below in Section 9.0 and included in Appendix I. The NYSDEC will be promptly notified of proposed changes, delays, and/or deviations to the schedule.

4.2.4 Work Hours

The hours for operation of remedial construction will either conform to the requirements of the NYCDOB construction code or to a site-specific variance issued by the NYCDOB. The NYSDEC will be notified by the Volunteer of any variances issued by the NYCDOB. The NYSDEC reserves the right to deny alternate remedial construction hours.

4.2.5 Site Security

The site perimeter will be secured with gated, signed, plywood fencing with restricted points of entry in accordance with the NYCDOB and New York City Department of Transportation (NYCDOT) permits and requirements. The purpose of the fencing is to limit site access to authorized personnel, protect pedestrians from site activities, and maintain site security.

4.2.6 Traffic Control

Site traffic will be controlled through designated points of access along Boerum Street. Access points will be continuously monitored and if necessary, a flagging system will be used to protect workers, pedestrians, and authorized guests. Traffic will also adhere to applicable local, state, and federal laws.

4.2.7 Contingency Plan

Contingency plans, as described below, have been developed to effectively deal with potential unexpected discovery of additional contaminated media or USTs.

4.2.8 Discovery of Additional Contaminated Soil

During remediation and construction, soil will be continuously monitored by the RE's field representatives via visual, olfactory, and instrumental field screening techniques to identify additional soil that may not be suitable for disposal at the NYSDEC-approved disposal facility. If such soil is identified, the suspected impacts will be confirmed by collecting and analyzing samples in accordance with the NYSDEC-approved facility's requirements. If the previously approved facility is not permitted to receive the impacted soil, the soil will be excavated to the extent practicable and disposed of off-site at a permitted facility that can receive the material based on the characterization data.

Identification of unknown or unexpected contaminated media identified by screening during ground-intrusive site work will be promptly communicated by phone and email to the NYSDEC

Project Manager. These findings will be detailed in the daily reports and the subsequent monthly BCP progress report.

Discovery of USTs

Previous geophysical surveys did not identify evidence of USTs at the site. As a contingency, if a UST is discovered via exploratory test pit or excavation, it will be decommissioned in accordance with 6 NYCRR Part 612.2 and 613.9, and DER-10 section 5.5. Once the tank and its contents are removed, post-excavation soil samples will be collected per the NYSDEC DER-10 requirements, if deemed necessary by the NYSDEC and the RE. Post-excavation soil sampling is not expected where the excavation will extend below the UST. If encountered, petroleum-contaminated soils will be removed. UST closure documentation, such as contractor affidavits, bills of lading for sludge disposal, and tank disposal receipts, will be provided as appendices in the FER. The NYSDEC PBS registration will be updated as necessary, depending on the type, number, and capacity of discovered tanks.

If USTs are encountered during ground-intrusive site work, the findings will be promptly communicated by phone to the NYSDEC Project Manager, as well as, detailed in the appropriate daily report. These findings will also be included in the monthly BCP progress reports.

4.2.9 Worker Training and Monitoring

Worker training and monitoring will be conducted in accordance with the site-specific CHASP, which is included in Appendix D.

4.2.10 Agency Approvals

All permits or government approvals required for remedial construction have been, or will be, obtained prior to the start of remedial construction.

4.2.11 Pre-Construction Meeting with the NYSDEC

Prior to the start of remedial construction, a meeting will be held between the NYSDEC, RE, Volunteer, Construction Manager, and remediation contractor to discuss project roles, responsibilities, and expectations associated with this RAWP.

4.2.12 Emergency Contact Information

An emergency contact sheet that defines the specific project contacts (with names and phone numbers) for use by NYSDEC and NYSDOH in the case of an emergency (day or night) is included in the CHASP (Appendix D).

4.2.13 Remedial Action Costs

The total estimated cost of the Track 1 Remedial Action is $1.8 million. An itemized and detailed summary of estimated costs for the remedy is provided in Table 1.

4.3 Site Preparation

4.3.1 Mobilization

Prior to commencing remedial construction, the remediation contractor will mobilize to the site and prepare for remedial activities. Mobilization and site preparation activities may include the following:

- Identifying the location of aboveground and underground utilities (e.g., power, gas, water, sewer, and telephone), equipment, and structures as necessary to implement remediation
- Mobilizing necessary remediation personnel, equipment, and materials to the site
- Constructing one or more stabilized construction entrances consisting of non-hazardous material at or near the site exit, which takes into consideration the site setting and site perimeter
- Constructing an equipment decontamination pad for trucks, equipment, and personnel that come into contact with impacted materials during remediation
- Installing temporary fencing or other temporary barriers to limit unauthorized access to areas where remediation will be conducted

4.3.2 Monitoring Well Decommissioning

Groundwater monitoring wells will be properly decommissioned in accordance with NYSDEC CP-43. Well decommissioning will be performed by an experienced driller and logged by the driller and Langan personnel. Decommissioning documentation will be provided in the FER.

4.3.3 Erosion and Sedimentation Controls

Since the planned earthwork activities will be below the adjacent sidewalk grade, full-time erosion and sedimentation measures are not anticipated. Best management practices for soil erosion will be selected and implemented, as needed, to minimize erosion and sedimentation off site.

4.3.4 Temporary Stabilized Construction Entrance(s)

Temporary stabilized construction entrances will be installed at the existing curb cuts along Boerum Street. The entrances will be covered with gravel or RCA and graded so that runoff water will be directed on site. Vehicles exiting construction areas will be cleaned using clean water or dry brushing, as needed, to remove site soil from the tires and undercarriages. The contractor will protect and maintain the existing sidewalks and roadways at both site access points.

4.3.5 Utility Marker and Easements Layout

The Volunteer and its contractors are solely responsible for the identification of utilities and/or easements that might be affected by work under this RAWP and implementation of the required, appropriate, or necessary health and safety measures during performance of the work under this RAWP. The Volunteer and its contractors are solely responsible for safe execution of the work performed under this RAWP. The Volunteer and its contractors must obtain the necessary local, state, and/or federal permits or approvals that may be required to perform the work detailed in this RAWP. Approval of this RAWP by the NYSDEC does not constitute satisfaction of these requirements.

4.3.6 Excavation Support

Appropriate management of the structural stability of on-site or off-site structures during site activities is the sole responsibility of the Volunteer and its contractors. The Volunteer and its contractors are solely responsible for the safe execution of the work performed under this RAWP. The Volunteer and its contractors must obtain the necessary local, state, and/or federal permits or approvals that may be required to perform the work detailed in this RAWP. Additionally, the Volunteer and its contractors are solely responsible for the implementation of the required, appropriate, or necessary health and safety measures during performance of work conducted under this RAWP.

4.3.7 Equipment and Material Staging

The Contractor will notify the RE and the Volunteer, in writing with receipt confirmed, at least 30 calendar days in advance of pending site work mobilization. During mobilization, construction equipment will be delivered to the site, temporary facilities constructed, and temporary utilities installed. The Contractor will place and maintain temporary toilet facilities within the work areas for usage by all site personnel.

4.3.8 Truck Inspection Station

An outbound-truck inspection station will be set up at or near the site exit. Before exiting the site, trucks will be required to stop at the truck inspection station and will be examined for evidence of contaminated soil on the undercarriage, body, and wheels. If observed, 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. The Contractor is responsible for collecting soil that is tracked immediately off-site and returning the soil to the site.

4.3.9 Site Fencing

The site perimeter will be secured with gated, signed, plywood fencing maintained by the Contractor. The purpose of the fencing is to limit site access to authorized personnel, protect pedestrians from site activities, and maintain site security.

4.3.10 Demobilization

After remediation and construction is completed, the Contractor will be responsible for demobilizing labor, equipment, and materials not designated for off-site disposal. The RE will document that the Contractor performs follow-up coordination and maintenance for the following activities:

- Removal of sediment and erosion control measures and disposal of materials in accordance with applicable rules and regulations
- Removal of remaining contaminated material or waste
- Equipment decontamination
- General refuse disposal

4.4 Reporting

Periodic reports and a FER will be required to document the remedial action. The RE responsible for certifying the reports will be an individual licensed to practice engineering in the State of New York; Jason J. Hayes, P.E. of Langan will have this responsibility. Should Mr. Hayes become unable to fulfill this responsibility, another suitably qualified NYS Professional Engineer will take his place. Daily and monthly reports will be included as appendices to the FER. In addition to the periodic reports and the FER, copies of the relevant contractor documents will be submitted to the NYSDEC.

4.4.1 Daily Reports

Daily reports will be submitted to the NYSDEC and NYSDOH Project Managers by the end of each day, or at a frequency acceptable to them, following the reporting period and will include:

- An update of progress made during the reporting day including a photograph log
- Locations of work and quantities of material imported and exported from the site
- References to an alpha-numeric map for site activities
- A summary of complaints with relevant details (names, phone numbers)
- A summary of CAMP findings, including exceedances
- An explanation of notable site conditions

Daily reports are not intended to be the primary mode of communication for notifying NYSDEC of emergencies (accident, spill), requests for changes to the RAWP, or other sensitive and/or time critical information. However, such conditions will still be included in the daily reports. Emergency conditions and changes to the RAWP will be addressed directly to the NYSDEC Project Manager via personal communication.

4.4.2 Monthly Reports

Monthly reports will be submitted to the NYSDEC and NYSDOH Project Managers by the tenth of the month following the reporting period. The monthly reports will include the following information, as well as, any additional information required by the BCA:

- Activities relative to the site during the previous reporting period and those anticipated for the next reporting period, including a quantitative presentation of work performed (i.e., tons of material exported and imported, etc.)
- Description of approved activity modifications, including changes of work scope and/or schedule
- Sampling results received following internal data review and validation, as applicable
- An update of the remedial schedule including the percentage of project completion, unresolved delays encountered or anticipated that may affect the future schedule, and efforts made to mitigate such delays

4.4.3 Other Reporting

Photographs of remedial activities will be taken and submitted to the NYSDEC in digital (JPEG) format. Photographs will illustrate the remedial program elements and will be of acceptable quality. Representative photographs of the site will be provided. Field photographs will be included in daily and monthly reports, as necessary, and a comprehensive photograph log will be included in the FER. Upon request, photographs will be submitted to the NYSDEC and NYSDOH Project Managers on CD or other acceptable electronic media. CDs will have a label and a general file inventory structure that separates photographs into directories and sub-directories according to logical Remedial Action components. A photograph log keyed to photo file ID numbers will be prepared to provide explanation for all representative photographs.

Site record keeping for all remedial work will be appropriately documented. These records will be maintained on site at all times during the project and will be available for inspection by NYSDEC and NYSDOH staff.

4.4.4 Complaint Management Plan

The management plan for documenting complaints is detailed below.

Item	Description
Approach	Complaints regarding remediation or construction activities/operations to be minimized and mitigation measures implemented to reduce the incidence of complaints
Objective	Manage environmental complaints from the community regarding remediation
Implementation Strategy/Mitigation Measures	Complaints will be documented on a complaint register. The register will be maintained as an ongoing record. Each entry will include the following information: • Time, date, and nature of complaint • Type of communication (telephone, letter, personal, etc.) • Name, contact address, and contact number • Response and investigation undertaken as a result of the complaint including action taken and signature of the responsible person Each complaint will be investigated as soon as practicable in relation to the requirements.
Monitoring	A representative from the Volunteer will follow up on the complaint within two weeks of receipt to ensure it is resolved.
Reporting	Upon receipt and following complaint investigation and resolution, the NYSDEC will be notified. Complaint resolutions will be documented in daily reports and the monthly BCP progress report.
Corrective Action	Should an incident of failure to comply occur in relation to the management of environmental complaints, one or more of the following corrective actions will be undertaken as appropriate: • Conduct additional training of staff to handle environmental complaints • Investigate why the environmental complaint was not addressed within the specified time frame • Investigate complaint and action follow-up according to results of investigation

4.4.5 Deviations from the RAWP

Necessary deviations from the RAWP will be coordinated with the NYSDEC in advance. Notification will be provided to the NYSDEC by telephone/email for conditions requiring immediate action (e.g., conditions judged to be a danger to the surrounding community). Based on the significance of the deviation, an addendum to this RAWP may be necessary and will include:

- Reasons for deviating from the approved RAWP
- Approval process to be followed for changes/editions to the RAWP
- Effect of the deviations on the overall remedy

5.0 REMEDIAL ACTION: MATERIAL REMOVAL FROM SITE

5.1 Soil Cleanup Objectives

SCOs for the site will be the Track 1 UU concentrations listed in Table 3. Soil and materials management will be conducted in accordance with the SMMP as described below. Soil sample locations and results that exceed the UU SCOs are shown on Figure 3. UST closures (if necessary) will, at a minimum, conform to criteria defined in DER-10.

5.2 Remedial Performance Evaluation (Confirmation Sampling)

5.2.1 Soil Sampling Frequency

One confirmation soil sample will be collected for every 900 square feet of excavation base site-wide in accordance with NYSDEC DER-10, or at an alternative frequency approved by NYSDEC. Confirmation samples will be collected to confirm that RURR SCOs have been achieved. Sidewall samples will not be collected from the excavation perimeter because SOE measures (e.g., sheeting, soldier beam and lagging) will preclude collection of sidewall samples. An estimated 12 bottom soil samples, plus QA/QC samples, will be collected. If a confirmation soil sample does not comply with the RURR SCOs, over-excavation will be completed as practicable, and additional confirmation samples will be collected, at the frequency of one sample per 900 square feet of over-excavation area.

In the event over-excavation or hotspot removal is required, one sidewall soil sample will be collected for every 30 linear feet of sidewall in those areas and additional base samples will be collected. A proposed endpoint confirmation sample location plan is provided as Figure 8.

5.2.2 Methodology

Confirmation samples soil samples will be collected from the base of the excavations in accordance with NYSDEC DER-10 to document remedial performance and will be analyzed for the Part 375 list of VOCs, SVOCs, PCBs, pesticides, metals including hexavalent and trivalent chromium, PFAS and 1,4-dioxane. Should additional soil sampling be deemed necessary (e.g., additional tank closure, unknown environmental condition through visual evidence of a remaining source, over-excavation of failed confirmation sample), confirmation sampling will be conducted in accordance with NYSDEC DER-10.

5.2.3 QA/QC

Quality control procedures for confirmation soil sampling are included in the QAPP (refer to Appendix H). Confirmation analytical results will be provided in the NYSDEC's electronic data deliverable (EDD) format for EQuIS™. Guidance on the sampling frequency is presented in NYSDEC DER-10 Section 5.4.

The QA/QC procedures required by the NYSDEC Analytical Services Protocol (ASP) and SW-846 methods will be followed. This will include instrument calibration, standard compound spikes, surrogate compound spikes, and analysis of quality control samples. The laboratory will provide sample bottles, which will be pre-cleaned and preserved. Where there are differences in the SW-846 and NYSDEC ASP requirements, the NYSDEC ASP will take precedence.

5.2.4 DUSR

ASP Category B deliverables will be prepared for all remedial performance samples collected during implementation of this RAWP. Data Usability Summary Reports (DUSR) will be prepared by a qualified data validator and the findings will be reported in the FER.

5.2.5 Reporting

Analytical laboratories that analyze confirmation soil samples, prepare results, and perform contingency sampling will be NYSDOH ELAP-certified laboratories.

5.3 Estimated Material Removal Quantities

The estimated volume of soil requiring removal and off-site disposal for a Track 1 cleanup is about 4,100 cubic yards. Over-excavated areas may require backfill meeting UU SCOs. In the event that over-excavation is required, virgin stone, RCA, or soil that meets PG and/or UU SCOs will be imported to the site as backfill.

5.4 Soil/Materials Management Plan

This section presents the approach to management, disposal, and reuse of soil, fill, and materials excavated from the site. This plan is based on the current knowledge of site conditions and will be augmented, as necessary, using additional data collected during remediation. Langan personnel under the direction of the RE will monitor and document the handling and transport of contaminated material removed from the site for disposal as a regulated solid waste. Langan personnel, under the direction of the RE, will assist the remediation contractor in identifying impacted materials during remediation, determining materials suitable for direct load out versus temporary on-site stockpiling, selection of samples for waste characterization, if necessary, and determining the proper off-site disposal facility. Separate stockpile areas will be constructed as needed for the various materials to be excavated or generated, with the intent to most efficiently manage and characterize the materials and to avoid comingling impacted materials with non-impacted soil.

5.4.1 Soil Screening Methods

Visual, olfactory, and instrumental soil screening and assessment will be performed by Langan personnel under the direction of the RE during remediation and development-related excavations

into known or potentially contaminated material. Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during the remedy and during the development phase, such as excavations for foundations and utility work, prior to issuance of the Certificate of Completion.

Resumes will be provided for personnel responsible for field screening (i.e., those representing the RE) the excavation and other ground-intrusive work performed during remediation and development.

5.4.2 Stockpile Methods

Stockpiles will be constructed as necessary to separate and stage excavated material pending loading or characterization sampling. Separate stockpile areas will be constructed to avoid comingling materials of differing waste types. Stockpile areas will meet the following minimum requirements:

- Excavated soil will be placed onto a minimum thickness of 6 mil low-permeability liner of sufficient strength and thickness to prevent puncture during use; separate stockpiles will be created where material types are different (e.g., petroleum-impacted material stockpiled in a contaminated soil area). The use of multiple layers of thinner liners is permissible.
- Equipment and procedures will be used to place and remove the soil that will minimize the potential to jeopardize the integrity of the liner.
- Stockpiles will be covered at the designated times (see below) with minimum 6-mil plastic sheeting or tarps which will be securely anchored to the ground. Stockpiles will be routinely inspected and broken sheeting covers will be promptly replaced.
- Stockpiles will be covered upon reaching their capacity (i.e., about 1,000 cubic yards) until ready for loading. Stockpiles that have not reached their capacity, whether active or inactive, will be covered at the end of each workday.
- Each stockpile will be encircled with silt fences and hay bales, as needed, to contain and filter particulates from rainwater that has drained off the soils and to mitigate the potential for surface water run-off.
- Stockpiles will be inspected at a minimum of once daily and after every storm event. Results of inspections will be recorded in a logbook, maintained at the site, and made available for inspection by the NYSDEC.

5.4.3 Materials Excavation and Load Out

Langan personnel under the supervision of the RE will monitor ground-intrusive work and the excavation and load-out of excavated material.

The Volunteer and its contractors are solely responsible for safe execution of ground-intrusive and other remedial work performed under this RAWP. The Volunteer and its contractors are solely responsible for the identification of utilities and/or easements that might be affected by the work conducted under this RAWP.

Loaded vehicles leaving the site will be appropriately lined, securely covered, manifested, and placarded in accordance with the appropriate federal, state, and local requirements, including applicable transportation requirements (i.e., New York State Department of Transportation [NYSDOT] and NYCDOT requirements). Trucks hauling historic fill material will not be lined unless free liquids are present or the material is grossly impacted.

A truck wash will be operated on site. The RE will be responsible for documenting that outbound trucks will be washed at the truck wash, as necessary, before leaving the site until the remedial construction is complete. Locations where vehicles enter or exit the site will be inspected daily for evidence of off-site sediment tracking.

The RE will be responsible for documenting that egress points for truck and equipment transport from the site will be clean of dirt and other materials derived from the site during remediation and development. The remediation contractor will clean adjacent streets as necessary to maintain a clean condition with respect to site-derived materials.

The Volunteer and associated parties preparing the remedial documents submitted to New York State, and the parties performing this work, are responsible for the safe performance of ground-intrusive work, the structural integrity of excavations, and for structures that may be affected by excavations (such as building foundations and bridge footings).

The Volunteer and associated parties will ensure that site development activities will not interfere with, or otherwise impair or compromise, remedial activities proposed in this RAWP.

Development-related grading cuts and fills will not be performed without NYSDEC approval and will not interfere with, or otherwise impair or compromise, the performance of remediation required by this RAWP.

Mechanical processing of historic fill and contaminated soil on-site is prohibited unless otherwise approved by NYSDEC.

Primary contaminant sources (including, but not limited to, tanks and hotspots) identified during site characterization, the RI, and implementation of the remedy will be surveyed by a surveyor licensed to practice in the State of New York. The survey information will be shown on maps to

be included with the FER. No survey will be required if a Track 1 cleanup is achieved. If the site fails to meet Track 1 cleanup requirements, the final excavation subgrade will be surveyed under the Track 4 cleanup requirements.

5.4.4 Materials Transport Off-Site

Transport of materials will be performed by licensed haulers in accordance with appropriate local, state, and federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded. Trucks headed to disposal facilities will travel east on Boerum Street to Bushwick Avenue, north on Bushwick Avenue to Grand Avenue, and northwest on Grand Avenue to the Williamsburg Bridge, or other routes approved by NYSDEC. Truck transport routes are shown on Figure 9.

Trucks loaded with site materials will exit the vicinity of the site using approved truck routes. These routes are the most appropriate routes to and from the site and take into account:

- Limiting transport through residential areas and past sensitive sites
- Use of city mapped truck routes
- Prohibiting off-site queuing of trucks entering the facility
- Limiting total distance to major highways
- Promoting safety in access to highways
- Overall safety in transport
- Community input (where necessary)

Trucks will be prohibited from excessive stopping and idling in the neighborhood outside of the site.

Egress points for truck and equipment transport from the site will be kept clean of dirt and other materials during remediation and development.

To the extent possible, queuing of trucks will be performed on-site in order to minimize off-site disturbance. Off-site queuing will be minimized.

Material transported by trucks exiting the site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

5.4.5 Materials Disposal Off-Site

Disposal facilities will be determined at a later date and will be reported to the NYSDEC Project Manager prior to off-site transport and disposal of excavated material. About 4,100 cubic yards

of historic fill and native soil that exceeds UU SCOs is expected to be disposed off-site. Soil/fill/solid waste excavated and removed from the site will be treated as contaminated and regulated material and will be disposed in accordance with local, state (including 6NYCRR Part 360) and federal regulations. If disposal of soil/fill from this site is proposed for unregulated disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to NYSDEC's Project Manager. Unregulated off-site management of materials from this site is prohibited without formal NYSDEC approval. Material that does not meet UU SCOs is prohibited from being taken to a New York State recycling facility (6 NYCRR Part 360-16 Registration Facility).

The following documentation will be obtained and reported by the RE for each disposal location used in this project to fully demonstrate and document that the disposal of material derived from the site conforms to applicable laws:

(1) A letter from the RE or Volunteer to the receiving facility describing the material to be disposed of and requesting formal written acceptance of the material. This letter will state that material to be disposed of is contaminated material generated at an environmental remediation site located in New York State. The letter will provide the project identity and the name and phone number of the RE. The letter will include as an attachment a summary of chemical data for the material being transported (including waste characterization and RI data); and

(2) A letter from each receiving facility stating that it is in receipt of the correspondence (above) and acceptance of the material is approved.

These documents will be included in the FER.

Non-hazardous historic fill material and contaminated soil transported off-site will be handled, at a minimum, as a solid waste per 6 NYCRR Part 360. Historic fill and contaminated soil excavated from the site are prohibited from being disposed of at Part 360 Registration Facilities (also known as Soil Recycling Facilities).

Soil that is contaminated but non-hazardous and is removed from the site is considered by the NYSDEC Division of Materials Management (DMM) to be construction and demolition (C&D) materials with contamination not typical of virgin soils. Soil not meeting Restricted Use Residential SCOs will be considered a solid waste unless a Beneficial Use Determination (BUD) is processed stating otherwise. This soil may be sent to a permitted Part 360 landfill in New York or other appropriate out-of-state disposal facility permitted to accept contaminated soil from a brownfield site. This soil may be sent to a permitted C&D processing facility without permit modifications only upon prior notification of NYSDEC. This material is prohibited from being sent or redirected to a New York Part 360 Registration Facility. In this case, as dictated by DMM,

special procedures will include, at a minimum, a letter to the C&D facility that provides a detailed explanation that the material is derived from an NYSDEC DER remediation site, that the material is contaminated, and that the material must not be redirected to on-site or off-site Soil Recycling Facilities. The letter will provide the project identity and the name and phone number of the RE. The letter will include as an attachment a summary of chemical data for the material being transported.

The FER will include an accounting of the destination of material removed from the site during implementation of the remedy, including excavated soil, contaminated soil, historic fill, solid waste, hazardous waste, non-regulated material, and fluids. Documentation associated with disposal of each material type must also include records and approvals for receipt of the material. This information will also be presented in a table to be included in the FER.

A "Bill of Lading" system or equivalent will be used for off-site movement of non-hazardous wastes and contaminated soils. This information will be reported in the FER. Hazardous wastes derived from the site, if any, will be stored, transported, and disposed of in full compliance with applicable local, state, and federal regulations.

Appropriately licensed haulers, in compliance with applicable local, state, and federal regulations, will be used to transport the material removed from this site.

Waste characterization has been performed for off-site disposal in a manner suitable to the receiving facility and in conformance with applicable permits. Sampling and analytical methods, sampling frequency, analytical results, and QA/QC results will be reported in the FER. Data available for excavated material to be disposed of at a given facility must be submitted to the disposal facility with suitable explanation prior to shipment and receipt.

5.4.6 Materials Reuse On-Site

Reuse of site soil is not anticipated as part of the Track 1 remedy. Soil excavated during the remedy may be reused on site if the requirements in this section are met. Grossly-impacted soil will not be reused. Reused soil must be non-hazardous and must meet the Track 1 SCOs (refer to Table 3). Soil removed during implementation of the remedy or removed for grading or other purposes will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the site is prohibited for reuse on-site. Reuse of soil will be coordinated in advance with the NYSDEC Project Manager. Material deemed unfit for reuse will be transported for off-site disposal.

5.4.7 Fluids Management

Liquids to be removed from the site, including dewatering fluids (although not anticipated), will be handled, transported, and disposed of in accordance with applicable local, state, and federal

regulations. Liquids discharged into the New York City sewer system will be addressed through approval by NYCDEP. Based on depth-to-groundwater observed during previous investigations, dewatering is not expected to be required to facilitate excavation of material that exceeds UU SCOs and construction of foundation components. If necessary, a dewatering and treatment system will be designed by the Remediation Contractor's NYS-licensed Professional Engineer. For the remedy, dewatering is considered a remedial component inasmuch as it is necessary to facilitate excavation of contaminated material.

Dewatered fluids will not be recharged back to the land surface or subsurface. Dewatering fluids will be managed off-site. Discharge of water generated during remedial construction to surface waters (i.e., a local pond, stream, and/or river) is prohibited without a SPDES permit.

5.4.8 Backfill from Off-Site Sources

Materials proposed for import onto the site will be approved by the RE and will be in compliance with the provisions in this RAWP prior to receipt at the site. Imported soil for backfill must meet the requirements of 6 NYCRR Part 375-6.7(d) and NYSDEC DER-10 Section 5.4(e), Table 5.4(e)10. Material from industrial sites, spill sites, other environmental remediation sites, or other potentially contaminated sites will not be imported to the site. Solid waste will not be imported onto the site.

The FER will include the following certification by the RE: "I certify that all import of soils from off-site, including source evaluation, approval, and sampling, has been performed in a manner that is consistent with the methodology defined in the RAWP".

Backfill material will consist of clean fill (as described in the following paragraph) or other acceptable fill material such as virgin stone from a quarry or RCA. If RCA is imported to the site, it will be from a NYSDEC-registered facility in compliance with 6 NYCRR Part 360 registration and permitting requirements for the period of acquisition of RCA. RCA imported from compliant facilities will not require chemical testing, unless required by the NYSDEC under the terms for operation of the facility. RCA imported to the site must be derived from recognizable and uncontaminated concrete, with no more than 10% by weight passing through a No. 80 sieve. RCA is not acceptable for and will not be used as cover or drainage material.

Imported soil (i.e., clean fill) will meet the UU SCOs. Non-compliant soils will not be imported to the site. Clean fill will be segregated at a source/facility that is free of environmental contaminants. Qualified environmental personnel will collect representative samples at a frequency consistent with NYSDEC CP-51. The samples will be analyzed for Part 375 VOCs, SVOCs, pesticides/herbicides, PCBs, cyanide, metals including trivalent and hexavalent chromium, 1,4-dioxane and PFAS by a NYSDOH ELAP-certified laboratory. Upon meeting these

criteria, the certified-clean fill will be transported to the site and segregated from impacted material, as necessary, on plastic sheeting until it is used as backfill.

Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this site, will not be imported onto the site without prior approval by the NYSDEC. The contents of this RAWP and NYSDEC approval of this RAWP should not be construed as an approval for this purpose.

Trucks entering the site with imported soils will be secured with tight fitting covers.

5.4.9 Stormwater Pollution Prevention

Silt fence or hay bales will be installed around the perimeter of the remedial construction area, as required. Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook maintained at the site and available for inspection by the NYSDEC. Necessary repairs to silt fence and/or hay bales will 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 materials. Manufacturer's recommendations will be followed for replacing silt fence damaged due to weathering. Erosion and sediment control measures identified in the RAWP will be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they will be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to the sewer system.

5.4.10 Contingency Plan

As discussed above in Section 4.2.7, if USTs or other previously unidentified contaminant sources are found during on-site remedial excavation or development-related construction, sampling will be performed on product, if encountered, and surrounding subsurface materials (e.g., soil, stone, etc.). Chemical analyses will be for full scan parameters (Part 375 VOCs, SVOCs, PCBs, pesticides, metals, PFAS and 1,4-dioxane). Analyses will not be otherwise limited without NYSDEC approval.

Identification of unknown or unexpected contaminated media identified by screening during ground-intrusive work will be promptly communicated by phone to the NYSDEC Project Manager. These findings will also be detailed in the daily reports and the subsequent monthly BCP progress report.

5.4.11 Community Air Monitoring Plan

Community air monitoring will be conducted in compliance with the NYSDOH Generic CAMP outlined below.

The CAMP will include real-time monitoring for VOCs and particulates at the downwind perimeter of each designated work area when ground-intrusive work is in progress. Continuous monitoring will be required for all ground-intrusive work. Ground-intrusive work includes, but is not limited to, soil/fill excavation and handling and utility trenching. Periodic monitoring for VOCs may be required during non-intrusive work such as the collection of soil samples. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location and taking a reading prior to leaving a sample location.

CAMP monitoring of total VOC levels will be conducted using PIDs, and monitoring for particulates will be conducted using particulate sensors equipped with filters that can detect airborne particulates less than 10 microns in diameter (PM10). Monitoring for particulates and odors will be conducted during ground-intrusive work by Langan personnel under the supervision of the RE. The work zone is defined as the general area in which machinery is operating in support of remediation. A portable PID will be used to monitor the work zone and for periodic monitoring of total VOC levels during work such as soil sampling. The site perimeter will be visually monitored for fugitive dust emissions.

At least two days prior to implementation of the CAMP during intrusive activities, background VOC and particulate readings will be collected continuously at the site perimeter (three air monitoring stations). This background air quality data will be provided to NYSDOH and NYSDEC.

The following actions will be taken based on total VOC levels measured:

- If total VOC levels exceed 5 ppm above background for the 15-minute average at the perimeter, work will be temporarily halted and monitoring continued. If levels readily decrease (per instantaneous readings) below 5 ppm above background, work will resume with continued monitoring.
- If total VOC levels at the downwind perimeter of the work zone persist at levels in excess of 5 ppm above background but less than 25 ppm, work will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work will resume provided that the total VOC level 200 feet downwind of the hot 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 above background for the 15-minute average
- If the total VOC level is above 25 ppm at the perimeter of the hot zone, work will be shut down.

The following actions will be taken based on visual dust observations:

- If the downwind particulate level is 100 µg/m³ greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression must be employed. Work may continue with dust suppression techniques provided that concentrations at the sensitive receptor and downwind PM10 levels do not exceed 150 µg/m³ above the background level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM10 levels are greater than 150 µg/m³ above the background level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM10 concentration to within 150 µg/m³ of the upwind level and in preventing visible dust migration.

Sustained concentrations of VOCs or PM10 will be reported to the NYSDEC and NYSDOH Project Managers and included in the daily report. In addition, a map showing the location of the downwind and upwind CAMP stations will be included in the daily report.

5.4.12 Odor, Dust and Nuisance Control Plan

Dust, odor, and nuisance controls will be accomplished by the remediation contractor as described in this section. The FER will include the following certification by the RE: "I certify that ground-intrusive work during remediation and development-related construction was conducted in accordance with dust and odor suppression methodology defined in the RAWP."

Odor Control Plan

This odor control plan is capable of controlling emissions of nuisance odors off site. Specific odor control methods to be used if needed will include application of foam suppressants or tarps over the odor or VOC source areas. If nuisance odors are identified, work will be halted and the source of odors will be identified and corrected. Work will not resume until nuisance odors have been abated. The NYSDEC and NYSDOH will be notified of odor events and of other complaints about the project. Implementation of odor controls is the responsibility of the Contractor. Monitoring odor emission, including the halt of work, will be the responsibility of the RE, who is responsible for certifying the FER.

Necessary means will be employed to prevent on- and off-site 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) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-site disposal; (e) use of chemical odorants in spray or misting systems; and (f) use of staff to monitor odors in surrounding neighborhoods.

Where odor nuisances have developed during remedial work and cannot be corrected, or where the release of nuisance odors cannot otherwise be avoided due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering excavation and handling areas under tented containment structures equipped with appropriate air venting/filtering systems.

Dust Control Plan

A dust suppression plan that addresses dust management during ground-intrusive on-site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved through the use of a dedicated water distribution system, on-site water truck for road wetting, or an alternate source with suitable supply and pressure for use in dust control.
- Gravel will be used for on-site roads to provide a clean and dust-free road surface.
- On-site roads will be limited in total area to minimize the area required for water spraying.

Other Nuisances

A plan for rodent control will be developed and used by the remediation contractor during site preparation (including clearing and grubbing) and during remedial work.

A plan for noise control will be developed and used by the remediation contractor during site preparation and remedial work and will conform, at a minimum, to the NYCDEP noise control standards.

6.0 RESIDUAL CONTAMINATION TO REMAIN ON-SITE

Residual contaminated soil and groundwater will not exist beneath the development footprint after the Track 1 remedy is complete; therefore, ECs and ICs will not be required to protect human health and the environment.

7.0 ENGINEERING CONTROLS

Following completion of the remedy, it is anticipated that the site will meet Track 1 SCOs; therefore, neither ECs (e.g., sub-membrane depressurization system or waterproofing/vapor barrier membrane) nor ICs (e.g., EE, SMP) will be required as part of the remedial action. In the event that a Track 1 cleanup is not achieved, but a Track 4 cleanup is achieved, it will be determined if implementation of ECs is required.

8.0 FINAL ENGINEERING REPORT

A FER will be submitted to the NYSDEC following implementation of the remedy defined in this RAWP. The FER will be prepared in conformance with NYSDEC DER-10 and will include the following:

- Documentation that the remedial work required under this RAWP has been completed and has been performed in compliance with this plan
- A comprehensive account of the locations and characteristics of material removed from the site including the surveyed map(s) of each source, as necessary
- As-built drawings for constructed elements, certifications, manifests, and bills of lading
- A description of the changes to the remedy from the elements provided in the RAWP and associated design documents, if any
- A tabular summary of performance evaluation sampling results and material characterization results and other sampling and chemical analyses performed as part of the remedy
- Written and photographic documentation of remedial work performed under this remedy
- A description of the in-situ groundwater remediation and documentation groundwater analytical results post-implementation.
- Sufficient information to show that remaining soil left on-site meets the Track 1 SCOs.
- If necessary, a thorough summary of remaining contamination that exceeds the Track 1 SCOs and an explanation for why the material was not removed as part of the remedy. A table and a map that shows remaining contamination in excess of the Track 1 SCOs will also be included.
- An accounting of the destination of material removed from the site, including excavated contaminated soil, historic fill, solid waste, hazardous waste, non-regulated material, and fluids. Documentation associated with the disposal of material must also include records and approvals for receipt of the material.
- An accounting of the origin and chemical quality of each material type imported onto the site.

Before approval of the FER and issuance of a Certificate of Completion, the daily reports and monthly BCP progress reports must be submitted in digital form on electronic media (i.e., PDF).

8.1 Certifications

The following certification will appear in front of the FER Executive Summary. The certification will be signed by the RE, Jason J. Hayes, who is a NYS-licensed Professional Engineer. The certification will be appropriately signed and stamped. The certification will include the following statements:

I, _____, am currently a registered professional engineer licensed by the State of New York. I had primary direct responsibility for implementation of the remedial program for the 159 Boerum Street site (NYSDEC Brownfield Cleanup Agreement Index No. C224291-07-30, Site No. C224291).

I certify that the site description presented in this Final Engineering Report is identical to the site descriptions presented in the Brownfield Cleanup Agreement for the 159 Boerum Street site.

I certify that the Remedial Action Work Plan dated [month day year] and Stipulations [if any] in a letter dated [month day year] and approved by the NYSDEC were implemented and that all requirements in those documents have been substantively complied with.

I certify that the remedial activities were observed by qualified environmental professionals under my supervision and that the remediation requirements set forth in the Remedial Action Work Plan and any other relevant provisions of ECL 27-1419 have been achieved.

I certify that the export of contaminated soil, fill, water, or other material from the property was performed in accordance with the Remedial Action Work Plan, and were taken to facilities licensed to accept this material in full compliance with all federal, state, and local laws.

I certify that import of soils from off-site, including source approval and sampling, has been performed in a manner that is consistent with the methodology defined in the Remedial Action Work Plan.

I certify that ground-intrusive work during remediation and development-related construction was conducted in accordance with dust and odor suppression methodology defined in the Remedial Action Work Plan.

I certify that all information and statements in this certification are true. I understand that a false statement made herein is punishable as Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

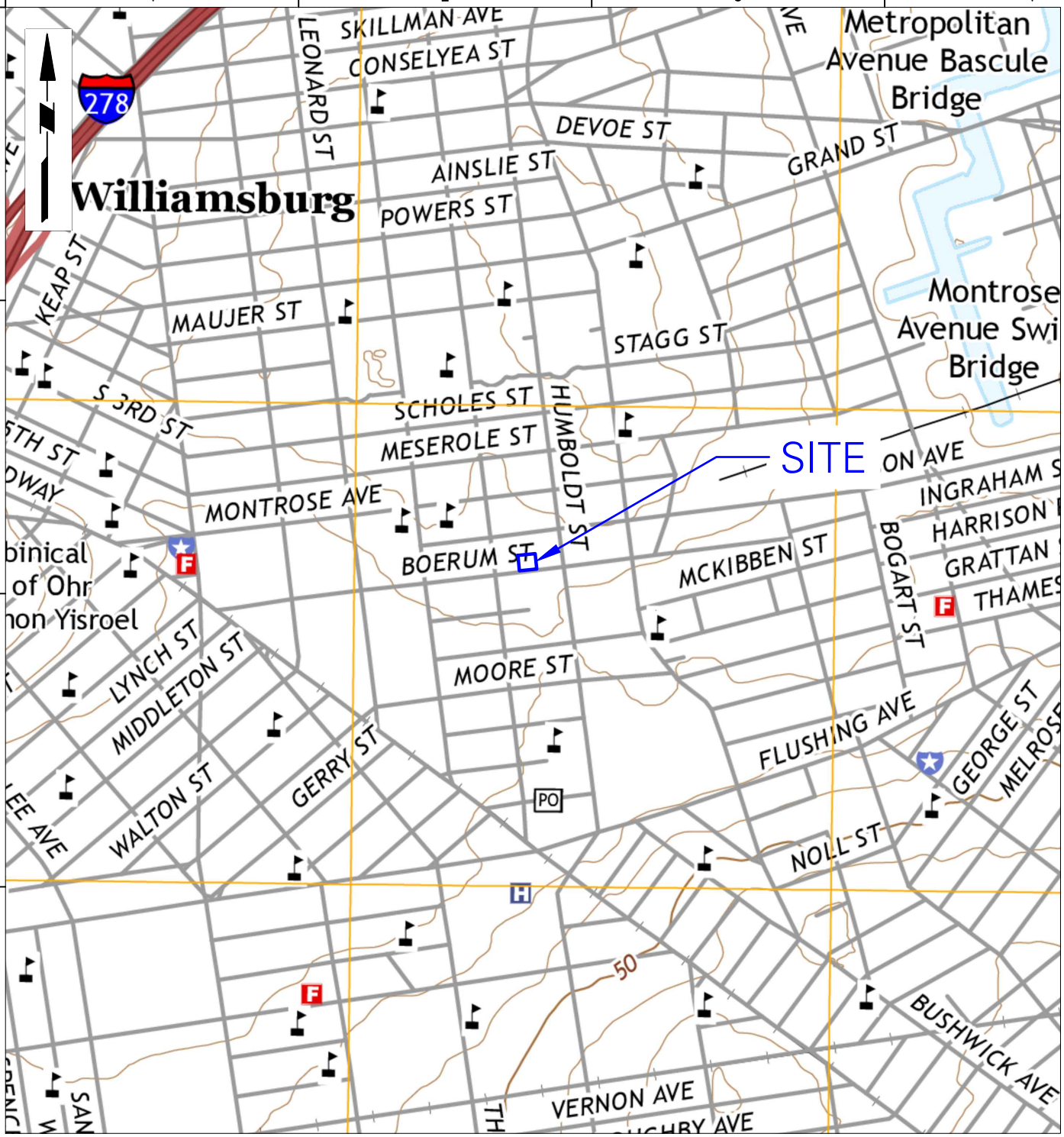
It is a violation of Article 130 of New York State Education Law for any person to alter this document in any way without the express written verification of adoption by any New York State

licensed engineer in accordance with Section 7209(2), Article 130, New York State Education Law.

9.0 SCHEDULE

Mobilization for implementation of the RAWP is expected to take about one to two weeks. Once mobilization is complete, remediation of the site will proceed. The remedy, which will be implemented in accordance with this RAWP, is anticipated to take about two months to complete. After completion of the remedy, a FER will be submitted to the NYSDEC for review and approval. A detailed project schedule is included in Appendix I.

FIGURES



LEGEND:

APPROXIMATE SITE BOUNDARY

NOTE:

BASE MAPS ADAPTED FROM UNITED STATES GEOLOGICAL SURVEY (USGS) 7.5-MINUTE BROOKLYN TOPOGRAPHIC QUADRANGLE, DATED 2016.

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SCALE IN FEET

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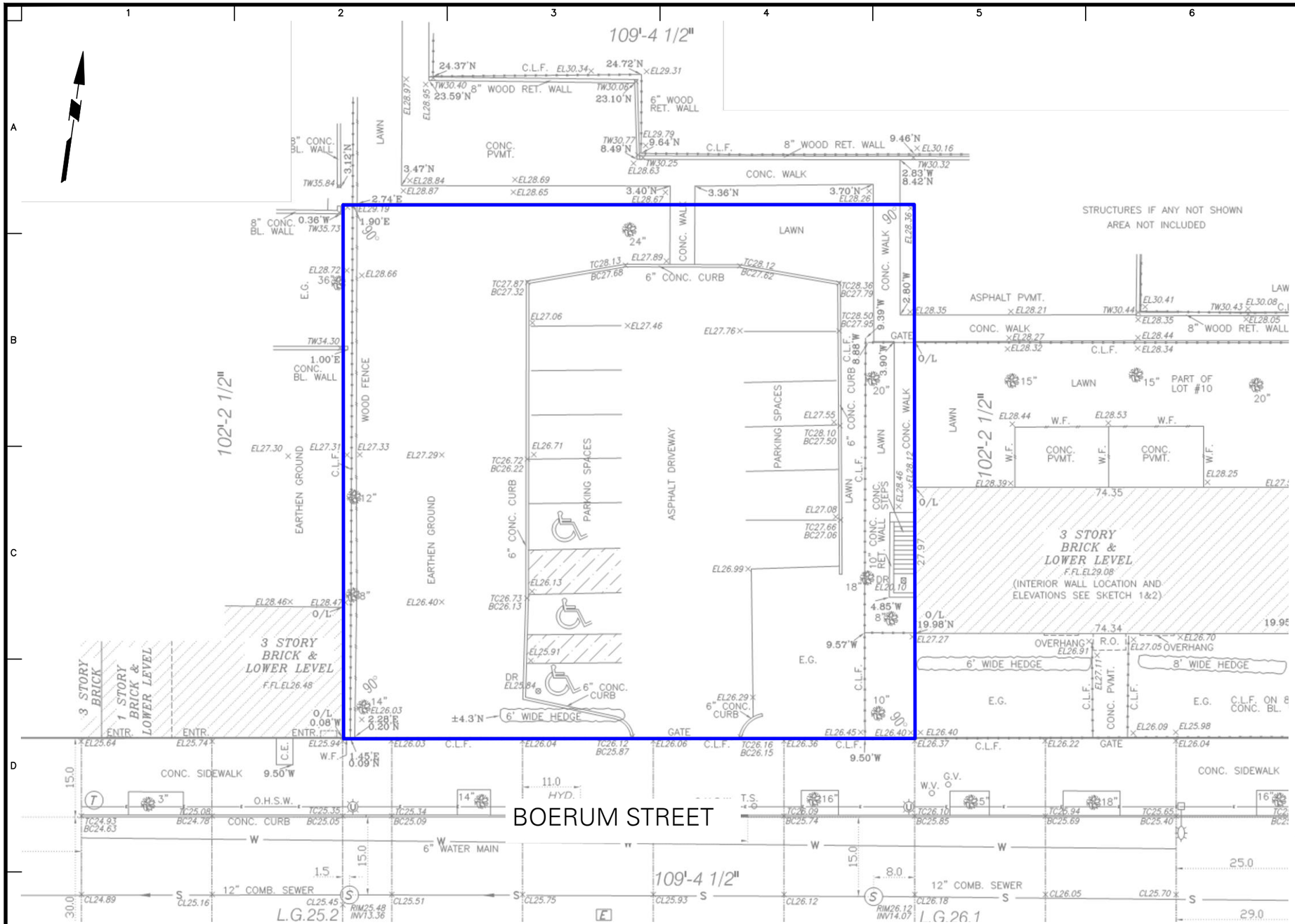
Project	159 BOERUM STREET BLOCK No. 3071, LOT No. 40 BROOKLYN NEW YORK
Figure Title	SITE LOCATION MAP
Project No.	170552901
Date	10/03/2018
Drawn By	NEK
Checked By	ES
Figure No.	1
Sheet	1 of 9



NOTE

1. BASEMAP IS REFERENCED FROM THE TOPOGRAPHIC SURVEY, PREPARED BY ROGUSKI LAND SURVEYING, P.C., DATED OCTOBER 23, 2018.

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS ITEM IN ANY WAY.

20 0 5 10 20
SCALE IN FEET

LANGAN
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Project	159 BOERUM STREET BLOCK No. 3071, LOT No. 40 BROOKLYN NEW YORK
Figure Title	SITE PLAN
Project No.	170552901
Date	10/10/2019
Drawn By	NEK
Checked By	ELS
Figure No.	2
Sheet	2 of 9

Filename: \\langan.com\data\NY\data9\170552901\Project Data\CAD\01\SheetFiles\RAWP\Figure 2 - Site Plan.dwg Date: 1/27/2020 Time: 11:41 User: nkung Style Table: Langan.stb Layout: Site Plan

Sample ID	SB02_0.0-2.0		SB02_4.0-6.0		SB02_18.0-20.0	
Sample Date	9/9/2019		9/9/2019		9/9/2019	
Sample Depth (feet bgs)	0-2		4-6		18-20	
VOCs (mg/kg)	ND		NE		NE	
SVOCs (mg/kg)						
Benzo(a)Anthracene	16		2.1		ND	
Benzo(a)Pyrene	16		1.9		ND	
Benzo(b)Fluoranthene	20		2.6		ND	
Benzo(k)Fluoranthene	5.9		NE		ND	
Chrysene	16		2		ND	
Dibenz(a,h)Anthracene	2.2		NE		ND	
Indeno(1,2,3-c,d)Pyrene	9.8		1.3		ND	
Pesticides (mg/kg)						
4,4'-DDD	0.0305		NE		NA	
4,4'-DDE	0.511		0.0361		NA	
4,4'-DDT	6.37		0.204	J	NA	
Herbicides (mg/kg)	ND		ND		NA	
PCBs (mg/kg)	NE		NE		ND	
Inorganics (mg/kg)						
Barium	NE		802		NE	
Lead	184		722		NE	
Mercury	0.265		0.592		NE	
Zinc	203		1,220		NE	
PFAS (µg/kg)						
N-ethyl perfluorooctane-sulfonamidoacetic acid	0.098	J	ND		ND	
Perfluorodecanoic acid	0.692	J	ND		ND	
Perfluorododecanoic Acid	0.34	J	ND		ND	
Perfluoroheptanoic acid	0.102	J	ND		ND	
Perfluorohexanoic Acid	0.146	J	0.077	J	ND	
Perfluorononanoic Acid	0.554	J	ND		ND	
Perfluorooctanesulfonic acid	4.05		0.329	J	ND	
Perfluorooctanoic Acid	0.769	J	0.628	J	0.532	J
Perfluoropentanoic Acid	0.117	J	0.056	J	ND	
Perfluorotetradecanoic Acid	0.154	J	ND		ND	
Perfluorotridecanoic Acid	0.232	J	ND		ND	
Perfluoroundecanoic Acid	0.647	J	ND		ND	
TOTAL PFOA AND PFOS	4.82	J	0.957	J	0.532	J

Sample ID	SB06_2-4	
Sample Date	5/3/2019	
Sample Depth (feet bgs)	2-4	
VOCs (mg/kg)		
1,2,4-Trimethylbenzene	8.9	J
Ethylbenzene	6.1	J
Naphthalene	3,400	
SVOCs (mg/kg)		
3 & 4 Methylphenol (m&p Cresol)	3.9	J
Acenaphthene	60	
Anthracene	120	
Benzo(a)Anthracene	200	
Benzo(a)Pyrene	190	
Benzo(b)Fluoranthene	250	
Benzo(g,h,i)Perylene	110	
Benzo(k)Fluoranthene	70	
Chrysene	170	
Dibenz(a,h)Anthracene	26	
Dibenzofuran	42	
Fluoranthene	460	
Fluorene	70	
Indeno(1,2,3-c,d)Pyrene	100	
Naphthalene	110	
Phenanthrene	420	
Pyrene	370	
Pesticides (mg/kg)	NE	
Herbicides (mg/kg)	ND	
PCBs (mg/kg)	NE	
Inorganics (mg/kg)		
Barium	990	
Copper	78.3	
Lead	721	
Mercury	ND	
Zinc	665	

Sample ID	SB06_0.0-2.0		SB06_14.0-16.0		SBDUP01_091019		SB06_18.0-20.0	
Sample Date	9/10/2019		9/10/2019		9/10/2019		9/10/2019	
Sample Depth (feet bgs)	0-2		14-16		14-16		18-20	
VOCs (mg/kg)	NE		NE		NE		NE	
SVOCs (mg/kg)	NE		ND		ND		ND	
Pesticides (mg/kg)	ND		NA		NA		NA	
Herbicides (mg/kg)	ND		NA		NA		NA	
PCBs (mg/kg)	ND		ND		ND		ND	
Inorganics (mg/kg)								
Lead	111		NE		NE		NE	
Mercury	0.411	J	ND		ND		ND	
PFAS (µg/kg)								
Perfluorohexanoic Acid	0.059	J	0.07	J	0.053	J	0.052	J
Perfluorooctanoic Acid	0.075	J	ND		ND		ND	
TOTAL PFOA AND PFOS	0.075	J	ND		ND		ND	

Sample ID	SB03_0.0-2.0		SB03_4.0-6.0		SB03_22.0-24.0	
Sample Date	9/10/2019		9/10/2019		9/10/2019	
Sample Depth (feet bgs)	0-2		4-6		22-24	
VOCs (mg/kg)						
Acetone	ND		0.066	J	0.084	J
SVOCs (mg/kg)						
Benzo(a)Anthracene	2.6		NE		ND	
Benzo(a)Pyrene	2.6		NE		ND	
Benzo(b)Fluoranthene	3.3		NE		ND	
Benzo(k)Fluoranthene	1.2		NE		ND	
Chrysene	2.7		NE		ND	
Dibenz(a,h)Anthracene	0.47		NE		ND	
Indeno(1,2,3-c,d)Pyrene	1.8		NE		ND	
Pesticides (mg/kg)						
4,4'-DDD	0.0389		NE		NA	
4,4'-DDE	0.0878		0.014		NA	
4,4'-DDT	0.197		0.03		NA	
Dieldrin	0.0103		NE		NA	
Herbicides (mg/kg)	ND		ND		NA	
PCBs (mg/kg)	ND		ND		ND	
Inorganics (mg/kg)						
Barium	706		NE		NE	
Copper	53.8	J	NE		NE	
Lead	511		230		NE	
Mercury	0.398	J	0.36	J	ND	
Zinc	479		264		NE	
PFAS (µg/kg)						
Perfluorodecanoic acid	0.152	J	ND		ND	
Perfluoroheptanoic acid	0.075	J	0.057	J	ND	
Perfluorohexanoic Acid	0.138	J	0.119	J	0.054	J
Perfluorononanoic Acid	0.128	J	ND		ND	
Perfluorooctanesulfonic acid	1.28		1.64		ND	
Perfluorooctanoic Acid	0.391	J	0.562	J	0.784	J
Perfluoropentanoic Acid	0.139	J	0.106	J	ND	
Perfluoroundecanoic Acid	0.095	J	ND		ND	
Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2)	ND		ND		0.174	J
Total PFOA and PFOS	1.67	J	2.2	J	0.784	J

Sample ID	SB07_2-4	
Sample Date	5/3/2019	
Sample Depth (feet bgs)	2-4	
VOCs (mg/kg)		
1,2,4-Trimethylbenzene	14	
Benzene	0.66	J
Ethylbenzene	6.9	
Naphthalene	1,900	
Toluene	3.8	
Total Xylenes	15	
SVOCs (mg/kg)		
3 & 4 Methylphenol (m&p Cresol)	5.5	J
Acenaphthene	83	
Anthracene	130	
Benzo(a)Anthracene	230	
Benzo(a)Pyrene	210	
Benzo(b)Fluoranthene	270	
Benzo(g,h,i)Perylene	120	
Benzo(k)Fluoranthene	80	
Chrysene	210	
Dibenz(a,h)Anthracene	29	
Dibenzofuran	55	
Fluoranthene	530	
Fluorene	96	
Indeno(1,2,3-c,d)Pyrene	110	
Naphthalene	150	
Phenanthrene	570	
Phenol	3.9	J
Pyrene	440	
Pesticides (mg/kg)		
4,4'-DDD	ND	
4,4'-DDE	ND	
4,4'-DDT	ND	
Dieldrin	ND	
Herbicides (mg/kg)	ND	
PCBs (mg/kg)	ND	
Inorganics (mg/kg)		
Barium	472	
Lead	1,580	
Mercury	ND	
Zinc	1,040	

Sample ID	SB04_2-4	
Sample Date	5/3/2019	
Sample Depth (feet bgs)	2-4	
VOCs (mg/kg)	NE	
SVOCs (mg/kg)	NE	
Pesticides (mg/kg)	NE	
Herbicides (mg/kg)	ND	
PCBs (mg/kg)	ND	
Inorganics (mg/kg)	NE	

Sample ID	SB09_0.0-2.0		SB09_5.0-7.0		SB09_18.0-20.0	
Sample Date	9/9/2019		9/9/2019		9/9/2019	
Sample Depth (feet bgs)	0-2		5-7		18-20	
VOCs (mg/kg)	ND		NE		NE	
SVOCs (mg/kg)						
Benzo(a)Anthracene	1.5		ND		ND	
Benzo(a)Pyrene	2.3		ND		ND	
Benzo(b)Fluoranthene	3		ND		ND	
Benzo(k)Fluoranthene	0.85		ND		ND	
Chrysene	1.5		ND		ND	
Dibenz(a,h)Anthracene	0.42		ND		ND	
Indeno(1,2,3-c,d)Pyrene	2.1		ND		ND	
Pesticides (mg/kg)						
4,4'-DDT	0.00468		ND		NA	
Herbicides (mg/kg)	ND		ND		NA	
PCBs (mg/kg)	NE		ND		ND	
Inorganics (mg/kg)						
Chromium, Trivalent	32		NE		NE	
Lead	116		NE		NE	
Mercury	0.233		ND		ND	
Zinc	142		NE		NE	
PFAS (µg/kg)						
Perfluorodecanoic acid	0.336	J	ND		ND	
Perfluorododecanoic Acid	0.17	J	ND		ND	
Perfluoroheptanoic acid	0.119	J	ND		ND	
Perfluorohexanoic Acid	0.196	J	0.061	J	0.054	J
Perfluorononanoic Acid	0.263	J	ND		ND	
Perfluorooctanesulfonic acid	1.9		0.355	J	ND	
Perfluorooctanoic Acid	0.736	J	0.147	J	0.071	J
Perfluoropentanoic Acid	0.172	J	ND		ND	
Perfluorotetradecanoic Acid	0.069	J	ND		ND	
Perfluoroundecanoic Acid	0.328	J	ND		ND	
TOTAL PFOA AND PFOS	2.64	J	0.502	J	0.071	J

Sample ID	SB01_0.0-2.0		SB01_6.0-8.0		SB01_20.0-22.0	
Sample Date	9/9/2019		9/9/2019		9/9/2019	
Sample Depth (feet bgs)	0-2		6-8		20-22	
VOCs (mg/kg)	ND		NE		NE	
SVOCs (mg/kg)						
Benzo(a)Anthracene	2.4		4.9		ND	
Benzo(a)Pyrene	2.4		5		ND	
Benzo(b)Fluoranthene	3.3		7.1		ND	
Benzo(k)Fluoranthene	0.95		2		ND	
Chrysene	2.3		4.7		ND	
Dibenz(a,h)Anthracene	0.38		0.86		ND	
Indeno(1,2,3-c,d)Pyrene	1.8		3.9		ND	
Pesticides (mg/kg)						
4,4'-DDD	0.0241		0.00872	J	NA	
4,4'-DDE	0.00632	J	0.00685		NA	
4,4'-DDT	0.0282		0.0416		NA	
Dieldrin	0.0071		0.0113		NA	
Herbicides (mg/kg)	ND		ND		NA	
PCBs (mg/kg)	NE		NE		ND	
Inorganics (mg/kg)						
Lead	241		2,680		NE	
Mercury	0.465		0.347		ND	
Zinc	197		690		NE	
PFAS (µg/kg)						
Perfluorodecanoic acid	0.266	J	ND		ND	
Perfluorododecanoic Acid	0.122	J	ND		ND	
Perfluoroheptanoic acid	0.068	J	0.097	J	ND	
Perfluorohexanoic Acid	0.122	J	0.087	J	ND	
Perfluorononanoic Acid	0.218	J	ND		ND	
Perfluorooctanesulfonic acid	2.15		3.04		ND	
Perfluorooctanoic Acid	0.518	J	0.52	J	ND	
Perfluoropentanoic Acid	0.091	J	ND		ND	
Perfluoroundecanoic Acid	0.198	J	ND		ND	
TOTAL PFOA AND PFOS	2.67	J	3.56	J	ND	

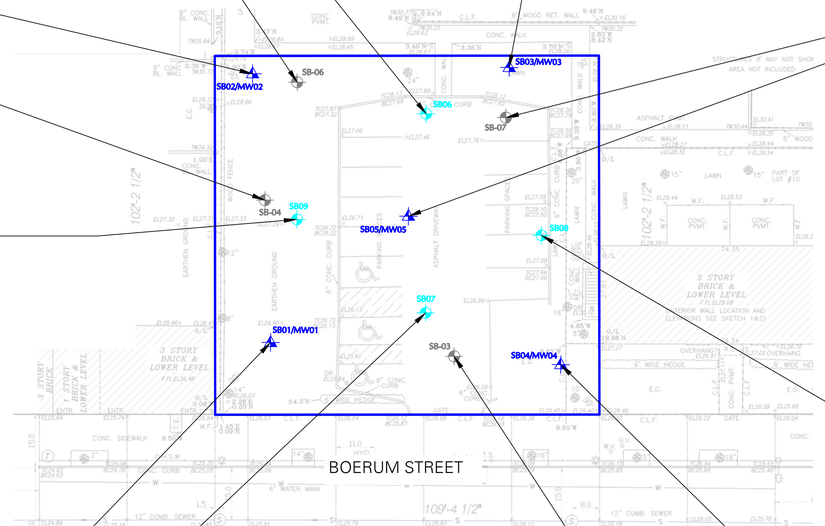
Sample ID	SB07_0.0-2.0		SB07_6.0-8.0		SB07_18.0-20.0	
Sample Date	9/11/2019		9/11/2019		9/11/2019	
Sample Depth (feet bgs)	0-2		6-8		18-20	
VOCs (mg/kg)	NE		NE		NE	
SVOCs (mg/kg)						
Benzo(a)Anthracene	1.6		1.8		ND	
Benzo(a)Pyrene	1.5		1.5		ND	
Benzo(b)Fluoranthene	1.9		2		ND	
Chrysene	1.6		1.6		ND	
Indeno(1,2,3-c,d)Pyrene	1		1		ND	
Pesticides (mg/kg)						
4,4'-DDD	ND		0.0121		NA	
4,4'-DDE	NE		0.0319		NA	
4,4'-DDT	0.0071		0.108		NA	
Dieldrin	NE		0.00937		NA	
Herbicides (mg/kg)	ND		ND		NA	
PCBs (mg/kg)	NE		NE		ND	
Inorganics (mg/kg)						
Lead	NE		118		NE	
Mercury	NE		0.346		ND	
Zinc	NE		301		NE	
PFAS (µg/kg)						
Perfluoroheptanoic acid	ND		0.122	J	ND	
Perfluorohexanoic Acid	0.069	J	0.126	J	ND	
Perfluorooctanesulfonic acid	0.181	J	3.32		ND	
Perfluorooctanoic Acid	ND		0.626	J	ND	
Perfluoropentanoic Acid	ND		0.053	J	ND	
TOTAL PFOA AND PFOS	0.181	J	3.95	J	ND	

Sample ID	SB03_2-4	
Sample Date	5/3/2019	
Sample Depth (feet bgs)	2-4	
VOCs (mg/kg)	NE	
SVOCs (mg/kg)		
Benzo(a)Anthracene	2.2	
Benzo(a)Pyrene	1.9	
Benzo(b)Fluoranthene	2.4	
Benzo(k)Fluoranthene	0.81	
Chrysene	2	
Indeno(1,2,3-c,d)Pyrene	1.2	
Pesticides (mg/kg)	NE	
Herbicides (mg/kg)	ND	
PCBs (mg/kg)	NE	
Inorganics (mg/kg)		
Lead	128	
Mercury	0.425	
Zinc	127	

Sample ID	SB05_0.0-2.0		SBDUP02_091019		SB05_9.0-11.0		SB05_18.0-20.0
Sample Date	9/10/2019		9/10/2019		9/10/2019		9/10/2019
Sample Depth (feet bgs)	0-2		0-2		9-11		18-20
VOCs (mg/kg)	NE		NE		NE		NE
SVOCs (mg/kg)							
Benzo(a)Anthracene	13	J	4.9	J	1.3		ND
Benzo(a)Pyrene	11	J	4.8	J	1.2		ND
Benzo(b)Fluoranthene	14	J	6.2	J	1.6		ND
Benzo(k)Fluoranthene	4.8	J	2.2	J	NE		ND
Chrysene	11	J	4.5	J	1.2		ND
Dibenz(a,h)Anthracene	1.7		0.75		NE		ND
Indeno(1,2,3-c,d)Pyrene	7.4	J	3.1	J	0.8		ND
Pesticides (mg/kg)							
4,4'-DDE	0.00462	J	0.00833	J	0.0223		NA
4,4'-DDT	0.0109	J	0.0235	J	0.0522	J	NA
Herbicides (mg/kg)	ND		ND		ND		NA
PCBs (mg/kg)							
Total PCBs	0.236	J	NE		NE		ND
Inorganics (mg/kg)							
Chromium, Trivalent	NE		NE		35		NE
Copper	68.7	J	63.2	J	123	J	NE
Lead	2,360	J	494	J	788		NE
Mercury	0.454	J	0.625	J	1.47	J	ND
Nickel	NE		NE		32.4		NE
Zinc	679		696		439		NE
PFAS (µg/kg)							
N-ethyl perfluorooctane-sulfonamidoacetic acid	0.113	J	ND		ND		ND
Perfluorohexanoic Acid	0.058	J	ND		ND		ND
Perfluorooctanesulfonic acid	0.281	J	0.194	J	ND		ND
Perfluorooctanoic Acid	0.137	J	0.097	J	ND		ND
TOTAL PFOA AND PFOS	0.418	J	0.291	J	ND		ND

Sample ID	SB08_0.0-2.0		SB08_11.5-13.5		SB08_18.0-20.0
Sample Date	9/12/2019		9/12/2019		9/12/2019
Sample Depth (feet bgs)	0-2		11.5-13.5		18-20
VOCs (mg/kg)					
Acetone	0.062		NE		NE
SVOCs (mg/kg)	NE		NE		ND
Pesticides (mg/kg)					
4,4'-DDE	0.0103		0.00877		NA
4,4'-DDT	0.027		0.0303		NA
Herbicides (mg/kg)	ND		ND		NA
PCBs (mg/kg)	NE		NE		ND
Inorganics (mg/kg)					
Mercury	0.271		ND		ND
Zinc	NE		255		NE
PFAS (µg/kg)					
Perfluorodecanoic acid	0.081	J	0.089	J	ND
Perfluorohexanoic Acid	0.081	J	0.068	J	ND
Perfluorononanoic Acid	0.091	J	ND		ND
Perfluorooctanesulfonic acid	0.532	J	0.138	J	ND
Perfluorooctanoic Acid	0.092	J	0.06	J	0.079	J
Perfluoropentanoic Acid	0.053	J	ND		ND
TOTAL PFOA AND PFOS	0.624	J	0.198	J	0.079	J

Sample ID	SB04_0.0-2.0		SB04_6.0-8.0		SB04_20.0-22.0	
Sample Date	9/11/2019		9/11/2019		9/11/2019	
Sample Depth (feet bgs)	0-2		6-8		20-22	
VOCs (mg/kg)	NE		NE		NE	
SVOCs (mg/kg)						
Benzo(a)Anthracene	1.5		NE		ND	
Benzo(a)Pyrene	1.2		NE		ND	
Benzo(b)Fluoranthene	1.4		NE		ND	
Chrysene	1.6		NE		ND	
Indeno(1,2,3-c,d)Pyrene	0.66		NE		ND	
Pesticides (mg/kg)						
4,4'-DDE	NE		0.0215		NA	
4,4'-DDT	ND		0.0612		NA	
Herbicides (mg/kg)	ND		ND		NA	
PCBs (mg/kg)	NE		NE		ND	
Inorganics (mg/kg)						
Copper	55.7		NE		NE	
Lead	208		187		NE	
Mercury	0.396		0.243		ND	
Zinc	234		267		NE	
PFAS (µg/kg)						
Perfluorodecanoic acid	0.362	J	0.069	J	ND	
Perfluorododecanoic Acid	0.241	J	ND		ND	
Perfluoroheptanoic acid	0.06	J	ND		ND	
Perfluorohexanoic Acid	0.112	J	0.081	J	ND	
Perfluorononanoic Acid	0.086	J	0.089	J	ND	
Perfluorooctanesulfonic acid	0.491	J	0.389	J	ND	
Perfluorooctanoic Acid	0.137	J	0.169	J	0.127	J
Perfluoropentanoic Acid	0.071	J	ND		ND	
Perfluorotetradecanoic Acid	0.111	J	ND		ND	
Perfluoroundecanoic Acid	0.364	J	ND		ND	
TOTAL PFOA AND PFOS	0.628	J	0.558	J	0.127	J



LEGEND

- BROWNFIELD CLEANUP PROGRAM SITE BOUNDARY
- SB01/MW01 — APPROXIMATE LOCATION OF SOIL BORING WITH OVERBURDEN MONITORING WELL
- SB06 — APPROXIMATE LOCATION OF SOIL BORING
- SB-01 — APPROXIMATE LOCATION OF SOIL BORING ADVANCED DURING THE MAY 2019 LIMITED SUBSURFACE INVESTIGATION

Analyte	CAS Number	NYSDEC Part 375 Unrestricted Use SCOs	NYSDEC Part 375 Restricted Use Restricted-Residential SCOs	NYSDEC Part 375 Restricted Use Protection of Groundwater SCOs
VOCs (mg/kg)				
1,2,4-Trimethylbenzene	95-63-6	3.6	52	3.6
Acetone	67-64-1	0.05	100	0.05
Benzene	71-43-2	0.06	4.8	0.06
Ethylbenzene	100-41-4	1	41	1
Naphthalene	91-20-3	12	100	12
Toluene	108-88-3	0.7	100	0.7
Total Xylenes	1330-20-7	0.26	100	1.6
SVOC (mg/kg)				
3 & 4 Methylphenol (m&p Cresol)	65794-96-9	0.33	100	~
Acenaphthene	83-32-9	20	100	98
Anthracene	120-12-7	100	100	1,000
Benzo(a)Anthracene	56-55-3	1	1	1
Benzo(a)Pyrene	50-32-8	1	1	22
Benzo(b)Fluoranthene	205-99-2	1	1	1.7
Benzo(g,h,i)Perylene	191-24-2	100	100	1,000
Benzo(k)Fluoranthene	207-08-9	0.8	3.9	1.7
Chrysene	218-01-9	1	3.9	1
Dibenz(a,h)Anthracene	53-70-3	0.33	0.33	1,000
Dibenzofuran	132-64-9	7	59	210
Fluoranthene	206-44-0	100	100	1,000
Fluorene	86-73-7	30	100	386
Indeno(1,2,3-c,d)Pyrene	193-39-5	0.5	0.5	8.2
Naphthalene	91-20-3	12	100	12
Phenanthrene	85-01-8	100	100	1,000
Phenol	108-95-2	0.33	100	0.33
Pyrene	129-00-0	100	100	1,000
Pesticides (mg/kg)				
4,4'-DDD	72-54-8	0.0033	13	14
4,4'-DDE	72-55-9	0.0033	8.9	17
4,4'-DDT	50-29-3	0.0033	7.9	136
Dieldrin	60-57-1	0.005	0.2	0.1
PCBs (mg/kg)				
Total PCBs	1336-36-3	0.1	1	3.2
Inorganics (mg/kg)				
Barium	7440-39-3	350	400	820
Chromium, Trivalent	16065-83-1	30	180	~
Copper	7440-50-8	50	270	1,720
Lead	7439-92-1	63	400	450
Mercury	7439-97-6	0.18	0.81	0.73
Nickel	7440-02-0	30	310	130
Zinc	7440-66-6	109	10,000	2,480

NOTES:

1. BASEMAP IS REFERENCED FROM THE TOPOGRAPHIC SURVEY, PREPARED BY ROGUSKI LAND SURVEYING, P.C., DATED OCTOBER 23, 2018.
2. SOIL SAMPLE LOCATIONS ARE APPROXIMATE AND BASED ON FIELD MEASUREMENTS.
3. SOIL SAMPLE ANALYTICAL RESULTS ARE COMPARED TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) TITLE 6 OF THE OFFICIAL COMPILATION OF NEW YORK CODES, RULES AND REGULATIONS (NYCRR) PART 375 UNRESTRICTED USE, RESTRICTED USE - PROTECTION OF GROUNDWATER, AND RESTRICTED USE RESTRICTED - RESIDENTIAL SOIL CLEANUP OBJECTIVES (SCOs).
4. REGULATORY CRITERIA DOES NOT EXIST FOR PFAS AND 1,4-DIOXANE IN NEW YORK STATE. ONLY DETECTED PFAS ARE SHOWN.
5. ONLY COMPOUNDS DETECTED AT CONCENTRATIONS ABOVE PART 375 SCOs ARE SHOWN.
6. ANALYTES DETECTED WITH CONCENTRATIONS ABOVE UNRESTRICTED USE SCOs ARE BOLDED.
7. ANALYTES DETECTED WITH CONCENTRATIONS ABOVE RESTRICTED USE RESTRICTED - RESIDENTIAL SCOs ARE SHADED.
8. ANALYTES DETECTED WITH CONCENTRATIONS ABOVE RESTRICTED USE - PROTECTION OF GROUNDWATER SCOs ARE UNDERLINED.
9. SAMPLE SBDUP01_091019 IS A DUPLICATE SAMPLE OF SB06_14.0-16.0 AND SAMPLE SBDUP02_091019 IS A DUPLICATE SAMPLE OF SB05_0.0-2.0.
10. VOC = VOLATILE ORGANIC COMPOUNDS
11. SVOC = SEMIVOLATILE ORGANIC COMPOUNDS
12. PCB = POLYCHLORINATED BIPHENYLS
13. PFAS = PER- AND POLY-FLUOROALKYL SUBSTANCES
14. mg/kg = MILLIGRAM PER KILOGRAM
15. bgs = BELOW GRADE SURFACE
16. NE = NO EXCEEDANCE
17. NA = NOT ANALYZED
18. ND = NOT DETECTED
19. J = THE ANALYTE WAS POSITIVELY IDENTIFIED AND THE ASSOCIATED NUMERICAL VALUE IS THE APPROXIMATE CONCENTRATION OF THE ANALYTE IN THE SAMPLE.

WARNING:
IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS ITEM IN ANY WAY.

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Project: 159 BOERUM STREET
BLOCK No. 3071, LOT No. 40
BROOKLYN NEW YORK

Drawing Title: SOIL SAMPLE ANALYTICAL RESULTS MAP

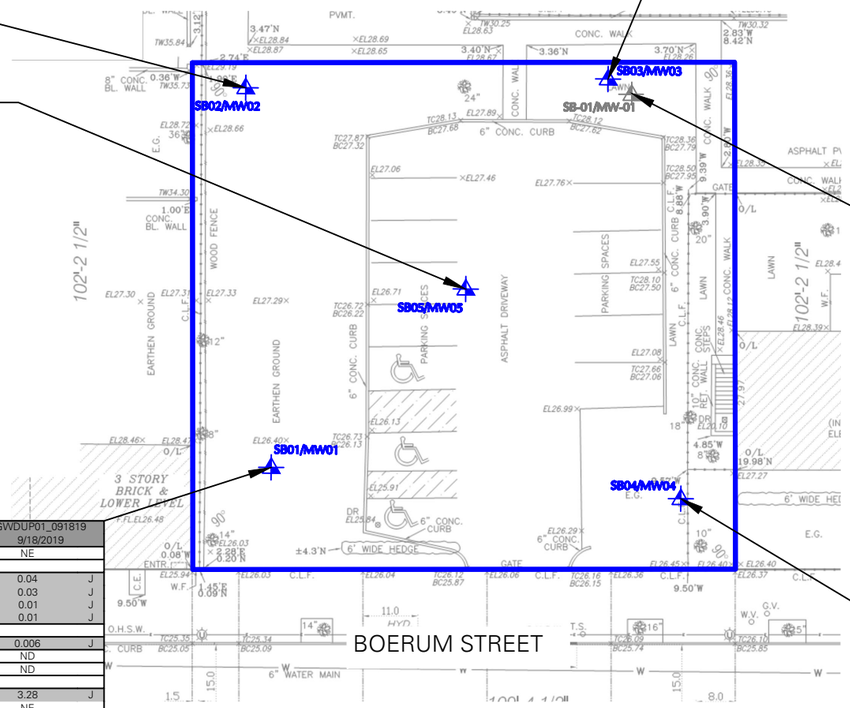
Project No. 170552901
Date 11/21/2019
Drawn By NEK
Checked By ELS
Drawing No. 3
Sheet 3 of 9

PROJECT NO. 170552901

Sample ID Sample Date	MW02_091919 9/19/2019	
VOCs (µg/L)	ND	
SVOCs (µg/L)	ND	
Pesticides (µg/L)	ND	
Herbicides (µg/L)	ND	
PCBs (µg/L)	ND	
Inorganics (µg/L)		
Iron	2,620	
Iron (Dissolved)	2,410	J
Sodium	42,900	
Sodium (Dissolved)	38,600	
PFAS (µg/L)		
Perfluorobutanesulfonic Acid	0.0341	
Perfluorobutanoic acid	0.0121	
Perfluorodecanoic acid	0.00215	
Perfluoroheptanoic acid	0.0093	
Perfluorohexanesulfonic Acid	0.00179	
Perfluorohexanoic Acid	0.0468	
Perfluorononanoic Acid	0.00504	
Perfluorooctanesulfonic acid	0.0381	
Perfluorooctanoic Acid	0.035	
Perfluoropentanoic Acid	0.0686	
TOTAL PFOA AND PFOS	0.0731	

Sample ID Sample Date	MW05_091819 9/18/2019	
VOCs (µg/L)	NE	
SVOCs (µg/L)	NE	
Pesticides (µg/L)		
Dieldrin	0.006	J
Herbicides (µg/L)	ND	
PCBs (µg/L)	ND	
Inorganics (µg/L)		
Iron	11,600	
Manganese	1,391	
Sodium	62,500	
Sodium (Dissolved)	52,300	
PFAS (µg/L)		
Perfluorobutanesulfonic Acid	0.037	
Perfluorobutanoic acid	0.0126	
Perfluorodecanoic acid	0.00334	
Perfluoroheptanoic acid	0.013	
Perfluorohexanesulfonic Acid	0.00247	
Perfluorohexanoic Acid	0.0409	
Perfluorononanoic Acid	0.00589	
Perfluorooctanesulfonic acid	0.041	
Perfluorooctanoic Acid	0.0368	
Perfluoropentanoic Acid	0.0521	
TOTAL PFOA AND PFOS	0.0778	

Sample ID Sample Date	MW01_091819 9/18/2019		GWDUP01_091819 9/18/2019	
VOCs (µg/L)	NE		NE	
SVOCs (µg/L)				
Benzo(a)Anthracene	0.05	J	0.04	J
Benzo(b)Fluoranthene	0.04	J	0.03	J
Benzo(k)Fluoranthene	0.01	J	0.01	J
Chrysene	0.02	J	0.01	J
Pesticides (µg/L)				
Dieldrin	0.005	J	0.006	J
Herbicides (µg/L)	ND		ND	
PCBs (µg/L)	ND		ND	
Inorganics (µg/L)				
Antimony	6.56	J	3.28	J
Chromium, Total	61.15	J	NE	
Iron	45,600	J	10,300	J
Iron (Dissolved)	459		473	
Magnesium	35,800		NE	
Manganese	8,808	J	3,441	J
Manganese (Dissolved)	463		466.1	
Selenium	14.2	J	NE	
Sodium	132,000		137,000	
Sodium (Dissolved)	114,000		116,000	
PFAS (µg/L)				
Perfluorobutanesulfonic Acid	0.025		0.0235	
Perfluorobutanoic acid	0.013		0.0125	
Perfluorodecanoic acid	0.00239		0.00239	
Perfluoroheptanoic acid	0.0113		0.0112	
Perfluorohexanesulfonic Acid	0.00292		0.00299	
Perfluorohexanoic Acid	0.0312		0.0303	
Perfluorononanoic Acid	0.00693		0.00638	
Perfluorooctanesulfonic acid	0.0619		0.0585	
Perfluorooctanoic Acid	0.0541		0.0524	
Perfluoropentanoic Acid	0.041		0.0392	
TOTAL PFOA AND PFOS	0.116		0.111	



Sample ID Sample Date	MW03_091919 9/19/2019	
VOCs (µg/L)	ND	
SVOCs (µg/L)		
Benzo(a)Anthracene	0.07	J
Benzo(a)Pyrene	0.05	J
Benzo(b)Fluoranthene	0.07	J
Benzo(k)Fluoranthene	0.03	J
Chrysene	0.05	J
Indeno(1,2,3-c,d)Pyrene	0.12	
Pesticides (µg/L)	NE	
Herbicides (µg/L)	ND	
PCBs (µg/L)	ND	
Inorganics (µg/L)		
Iron	2,470	
Iron (Dissolved)	1,270	J
Manganese	489.5	
Manganese (Dissolved)	383.5	
Sodium	64,300	
Sodium (Dissolved)	63,200	
PFAS (µg/L)		
Perfluorobutanesulfonic Acid	0.007	
Perfluorobutanoic acid	0.0111	
Perfluorodecanoic acid	0.000384	J
Perfluoroheptanesulfonic acid	0.000767	J
Perfluoroheptanoic acid	0.00908	
Perfluorohexanesulfonic Acid	0.00289	
Perfluorohexanoic Acid	0.0192	
Perfluorononanoic Acid	0.00266	
Perfluorooctanesulfonic acid	0.0343	
Perfluorooctanoic Acid	0.138	
Perfluoropentanoic Acid	0.0232	
TOTAL PFOA AND PFOS	0.172	

Sample ID Sample Date	MW01_050319 5/3/2019
VOCs (µg/L)	ND
SVOCs (µg/L)	ND
Herbicides (µg/L)	ND
PCBs (µg/L)	ND
Dissolved - Inorganics (µg/L)	
Barium	3,143
Beryllium	9.63
Chromium, Total	317
Copper	499.4
Iron	156,000
Lead	122.2
Magnesium	50,200
Manganese	23,430
Nickel	383.1
Selenium	39.9
Sodium	62,400

Sample ID Sample Date	MW04_091919 9/19/2019
VOCs (µg/L)	NE
SVOCs (µg/L)	NE
Pesticides (µg/L)	ND
Herbicides (µg/L)	ND
PCBs (µg/L)	ND
Inorganics (µg/L)	
Iron	24,400
Manganese	3,211
Sodium	59,200
Sodium (Dissolved)	60,700
PFAS (µg/L)	
Perfluorobutanesulfonic Acid	0.0288
Perfluorobutanoic acid	0.0132
Perfluorodecanoic acid	0.00298
Perfluoroheptanoic acid	0.0133
Perfluorohexanesulfonic Acid	0.00209
Perfluorohexanoic Acid	0.0353
Perfluorononanoic Acid	0.00645
Perfluorooctanesulfonic acid	0.0427
Perfluorooctanoic Acid	0.0281
Perfluoropentanoic Acid	0.0436
TOTAL PFOA AND PFOS	0.0708

LEGEND

BROWNFIELD CLEANUP PROGRAM SITE BOUNDARY

SB01/MW01 — APPROXIMATE LOCATION OF PERMANENT GROUNDWATER MONITORING WELL

SB01/MW01 — APPROXIMATE LOCATION OF TEMPORARY GROUNDWATER MONITORING WELL INSTALLED DURING THE MAY 2019 LIMITED SUBSURFACE INVESTIGATION

Analyte	NYSDEC SGVs	USEPA Health Advisory for Emerging Contaminants
SVOCs (µg/L)		
Benzo(a)Anthracene	0.002	~
Benzo(a)Pyrene	ND	~
Benzo(b)Fluoranthene	0.002	~
Benzo(k)Fluoranthene	0.002	~
Chrysene	0.002	~
Indeno(1,2,3-c,d)Pyrene	0.002	~
Pesticides (µg/L)		
Dieldrin	0.004	~
Inorganics (µg/L)		
Antimony	3	~
Barium	1,000	~
Beryllium	3	~
Chromium, Total	50	~
Copper	200	~
Iron	300	~
Lead	25	~
Magnesium	35,000	~
Manganese	300	~
Nickel	100	~
Selenium	10	~
Sodium	20,000	~
PFAS (µg/L)		
Perfluorooctanoic Acid	~	0.07

NOTES:

1. BASEMAP IS REFERENCED FROM THE TOPOGRAPHIC SURVEY, PREPARED BY ROGUSKI LAND SURVEYING, P.C., DATED OCTOBER 23, 2018.
2. MONITORING WELL LOCATIONS ARE APPROXIMATE AND BASED ON FIELD MEASUREMENTS.
3. GROUNDWATER SAMPLE RESULTS ARE COMPARED TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) TITLE 6 OF THE OFFICIAL COMPILATION OF NEW YORK CODES, RULES, AND REGULATIONS (NYCRR) PART 703.5 AND NYSDEC TECHNICAL OPERATIONAL GUIDANCE SERIES (TOGS) 1.1.1 AMBIENT QUALITY STANDARDS AND GUIDANCE VALUES FOR CLASS GA WATER (NYSDEC SGVS).
4. REGULATORY CRITERIA DO NOT EXIST FOR PER- AND POLY-FLUOROALKYL SUBSTANCES (PFAS) AND 1,4-DIOXANE IN NEW YORK STATE. PFAS AND 1,4-DIOXANE ARE COMPARED TO THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA) HEALTH ADVISORY LEVEL. ONLY DETECTED PFAS ARE SHOWN.
5. ONLY ANALYTICAL RESULTS DETECTED AT CONCENTRATIONS ABOVE THEIR RESPECTIVE NYSDEC SGVS ARE SHOWN.
6. ANALYTES DETECTED WITH CONCENTRATIONS ABOVE NYSDEC SGVS ARE SHADED.
7. SAMPLE GWDUP01_101819 IS A DUPLICATE SAMPLE OF MW01_101819.
8. VOC = VOLATILE ORGANIC COMPOUND
9. SVOC = SEMIVOLATILE ORGANIC COMPOUND
10. PCB = POLYCHLORINATED BIPHENYL
11. PFAS = PER- AND POLY-FLUOROALKYL SUBSTANCES
12. µg/L = MICROGRAMS PER LITER
13. NE = NO EXCEEDANCE
14. ND = NOT DETECTED
15. NA = NOT ANALYZED

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Project
159 BOERUM STREET
BLOCK No. 3071, LOT No. 40
BROOKLYN NEW YORK

Figure Title
GROUNDWATER SAMPLE ANALYTICAL RESULTS MAP

Project No. 170552901
Date 11/21/2019
Drawn By NEK
Checked By ELS

Figure No. 4
Sheet 4 of 9

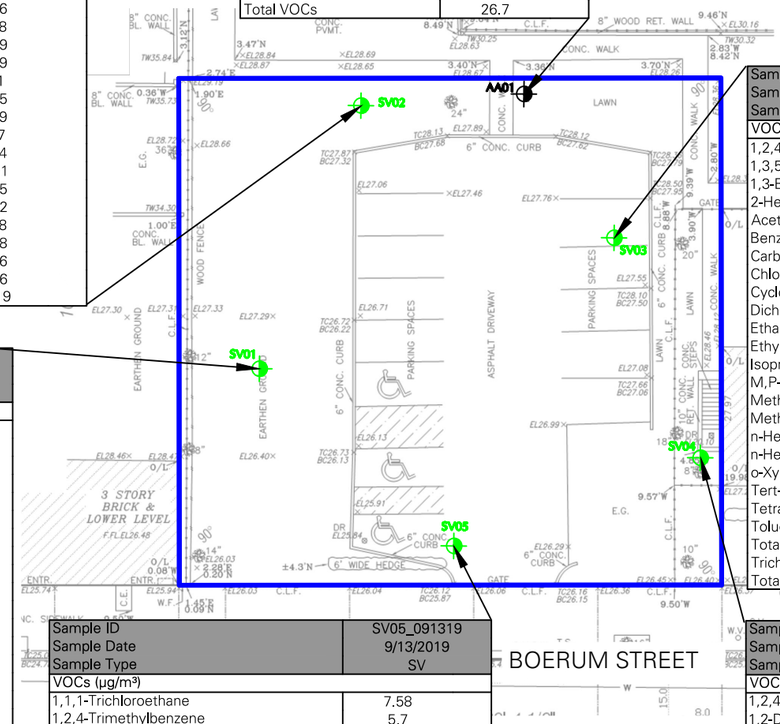
Filename: \\langan.com\data\NY\data9\170552901\Project Data\CAD\01\SheetFiles\RAWP\Figure 4 - Groundwater Sample Analytical Results Map.dwg Date: 1/27/2020 Time: 11:41 User: nkung Style Table: Langan.stb Layout: GW RESULTS

Sample ID	SV02_091319
Sample Date	9/13/2019
Sample Type	SV
VOCs (µg/m³)	
1,2,4-Trimethylbenzene	2.23
1,3,5-Trimethylbenzene (Mesitylene)	1.09
1,3-Butadiene	2.83
2-Hexanone	72.5
Acetone	684
Benzene	2.57
Carbon Disulfide	2.41
Chloroform	7.96
Cyclohexane	1.98
Dichlorodifluoromethane	3.59
Ethanol	24.9
Ethylbenzene	2.1
Isopropanol	2.65
M,P-Xylene	5.99
Methyl Ethyl Ketone (2-Butanone)	237
n-Heptane	5.94
n-Hexane	8.21
o-Xylene (1,2-Dimethylbenzene)	2.55
Tert-Butyl Alcohol	35.2
Tetrachloroethene (PCE)	1.48
Toluene	7.08
Total Xylenes	8.56
Trichlorofluoromethane	4.86
Total VOCs	1,119

Sample ID	AA01_091319
Sample Date	9/13/2019
Sample Type	AA
VOCs (µg/m³)	
Acetone	6.53
Chloromethane	0.985
Dichlorodifluoromethane	2.54
Ethanol	11
Isopropanol	1.31
Toluene	2.78
Trichlorofluoromethane	1.52
Total VOCs	26.7

LEGEND

- BROWNFIELD CLEANUP PROGRAM SITE BOUNDARY
- SV01 — APPROXIMATE LOCATION OF TEMPORARY SOIL VAPOR SAMPLE
- AA01 — APPROXIMATE LOCATION OF AMBIENT AIR SAMPLE



Sample ID	SV03_091319		SVDUP01_091319	
Sample Date	9/13/2019		9/13/2019	
Sample Type	SV		SV	
VOCs (µg/m³)				
1,2,4-Trimethylbenzene	2.98	J	4.06	J
1,3,5-Trimethylbenzene (Mesitylene)	1.35		1.93	
1,3-Butadiene	ND		0.723	
2-Hexanone	77.9		86.1	
Acetone	287	J	477	J
Benzene	2.21		2.82	
Carbon Disulfide	1.49	J	4.14	J
Chloroform	2.72		2.92	
Cyclohexane	0.902	J	2.98	J
Dichlorodifluoromethane	8.85		9.3	
Ethanol	15.8		19.8	
Ethylbenzene	2.98	J	4.78	J
Isopropanol	1.7	J	3	J
M,P-Xylene	9.08	J	14.9	J
Methyl Ethyl Ketone (2-Butanone)	144	J	198	J
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	2.79		2.87	
n-Heptane	5.45	J	9.47	J
n-Hexane	5.25	J	8.25	J
o-Xylene (1,2-Dimethylbenzene)	3.11	J	6.12	J
Tert-Butyl Alcohol	24.5		26.8	
Tetrachloroethene (PCE)	2.94		1.96	
Toluene	6.78	J	13.9	J
Total Xylenes	12.2	J	21	J
Trichlorofluoromethane	14.9		15.4	
Total VOCs	625		917	

Sample ID	SV01_091319
Sample Date	9/13/2019
Sample Type	SV
VOCs (µg/m³)	
1,2,4-Trimethylbenzene	2.57
1,3,5-Trimethylbenzene (Mesitylene)	1.35
1,3-Butadiene	5.73
2-Hexanone	63.1
Acetone	570
Benzene	6.2
Bromodichloromethane	3.16
Carbon Disulfide	7.57
Chloroform	182
Cyclohexane	2.12
Dichlorodifluoromethane	3.15
Ethanol	24.1
Ethylbenzene	2.23
Isopropanol	2.63
M,P-Xylene	6.52
Methyl Ethyl Ketone (2-Butanone)	190
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	2.67
n-Heptane	9.02
n-Hexane	11.9
o-Xylene (1,2-Dimethylbenzene)	2.74
Tert-Butyl Alcohol	23.9
Tetrachloroethene (PCE)	2.56
Toluene	10.4
Total Xylenes	9.25
Trichlorofluoromethane	5.84
Total VOCs	1,141

Sample ID	SV05_091319
Sample Date	9/13/2019
Sample Type	SV
VOCs (µg/m³)	
1,1,1-Trichloroethane	7.58
1,2,4-Trimethylbenzene	5.7
1,2-Dichlorotetrafluoroethane	9.72
1,3,5-Trimethylbenzene (Mesitylene)	2.58
2-Hexanone	98.4
Acetone	839
Benzene	5.81
Bromodichloromethane	12.5
Carbon Disulfide	11.3
Chloroform	571
Cyclohexane	1.66
Dichlorodifluoromethane	3.87
Ethanol	33.5
Ethylbenzene	2.77
Isopropanol	3.61
M,P-Xylene	7.91
Methyl Ethyl Ketone (2-Butanone)	301
n-Heptane	7.83
n-Hexane	11
o-Xylene (1,2-Dimethylbenzene)	3.36
Tert-Butyl Alcohol	51.5
Tetrachloroethene (PCE)	5.81
Toluene	9.46
Total Xylenes	11.3
Trichlorofluoromethane	8.2
Total VOCs	2,015

Sample ID	SV04_091319
Sample Date	9/13/2019
Sample Type	SV
VOCs (µg/m³)	
1,2,4-Trimethylbenzene	1.96
1,2-Dichlorotetrafluoroethane	6.28
1,3-Butadiene	0.673
2-Hexanone	41.4
Acetone	157
Benzene	1.93
Carbon Disulfide	0.828
Chloroform	5.08
Cyclohexane	1.03
Dichlorodifluoromethane	2.93
Ethylbenzene	1.79
M,P-Xylene	5.26
Methyl Ethyl Ketone (2-Butanone)	83.2
n-Heptane	4.67
n-Hexane	5.53
o-Xylene (1,2-Dimethylbenzene)	2.22
Tert-Butyl Alcohol	13.6
Toluene	6.52
Total Xylenes	7.47
Trichlorofluoromethane	3.69
Total VOCs	346

NOTES:

1. BASEMAP IS REFERENCED FROM THE TOPOGRAPHIC SURVEY, PREPARED BY ROGUSKI LAND SURVEYING, P.C., DATED OCTOBER 23, 2018.
2. SOIL VAPOR LOCATIONS ARE APPROXIMATE AND BASED ON FIELD MEASUREMENTS.
3. SOIL VAPOR SAMPLE ANALYTICAL RESULTS ARE COMPARED TO THE AMBIENT AIR (AA) SAMPLE.
4. SV = SOIL VAPOR
5. VOC = VOLATILE ORGANIC COMPOUND
6. µg/m^3 = MICROGRAMS PER CUBIC METER
7. ND = NOT DETECTED
8. SAMPLE SVDUP01_101319 IS A DUPLICATE OF PARENT SAMPLE SV03_101319.

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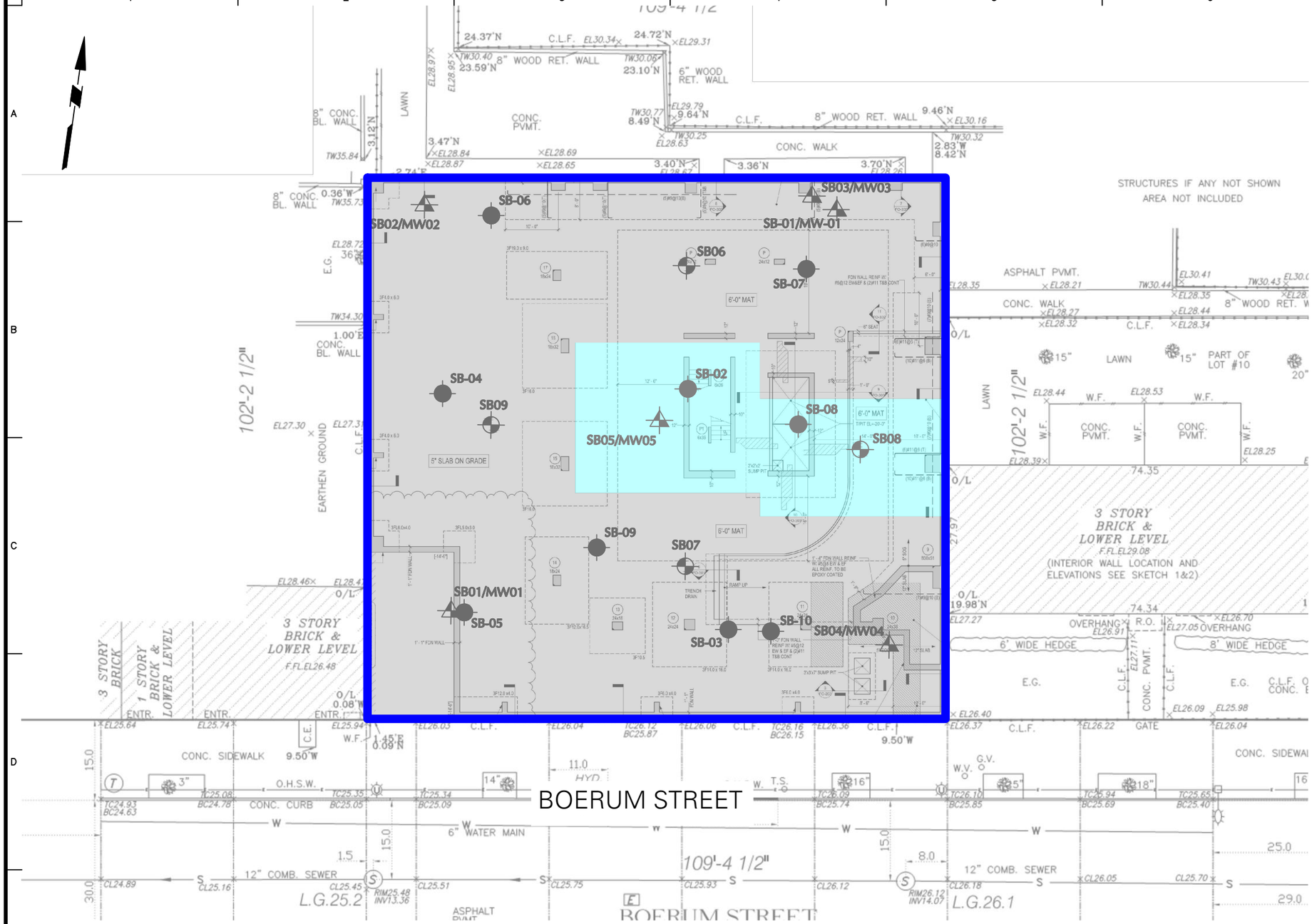
Project
159 BOERUM STREET
BLOCK No. 3071, LOT No. 40
BROOKLYN NEW YORK

Figure Title
SOIL VAPOR SAMPLE ANALYTICAL RESULTS MAP

Project No.	170552901
Date	11/21/2019
Drawn By	NEK
Checked By	ELS

Figure No. 5
Sheet 5 of 9

Filename: \\langan.com\data\NY\data9\170552901\Project Data\CAD\01\SheetFiles\RAWP\Figure 5 - Soil Vapor Sample Analytical Results Map.dwg Date: 1/27/2020 Time: 11:41 User: nkung Style Table: Langan.stb Layout: SV RESULTS



LEGEND

- BROWNFIELD CLEANUP PROGRAM SITE BOUNDARY
- EXCAVATION TO ABOUT 14 FEET BELOW GRADE SURFACE FOR IMPLEMENTATION OF TRACK 1 (ALTERNATIVE I) CLEANUP
- EXCAVATION TO ABOUT 9 FEET BELOW GROUND SURFACE FOR IMPLEMENTATION OF TRACK 1 (ALTERNATIVE I) CLEANUP
- SB-04 — APPROXIMATE LOCATION OF SOIL BORING ADVANCED DURING THE MAY 2019 LIMITED SUBSURFACE INVESTIGATION (LANGAN)
- SB06 — APPROXIMATE LOCATION OF SOIL BORING ADVANCED DURING THE SEPTEMBER 2019 REMEDIAL INVESTIGATION (LANGAN)
- SB01/MW01 — APPROXIMATE LOCATION OF SOIL BORING WITH OVERBURDEN MONITORING WELL INSTALLED DURING THE SEPTEMBER 2019 REMEDIAL INVESTIGATION (LANGAN)

NOTES

1. BASEMAP FOR THE SITE IS REFERENCED FROM THE FOUNDATION PLAN, PREPARED BY AUFGANG ARCHITECTS, LLC., DATED JUNE 3, 2019 AND REVISED AUGUST 15, 2019.
2. BASEMAP FOR SURROUNDING PROPERTIES IS REFERENCED FROM THE TOPOGRAPHIC SURVEY, PREPARED BY ROGUSKI LAND SURVEYING, P.C., DATED OCTOBER 23, 2018.
3. THE TRACK 1 (ALTERNATIVE I) CLEANUP PLAN INCLUDES REMEDIAL EXCAVATION OF THE ENTIRE SITE FOOTPRINT TO ABOUT 9 FEET BELOW GRADE SURFACE (BGS), FOLLOWED BY ADDITIONAL EXCAVATION AT AREAS CENTERED AROUND BORINGS SB05 AND SB08 TO ABOUT 14 FEET BGS.
4. EXCAVATION OF THE ENTIRE SITE FOOTPRINT TO ABOUT 16 FEET BGS IS REQUIRED FOR DEVELOPMENT OF THE PROPOSED 19-STORY BUILDING.

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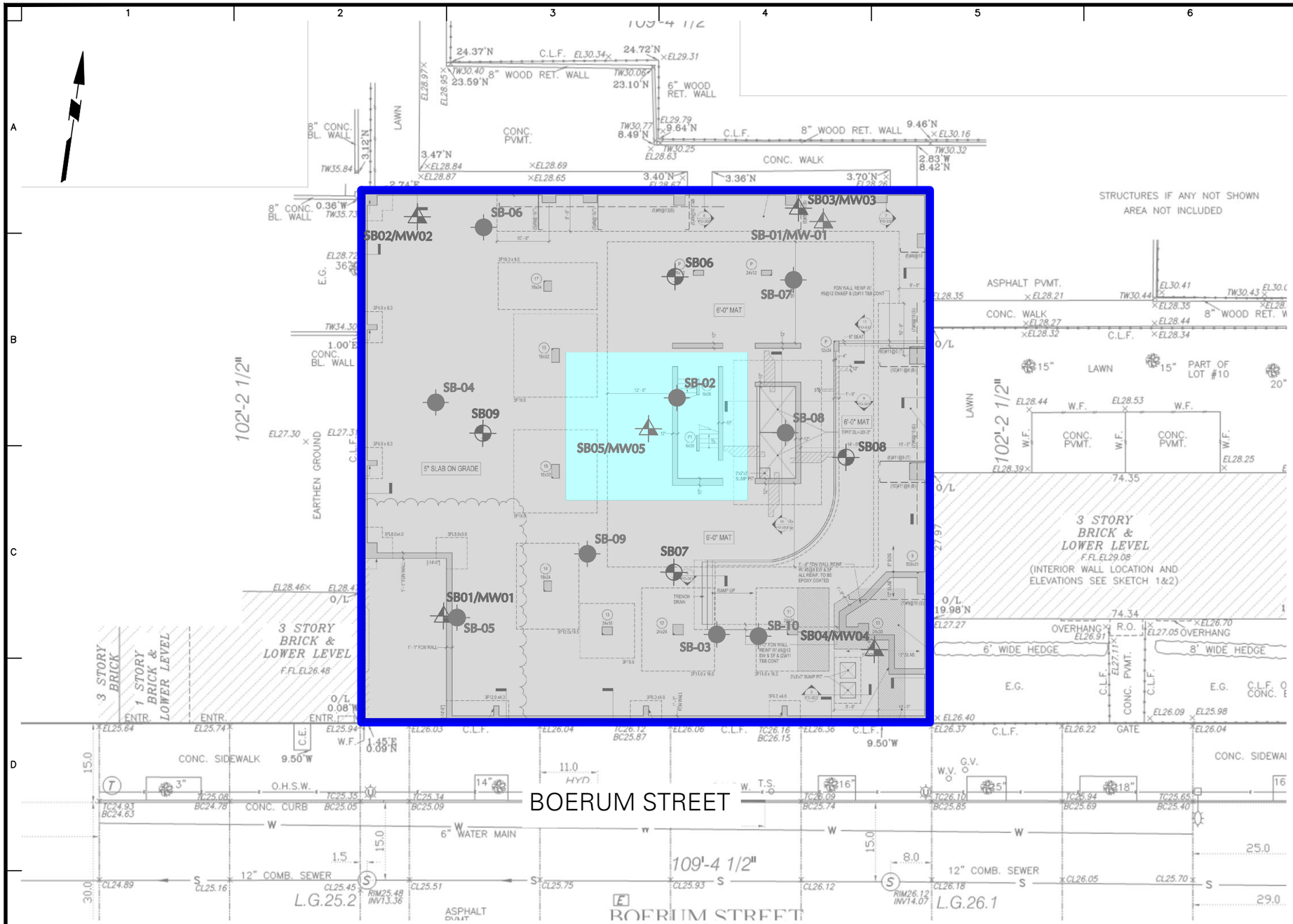
Project	159 BOERUM STREET BLOCK No. 3071, LOT No. 40 BROOKLYN NEW YORK
Figure Title	TRACK 1 CLEANUP PLAN
Project No.	170552901
Date	01/23/2020
Drawn By	ABK
Checked By	ELS
Figure No.	6
Sheet	6 of 9

Filename: \\langan.com\data\NY\data9\170552901\Project Data\CAD\01\SheetFiles\RAWP\Figure 6 - Track 1 Cleanup Plan.dwg Date: 1/29/2020 Time: 10:26 User: nkung Style Table: Langan.stb Layout: TRACK 1



LEGEND

- BROWNFIELD CLEANUP PROGRAM SITE BOUNDARY
- EXCAVATION TO ABOUT 11 FEET BELOW GRADE SURFACE FOR IMPLEMENTATION OF TRACK 4 (ALTERNATIVE II) CLEANUP
- EXCAVATION TO ABOUT 9 FEET BELOW GROUND SURFACE FOR IMPLEMENTATION OF TRACK 4 (ALTERNATIVE II) CLEANUP
- SB-04 — APPROXIMATE LOCATION OF SOIL BORING ADVANCED DURING THE MAY 2019 LIMITED SUBSURFACE INVESTIGATION (LANGAN)
- SB06 — APPROXIMATE LOCATION OF SOIL BORING ADVANCED DURING THE SEPTEMBER 2019 REMEDIAL INVESTIGATION (LANGAN)
- SB01/MW01 — APPROXIMATE LOCATION OF SOIL BORING WITH OVERBURDEN MONITORING WELL INSTALLED DURING THE SEPTEMBER 2019 REMEDIAL INVESTIGATION (LANGAN)

NOTES

1. BASEMAP FOR THE SITE IS REFERENCED FROM THE FOUNDATION PLAN, PREPARED BY AUFGANG ARCHITECTS, LLC., DATED JUNE 3, 2019 AND REVISED AUGUST 15, 2019.
2. BASEMAP FOR SURROUNDING PROPERTIES IS REFERENCED FROM THE TOPOGRAPHIC SURVEY, PREPARED BY ROGUSKI LAND SURVEYING, P.C., DATED OCTOBER 23, 2018.
3. THE TRACK 2 (ALTERNATIVE II) CLEANUP PLAN INCLUDES REMEDIAL EXCAVATION OF THE ENTIRE SITE FOOTPRINT TO ABOUT 9 FEET BELOW GRADE SURFACE (BGS), FOLLOWED BY ADDITIONAL EXCAVATION AT AREAS CENTERED AROUND BORING SB05 TO ABOUT 11 FEET BGS.
4. EXCAVATION OF THE ENTIRE SITE FOOTPRINT TO ABOUT 16 FEET BGS IS REQUIRED FOR DEVELOPMENT OF THE PROPOSED 19-STORY BUILDING.

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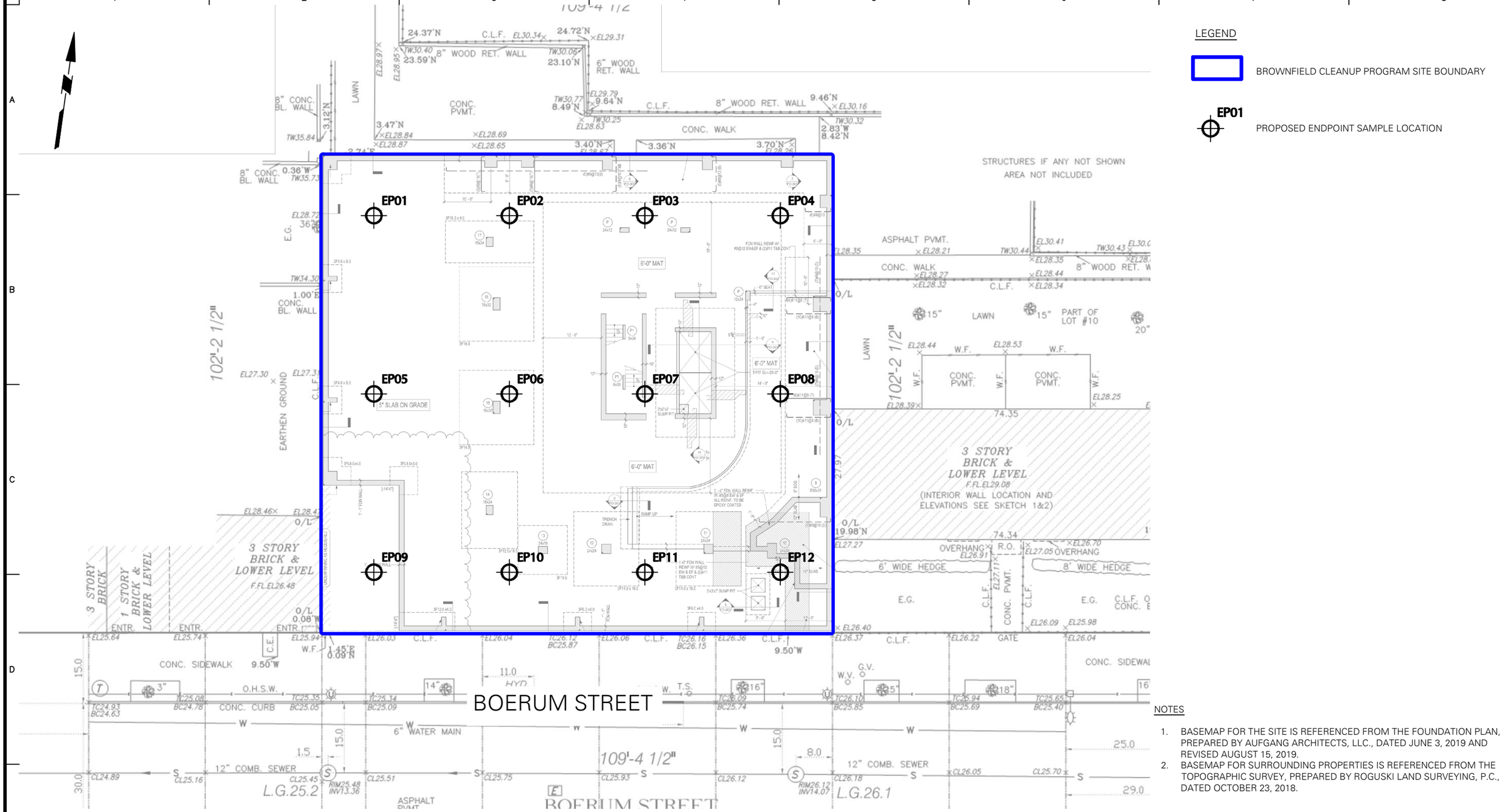
Project	159 BOERUM STREET BLOCK No. 3071, LOT No. 40 BROOKLYN NEW YORK
Figure Title	TRACK 4 CLEANUP PLAN
Project No.	170552901
Date	01/23/2020
Drawn By	ABK
Checked By	ELS
Figure No.	7
Sheet	7 of 9

Filename: \\langan.com\data\NY\data9\170552901\Project Data\CAD\01\SheetFiles\RAWP\Figure 7 - Track 4 Cleanup Plan.dwg Date: 1/29/2020 Time: 10:26 User: nkung Style Table: Langan.stb Layout: TRACK 4



NOTES

1. BASEMAP FOR THE SITE IS REFERENCED FROM THE FOUNDATION PLAN, PREPARED BY AUFGANG ARCHITECTS, LLC., DATED JUNE 3, 2019 AND REVISED AUGUST 15, 2019.
2. BASEMAP FOR SURROUNDING PROPERTIES IS REFERENCED FROM THE TOPOGRAPHIC SURVEY, PREPARED BY ROGUSKI LAND SURVEYING, P.C., DATED OCTOBER 23, 2018.

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Project	159 BOERUM STREET BLOCK No. 3071, LOT No. 40 BROOKLYN NEW YORK
Figure Title	ENDPOINT SAMPLE LOCATION MAP
Project No.	170552901
Date	11/18/2019
Drawn By	DEC
Checked By	NEK
Figure No.	8
Sheet	8 of 9

Filename: \\langan.com\data\NY\data9\170552901\Project Data\CAD\01\SheetFiles\RAWP\Figure 8 - Endpoint Sample Location Map.dwg Date: 1/27/2020 Time: 11:41 User: nkung Style Table: Langan.stb Layout: ENDPOINT PLAN

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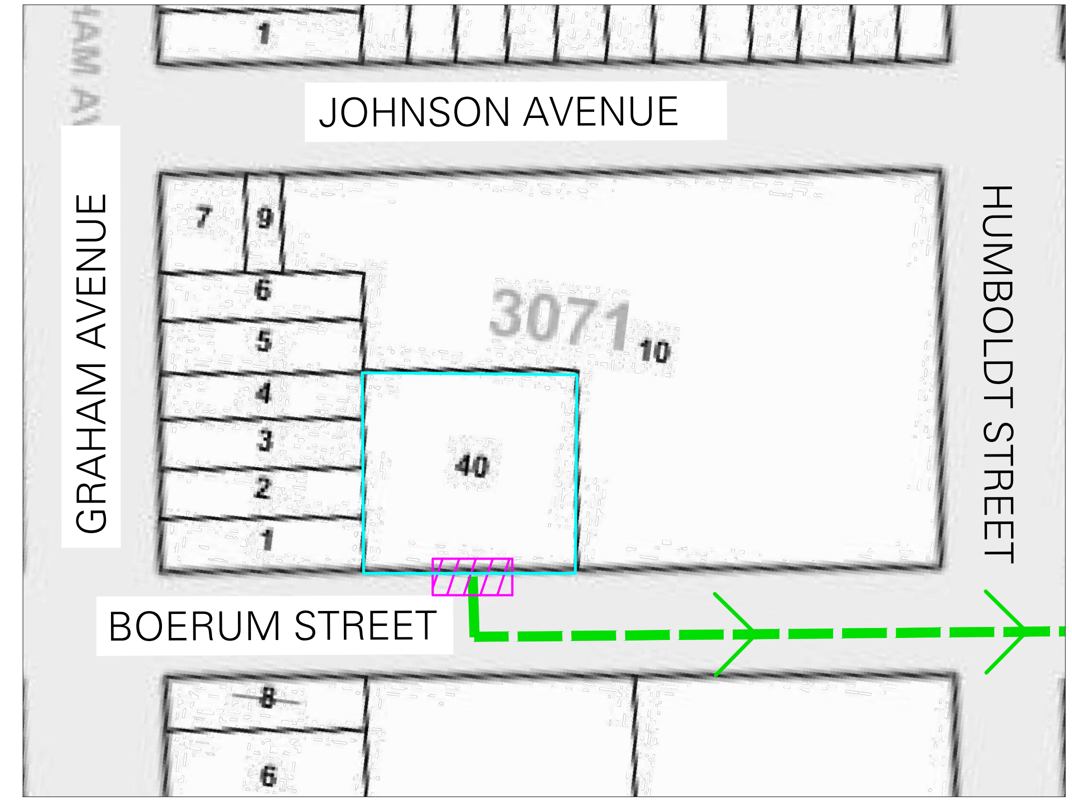

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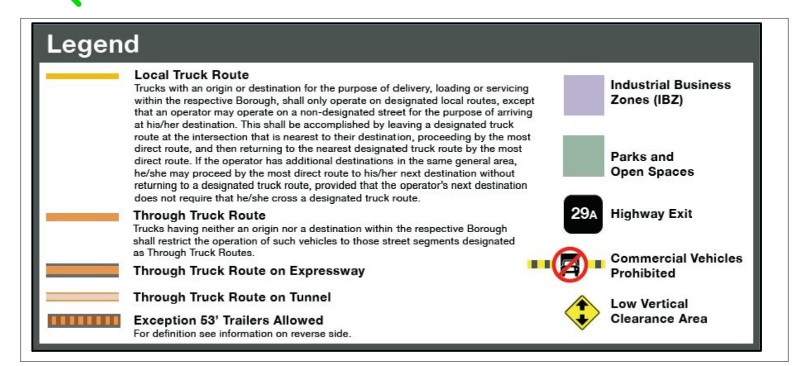
LEGEND

BROWNFIELD CLEANUP PROGRAM SITE BOUNDARY

CONSTRUCTION ENTRANCE

TRUCK ROUTE



GENERAL NOTES

1. TRUCK ROUTE MAP ADAPTED FROM THE NEW YORK CITY DEPARTMENT OF TRANSPORTATION 2015 TRUCK ROUTE MAP.
2. AERIAL IMAGE TAKEN FROM http://maps.nyc.gov/taxmap/map.htm ACCESSED ON JANUARY 16, 2019.
3. LOCATION OF CONSTRUCTION ENTRANCES ARE SUBJECT TO CHANGE PENDING CONSTRUCTION LOGISTICS.

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Project	Figure Title	Project No. 170552901	Figure No.
159 BOERUM STREET	TRUCK ROUTE MAP	Date 11/07/2019	9
BLOCK No. 3071, LOT No. 40		Drawn By DEC	
BROOKLYN NEW YORK		Checked By NEK	Sheet 9 of 9

Filename: \\langan.com\data\NY\data9\170552901\Project Data\CAD\01\SheetFiles\RAWP\Figure 9 - Truck Route Map.dwg Date: 1/27/2020 Time: 11:53 User: nkung Style Table: Langan.stb Layout: ANSIB-BL

TABLES

Table 1
Environmental Remediation Estimate - Alternative I
Remedial Action Work Plan

159 Boerum Street
Brooklyn, New York
NYSDEC BCP Site No C224291
Langan Project No. 170552901

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST	ABSOLUTE COST
CONTRACTOR FEES					
1	Remediation Facilities, Mobilization, Demobilization, and Site Maintenance - Remediation and decontamination facilities, site fencing, trailer, truck cleaning facilities, etc.	Lump Sum			$ 50,000
2	Management and Handling of Excavated Materials (Contaminated and Hazardous Materials)	4,100	CY	$ 25	$ 102,500
3	Perimeter Support of Excavation ([SOE] Soldier Piles and Lagging)	4,750	SF	$ 100	$ 475,000
4	Off-Site Transport and Disposal of Historic Fill Material	6,075	Ton	$ 50	$ 303,750
5	Off-Site Transport and Disposal of Hazardous Lead-Impacted Historic Fill Material	60	Ton	$ 185	$ 11,100
6	Underground Storage Tank (UST) contingency (assumes registration, cleaning, removal and disposal)	2	Each	$ 10,000	$ 20,000
7	Dust, Odor, and Vapor Control	2	Months	$ 10,000	$ 20,000
8	Remedial Investigation, Waste Characterization Subcontractors (Drilling Contractor, Laboratory Contractor, Geophysical Survey, etc.)	Lump Sum			$ 100,000
				CONTRACTOR FEES	*$ 1,082,350*
				(20% CONTINGENCY OF CONTRACTOR FEE SUBTOTAL)	*$ 216,470*
ENGINEERING FEES					
9	Waste Characterization and Hazardous Lead Delineation	Lump Sum			$ 75,000
10	Remedial Investigation, Remedial Investigation Report, Remedial Action Work Plan	Lump Sum			$ 100,000
11	Bid Support and Construction Administration	Lump Sum			$ 25,000
12	Construction Environmental Monitoring (includes community air monitoring program [CAMP] equipment rental)	2	Months	$ 40,000	$ 80,000
13	Endpoint Sampling (to document residual site conditions following source material removal)	12	Samples	$ 2,500	$ 30,000
14	Regulatory Agency Required Reporting (Final Engineering Report [FER], Data Validation & EQuIS Submittals, CPP and fact sheets)	Lump Sum			$ 100,000
				ENGINEERING FEE SUBTOTAL:	*$ 410,000*
				(20% CONTINGENCY OF CONTRACTOR FEE SUBTOTAL):	*$ 82,000*
				ESTIMATED ABSOLUTE COSTS - rounded:	**$ 1,800,000**

GENERAL NOTES AND ASSUMPTIONS

General Assumptions

- The density used for conversion from cubic yards (CY) to tons is 1.5 tons/CY.
- The site has a footprint of about 11,180 square feet. Assumes site-wide excavation to 9 feet below grade surface (bgs) and localized excavation to 14 feet bgs centered around borings SB05 and SB08 for a total of about 4,100 cubic yards (6,150 tons) of soil/fill material removal. The remainder of the site-wide excavation will extend to about 15 to 16 feet bgs for installation of new foundations (about 6,625 total cubic yards of soil/fill material removal).
- Assumes soil remaining in place meets the Track 1 Unrestricted Use (UU) Soil Cleanup Objectives (SCOs).
- Assumes site-wide dewatering will not be required.
- Costs provided are estimates.
- This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding the site and the anticipated scope of the remedial alternative. Changes in cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. This cost estimate is expected to be within -30% to +50% of the actual cost. Utilization of this cost estimate information beyond the stated purpose is not recommended. Langan is not licensed to provide financial or legal consulting services; as such, this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability services.
- Costs do not include new building construction.
- Estimate excludes soft costs, legal fees, insurance, general consulting, etc.
- Assumes duration of remediation oversight will be 2 months.

Item No.

1 Includes mobilization and demobilization of equipment and materials necessary to excavate, transport, and dispose the targeted soil per the Remedial Action Work Plan (RAWP). Also includes labor and any project related permit or regulation fees (excludes potential hazardous waste fees).

2 Management and handling of contaminated and potentially hazardous material assumes 15% increase in labor costs for OSHA trained labor. Baseline labor fees assumes $25 per cubic yard. Soil handling includes excavation for off-site disposal. Assumes excavation of historic contaminated fill observed from about 0 to 9 feet bgs across the site, and localized excavation to 14 feet bgs centered around borings SB05 and SB08. Value assumes additional removal of hazardous lead-impacted material.

3 Perimeter support assumes that soldier pile and lagging and underpinning will be necessary along the site extents where applicable. Square footage based on depth of remedial cut of 9 and 14 feet bgs to achieve a Track 1 Unrestricted Use Cleanup. Remedial excavations along site boundaries cannot be sloped and thus require excavation support. Assumes 33% of total estimate will count toward the BCP Tax Credits for Site Prep.

4-5 The estimated volumes for the differing types of materials are based on the sampling results of the September 2019 Remedial Investigation and Waste Characterization performed by Langan. Assumes excavation of historic fill in addition to hazardous material to remedial excavation grade.

6 Based on experience in the surrounding area, there may be unknown USTs at the site. For this estimate, we assume that up to two USTs will be decommissioned.

7 Dust, odor and vapor control will be required throughout the duration of soil excavation. This cost estimate includes incremental costs associated with equipment and material necessary to monitor and mitigate vapor/odor emission.

8 Includes estimated contractor fees associated with performing the Remedial Investigation (RI): Drilling, laboratory, geophysical survey, site survey contractors.

9 Includes reporting of waste characterization results and supplemental waste characterization/ lead delineation results for disposal-related requirements.

10 Cost based on Langan's experience and includes engineering fees for the RI, Remedial Investigation Report (RIR), and preparation of a Remedial Action Work Plan (RAWP).

11 Remediation Engineer will field contractor questions related to remediation during the bidding process and support the current site owner, as necessary, during the bid leveling process. Includes submittal review, responses to Requests for Information (RFI), and coordination with development team and the architect.

12 Estimate includes, but is not limited to, implementation of a CAMP as required by the NYSDEC, the presence of an on-site engineer throughout remediation, remediation health and safety including purchase and maintenance of appropriate personal protective equipment (PPE), periodic office reporting to the regulatory agency and attendance of at least two site meetings per month.

13 Sampling frequency based on total square footage of the building area at a rate of one sample per 900 square feet of base, plus QA/QC samples, in accordance with NYSDEC DER-10 requirements.

14 Costs are based on Langan's experience with regulatory programs and includes the preparation of a Final Engineering Report (FER), Community Participation Plans (CPP) and periodic daily and monthly reporting.

Table 2
Environmental Remediation Estimate - Alternative II
Remedial Action Work Plan

159 Boerum Street
Brooklyn, New York
NYSDEC BCP Site No C224291
Langan Project No. 170552901

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST	ABSOLUTE COST
CONTRACTOR FEES					
1	Remediation Facilities, Mobilization, Demobilization, and Site Maintenance - Remediation and decontamination facilities, site fencing, trailer, truck cleaning facilities, etc.	Lump Sum			$ 50,000
2	Management and Handling of Excavated Materials (Contaminated and Hazardous Materials)	3,750	CY	$ 25	$ 93,750
3	Perimeter Support of Excavation ([SOE] Soldier Piles and Lagging)	4,000	SF	$ 100	$ 400,000
4	Off-Site Transport and Disposal of Historic Fill Material	5,625	Ton	$ 40	$ 225,000
5	Off-Site Transport and Disposal of Hazardous Lead-Impacted Historic Fill Material	60	Ton	$ 185	$ 11,100
6	Underground Storage Tank (UST) contingency (assumes registration, cleaning, removal and disposal)	2	Each	$ 10,000	$ 20,000
7	Dust, Odor, and Vapor Control	2	Month	$ 10,000	$ 20,000
8	Remedial Investigation, Waste Characterization Subcontractors (Drilling Contractor, Laboratory Contractor, Geophysical Survey, etc.)	Lump Sum			$ 100,000
				CONTRACTOR FEES	*$ 919,850*
				(20% CONTINGENCY OF CONTRACTOR FEE SUBTOTAL)	*$ 183,970*
ENGINEERING FEES					
9	Waste Characterization and Hazardous Lead Delineation	Lump Sum			$ 75,000
10	Remedial Investigation, Remedial Investigation Report, Remedial Action Work Plan	Lump Sum			$ 100,000
11	Bid Support and Construction Administration	Lump Sum			$ 25,000
12	Construction Environmental Monitoring (includes community air monitoring program [CAMP] equipment rental)	2	Month	$ 40,000	$ 80,000
13	Endpoint Sampling (to document residual site conditions following source material removal)	12	Samples	$ 2,500	$ 30,000
14	Regulatory Agency Required Reporting (Final Engineering Report [FER], Data Validation & EQuIS Submittals, CPP and fact sheets)	Lump Sum			$ 100,000
				ENGINEERING FEE SUBTOTAL:	*$ 410,000*
				(20% CONTINGENCY OF CONTRACTOR FEE SUBTOTAL):	*$ 82,000*
				ESTIMATED ABSOLUTE COSTS - rounded:	**$ 1,600,000**

GENERAL NOTES AND ASSUMPTIONS

General Assumptions

- The density used for conversion from cubic yards (CY) to tons is 1.5 tons/CY.
- The site has a footprint of about 11,180 square feet. Assumes site-wide excavation to 9 feet below grade surface (bgs) and localized excavation to 11 feet bgs centered around boring SB05 for a total of about 3,800 cubic yards (5,750 tons) of soil/fill material removal. The remainder of the site-wide excavation will extend to about 15 to 16 feet bgs for installation of new foundations (about 6,625 total cubic yards of soil/fill material removal).
- Assumes soil remaining in place meets the Track 4 Restricted Use Restricted Residential (RURR) Soil Cleanup Objectives (SCOs).
- Assumes site-wide dewatering will not be required.
- Costs provided are estimates.
- This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding the site and the anticipated scope of the remedial alternative. Changes in cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. This cost estimate is expected to be within -30% to +50% of the actual cost. Utilization of this cost estimate information beyond the stated purpose is not recommended. Langan is not licensed to provide financial or legal consulting services; as such, this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability services.
- Costs do not include new building construction.
- Estimate excludes soft costs, legal fees, insurance, general consulting, etc.
- Assumes duration of remediation oversight will be 1 month.

Item No.

1 Includes mobilization and demobilization of equipment and materials necessary to excavate, transport, and dispose the targeted soil per the Remedial Action Work Plan. Also includes labor and any project related permit or regulation fees (excludes potential hazardous waste fees).

2 Management and handling of contaminated and potentially hazardous material assumes 15% increase in labor costs for OSHA trained labor. Baseline labor fees assumes $25 per cubic yard. Soil handling includes excavation for off-site disposal. Assumes excavation of historic contaminated fill observed from about 0 to 9 feet bgs across the site, and localized excavation to 11 feet bgs centered around boring SB05. Value assumes additional removal of hazardous lead-impacted material.

3 Perimeter support assumes that soldier pile and lagging and underpinning will be necessary along the Site extents where applicable. Square footage based on depth of remedial cut of about 9 to 11 feet bgs to achieve a Track 4 cleanup. Remedial excavations along Site boundaries cannot be sloped and thus require excavation support. Assumes 33% of total estimate will count toward the BCP Tax Credits for Site Prep.

4-5 The estimated volumes for the differing types of materials are based on the sampling results of the September 2019 Remedial Investigation and Waste Characterization performed by Langan. Assumes excavation of historic fill in addition to hazardous material to remedial excavation grade.

6 Based on experience in the surrounding area, there may be unknown USTs at the site. For this estimate, we assume that up to two USTs will be decommissioned.

7 Dust, odor and vapor control will be required throughout the duration of soil excavation. This cost estimate includes incremental costs associated with equipment and material necessary to monitor and mitigate vapor/odor emission.

8 Includes estimated contractor fees associated with performing the Remedial Investigation (RI): Drilling, laboratory, geophysical survey, site survey contractors.

9 Includes reporting of waste characterization results and supplemental waste characterization/ lead delineation results for disposal-related requirements.

10 Cost based on Langan's experience and includes engineering fees for the RI, Remedial Investigation Report (RIR), and preparation of a Remedial Action Work Plan (RAWP).

11 Remediation Engineer will field contractor questions related to remediation during the bidding process and support the current site owner, as necessary, during the bid leveling process. Includes submittal review, responses to Requests for Information (RFI), and coordination with development team and the architect.

12 Estimate includes, but is not limited to, implementation of a CAMP as required by the NYSDEC, the presence of an on-site engineer throughout remediation, remediation health and safety including purchase and maintenance of appropriate personal protective equipment (PPE), periodic office reporting to the regulatory agency and attendance of at least two site meetings per month.

13 Sampling frequency based on total square footage of the building area at a rate of one sample per 900 square feet of base, plus QA/QC samples, in accordance with NYSDEC DER-10 requirements.

14 Costs are based on Langan's experience with regulatory programs and includes the preparation of a Final Engineering Report (FER), Community Participation Plans (CPP) and periodic daily and monthly reporting.

TABLE 3
TRACK 1 SOIL CLEANUP OBJECTIVES
159 BOERUM STREET
BROOKLYN, NEW YORK
NYSDEC BCP SITE NO. C224291
LANGAN PROJECT NO. 170552901

VOCs (mg/kg)	
1,1,1-Trichloroethane	0.68
1,1-Dichloroethane	0.27
1,1-Dichloroethylene	0.33
1,2,4-Trimethylbenzene	3.6
1,2-Dichlorobenzene	1.1
1,2-Dichloroethane	0.02
1,3,5-Trimethylbenzene	8.4
1,3-Dichlorobenzene	2.4
1,4-Dichlorobenzene	1.8
1,4-Dioxane	0.1
2-Butanone	0.12
Acetone	0.05
Benzene	0.06
Carbon tetrachloride	0.76
Chlorobenzene	1.1
Chloroform	0.37
cis-1,2-Dichloroethylene	0.25
Ethyl Benzene	1
Methyl tert-butyl ether (MTBE)	0.93
Methylene chloride	0.05
n-Butylbenzene	12
n-Propylbenzene	3.9
sec-Butylbenzene	11
tert-Butylbenzene	5.9
Tetrachloroethylene	1.3
Toluene	0.7
trans-1,2-Dichloroethylene	0.19
Trichloroethylene	0.47
Vinyl Chloride	0.02
Xylenes, Total	0.26

Metals (mg/kg)	
Arsenic	13
Barium	350
Beryllium	7.2
Cadmium	2.5
Chromium, hexavalent	1
Chromium, trivalent	30
Copper	50
Cyanide	27
Lead	63
Manganese	1,600
Mercury	0.18
Nickel	30
Selenium	3.9
Silver	2
Zinc	109

SVOCs (mg/kg)	
Acenaphthene	20
Acenaphthylene	100
Anthracene	100
Benzo(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1
Benzo(g,h,i)perylene	100
Benzo(k)fluoranthene	0.8
Chrysene	1
Dibenzo(a,h)anthracene	0.33
Fluoranthene	100
Fluorene	30
Indeno(1,2,3-cd)pyrene	0.5
m-Cresol	0.33
Naphthalene	12
o-Cresol	0.33
p-Cresol	0.33
Pentachlorophenol	0.8
Phenanthrene	100
Phenol	0.33
Pyrene	100

PCBs/Pesticides (mg/kg)	
2,4,5-TP Acid (Silvex)	3.8
4,4'-DDE	0.0033
4,4'-DDT	0.0033
4,4'-DDD	0.0033
Aldrin	0.005
alpha-BHC	0.02
beta-BHC	0.036
Chlordane (alpha)	0.094
delta-BHC	0.04
Dibenzofuran	7
Dieldrin	0.005
Endosulfan I	2.4
Endosulfan II	2.4
Endosulfan sulfate	2.4
Endrin	0.014
Heptachlor	0.042
Lindane	0.1
Polychlorinated biphenyls	0.1

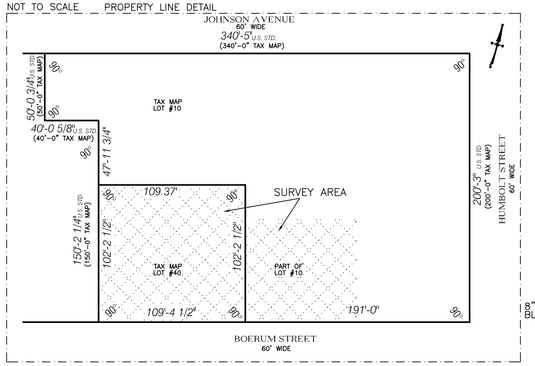
Notes:
1. The above criteria are the Title 6 of the New York Codes, Rules and Regulations (6 NYCRR) Part 375 Unrestricted Use Soil Cleanup Objectives (i.e., the Track 1 soil cleanup objectives).
2. VOC: volatile organic compound
3. SVOC: semivolatile organic compound
4. PCBs: polychlorinated biphenyls
5. mg/kg: milligram per kilogram

APPENDIX A

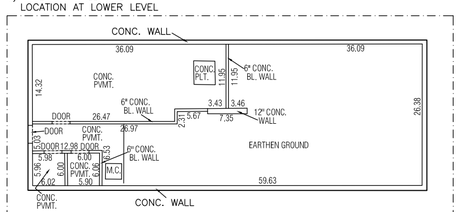
BOUNDARY SURVEY

Job No. RLS182862

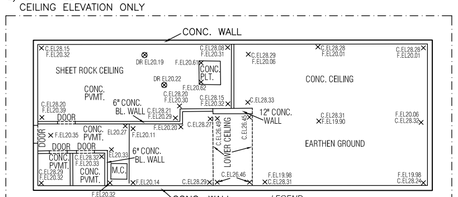
NOT TO SCALE PROPERTY LINE DETAIL



1) INTERIOR WALL ONLY
LOCATION AT LOWER LEVEL



2) LOWER LEVEL FLOOR &
CEILING ELEVATION ONLY



1. *CONSULT WITH THE HIGHWAY DEPARTMENT BEFORE DESIGNING, INSTALLING OR MODIFYING ANY NEW OR EXISTING CURBS, WALKS OR ROADWAYS IN THE STREETS SHOWN HEREON.*

2. *SUBSURFACE INFORMATION SHOWN HEREON WAS OBTAINED FROM VARIOUS CITY DEPARTMENTS AND/OR PRIVATE UTILITY COMPANIES. THE SURVEYOR DOES NOT CERTIFY AS TO THE ACCURACY OR COMPLETENESS OF THIS DATA AND ALL USERS OF THIS SURVEY AGREE TO HOLD THE SURVEYOR HARMLESS FOR SAME. THE LOCATION OF SAID UTILITIES SHOULD BE CONSIDERED APPROXIMATE AND MUST BE CONFIRMED BY THE USER OF THIS SURVEY PRIOR TO CONSTRUCTION OR PURCHASING PROPERTY.*

3. *THIS IS TO CERTIFY THAT THERE ARE NO VISIBLE STREAMS OR NATURAL WATER COURSES IN THE PROPERTY AS SHOWN ON THE SURVEY.*

4. *UNLESS OTHERWISE NOTED, ELEVATIONS AND LEGAL GRADES SHOWN ON THIS SURVEY ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), AS ESTABLISHED AND MAINTAINED BY THE NATIONAL GEODETIC SURVEY OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, OR SUCCESSOR AGENCY, WHICH IS ESTABLISHED AS THE CITY DATUM BY LOCAL LAW 96 OF 2013.*

5. *NO SUBSURFACE UTILITY INFORMATION WITHIN THE PROPERY IS SHOWN. CONTACT ONE CALL TO HAVE ALL SUBSURFACE UTILITY INFORMATION WITHIN THE PROPERTY MARKED OUT PRIOR TO CONSTRUCTION. THE SURVEYOR WILL NOT BE LIABLE OR HELD RESPONSIBLE FOR DAMAGES TO SUBSURFACE UTILITIES EITHER WITHIN OR OUTSIDE THE SURVEYED PROPERTY DUE TO CONSTRUCTION.*

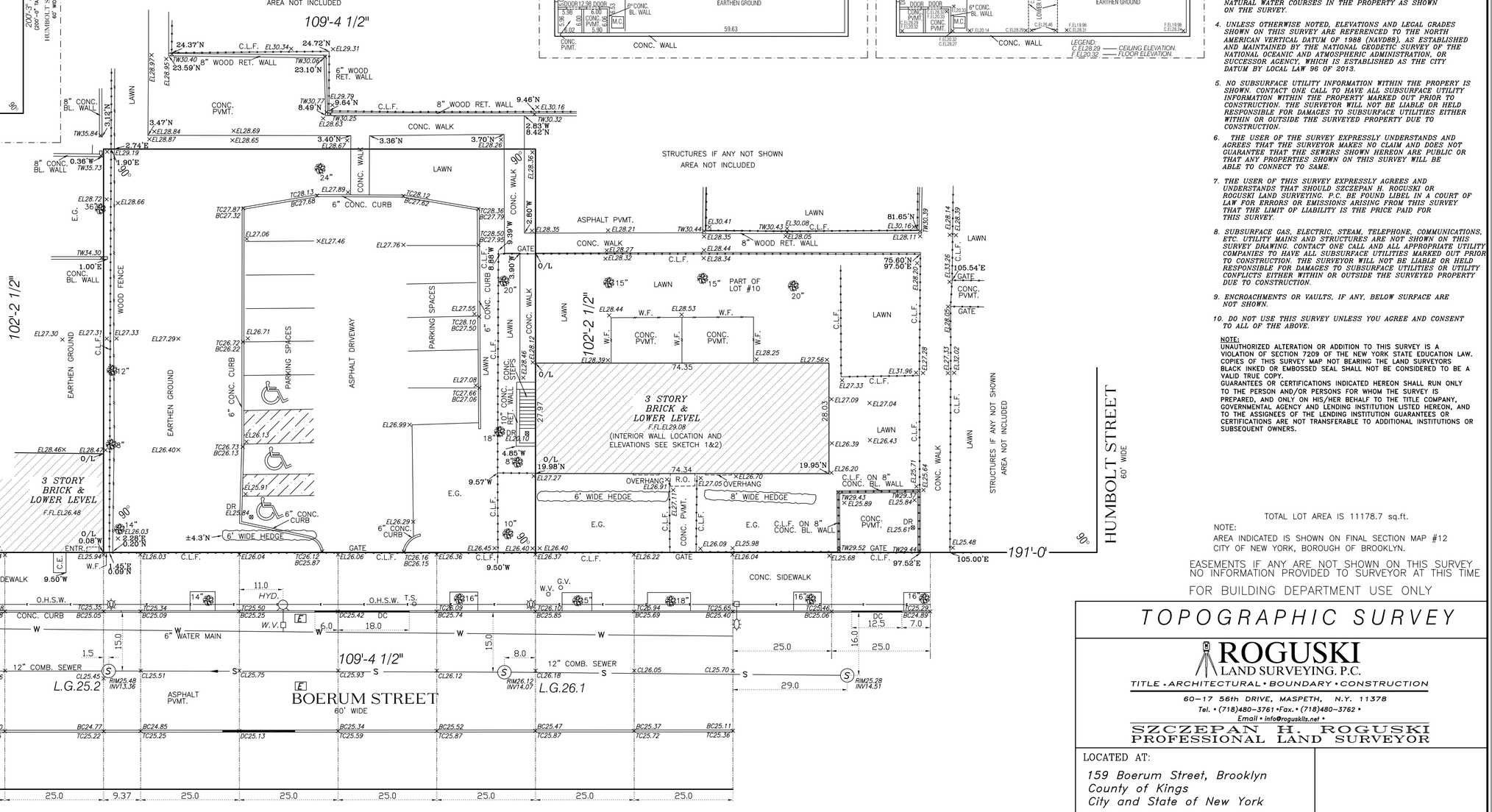
6. *THE USER OF THE SURVEY EXPRESSLY UNDERSTANDS AND AGREES THAT THE SURVEYOR MAKES NO CLAIM AND DOES NOT GUARANTEE THAT THE SEWERS SHOWN HEREON ARE PUBLIC OR THAT ANY PROPERTIES SHOWN ON THIS SURVEY WILL BE ABLE TO CONNECT TO SAME.*

7. *THE USER OF THIS SURVEY EXPRESSLY AGREES AND UNDERSTANDS THAT SHOULD SZCZEPAN H. ROGUSKI OR ROGUSKI LAND SURVEYING, P.C. BE FOUND LIBEL IN A COURT OF LAW FOR ERRORS OR EMISSIONS ARISING FROM THIS SURVEY THAT THE LIMIT OF LIABILITY IS THE PRICE PAID FOR THIS SURVEY.*

8. *SUBSURFACE GAS, ELECTRIC, STEAM, TELEPHONE, COMMUNICATIONS, ETC. UTILITY MAINS AND STRUCTURES ARE NOT SHOWN ON THIS SURVEY DRAWING. CONTACT ONE CALL AND ALL APPROPRIATE UTILITY COMPANIES TO HAVE ALL SUBSURFACE UTILITIES MARKED OUT PRIOR TO CONSTRUCTION. THE SURVEYOR WILL NOT BE LIABLE OR HELD RESPONSIBLE FOR DAMAGES TO SUBSURFACE UTILITIES OR UTILITY CONFLICTS EITHER WITHIN OR OUTSIDE THE SURVEYED PROPERTY DUE TO CONSTRUCTION.*

9. *ENCROACHMENTS OR VAULTS, IF ANY, BELOW SURFACE ARE NOT SHOWN.*

10. *DO NOT USE THIS SURVEY UNLESS YOU AGREE AND CONSENT TO ALL OF THE ABOVE.*



TOTAL LOT AREA IS 11178.7 sq.ft.

NOTE:
AREA INDICATED IS SHOWN ON FINAL SECTION MAP #12
CITY OF NEW YORK, BOROUGH OF BROOKLYN.

EASEMENTS IF ANY ARE NOT SHOWN ON THIS SURVEY
NO INFORMATION PROVIDED TO SURVEYOR AT THIS TIME

FOR BUILDING DEPARTMENT USE ONLY

TOPOGRAPHIC SURVEY

ROGUSKI
LAND SURVEYING. P.C.
TITLE • ARCHITECTURAL • BOUNDARY • CONSTRUCTION
60–17 56th DRIVE, MASPETH, N.Y. 11378
Tel. • (718)480–3761 • Fax. • (718)480–3762 •
Email • info@roguskils.net •
SZCZEPAN H. ROGUSKI
PROFESSIONAL LAND SURVEYOR

LOCATED AT:
159 Boerum Street, Brooklyn
County of Kings
City and State of New York

TAX DESIG: *Block 3071 Lot 40,*
Part of Lot 10

CERTIFIED TO:
Slate Property Group

DATE: *October 23, 2018*

SCALE: *1"=20'* DRAWN: BK

LEGEND:
CATCH BASIN. C.B.
TREE DIAMETER. 3'
UTILITY POLE.
VALVES. GAS G.V. WATER W.V. METAL VELVE M.V.
OVERHEAD SERVICE WIRES. O.H.S.W.
CURB AND CURB CUT.
MANHOLES. SEWER (S) GAS (G) WATER (W) ELECTRIC (E)

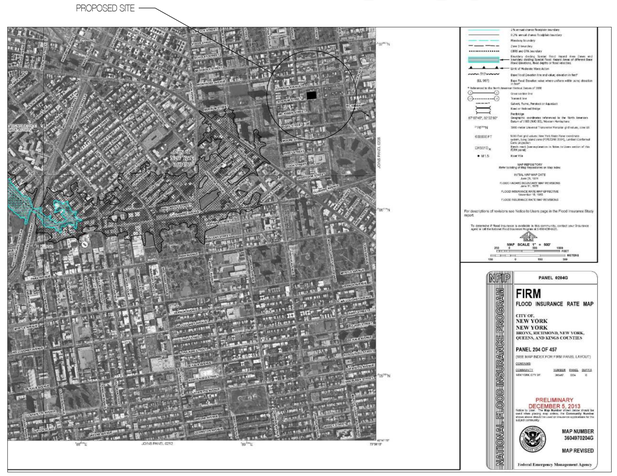
TRAFFIC SIGN — T.S.
CHAIN LINK FENCE — C.L.F.
METAL COVER — M.C.
AIR CONDITIONER — A.C.
METAL GRATE — M.G.
CELLAR ENTRANCE — C.E.
PLATFORM — PLT.
METAL DOOR — M.D.
BAY WINDOW — B.W.
EARHEN GROUND — E.G.
PARKING METER — P.M.
PAVEMENT — PVMT.
TRAFFIC LIGHT — T.L.
AREA WAY — A.W.
METAL FENCE — M.F.
EXISTING ELEVATION. — EL 43.54
BOTTOM OF CURB — BC 43.53
CENTER LINE OF STREET — CL 43.54
TOP OF CURB — TC 43.54
DROP CURB — DC 43.54
LEGAL GRADES — L.G.43.60

ELECTRIC — E
GAS — G
TELEPHONE — T
SEWER — S
WATER — W
FIRE HYDRANT. — HYD.
ROOF OVER — R.O.
ON LINE — O/L

APPENDIX B

PROPOSED DEVELOPMENT PLANS

PROPOSED NEW DEVELOPMENT FOR: 159 BOERUM STREET, BROOKLYN, NY



FEMA FLOOD MAPS (2013)

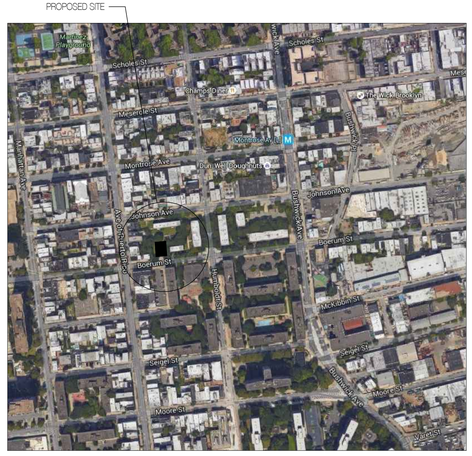
NOT TO SCALE

THIS SITE DOES NOT FALL UNDER A FLOOD HAZARD AS PER FLOOD INSURANCE RATE MAP #3604970204G

FEMA FLOOD MAPS (2007)

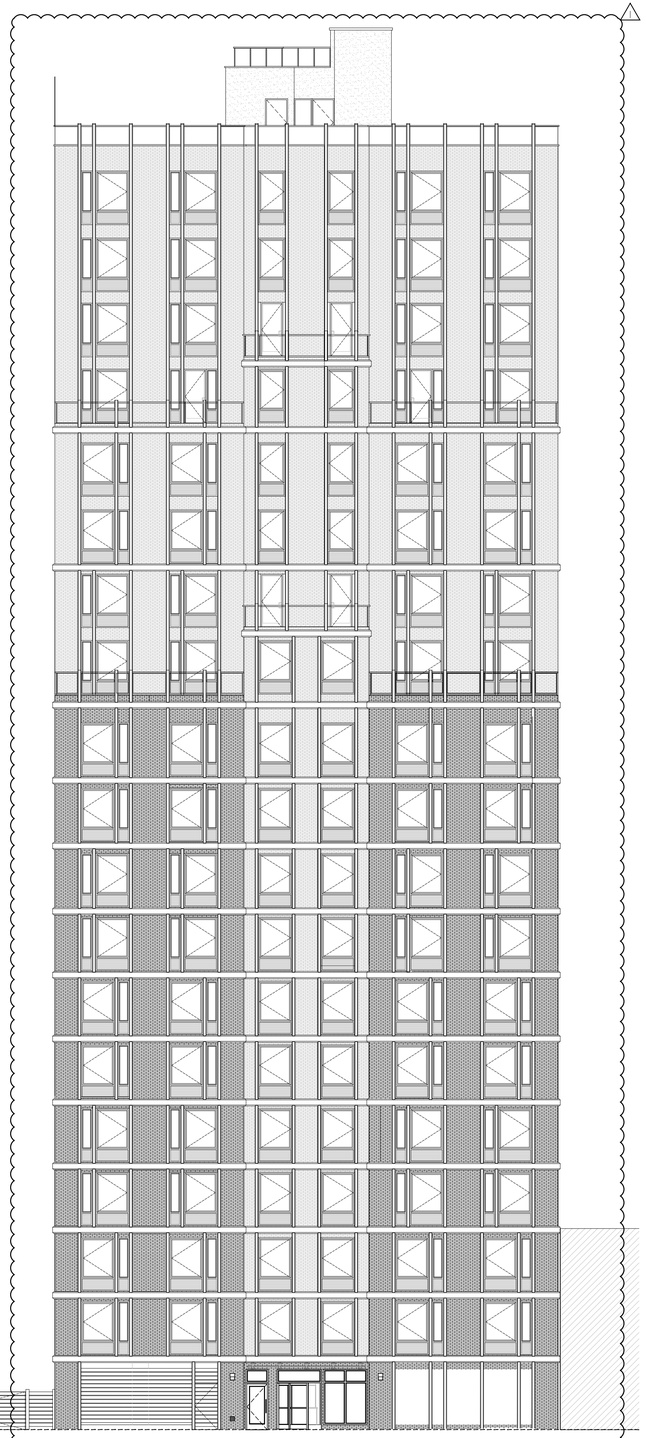
NOT TO SCALE

THIS SITE DOES NOT FALL UNDER A FLOOD HAZARD AS PER FLOOD INSURANCE RATE MAP #3604970204F



VICINITY MAP

NOT TO SCALE



BOERUM STREET ELEVATION (N.T.S.)

DRAWING SCHEDULE:

T-001	COVER SHEET
C-001	SURVEY
C-002	SCHEMATIC SITE PLAN
Z-001	CALCULATIONS & SCHEMATIC HEIGHT DIAGRAM
Z-002	LOT AREA AND LOT COVERAGE DIAGRAMS
Z-003	LOT AREA AND LOT COVERAGE DIAGRAMS
EN-001	ENERGY ANALYSIS
EN-002	ENERGY ANALYSIS
EN-003	ENERGY ANALYSIS
EN-004	CONTINUITY DIAGRAM
EN-005	STANDARD AIR SEALING DETAILS

ARCHITECTURAL DRAWINGS:

A-001	GENERAL NOTES
A-002	ACCESSIBILITY NOTES & DIAGRAMS
A-003	ACCESSIBILITY NOTES & DIAGRAMS
A-004	EGRESS PLANS - CELLAR & 1ST FLOOR
A-005	EGRESS PLANS - 2ND - 20TH FLOORS
A-006	SIGNAGE DETAILS
A-007	SIGNAGE DETAILS (2)
A-100	CELLAR & 1ST FLOOR PLANS
A-101	2ND - 11TH FLOOR PLANS
A-102	12TH - 13TH FLOOR PLANS
A-103	14TH - 16TH FLOOR PLANS
A-104	17TH - 19TH FLOOR PLANS
A-105	ROOF PLAN & BULKHEAD ROOF PLAN
A-150	CELLAR SLAB EDGE PLAN
A-151	2ND - 11TH FLOOR SLAB EDGE PLANS
A-152	12TH - 13TH FLOOR SLAB EDGE PLANS
A-153	14TH - 16TH FLOOR SLAB EDGE PLANS
A-154	17TH - 19TH FLOOR SLAB EDGE PLANS
A-155	ROOF PLAN & BULKHEAD ROOF SLAB EDGE PLANS
A-200	EXTERIOR ELEVATIONS
A-201	EXTERIOR ELEVATIONS
A-210	BUILDING CROSS SECTIONS
A-300	ENLARGED ELEVATOR PLANS, SECTION & DETAILS
A-301	ENLARGED STAIR PLANS
A-302	ENLARGED STAIR PLANS
A-303	ENLARGED STAIR SECTION & DETAILS
A-304	ENLARGED COMPACTOR CHUTE PLANS, SECTION & DETAILS
A-305	CROSS SECTION THROUGH RAMP SECTION
A-400	TYPICAL WALL SECTION
A-401	TYPICAL WALL SECTION
A-410	MISC. DETAILS
A-411	MISC. DETAILS
A-412	MISC. DETAILS
A-413	MISC. DETAILS
A-420	TYPICAL WINDOW ELEVATIONS
A-421	TYPICAL WINDOW DETAILS
A-500	ENLARGED 0BR APARTMENT LAYOUTS
A-501	ENLARGED 0BR APARTMENT LAYOUTS
A-502	ENLARGED 1BR APARTMENT LAYOUTS
A-503	ENLARGED 1BR APARTMENT LAYOUTS
A-504	ENLARGED 2BR APARTMENT LAYOUTS
A-505	ENLARGED 2BR APARTMENT LAYOUTS
A-506	ENLARGED 2BR APARTMENT LAYOUTS
A-510	ENLARGED APARTMENT & PUBLIC BATHROOM LAYOUTS
A-511	BATHROOM ELEVATIONS
A-512	ENLARGED APARTMENT KITCHEN LAYOUTS
A-513	KITCHEN ELEVATIONS
A-514	OMITTED
A-515	PARTITION TYPE DETAILS
A-520	CELLAR & 1ST FLOOR PLANS RCP
A-521	2ND - 6TH FLOOR PLANS RCP
A-522	7TH - 12TH FLOOR PLANS RCP
A-523	14TH - 16TH FLOOR PLANS RCP
A-524	17TH - 20TH FLOOR PLANS RCP
A-600	DOOR SCHEDULE
A-601	WINDOW & LOUVER SCHEDULES & MAILBOX DETAILS
A-602	STOREFRONT SCHEDULE & ELEVATIONS

STRUCTURAL DRAWINGS:

S-000	COVER SHEET
S-001	GENERAL NOTES
S-002	PLAN NOTES AND LEGENDS
FO-100	FOUNDATION PLAN
FO-101	FOUNDATION PLAN GENERAL ARRANGEMENT PLAN
FO-200	TYPICAL FOOTING & SOG DETAILS I
FO-201	TYPICAL FOOTING & SOG DETAILS II
FO-202	TYPICAL FOUNDATION DETAILS I
FO-203	TYPICAL FOUNDATION DETAILS II
FO-204	MAT FOUNDATION REINFORCEMENT
FO-210	REINF. DEVELOPMENT LENGTH/LAP SPLICE SCHED.
FO-300	FOUNDATION SECTIONS I
FO-301	FOUNDATION SECTIONS II
FO-302	FOUNDATION SECTIONS III
FO-303	FOUNDATION SECTIONS IV
S-010	1ST FLOOR FRAMING PLAN
S-011	1ST FLOOR GENERAL ARRANGEMENT PLAN
S-020	2ND FLOOR FRAMING PLAN
S-021	2ND FLOOR GENERAL ARRANGEMENT PLAN
S-030	3RD FLOOR FRAMING PLAN
S-031	3RD FLOOR GENERAL ARRANGEMENT PLAN
S-040	4TH - 6TH FLOOR FRAMING PLAN
S-040	4TH - 6TH FLOOR GENERAL ARRANGEMENT PLAN
S-070	7TH - 10TH FLOOR FRAMING PLAN
S-070	7TH - 10TH FLOOR GENERAL ARRANGEMENT PLAN
S-110	11H FLOOR FRAMING PLAN
S-111	11H FLOOR GENERAL ARRANGEMENT PLAN
S-120	12TH FLOOR FRAMING PLAN
S-121	12TH FLOOR GENERAL ARRANGEMENT PLAN
S-130	13TH FLOOR FRAMING PLAN
S-131	13TH FLOOR GENERAL ARRANGEMENT PLAN
S-140	14TH FLOOR FRAMING PLAN
S-141	14TH FLOOR GENERAL ARRANGEMENT PLAN
S-150	15TH FLOOR FRAMING PLAN
S-151	15TH FLOOR GENERAL ARRANGEMENT PLAN
S-160	16TH FLOOR FRAMING PLAN
S-161	16TH FLOOR GENERAL ARRANGEMENT PLAN
S-170	17TH FLOOR FRAMING PLAN
S-171	17TH FLOOR GENERAL ARRANGEMENT PLAN
S-180	18TH - 19TH FLOOR FRAMING PLAN
S-181	18TH - 19TH FLOOR GENERAL ARRANGEMENT PLAN
S-210	ROOF FRAMING PLAN
S-211	ROOF GENERAL ARRANGEMENT PLAN
S-910	COLUMN SCHEDULE
S-915	TYPICAL COLUMN DETAILS
S-916	TYPICAL COLUMN DETAILS
S-917	COLUMN DETAILS
S-930	TYPICAL SHEAR WALL AND LINK BEAM DETAILS I
S-931	TYPICAL SHEAR WALL AND LINK BEAM DETAILS II
S-932	SHEAR WALL REINFORCING PLAN
S-933	SHEAR WALL REINFORCING PLAN
S-934	SHEAR WALL REINFORCING PLAN
S-935	SHEAR WALL ELEVATIONS I
S-936	SHEAR WALL ELEVATIONS II
S-937	SHEAR WALL ELEVATIONS III
S-938	SHEAR WALL ELEVATIONS IV
S-939	SHEAR WALL ELEVATIONS V
S-940	TYPICAL CONCRETE DETAILS I
S-941	TYPICAL CONCRETE DETAILS II
S-942	TYPICAL CONCRETE DETAILS III
S-943	TYPICAL CONCRETE DETAILS IV
S-944	TYPICAL CONCRETE DETAILS V
S-945	TYPICAL CONCRETE DETAILS VI
S-946	TYPICAL CONCRETE DETAILS VII
S-948	TYPICAL CONCRETE DETAILS VIII
S-960	TYPICAL MASONRY DETAILS
S-961	TYPICAL MASONRY DETAILS II
S-980	TYPICAL STAIR DETAILS I
S-981	TYPICAL STAIR DETAILS II

MECHANICAL DRAWINGS:

M-101	MECHANICAL NOTES, & LEGEND
M-102	MECHANICAL SPECIFICATIONS
M-301	MECHANICAL CELLAR LEVEL & 1ST FLOOR PLAN
M-302	MECHANICAL 2ND - 6TH FLOOR PLANS
M-303	MECHANICAL 7TH - 12TH FLOOR PLANS
M-304	MECHANICAL 13TH - 15TH FLOORS PLANS
M-305	MECHANICAL 16TH - 19TH FLOOR PLANS
M-306	MECHANICAL ROOF & BULKHEAD PLANS
M-401	MECHANICAL SEQUENCE OF OPERATION & DETAILS
M-501	MECHANICAL RISER DIAGRAM (PART 1)
M-502	MECHANICAL RISER DIAGRAM (PART 2)
M-601	MECHANICAL SCHEDULES

PLUMBING DRAWINGS:

P-101	PLUMBING NOTES, LEGEND & PLOT PLAN
P-102	PLUMBING SPECIFICATIONS & DETAILS
P-301	PLUMBING CELLAR LEVEL & 1ST FLOOR PLAN
P-302	PLUMBING 2ND - 6TH FLOOR PLANS
P-303	PLUMBING 7TH - 12TH FLOOR PLANS
P-304	PLUMBING 13TH - 15TH FLOORS PLANS
P-305	PLUMBING 16TH - 19TH FLOOR PLANS
P-306	PLUMBING ROOF & BULKHEAD PLANS
P-401	PLUMBING DETAILS
P-501	PLUMBING RISER DIAGRAMS-1
P-502	PLUMBING RISER DIAGRAMS-2
P-503	PLUMBING RISER DIAGRAMS-3
P-504	PLUMBING RISER DIAGRAMS-4
P-505	PLUMBING RISER DIAGRAMS-5
P-506	PLUMBING RISER DIAGRAMS-6
P-507	PLUMBING RISER DIAGRAMS-7
P-508	PLUMBING RISER DIAGRAMS-8
P-509	PLUMBING RISER DIAGRAMS-9
P-510	PLUMBING RISER DIAGRAMS-10
P-511	PLUMBING RISER DIAGRAMS-11
P-512	PLUMBING RISER DIAGRAMS-12

FIRE PROTECTION DRAWINGS:

FP-101	FIRE PROTECTION NOTES, LEGEND & PLOT PLAN
FP-102	FIRE PROTECTION SPECIFICATIONS & DETAILS
FP-301	FIRE PROTECTION CELLAR LEVEL & 1ST FLOOR PLAN
FP-302	FIRE PROTECTION 2ND - 6TH FLOOR PLANS
FP-303	FIRE PROTECTION 7TH - 12TH FLOOR PLANS
FP-304	FIRE PROTECTION 13TH - 15TH FLOORS PLANS
FP-305	FIRE PROTECTION 16TH - 19TH FLOOR PLANS
FP-306	FIRE PROTECTION ROOF PLANS
FP-401	FIRE PROTECTION RISER DIAGRAM

FIRE ALARM DRAWINGS:

FA-001	FIRE ALARM NOTES, LEGEND & PLOT PLAN
FA-002	FIRE ALARM RISER DIAGRAM & MATRIX
FA-101	FIRE ALARM CELLAR LEVEL & 1ST FLOOR PLAN
FA-102	FIRE ALARM 2ND - 6TH FLOOR PLANS
FA-103	FIRE ALARM 7TH - 12TH FLOOR PLANS
FA-104	FIRE ALARM 13TH - 15TH FLOOR PLANS
FA-105	FIRE ALARM 16TH - 19TH FLOOR PLANS
FA-106	FIRE ALARM ROOF & BULKHEAD PLANS

ENERGY CODE:

EN-200	ENERGY ANALYSIS MECHANICAL, PLUMBING & LIGHTING SYSTEMS
EN-201	ENERGY ANALYSIS MECHANICAL, PLUMBING & LIGHTING SYSTEMS
EN-202	ENERGY ANALYSIS MECHANICAL, PLUMBING & LIGHTING SYSTEMS
EN 203	ENERGY ANALYSIS MECHANICAL, PLUMBING & LIGHTING SYSTEMS

ELECTRICAL DRAWINGS:

E-001	ELECTRICAL NOTES & LEGEND
E-002	ELECTRICAL NOTES & LEGEND
E-100	ELECTRICAL CELLAR LEVEL & 1ST FLOOR PLANS
E-101	ELECTRICAL 2ND - 6TH FLOOR PLANS
E-102	ELECTRICAL 7TH - 12TH FLOOR PLANS
E-103	ELECTRICAL 13TH -14TH FLOOR PLANS
E-104	ELECTRICAL 16TH - 19TH FLOOR PLANS
E-105	ELECTRICAL ROOF & BULKHEAD PLANS
E-300	ELECTRICAL RISER DIAGRAM
E-301	ELECTRICAL INTERCOM RISER DIAGRAM
E-302	ELECTRICAL TELECOM RISER DIAGRAM
E-400	ELECTRICAL PANELBOARDS
E-600	ELECTRICAL DETAILS

ARC:

ARC-001	ARC SYSTEM NOTES, LEGEND & RISER DIAGRAM
ARC-101	ARC SYSTEM CELLAR LEVEL & 1ST FLOOR PLAN
ARC-102	ARC SYSTEM 2ND-9TH FLOOR PLANS
ARC-103	ARC SYSTEM 10TH-12TH FLOOR PLANS
ARC-104	ARC SYSTEM 13TH-15TH FLOOR PLANS
ARC-105	ARC SYSTEM 16TH-19TH FLOOR PLANS
ARC-106	ARC SYSTEM ROOF PLANS
ARC-107	ARC SYSTEM PRODUCT SELECTION

APPLICATIONS:

- SPRINKLER - 340596897
- FIRE ALARM - 321664390
- BUILDERS PAVEMENT PLAN - 340574275
- TEMP SD - 340581221
- ARCS - 321664287
- CURB CUT - B00080207
- CONSTRUCTION FENCE - B00076458
- ALT. 1 NO WORK (159 BOERUM STREET) - 321300454
- ALT. 1 NO WORK (192 JOHNSON STREET) - 321300465
- ALT. 1 NO WORK (161 BOERUM STREET) - 321300427

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:

AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

AUFGANG ARCHITECTS

DEVELOPER:

SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:

McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:

A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:

ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

DATE	SUBMISSIONS / REVISIONS
08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
05.03.19	PAA TO D.O.B.
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
01.26.18	RE-ISSUED TO DOB FOR REVIEW AND COMMENT
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS

SHEET TITLE:

COVER SHEET

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

ISSUE DATE: 10-19-15 PROJECT NO: #1520

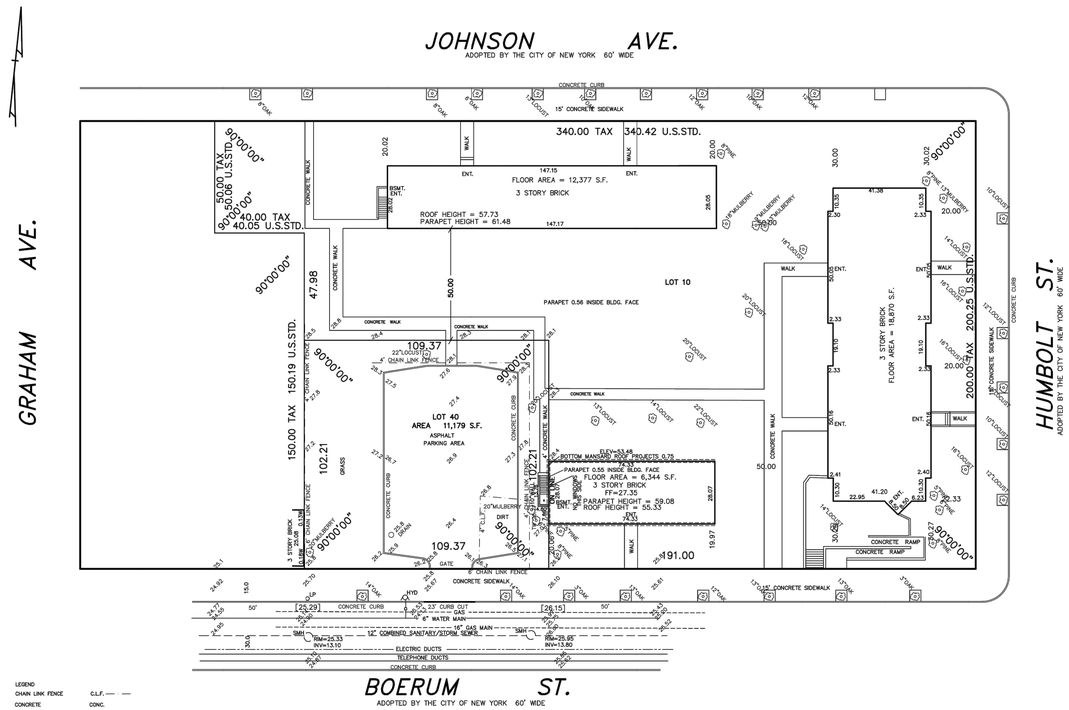
DRAWN BY: A.F.M. CHECKED BY: T.L.

SCALE: 1/8"=1'-0" SHEET NO:

DRAWING NO: T-001.01

NYC DOB NUMBER: 321191802

67056C
SH 1 OF 2



LEGEND

CHAIN LINK FENCE	C.L.F. — —
CONCRETE	CONC.
DRAIN	○DR
GAS BOX	GB
HYDRANT	HYD
WATER MAN HOLE	WM
LIGHT POLE	○LP
SANITARY MANHOLE	SMH
STORM MANHOLE	STMH
TREE	

TOTAL ZONING LOT AREA 62,154 S.F. 1.4269 ACRES

ELEVATIONS REFER TO NAVD88 WHICH IS 1.45 BELOW BROOKLYN HIGHWAY DATUM.
BENCH MARK USED: ELEV=91.00
ELEVATIONS SHOWN ON THIS MAP ARE FINISHED GRADES.

TAX BLOCK 3071 LOT 40

UNAUTHORIZED ALTERATION OR ADDITION TO THIS SURVEY IS A VIOLATION OF SECTION 7209 OF THE NEW YORK STATE EDUCATION LAW.
COPIES OF THE SURVEY MAP NOT BEARING THE LAND SURVEYOR'S INKED SEAL OR EMBOSSED SEAL SHALL NOT BE CONSIDERED TO BE A VALID TRUE COPY.
SUBMISSION OR CERTIFICATION INDICATED HEREON SHALL RUN ONLY TO THE PERSON FOR WHOM THE SURVEY WAS PREPARED, AND TO THOSE WHO PURCHASE, MORTGAGE OR GUARANTEE THE TITLE TO THE REAL ESTATE INSTANTLY TRANSFERRED, WITHIN A REASONABLE TIME FROM THE DATE OF CERTIFICATION. USE OF CERTIFICATIONS ARE NOT TRANSFERRABLE TO ADDITIONAL INSTITUTIONS OR SUBSEQUENT OWNERS.

UTILITY NOTE:

BY LAW, EXCAVATORS AND CONTRACTORS WORKING IN THE FIVE BOROUGHS OF NEW YORK CITY AND NASSAU AND SUFFOLK COUNTIES ON LONG ISLAND MUST CONTACT DIGNET, 1-800-272-4480 AT LEAST 48 HOURS PRIOR TO BEGINNING ANY MECHANIZED DIGGING OR EXCAVATION WORK TO INSURE UNDERGROUND UTILITY LINES ARE MARKED.

UTILITIES SHOWN WERE OBTAINED FROM THE VARIOUS NYC AGENCIES AND UTILITY COMPANIES THE SURVEYOR IS NOT RESPONSIBLE FOR THE LOCATIONS. ALL UTILITY LOCATIONS MUST BE VERIFIED PRIOR TO CONSTRUCTION.

UPDATED AND ADDITIONAL TREES SHOWN SEPT 4, 2017
ADDITIONAL BUILDING INFORMATION DEC 27, 2015
REVISED DEC. 5, 2015
REVISED OCT. 23, 2015
REVISED AUG. 28, 2015

TODD W. ETTLINGER, P.E., L.S.,C.S.
NYS LS# 49048

SPG BOERUM LLC

Map of Survey of Property

Block 3071 Lot 40

in the
Borough of Brooklyn, Kings County
City of New York

DRAWN BY: T.W.E.	RAJAKARUNA & ETTLINGER P.C.	SCALE 1"= 20'
CHECKED BY: T.W.E.	CONSULTING ENGINEERS & CITY SURVEYORS	FB: PRINT
DATE: AUG. 15, 2015	48 ENGLEWOOD AVE. UNIT 4, STATEN ISLAND, NY 10309 718-984-9500	CB: FM:

PROPOSED NEW DEVELOPMENT

159 BOERUM

BROOKLYN, NY

BLOCK: 3071 LOT: 40

ARCHITECT:
AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:
SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:
McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
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T: 212.246.9800

MEP ENGINEER:
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BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:
ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

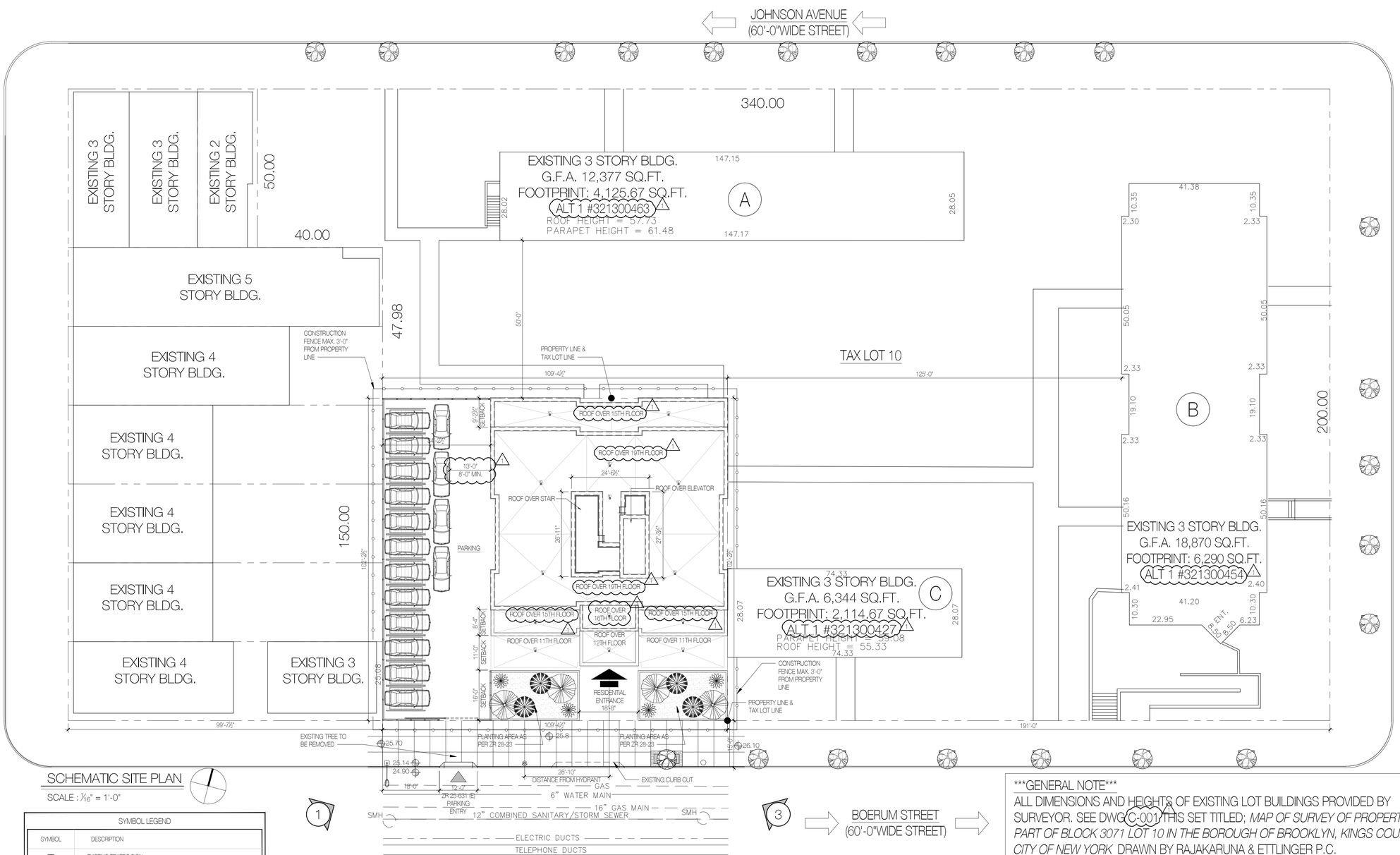
DATE	SUBMISSIONS / REVISIONS
08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
01.26.18	RE-ISSUED TO D.O.B. FOR REVIEW AND COMMENTS
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS

SHEET TITLE:

SURVEY (1)

SEAL & SIGNATURE

ISSUE DATE: 10-19-15
PROJECT NO: #1520
DRAWN BY: S.Z.
CHECKED BY: T.L.
SCALE: 1"=20'
SHEET NO:
DRAWING NO: C-001.00
NYC DOB NUMBER:



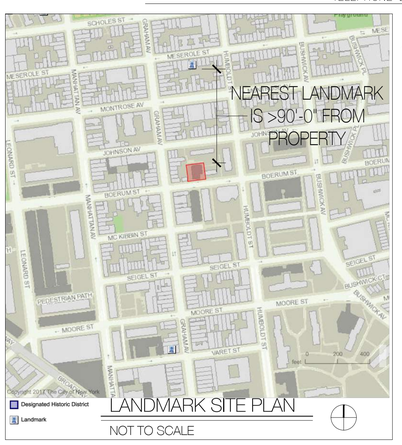
SCHEMATIC SITE PLAN

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

SYMBOL LEGEND	
SYMBOL	DESCRIPTION
▼	EXISTING TRAFFIC SIGN
Ⓤ	EXISTING UTILITY POLE
	EXISTING HYDRANT
●	EXISTING BUS STOP
	EXISTING LIGHT POST
	5' X 10' TREE PIT
	EXISTING TREE
	STORM DRAIN
	EXTERIOR LIGHTING
	PROPERTY LINE

STREET TREES				
STREET FRONTAGE	REQUIRED TREES (1 PER 25 LN FT)	ON SITE	OFF SITE	TOTAL
840'-7½"	34	0	11	34

BLOCK: 3071
LOT: 10/40
NUMBER OF STORY: CELLAR + 19 STORIES + ROOF
OCCUPANCY CLASSIFICATION: RESIDENTIAL R-2
ZONING DISTRICT: R6
BUILDING HEIGHT: 190'-0"



LANDMARK SITE PLAN

NOT TO SCALE

GENERAL NOTE
ALL DIMENSIONS AND HEIGHTS OF EXISTING LOT BUILDINGS PROVIDED BY SURVEYOR. SEE DWG C-001 THIS SET TITLED; *MAP OF SURVEY OF PROPERTY PART OF BLOCK 3071 LOT 10 IN THE BOROUGH OF BROOKLYN, KINGS COUNTY CITY OF NEW YORK* DRAWN BY RAJAKARUNA & ETTLINGER P.C.


PICTURE #1


PICTURE #2


PICTURE #3

TRANSIT NOTE
SITE IS NOT LOCATED WITHIN 200'-0" OF A TRANSIT AUTHORITY STRUCTURE. TA APPROVAL IS NOT REQUIRED

NOTE
SITE LOCATED WITHIN BROOKLYN COMM. DISTRICT I - AS PER APPENDIX I - ENTIRE SITE WITHIN TRANSIT ZONE

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:
AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:
SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:
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INTERIOR DESIGNER:
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AUFGANG ARCHITECTS

1	08.15.19 PAA TO D.O.B.
	08.02.19 99% CONSTRUCTION SET
	05.31.19 BID SET
	07.27.18 90% PROGRESS SET
	06.04.18 RE-ISSUED TO D.O.B.
	01.26.18 RE-ISSUED TO D.O.B. FOR REVIEW AND COMMENTS
	11.03.17 ISSUED TO D.O.B. FOR REVIEW AND COMMENTS
DATE	SUBMISSIONS / REVISIONS

SHEET TITLE:

SCHEMATIC SITE PLAN

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 027189 STATE OF NEW YORK

ISSUE DATE:	PROJECT NO:
10-19-15	#1520
DRAWN BY:	CHECKED BY:
S.Z.	T.L.
SCALE:	SHEET NO:
AS NOTED	

DRAWING NO: C-002.01

NYC DOB NUMBER: 321191802

SITE DATA		LIST OF REQUIRED ACTIONS		HEIGHT FACTOR
Block:	3071		CONST. CLASS 1-B 2HR RATED	
Lots:	40 & 10		BUILDING CODE OCCUPANCY GROUP R-2	
Street Address:	Boerum Street		BUILDING TO BE FULLY SPRINKLERED	
Existing Zoning:	R6		BUILDING TO BE DESIGNED PER 2014 NYC BUILDING CODE PER NYC 2014 ENERGY CODE	
Community District:	1, BROOKLYN			
Zoning Section Map:	13b			
Zoning Lot Area	62,000.00			

ZR - Section	Title	Permitted / Required	Ex.to Remain	Proposed	Total	Compliance / Notes
23-32	**MIN LOT AREA**	1,700 CORNER LOT 42,000.00 SQ. FT. INTERIOR LOT 20,000.00 SQ. FT. 62,000.00 SQ. FT.				OK- SEE Z-002
23-15	**FAR**	R6 RESIDENTIAL 7 FACTOR **2.23** 138,260.00	37,591.00	100,637.47	**138,228.47**	OK-SEE Z-001 FOR EXISTING BUILDING BREAKDOWN
23-15 23-151	**OPEN SPACE RATIO**	R6 Open Area Req. 7 FACTOR 30.50% **42,159.68**				
		New Building (Covered Lot)		6,338.74		
		Building A (Covered Lot)	4,125.67			
		Building B (Covered Lot)	6,290.00			
		Building C (Covered Lot)	2,114.67			
			12,530.34	6,338.74	18,869.08	OK - SEE Z-002 FOR LOT COVERAGE DIAGRAM
		Open Area Provided 31.20%			**43,130.92**	
		TOTAL DEVELOPMENT 62,000.00 X FACTOR =			**43,130.92**	OK
	HEIGHT & SETBACKS					
23-64		BASE HEIGHT 60'-0"		60'-0"		OK
23-64		MAX BASE N/A				OK
23-64		FRONT OPEN AREA (NARROW STREET) 15'-0"		16'-0"		OK
23-64		SKY EXPOSURE PLAN (NARROW STREET) 3.7 to 1		PROVIDED		OK
	DENSITY					
23-22		R6 = 680 203	42	161	**203**	OK - SEE Z-001 FOR CALCULATION
25-23 25-251	**ACCESSORY OFF-STREET PARKING (WITH EXISTING)**	RESIDENTIAL = 161 UNITS AFFORDABLE = 33 UNITS (WAIVED)(ZR 25-251) TOTAL REQ. = 128 UNITS (70%) 128 UNITS x 70% = 90 REQUIRED PARKING	18 (WAIVED)	90	**90**	OK - SEE Z-001 FOR CALCULATION
25-80	**BICYCLE PARKING**	RESIDENTIAL 50% 81 REQ. PARKING		81		OK - SEE Z-001 FOR CALCULATION

BIKE STORAGE:

AREA REQ PER ZR 25-80:
RESIDENTIAL = ONE BICYCLE FOR EVERY TWO APTS= 161 APTS / 2 = 81 BICYCLES
15 SQ. FT. 81 SPACES = 1200 SQ FT
CALCULATION FOR NUMBER OF BICYCLES PER ZR-25-811

CELLAR 486.34 SQ.FT. / 81 SPACES = 6.00 SQ.FT.

AS PER ZR 25-83:
G.C. SHALL PROVIDE A PLAQUE AT THE EXTERIOR OF THE ENTRY TO THE BICYCLE PARKING AREA WITH LETTERING AT LEAST ½" IN HEIGHT, STATING "BICYCLE PARKING".

EXISTING BUILD.	G.F.A.	LOT COVERAGE
BUILDING A	12,377 SQ.FT.	4,125.67 SQ. FT.
BUILDING B	18,870 SQ.FT.	6,290.00 SQ. FT.
BUILDING C	6,344 SQ.FT.	2,114.67 SQ. FT.
	37,591 SQ. FT.	12,530.34 SQ. FT.

REQUIRED PARKING:

AREA REQ PER ZR 25-23:
161 APTS : 33 AFFORDABLE, 128 MARKET RATE
PARKING FOR 33 AFFORDABLE APARTMENTS: 33 UNITS/2 = 17 SPACES WAIVED (ZR 25-251)
RESIDENTIAL = ONE SPACE FOR 70% MARKET RATE APTS = 128 UNITS(70%) = 90 SPACES
18 EXISTING SPOTS WAIVED AS PER BSA DETERMINATION

TOTAL SPACES REQUIRED = 90 SPACES
TOTAL SPACES PROVIDED = 42 SPACES (CELLAR FLOOR) + 23 SPACES (GROUND FLOOR) + 25 SPACES (OFFSITE AT 222 JOHNSON AVE. = 90 SPACES

DENSITY CALCULATION
2,000 SQ.FT. + 20,000 SQ.FT. + 40,000 SQ.FT. = 62,000 SQ.FT.
62,000 SQ.FT. (TOTAL) x 2.23 (FAR) = 138,260 SQ.FT

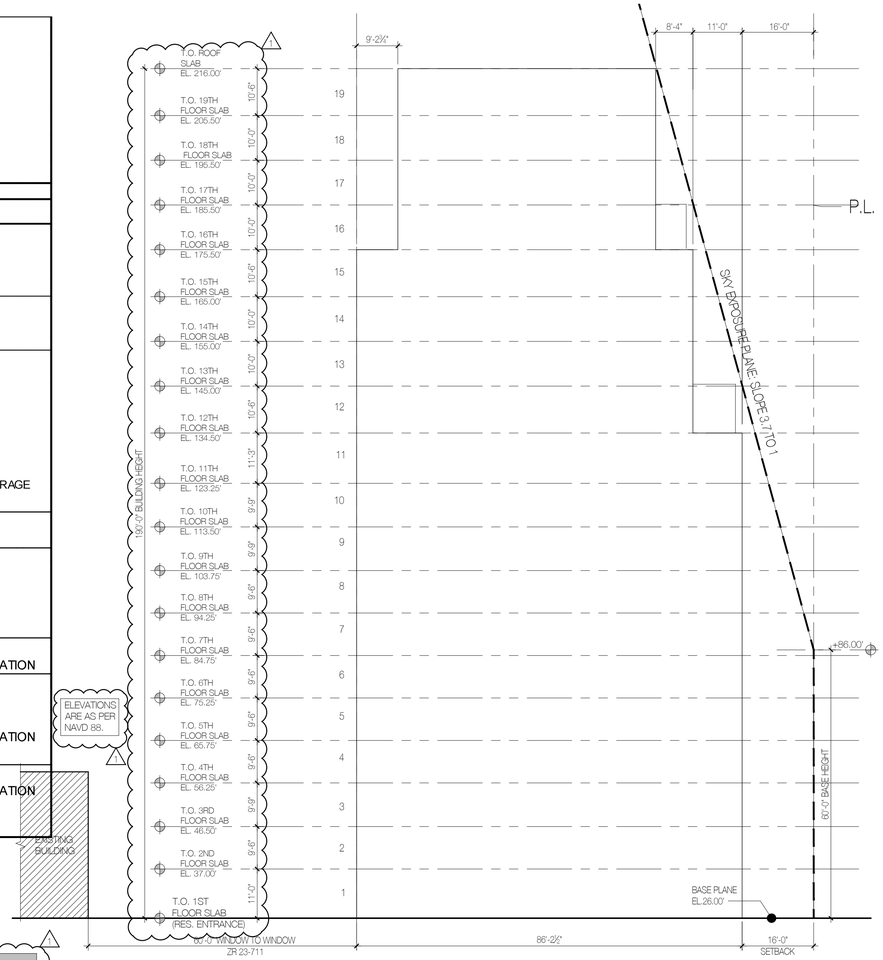
138,260 SQ.FT. / 680 = 203.3
PROPOSED BUILDING = 161
EXISTING BUILDING A = 12
EXISTING BUILDING B = 24
EXISTING BUILDING C = 6
TOTAL = 203 < 203.3 (COMPLIES)

AVERAGE GRADE / BASE PLANE CALCULATION

EL:		EL:				AVG. EL:		DIST.		
25.80	+	25.89	=	51.69	/ 2	= 25.85	X	25.00	=	646.13
25.89	+	26.00	=	51.89	/ 2	= 25.95	X	25.00	=	648.63
26.00	+	26.11	=	52.11	/ 2	= 26.06	X	25.00	=	651.38
26.11	+	26.20	=	52.31	/ 2	= 26.16	X	25.00	=	653.88
TOTAL:								**100.00**		**2,600.00**

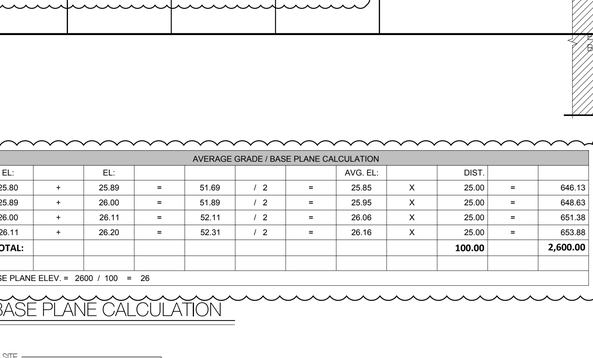
BASE PLANE ELEV. = 2600 / 100 = 26

BASE PLANE CALCULATION



SCHEMATIC HEIGHT DIAGRAM

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

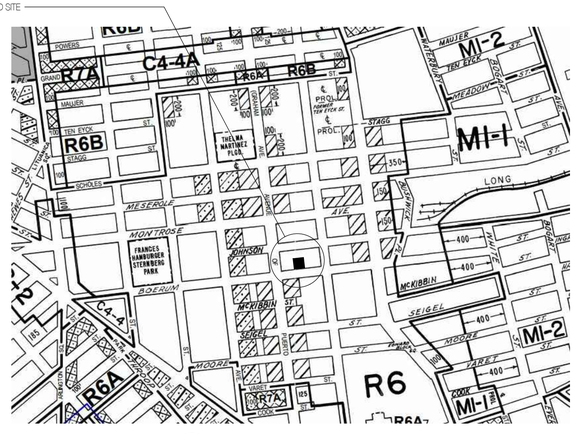


TAX MAP

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

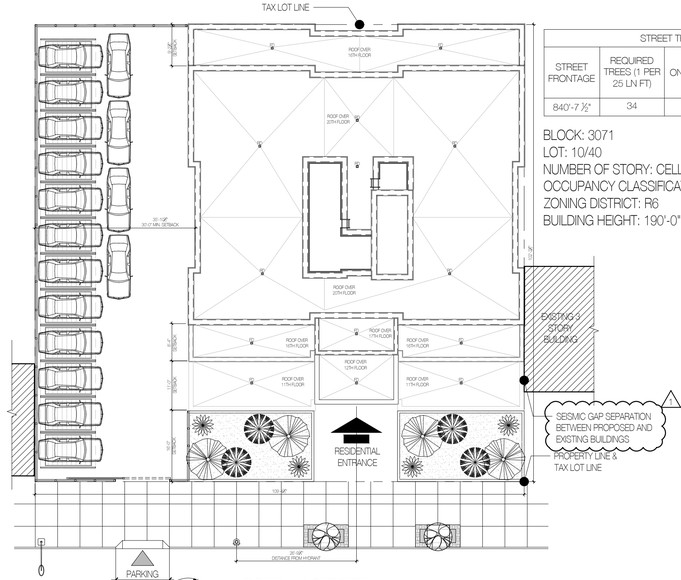
ZONING LOT

PROPOSED BUILDING/ TAX LOT



ZONING MAP

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



PLOT PLAN

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

*** SEE SITE PLAN, DWG C-002 FOR COMPLETE DIMENSIONS ***

STREET TREES				
STREET FRONTAGE	REQUIRED TREES (1 PER 25 LN FT)	ON SITE	OFF SITE	TOTAL
840'-7 ½"	34	23	11	34

BLOCK: 3071
LOT: 10/40
NUMBER OF STORY: CELLAR + 19 STORIES + ROOF
OCCUPANCY CLASSIFICATION: RESIDENTIAL R-2
ZONING DISTRICT: R6
BUILDING HEIGHT: 190'-0"

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:
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STRUCTURAL ENGINEER:
McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:
A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:
ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
05.03.19	PAA TO D.O.B.
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
01.26.18	RE-ISSUED TO D.O.B. FOR REVIEW AND COMMENTS
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS

SHEET TITLE:

CALCULATIONS & SCHEMATIC HEIGHT DIAGRAM

SEAL & SIGNATURE

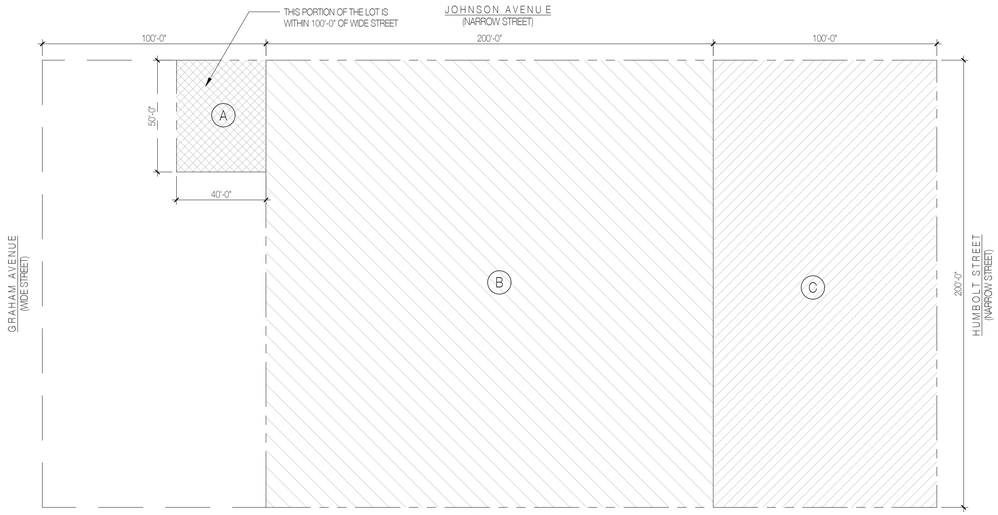
REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

ISSUE DATE:	PROJECT NO:
10-19-15	#1520
DRAWN BY:	CHECKED BY:
M.B.	T.L.
SCALE:	SHEET NO:
AS NOTED	

DRAWING NO:

Z-001.01

NYC DOB NUMBER: 321191802

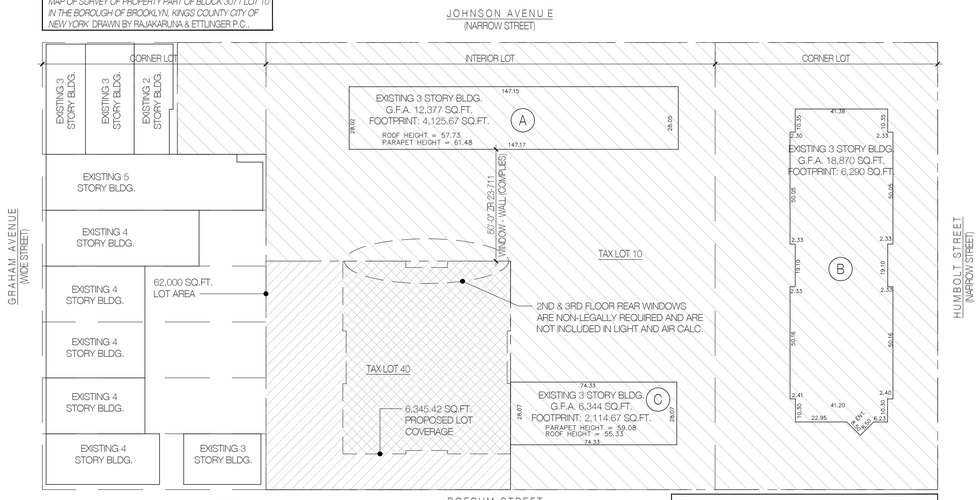


LOT AREA DIAGRAM

NOT TO SCALE

CORNER LOT WITHIN 100'-0" WIDE STREET	A	2,000.00 SQ. FT.
CORNER LOT	C	20,000.00 SQ. FT.
INTERIOR LOT	B	40,000.00 SQ. FT.
		62,000.00 SQ. FT.

GENERAL NOTE:
ALL DIMENSIONS AND HEIGHTS OF EXISTING LOT BUILDINGS PROVIDED BY SURVEYOR. SEE DWG C-001 THIS SET TITLED; *MAP OF SURVEY OF PROPERTY PART OF BLOCK 3071 LOT 10 IN THE BOROUGH OF BROOKLYN, KINGS COUNTY, CITY OF NEW YORK.* DRAWN BY RAJAKARUNA & ETTLINGER P.C..



LOT COVERAGE

NOT TO SCALE

ZONING LOT

PROPOSED BUILDING/TAX LOT

ZR 23-711: WINDOW TO WALL
EXISTING BUILDING "A" HEIGHT = 57.73'
PROPOSED BUILDING HEIGHT = 190.0'

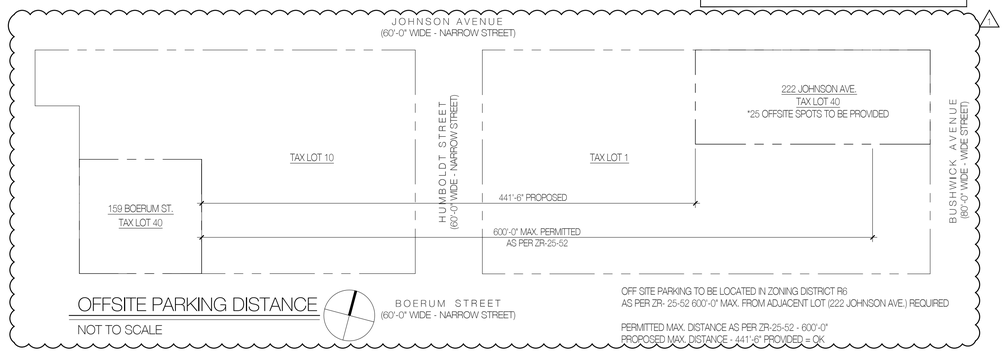
57.73 + 190.0 = 247.73/2 = 123.86'
WINDOW TO WALL 50'-0" REQUIRED (PROVIDED)

EXISTING BUILD.	G.F.A.	LOT COVERAGE
BUILDING A	12,377 SQ.FT.	4,125.67 SQ. FT.
BUILDING B	18,870 SQ.FT.	6,290.00 SQ. FT.
BUILDING C	6,344 SQ.FT.	2,114.67 SQ. FT.
TOTAL	37,591 SQ. FT.	12,530.34 SQ. FT.
PROPOSED		+ 6,345.42 SQ.FT.
TOTAL		18,875.76 SQ.FT.

OPEN SPACE (ZR 23-151) : OPEN AREA REQ. 42,144 SQ.FT. (30.50%)

PROPOSED BUILD. AREA	138,178 SQ.FT.
TOTAL LOT AREA	62,000 SQ.FT.
TOTAL LOT COVERAGE	18,875 SQ.FT.

62,000 - 18,875 = 43,125 SQ.FT. / 138,178 SQ.FT. = 31.21% > 30.50%



OFFSITE PARKING DISTANCE

NOT TO SCALE

OFF SITE PARKING TO BE LOCATED IN ZONING DISTRICT R6
AS PER ZR- 25-52 600'-0" MAX. FROM ADJACENT LOT (222 JOHNSON AVE.) REQUIRED

PERMITTED MAX. DISTANCE AS PER ZR-25-52 - 600'-0"
PROPOSED MAX. DISTANCE - 441'-6" PROVIDED = OK

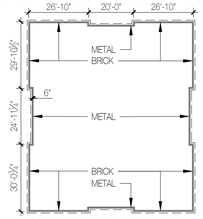
GROSS FLOOR AREAS

FLOOR	RESIDENTIAL GROSS FLOOR AREA (SQ. FT.)	RESIDENTIAL DEDUCTIONS (SQ. FT.)				TOTAL ZONING
		MECH	ZONE GREEN DEDUCTION AT ENVELOPE	STAIR	TOTAL DEDUCTION	RESIDENTIAL ZONING AREA (SQ. FT.)
CELLAR	10,616.00					
1ST	3,371.56				-	3,371.56
2ND	6,338.74	130.46	163.54	35.56	329.56	6,009.18
3RD	6,338.74	130.46	163.54	35.56	329.56	6,009.18
4TH	6,338.74	135.91	163.54	35.56	335.01	6,003.73
5TH	6,338.74	135.91	163.54	35.56	335.01	6,003.73
6TH	6,338.74	135.91	163.54	35.56	335.01	6,003.73
7TH	6,338.74	135.91	163.54	35.56	335.01	6,003.73
8th	6,338.74	135.91	163.54	35.56	335.01	6,003.73
9th	6,338.74	135.91	163.54	35.56	335.01	6,003.73
10th	6,338.74	135.91	163.54	35.56	335.01	6,003.73
11th	6,338.74	135.91	163.54	35.56	335.01	6,003.73
12th	5,719.09	108.95	153.54	35.56	298.05	5,421.04
13th	5,513.80	95.32	145.54	35.56	276.42	5,237.38
14th	5,513.80	81.38	145.54	35.56	262.48	5,251.32
15th	5,513.80	81.38	145.54	35.56	262.48	5,251.32
16th	4,351.58	64.89	123.84	35.56	224.29	4,127.29
17th	4,195.84	65.33	118.50	35.56	219.39	3,976.45
18th	4,195.84	65.33	118.50	35.56	219.39	3,976.45
19th	4,195.84	65.33	118.50	35.56	219.39	3,976.45
ROOF	*612.84	-	-	-	-	-
TOTAL	116,574.55	1,976.10	2,704.90	640.08	5,321.08	100,637.47

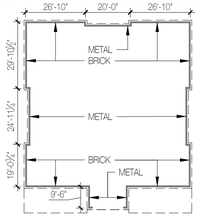
*NOT INCLUDED IN RESIDENTIAL ZONING AREA.

APARTMENT DISTRIBUTION

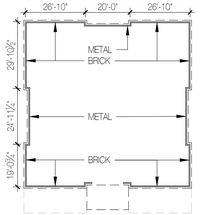
LEVEL	0BR	1BR	2BR	2BR +	TOTAL
2nd floor	6	2	0	2	10
3rd floor	6	2	0	2	10
4th floor	6	6	0	0	12
5th floor	6	6	0	0	12
6th floor	6	6	0	0	12
7th floor	6	6	0	0	12
8th floor	6	6	0	0	12
9th floor	6	6	0	0	12
10th floor	6	6	0	0	12
11th floor	6	6	0	0	12
12th floor	2	5	0	2	9
13th floor	0	6	0	2	8
14th floor	0	2	2	2	6
15th floor	0	2	2	2	6
16th floor	0	0	4	0	4
17th floor	0	0	4	0	4
18th floor	0	0	4	0	4
19th floor	0	0	4	0	4
TOTAL	62	67	20	12	161
%	39%	42%	12%	7%	100%



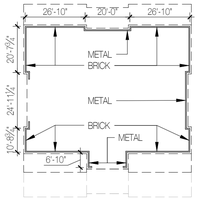
2ND THROUGH 11TH
ZONE GREEN DEDUCTION 163.54 SQ. FT.



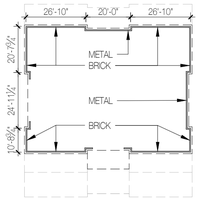
12TH FLOOR PLAN
ZONING FLOOR AREA 153.54 SQ. FT.



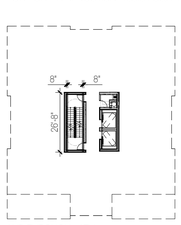
13TH THROUGH 15TH
ZONING FLOOR AREA 145.54 SQ. FT.



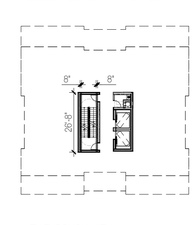
16TH FLOOR PLAN
ZONING FLOOR AREA 123.84 SQ. FT.



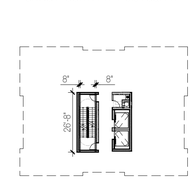
17TH THROUGH 19TH
ZONING FLOOR AREA 118.50 SQ. FT.



2ND THROUGH 13TH
STAIR DEDUCTION 35.56 SQ. FT.
(12 FLOORS) x 35.56 SQ. FT. = 426.69 SQ. FT.



14TH THROUGH 17TH
STAIR DEDUCTION 35.56 SQ. FT.
(4 FLOORS) x 35.56 SQ. FT. = 142.23 SQ. FT.

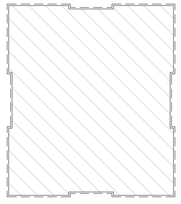


18TH THROUGH 19TH
STAIR DEDUCTION 35.56 SQ. FT.
(2 FLOORS) x 35.56 SQ. FT. = 71.12 SQ. FT.

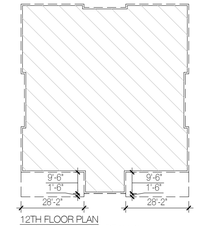
STAIR DEDUCTION

426.69 SQ. FT.
142.23 SQ. FT.
71.12 SQ. FT.

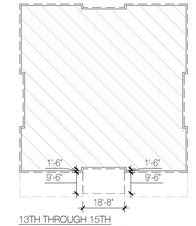
TOTAL: 640.04 SQ. FT.



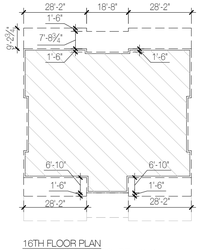
2ND THROUGH 11TH
NO TERRACE ENCLOSURE



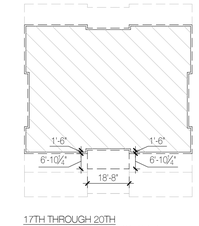
12TH FLOOR PLAN
TERRACE ENCLOSURE 37'-8"
TOTAL TERRACE 78'-4"
% OF TERRACE ENCLOSURE = 48% < 67%
COMPLIANT



13TH THROUGH 15TH
TERRACE ENCLOSURE 21'-8"
TOTAL TERRACE 59'-4"
% OF TERRACE ENCLOSURE = 37% < 67%
COMPLIANT



16TH FLOOR PLAN
A. TERRACE ENCLOSURE 78'-0"
TOTAL TERRACE 174'-5 1/2"
% OF TERRACE ENCLOSURE = 45% < 67%
COMPLIANT
B. TERRACE ENCLOSURE 35'-0"
TOTAL TERRACE 73'-0 1/4"
% OF TERRACE ENCLOSURE = 48% < 67%
COMPLIANT



17TH THROUGH 20TH
TERRACE ENCLOSURE 21'-8 1/4"
TOTAL TERRACE 54'-0 1/4"
% OF TERRACE ENCLOSURE = 40% < 67%
COMPLIANT

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:
AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:
SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:
McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:
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2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
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INTERIOR DESIGNER:
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DATE	SUBMISSIONS / REVISIONS

SHEET TITLE:

LOT AREA & LOT COVERAGE DIAGRAMS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

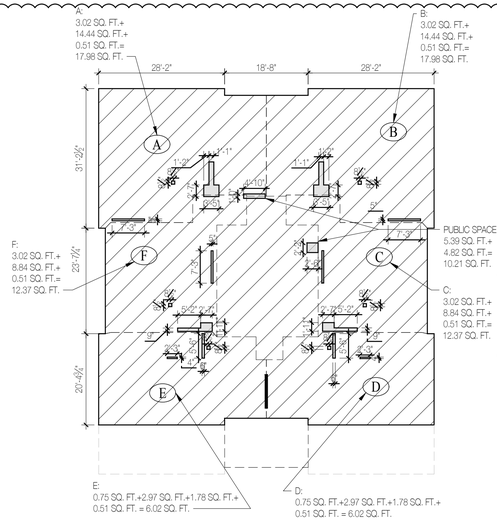
ISSUE DATE: 10-19-15 PROJECT NO: #1520

DRAWN BY: S.Z. CHECKED BY: T.L.

SCALE: AS NOTED SHEET NO:

DRAWING NO: Z-002.01

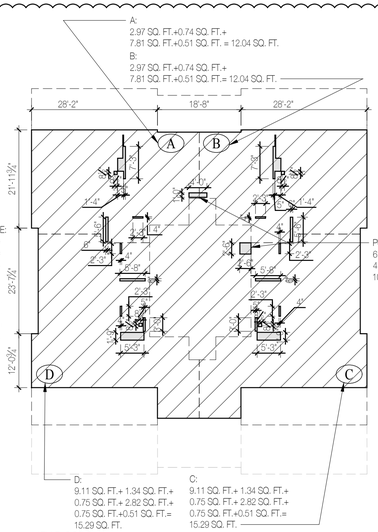
NYC DOB NUMBER: 321191802



14TH THROUGH 15TH FLOOR PLAN

GROSS FLOOR AREA 5,513.80 SQ. FT.

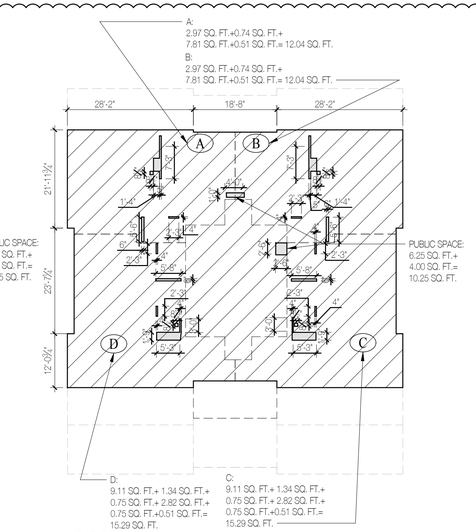
MEP DEDUCTIONS 81.38 SQ. FT.



16TH FLOOR PLAN

GROSS FLOOR AREA 4,351.58 SQ. FT.

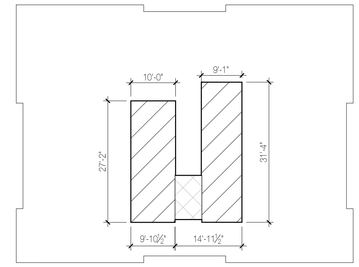
MEP DEDUCTIONS 64.89 SQ. FT.



17TH THROUGH 19TH

RESIDENTIAL 4,195.84 SQ. FT.

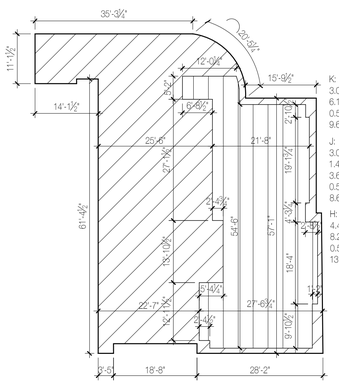
MEP DEDUCTIONS 65.33 SQ. FT.



ROOF PLAN
ZONING FLOOR AREA

RESIDENTIAL 553.62 SQ. FT.

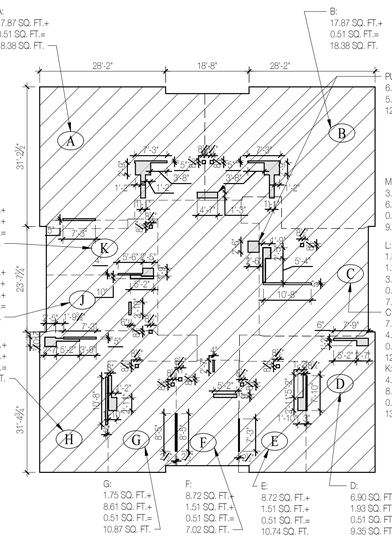
VESTIBULE 59.22 SQ. FT.



1ST FLOOR PLAN
ZONING FLOOR AREA 3371.56 SQ. FT.

RESIDENTIAL 2,080.34 SQ. FT.

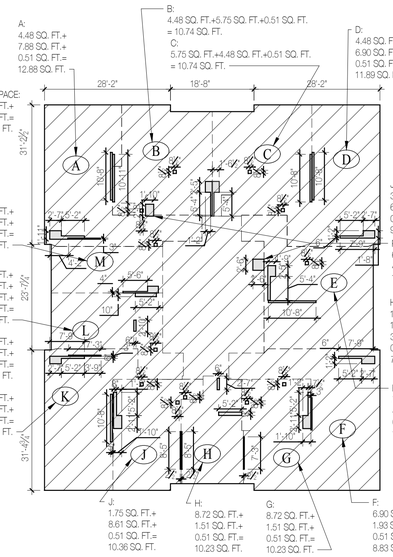
ACCESSORY REC. 1,291.22 SQ. FT.



2ND THROUGH 3RD

GROSS FLOOR AREA 6338.74 SQ. FT.

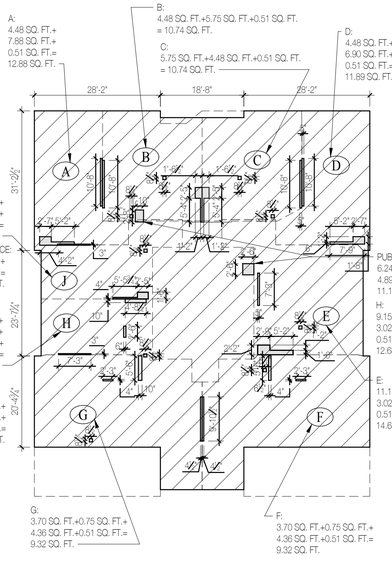
MEP DEDUCTIONS 130.46 SQ. FT.



4TH THROUGH 11TH

GROSS FLOOR AREA 6,338.74 SQ. FT.

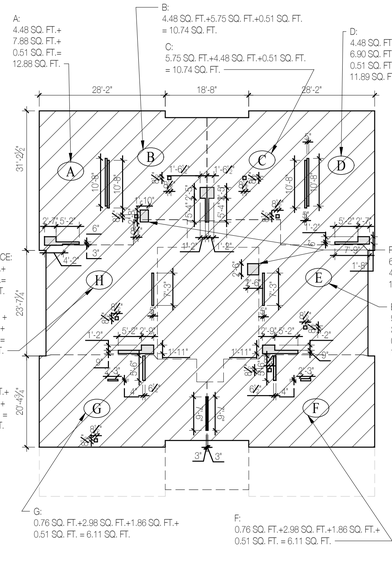
MEP DEDUCTIONS 135.91 SQ. FT.



12TH FLOOR PLAN

GROSS FLOOR AREA 5,719.09 SQ. FT.

MEP DEDUCTIONS 108.95 SQ. FT.



13TH FLOOR PLAN

GROSS FLOOR AREA 5,513.80 SQ. FT.

MEP DEDUCTIONS 95.32 SQ. FT.

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:

AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:

SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:

McNAMARA - SALVIA
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MEP ENGINEER:

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INTERIOR DESIGNER:

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LOT AREA & LOT COVERAGE DIAGRAMS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

ISSUE DATE: 10-19-15

PROJECT NO: #1520

DRAWN BY: S.Z.

CHECKED BY: T.L.

SCALE: AS NOTED

SHEET NO:

DRAWING NO: Z-003.01

NYC DOB NUMBER: 321191802

COMcheck Software Version 4.1.1.0

Envelope Compliance Certificate

Project Information

Energy Code:	90.1 (2013) Standard
Project Title:	
Location:	New York, New York
Climate Zone:	4a
Project Type:	New Construction
Vertical Glazing / Wall Area:	23%
Performance Sim. Specs:	EnergyPlus 8.1.0.009 (EPW: USA_NY_New.York-LaGuardia.AP.725030_TMY3.epw)

Construction Site: 159 Boerum Street Brooklyn, NY 11206

Owner/Agent:

Designer/Contractor:

Building Area

	Floor Area
1-Multifamily : Residential	116458

Envelope Assemblies

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Proposed U-Factor	Budget U-Factor$_{UA}$
RF - 1 Paved Roof - Private Terrace: Insulation Entirely Above Deck, [Bldg. Use 1 - Multifamily]	4334	---	30.0	0.032	0.032
RF - 2 Paved Area on Grade: Insulation Entirely Above Deck, [Bldg. Use 1 - Multifamily]	368	---	45.0	0.022	0.032
RF - 3 Bulkhead Roof: Insulation Entirely Above Deck, [Bldg. Use 1 - Multifamily]	1026	---	30.0	0.032	0.032
RF - 4 Green Roof: Insulation Entirely Above Deck, [Bldg. Use 1 - Multifamily]	877	---	30.0	0.032	0.032
FL - 1 Underside of 1st Floor: Concrete Floor (over unconditioned space), [Bldg. Use 1 - Multifamily]	5154	---	15.0	0.055	0.051
NORTH					
WT - 1A Brick Wall: Steel-Framed, 16" o.c., [Bldg. Use 1 - Multifamily]	12089	14.7	12.6	0.048	0.064
Vision Glazing: Metal Frame:Fixed, Perf. Specs.: Product ID NA, SHGC 0.38, VT 0.41, [Bldg. Use 1 - Multifamily] (c)	3445	---	---	0.380	0.420
Opaque Metal Door: Uninsulated Single-Layer Metal, Swinging, [Bldg. Use 1 - Multifamily]	108	---	---	0.500	0.500
WT - 1B Brick Wall - Slab Edge: Solid Concrete:8" Thickness, Normal Density, Furring: None, [Bldg. Use 1 - Multifamily]	1106	---	12.6	0.069	0.090
WT - 1C PTAC Louvers at WT - 1: Other Metal Building Wall, [Bldg. Use 1 - Multifamily] (b)	418	---	---	0.500	0.050
WT - 2A 3" EIFS Wall with CMU Backup: Concrete Block:8", Solid Grouted, Normal Density, Furring: None, [Bldg. Use 1 - Multifamily]	600	---	15.0	0.059	0.090
Vision Glazing: Metal Frame:Fixed, Perf. Specs.: Product ID NA, SHGC 0.38, VT 0.41, [Bldg. Use 1 - Multifamily] (c)	26	---	---	0.380	0.420
WT - 3 Inactive Louvers: Metal Building Wall, Single Layer Mineral Fiber (compressed at girt), [Bldg. Use 1 - Multifamily]	398	0.0	12.6	0.074	0.050
WT - 5 EIFS Bulkhead Wall with Concrete back-up: Solid Concrete:10" Thickness, Normal Density, Furring: None, [Bldg. Use 1 - Multifamily]	197	---	15.0	0.059	0.090

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Proposed U-Factor	Budget U-Factor$_{UA}$
Vision Glazing: Metal Frame:Fixed, Perf. Specs.: Product ID NA, SHGC 0.38, VT 0.41, [Bldg. Use 1 - Multifamily] (c)	58	---	---	0.380	0.420
WT - 6 EIFS Bulkhead Wall with Stud wall back-up: Steel-Framed, 16" o.c., [Bldg. Use 1 - Multifamily]	119	14.7	12.6	0.048	0.064
EAST					
WT - 1A Brick Wall: Steel-Framed, 16" o.c., [Bldg. Use 1 - Multifamily]	12604	14.7	12.6	0.048	0.064
Vision Glazing: Metal Frame:Fixed, Perf. Specs.: Product ID NA, SHGC 0.38, VT 0.41, [Bldg. Use 1 - Multifamily] (c)	2695	---	---	0.380	0.420
Opaque Metal Door: Uninsulated Single-Layer Metal, Swinging, [Bldg. Use 1 - Multifamily]	27	---	---	0.500	0.500
WT - 1B Brick Wall - Slab Edge: Solid Concrete:8" Thickness, Normal Density, Furring: None, [Bldg. Use 1 - Multifamily]	1144	---	12.6	0.069	0.090
WT - 1C PTAC Louvers at WT - 1: Other Metal Building Wall, [Bldg. Use 1 - Multifamily] (b)	573	---	---	0.500	0.050
WT - 2A 3" EIFS Wall with CMU Backup: Concrete Block:8", Solid Grouted, Normal Density, Furring: None, [Bldg. Use 1 - Multifamily]	909	---	15.0	0.059	0.090
WT - 2B 2" EIFS Wall with CMU Backup - Slab Edge: Solid Concrete:8" Thickness, Normal Density, Furring: None, [Bldg. Use 1 - Multifamily]	55	---	15.0	0.060	0.090
WT - 3 Inactive Louvers: Metal Building Wall, Single Layer Mineral Fiber (compressed at girt), [Bldg. Use 1 - Multifamily]	60	0.0	12.6	0.074	0.050
WT - 5 EIFS Bulkhead Wall with Concrete back-up: Solid Concrete:10" Thickness, Normal Density, Furring: None, [Bldg. Use 1 - Multifamily]	632	---	15.0	0.059	0.090
Vision Glazing: Metal Frame:Fixed, Perf. Specs.: Product ID NA, SHGC 0.38, VT 0.41, [Bldg. Use 1 - Multifamily] (c)	53	---	---	0.380	0.420
WT - 6 EIFS Bulkhead Wall with Stud wall back-up: Steel-Framed, 16" o.c., [Bldg. Use 1 - Multifamily]	58	14.7	12.6	0.048	0.064
SOUTH					
WT - 1A Brick Wall: Steel-Framed, 16" o.c., [Bldg. Use 1 - Multifamily]	12097	14.7	12.6	0.048	0.064
Vision Glazing: Metal Frame:Fixed, Perf. Specs.: Product ID NA, SHGC 0.38, VT 0.41, [Bldg. Use 1 - Multifamily] (c)	4094	---	---	0.380	0.420
Opaque Metal Door: Uninsulated Single-Layer Metal, Swinging, [Bldg. Use 1 - Multifamily]	155	---	---	0.500	0.500
WT - 1B Brick Wall - Slab Edge: Solid Concrete:8" Thickness, Normal Density, Furring: None, [Bldg. Use 1 - Multifamily]	1151	---	12.6	0.069	0.090
WT - 1C PTAC Louvers at WT - 1: Other Metal Building Wall, [Bldg. Use 1 - Multifamily] (b)	482	---	---	0.500	0.050
WT - 3 Inactive Louvers: Metal Building Wall, Single Layer Mineral Fiber (compressed at girt), [Bldg. Use 1 - Multifamily]	459	0.0	12.6	0.074	0.050
WT - 4 Storefront: Metal Building Wall: Single Layer Mineral Fiber (compressed at girt), [Bldg. Use 1 - Multifamily]	361	0.0	0.0	1.180	0.050
Vision Glazing: Metal Frame:Fixed, Perf. Specs.: Product ID NA, SHGC 0.38, VT 0.70, [Bldg. Use 1 - Multifamily] (c)	360	---	---	0.380	0.420
WT - 5 EIFS Bulkhead Wall with Concrete back-up: Solid Concrete:10" Thickness, Normal Density, Furring: None, [Bldg. Use 1 - Multifamily]	317	---	15.0	0.059	0.090
Vision Glazing: Metal Frame:Fixed, Perf. Specs.: Product ID NA, SHGC 0.38, VT 0.41, [Bldg. Use 1 - Multifamily] (c)	58	---	---	0.380	0.420
WEST					
WT - 1A Brick Wall: Steel-Framed, 16" o.c., [Bldg. Use 1 - Multifamily]	13391	14.7	12.6	0.048	0.064
Vision Glazing: Metal Frame:Fixed, Perf. Specs.: Product ID NA, SHGC 0.38, VT 0.41, [Bldg. Use 1 - Multifamily] (c)	3227	---	---	0.380	0.420
Opaque Metal Door: Uninsulated Single-Layer Metal, Swinging, [Bldg. Use 1 - Multifamily]	121	---	---	0.500	0.500
WT - 1B Brick Wall - Slab Edge: Solid Concrete:8" Thickness, Normal Density, Furring: None, [Bldg. Use 1 - Multifamily]	1204	---	12.6	0.069	0.090
WT - 1C PTAC Louvers at WT - 1: Other Metal Building Wall, [Bldg. Use 1 - Multifamily] (b)	676	---	---	0.500	0.050
WT - 3 Inactive Louvers: Metal Building Wall, Single Layer Mineral Fiber	79	0.0	25.2	0.038	0.050

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Proposed U-Factor	Budget U-Factor$_{UA}$
(compressed at girt), [Bldg. Use 1 - Multifamily]					
WT - 5 EIFS Bulkhead Wall with Concrete back-up: Solid Concrete:10" Thickness, Normal Density, Furring: None, [Bldg. Use 1 - Multifamily]	608	---	15.0	0.059	0.090
Vision Glazing: Metal Frame:Fixed, Perf. Specs.: Product ID NA, SHGC 0.38, VT 0.41, [Bldg. Use 1 - Multifamily] (c)	80	---	---	0.380	0.420
WT - 6 EIFS Bulkhead Wall with Stud wall back-up: Steel-Framed, 16" o.c., [Bldg. Use 1 - Multifamily]	37	14.7	12.6	0.048	0.064
Vision Glazing: Metal Frame:Fixed, Perf. Specs.: Product ID NA, SHGC 0.38, VT 0.41, [Bldg. Use 1 - Multifamily] (c)	21	---	---	0.380	0.420

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

Envelope PASSES: Design 1% better than code

Envelope Compliance Statement

Compliance Statement: The proposed envelope design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed envelope systems have been designed to meet the 90.1 (2013) Standard requirements in COMcheck Version 4.1.1.0 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Name - Title Signature Date

COMcheck Software Version 4.1.1.0

Inspection Checklist

Energy Code: 90.1 (2013) Standard

Requirements: 0.0% were addressed directly in the COMcheck software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
4.2.2, 5.4.3.1.1, 5.7 [PR1][1]	Plans and/or specifications provide all information with which compliance can be determined for the building envelope and document where exceptions to the standard are claimed.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
4.2.2, 8.4.1.1, 8.4.1.2, 8.7 [PR6][2]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the electrical systems and equipment and document where exceptions are claimed. Feeder connectors sized in accordance with approved plans and branch circuits sized for maximum drop of 3%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
5.5.4.2.3 [PR7][2]	In buildings > 2,500 ft2, any enclosed spaces directly under a roof with ceiling heights > 15 ft. and used as an office, lobby, atrium, concourse, corridor, storage (including nonrefrigerated warehouse), gymnasium, fitness/exercise area, playing area, gymnasium seating area, convention exhibit/event space, courtroom, automotive service, fire station engine room, manufacturing corridor/transition and bay areas, retail, library reading and stack areas, distribution/sorting area, transportation baggage and seating areas, or workshop, the following requirements apply: The daylight zone under skylights is >= half the floor area and (a) the skylight area to daylight zone is >= 3 percent with a skylight VT >= 0.40 or (b) the minimum skylight effective aperture >= 1 percent. The skylights have a measured haze value > 90 percent.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Footing / Foundation Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
5.5.3.3 [FO1][1]	Below-grade wall insulation R-value.	R-____	R-____	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.5.3.5 [FO3][2]	Slab edge insulation R-value.	R-____ ☐ UnHeated ☐ Heated	R-____ ☐ UnHeated ☐ Heated	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.5.3.5 [FO5][2]	Slab edge insulation depth/length.	____ ft	____ ft	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.8.1.7 [FO6][1]	Exterior insulation protected against damage, sunlight, moisture, wind, landscaping and equipment maintenance activities.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
5.8.1.7.3 [FO7][1]	Insulation in contact with the ground has <=0.3% water absorption rate per ASTM C272.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
6.4.4.1.5 [FO11][1]	Bottom surface of floor structures incorporating radiant heating insulated to >=R-3.5.	R-____	R-____	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Framing / Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
5.4.3.2 [FR1][1]	Factory-built and site-assembled fenestration and doors are labeled or certified as meeting air leakage requirements.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
5.4.3.4 [FR4][1]	Vestibules are installed where building entrances separate conditioned space from the exterior, and meet exterior envelope requirements. Doors have self-closing devices, and are >=7 ft apart (>= 16 ft apart for adjoining floor area >= 40000 sq.ft.). Vestibule floor area <=7 50 sq.ft. or 2 percent of the adjoining conditioned floor area.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
5.5.4.3a [FR8][1]	Vertical fenestration U-Factor.	U-____	U-____	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.5.4.3b [FR9][1]	Skylight fenestration U-Factor.	U-____	U-____	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.5.4.4.1 [FR10][1]	Vertical fenestration SHGC value.	SHGC:____	SHGC:____	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.5.4.4.2 [FR11][1]	Skylight SHGC value.	SHGC:____	SHGC:____	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.8.2.1, 5.8.2.3, 5.8.2.4, 5.8.2.5 [FR12][2]	Fenestration products rated (U-factor, SHGC, and VT) in accordance with NFRC or energy code defaults are used.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
5.8.2.2 [FR13][2]	Fenestration and door products are labeled, or a signed and dated certificate listing the U-factor, SHGC, VT, and air leakage rate has been provided by the manufacturer.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
5.5.3.6 [FR14][2]	U-factor of opaque doors associated with the building thermal envelope meets requirements.	U-____ ☐ Swinging ☐ Nonswinging	U-____ ☐ Swinging ☐ Nonswinging	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.4.3.1 [FR15][2]	Continuous air barrier is wrapped, sealed, caulked, gasketed, and/or taped in an approved manner, except in semiheated spaces in climate zones 1-6.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
8.4.2 [EL1][2]	At least 50% of all 125 volt 15- and 20-Amp receptacles are controlled by an automatic control device.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Insulation Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
5.5.3.1 [IN2][1]	Roof R-value. For some ceiling systems, verification may need to occur during Framing Inspection.	R-____ ☐ Above deck ☐ Metal ☐ Attic	R-____ ☐ Above deck ☐ Metal ☐ Attic	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.8.1.2, 5.8.1.3 [IN3][1]	Roof insulation installed per manufacturer's instructions. Blown or poured loose-fill insulation is installed anlyy where the ceiling slope is <= 3:12.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
5.5.3.2 [IN6][2]	Above-grade wall insulation R-value.	R-____ ☐ Mass ☐ Metal ☐ Steel ☐ Wood	R-____ ☐ Mass ☐ Metal ☐ Steel ☐ Wood	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.8.1.2 [IN7][2]	Above-grade wall insulation installed per manufacturer's instructions.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
5.5.3.4 [IN8][2]	Floor insulation R-value.	R-____ ☐ Mass ☐ Steel ☐ Wood	R-____ ☐ Mass ☐ Steel ☐ Wood	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.8.1.2 [IN9][2]	Floor insulation installed per manufacturer's instructions.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
5.8.1.1 [IN10][2]	Building envelope insulation is labeled with R-value or insulation certificate has been provided listing R-value and other relevant data.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
5.8.1.9 [IN18][2]	Building envelope insulation extends over the full area of the component at the proposed rated R or U value.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
5.8.1.4 [IN11][2]	Eaves are baffled to deflect air to above the insulation.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
5.8.1.5 [IN12][2]	Insulation is installed in substantial contact with the inside surface separating conditioned space from unconditional space.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
5.8.1.6 [IN13][2]	Recessed equipment installed in building envelope assemblies does not compress the adjacent insulation.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Insulation Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
5.8.1.7.1 [IN15][2]	Attics and mechanical rooms have insulation protected where adjacent to attic or equipment access.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
5.8.1.7.2 [IN16][2]	Foundation vents do not interfere with insulation.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
5.8.1.8 [IN17][2]	Insulation intended to meet the roof insulation requirements cannot be installed on top of a suspended ceiling. Mark this requirement compliant if insulation is installed accordingly.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
5.4.3.3 [FI1][1]	Weatherseals installed on all loading dock cargo doors in Climate Zones 4-8.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:
AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:
SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:
McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:
A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:
ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
1 08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
05.03.19	PAA TO D.O.B.
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
05.02.18	REVISED AS PER ENERGY COMMENTS
01.26.18	RE-ISSUED TO D.O.B. FOR REVIEW AND COMMENTS
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS

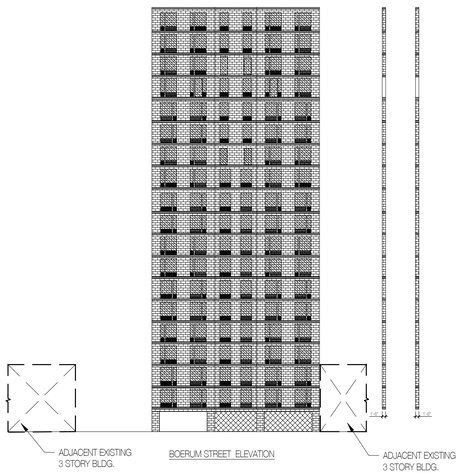
SHEET TITLE:

ENERGY ANALISYS

SEAL & SIGNATURE

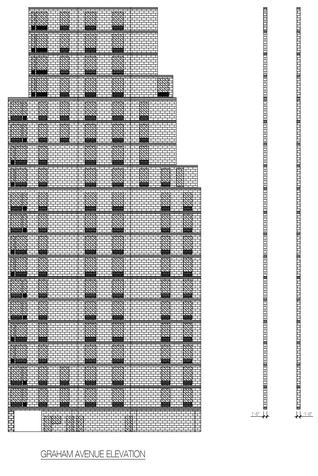
REGISTERED ARCHITECT ARIEL AUFGANG STATE OF NEW YORK 032789

ISSUE DATE: 10-19-15
PROJECT NO: #1520
DRAWN BY: V.J.
CHECKED BY: T.L.
SCALE: N/A
SHEET NO:
DRAWING NO: EN-001.01
NYC DOB NUMBER: 321191802



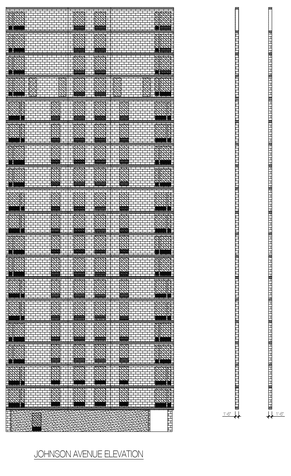
BOERUM STREET ELEVATION

FINISH MATERIAL	FINISH AREA	SLAB EDGE	WINDOW	DOOR
3" EIFs	N/A	N/A	N/A	N/A
BRICK/STONE	13037.95 SQ. FT.	1150.54 SQ. FT.	4093.96 SQ. FT.	154.97 SQ. FT.
STOREFRONT	360.90 SQ. FT.	N/A	N/A	N/A
PTAC	482.20 SQ. FT.	N/A	N/A	N/A
IN-ACTIVE LOUVER	458.97 SQ. FT.	N/A	N/A	N/A



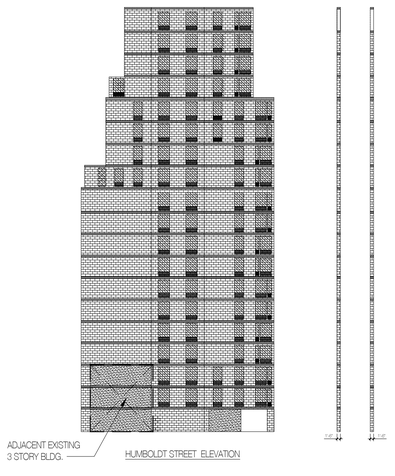
GRAHAM AVENUE ELEVATION

FINISH MATERIAL	FINISH AREA	SLAB EDGE	WINDOW	DOOR
3" EIFs	N/A	N/A	N/A	N/A
BRICK/STONE	14145.48 SQ. FT.	1203.91 SQ. FT.	3211.47 SQ. FT.	120.56 SQ. FT.
STOREFRONT	N/A	N/A	N/A	N/A
PTAC	676.05 SQ. FT.	N/A	N/A	N/A
IN-ACTIVE LOUVER	78.89 SQ. FT.	N/A	N/A	N/A



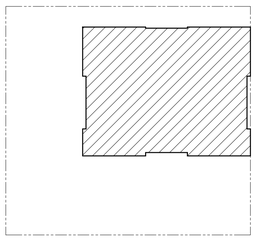
JOHNSON AVENUE ELEVATION

FINISH MATERIAL	FINISH AREA	SLAB EDGE	WINDOW	DOOR
3" EIFs	600.12 SQ. FT.	N/A	25.89 SQ. FT.	N/A
BRICK/STONE	12905.83 SQ. FT.	1106.24 SQ. FT.	3444.83 SQ. FT.	108.14 SQ. FT.
STOREFRONT	N/A	N/A	N/A	N/A
PTAC	418.09 SQ. FT.	N/A	N/A	N/A
IN-ACTIVE LOUVER	398.27 SQ. FT.	N/A	N/A	N/A

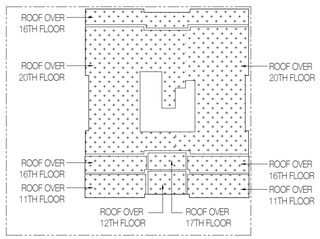


HUMBOLDT STREET ELEVATION

FINISH MATERIAL	FINISH AREA	SLAB EDGE	WINDOW	DOOR
3" EIFs	908.85 SQ. FT.	54.95 SQ. FT.	N/A	N/A
BRICK/STONE	13236.78 SQ. FT.	1143.86 SQ. FT.	2695.40 SQ. FT.	27.22 SQ. FT.
STOREFRONT	N/A	N/A	N/A	N/A
PTAC	572.81 SQ. FT.	N/A	N/A	N/A
IN-ACTIVE LOUVER	59.74 SQ. FT.	N/A	N/A	N/A

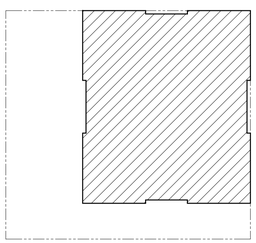


17TH - 19TH FLOOR PLAN
CONDITIONED SPACE 4214.51 SQ. FT.

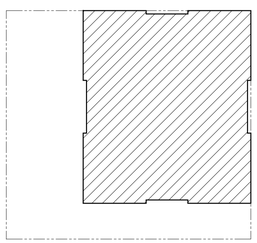


ROOF PLAN

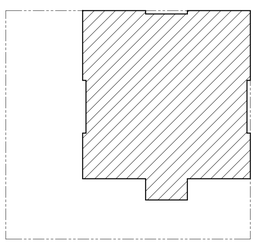
ROOF FLOOR AREA ##############
PAVERS 5286.89 SQ. FT.



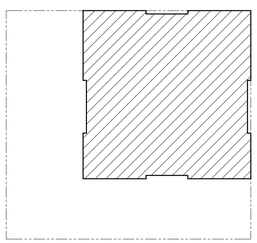
2ND - 3RD FLOOR PLAN
CONDITIONED SPACE 6338.72 SQ. FT.



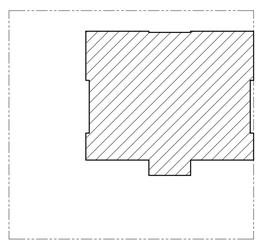
4TH - 11TH FLOOR PLAN
CONDITIONED SPACE 6338.72 SQ. FT.



12TH FLOOR PLAN
CONDITIONED SPACE 5719.05 SQ. FT.



13TH - 15TH FLOOR PLAN
CONDITIONED SPACE 5513.73 SQ. FT.



16TH FLOOR PLAN
CONDITIONED SPACE 4370.14 SQ. FT.

ENERGY ENVELOPE BOUNDARIES

FINISH MATERIAL ENVELOPE DESIGNATION	FINISH MATERIAL	AREA	SLAB EDGE
WT1-BRICK/STONE	BRICK/STONE	53,326.04 SQ. FT.	4,648.85 SQ. FT.
WT2- STOREFRONT	GLAZING	360.90 SQ. FT.	N/A
WINDOW	GLAZING	13,445.66 SQ. FT.	N/A
PTAC	ALUMINUM GRILLE	2,149.15 SQ. FT.	N/A
IN-ACTIVE LOUVER	ALUMINUM GRILLE	995.86 SQ. FT.	N/A
ERS	ERS	1508.97 SQ. FT.	54.95 SQ. FT.

PROFESSIONAL STATEMENT

TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE "ASHRAE 90.1 2013 AS AMENDED BY APPENDIX CA"

NOTE:

- COMMISSIONING IS REQUIRED.
- FOR MEP COMPLIANCE WITH ENERGY CODE SEE EN SHEETS PROVIDED BY MEP ENGINEER
- SEE DWG M-101 FOR HEATING AND COOLING CAPACITY

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:

AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:

SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:

McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:

A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:

ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
1 08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
05.03.19	PAA TO D.O.B.
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
05.02.18	REVISED AS PER ENERGY COMMENTS
01.26.18	RE-ISSUED TO D.O.B. FOR REVIEW AND COMMENTS
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS

SHEET TITLE:

ENERGY ANALISYS

SEAL & SIGNATURE

REGISTERED ARCHITECT
ARIEL AUFGANG
022789
STATE OF NEW YORK

ISSUE DATE: 10-19-15
PROJECT NO: #1520

DRAWN BY: V.J.
CHECKED BY: T.L.

SCALE: AS NOTED
SHEET NO:

DRAWING NO: EN-002.01

NYC DOB NUMBER: 321191802

TABLE II
PROGRESS INSPECTIONS FOR ENERGY CODE COMPLIANCE - COMMERCIAL BUILDINGS

IIA Envelope Inspections

	Inspection/Test	Periodic (minimum)	Reference Standard or Other Criteria	ECC or Other Citation	
IIA1	Protection of exposed foundation insulation: Insulation shall be visually inspected to verify proper protection where applied to the exterior of basement or cellar walls, crawl-space walls and/or the perimeter of slab-on-grade floors.	As required during foundation work and prior to backfill	Approved construction documents	C303.2.1; ASHRAE 90.1 - 5.8.1.7	YES
IIA2	Insulation placement and R-values: Installed insulation for each component of the conditioned space envelope and at junctions between components shall be visually inspected to ensure that the R-values are marked, that such R-values conform to the R-values identified in the construction documents and that the insulation is properly installed. Certifications for unmarked insulation shall be similary visually inspected.	As required to verify continuous enclosure while walls, ceilings and floors are open	Approved construction documents	C303.1, C303.1.1, C303.1.2, C402.1, C402.2; ASHRAE 90.1 -5.5, 5.6 or 11; 5.8.1	YES
IIA3	Fenestration U-factor and product ratings: U-factors, SHGC and VT values of installed fenestration shall be visually inspected for conformance with the U-factors, SHGC and VT values identified in the construction drawings by verifying the manufacturer's NFRC labels or, where not labeled, using the ratings in ECC Tables C303.1.3(1), (2) and (3).	As required during installation	Approved construction documents; NFRC 100, NFRC 200	C303.1, C303.1.3, C402.3; ASHRAE 90.1 -5.5.5.6 or 11; 5.8.2	YES
IIA4	Fenestration air leakage: Windows and sliding or swinging door assemblies, except site-built windows and/or doors, shall be visually inspected to verify that installed assemblies are listed and labeled by the manufacturer to the referenced standard. For curtain wall, storefront glazing, commercial entrance doors and revolving doors, the testing reports shall be reviewed to verify that the installed assembly complies with the standard cited in the approved plans.	As required during installation; prior to final construction inspection	NFRC 400, AAMA/WDMA/CSA 101/I.S.2/A440, ASTM E283, and/OrASTM E 1105	C402.4.3; ASHRAE 90.1 -5.4.3.2	YES
IIA5	Fenestration areas: Dimensions of windows, doors and skylights shall be verified by visual inspection.	Prior to final construction inspection	Approved construction documents	C402.3; ASHRAE 90.1 - 5.5.4.2, 5.6 or 11	YES
IIA6	Air sealing and insulation - visual inspection: Openings and penetrations in the building envelope, including site-built fenestration and doors, shall be visually inspected to verify that a continuous air barrier around the envelope forms an air-tight enclosure. The progress inspector shall visually inspect to verify that materials and/or assemblies have been tested and meet the requirements of the respective standards, or that the building is tested and meets the requirements of the standard, in accordance with the standard(s) cited in the approved plans.	As required during construction	Approved construction documents; ASTM E2178, ASTM E2357, ASTM E1677, ASTM E779, ASTM E283.	C402.4; ASHRAE 90.1 - 5.4.3.1	YES
IIA7	Projection factors: Where the energy analysis utilized a projection factor > 0, the projection dimensions of overhangs, eaves or permanently attached shading devices shall be verified for conformance with approved plans by visual inspection.	Prior to final construction inspection	Approved construction documents, including energy analysis	C402.3; ASHRAE 90.1 - 5.5.4, 5.6 or 11	NO
IIA8	Loading dock weatherseals: Weatherseals at loading docks shall be visually verified.	Prior to final construction inspection	Approved construction documents	C402.4.6; ASHRAE 90.1 - 5.4.3.3	NO
IIA9	Vestibules: Required entrance vestibules shall be visually inspected for proper operation.	Prior to final construction inspection	Approved construction documents	C402.4.7; ASHRAE 90.1 - 5.4.3.4	YES

IIB Mechanical/Water Heating Inspections

IIB1	Fireplaces: Provision of combustion air and tight-fitting fireplace doors shall be verified by visual inspection.	Prior to final construction inspection	Approved construction documents; ANSI Z21.60 (see also MC 304), ANSI Z21.50	C402.2.9; IBC 2111; MC Chapters 7, 8, 9; FGC Chapter 6	NO
IIB2	Dampers for stair and elevator shaft vents and other outdoor air intake and exhaust openings integral to the building envelope shall be visually inspected to verify that such dampers, except where permitted to be gravity dampers, comply with approved construction drawings. Manufacturer's literature shall be reviewed to verify that the product has been tested and found to meet the standard.	Prior to final construction inspection	Approved construction documents; AMCA 500D	C403.2.4.4; ASHRAE 90.1 – 6.4.3.4	YES
IIB3	HVAC and service water heating equipment: Equipment sizing, efficiencies and other performance data of all major equipment units, as determined by the applicant of record, and no less than 10% of minor equipment units, shall be verified by visual inspection and, where necessary, review of manufacturer's data. Pool heaters and covers shall be verified by visual inspection.	Prior to final plumbing and construction inspection	Approved construction documents	C403.2, C404.2, C404.7, C406.2; ASHRAE 90.1 - 6.3, 6.4.1, 6.4.2, 6.8.7.4, 7.8	YES
IIB4	HVAC system controls and economizers and where no water system controls, no less than 20% of each type of required controls and economizers shall be verified by visual inspection and tested for functionality and proper operation. Such controls shall include, but are not limited to: Thermostats Set point overlap restriction Off hour Dead-band sensor Snow-melt system Demand control systems Outdoor heating systems Zones Economizers Variable flow Variable air volume fan Hydronic systems Heat rejection equipment fan speed Complex mechanical systems serving multiple zones Condensers Energy recovery systems Hot gas bypass limitation Temperature Service water heating Hot water system Pool heater and time switches Pool covers Radiant heating systems CONTROLS WITH SEASONALLY DEPENDENT FUNCTIONALITY: CONTROLS IN HOSE COMPLETE OPERATION CANNOT BE DEMONSTRATED DUE TO PREVAILING WEATHER CONDITIONS TYPICAL OF THE SEASON DURING WHICH PROGRESS INSPECTIONS WILL BE PERFORMED SHALL BE REVIEWED BY THE PROGRESS INSPECTOR AND SHALL BE LISTED ON CERTIFICATE OF OCCUPANCY WITH ONLY A VISUAL INSPECTION PROVIDED. HOWEVER, THE THE PROGRESS INSPECTOR SHALL PERFORM A SUPPLEMENTAL INSPECTION WHERE THE CONTROLS ARE VISUALLY INSPECTED AND TESTED FOR FUNCTIONALITY AND PROPER OPERATION DURING THE NEXT IMMEDIATE SEASON THEREAFTER. THE OWNER SHALL PROVIDE FULL ACCESS TO THE PROGRESS INSPECTOR WITHIN TWO WEEKS OF THE PROGRESS INSPECTOR'S REQUEST FOR SUCH ACCESS TO PERFORM THE PROGRESS INSPECTION. FOR SUCH SUPPLEMENTAL INSPECTIONS, THE DEPARTMENT SHALL BE NOTIFIED BY THE APPROVED PROGRESS INSPECTION AGENCY OF ANY UNRESOLVED DEFICIENCIES IN THE INSTALLED WORK WITHIN 180 DAYS OF SUCH SUPPLEMENTAL INSPECTION.	After installation and prior to final electrical and construction inspection, except that for controls with seasonally dependent functionality, such testing shall be performed before sign-off for issuance of a Final Certificate of Occupancy	Approved construction documents, including control system narratives; ASHRAE Guideline The HVAC Commissioning Process where applicable	C403.2.4, C403.2.5.1, C403.2.11, C403.3, C403.4, C404.5, C404.6, C404.7; ASHRAE 90.1 - 6.3, 6.4, 6.5, 7.4.4, 7.4.5	YES

IIB5	HVAC insulation and sealing: Installed duct and piping insulation shall be visually inspected to verify proper insulation placement and values, joints, longitudinal and transverse seams and connections in ductwork shall be visually inspected for proper sealing.	After installation and prior to closing shafts, ceilings and walls	Approved construction documents; SMACNA Duct Construction Standards, Metal and Flexible	C403.2.7, C403.2.8, C404.5, MC 603.9; ASHRAE 90.1 - 6.3, 6.4.4, 6.8.2, 6.8.3, 7.4.3	YES
IIB6	Duct leakage testing: For duct systems designed to operate at static pressures in excess of 3 inches w.g. (746 Pa), representative sections, as determined by the progress inspector, totaling at least 25% of the duct area, per ECC C403.2.7.1.3, shall be tested to verify that actual air leakage is below allowable amounts.	After installation and sealing and prior to closing shafts, ceilings and walls	Approved construction documents; SMACNA HVAC Air Duct Leakage Test Manual	C403.2.7.1.3; ASHRAE 90.1 - 6.4.4.2.2	YES

IIC Electrical Power and Lighting Systems

IIC1	Electrical energy consumption: The presence and operation of individual meters or other means of monitoring individual apartments shall be verified by visual inspection for all apartments and where required in a covered tenant space.	Prior to final electrical and construction inspection	Approved construction documents	C405.7	YES
IIC2	Lighting in dwelling units: Lamps in permanently installed lighting fixtures shall be visually inspected to verify compliance with high-efficacy requirements.	Prior to final electrical and construction inspection	Approved construction documents	C405.1; ASHRAE 90.1 - 9.1.1	YES
IIC3	Interior lighting power: Installed lighting shall be verified for compliance with the lighting power allowance by visual inspection of fixtures, lamps, ballasts and transformers.	Prior to final electrical and construction inspection	Approved construction documents	C405.5, C406.2; ASHRAE 90.1 -9.1, 9.2, 9.5, 9.6; "FROM §101-07(c)3)ii)Cl4	YES
IIC4	Exterior lighting power: Installed lighting shall be verified for compliance with source efficacy and/or the lighting power allowance by visual inspection of fixtures, lamps, ballasts and relevant transformers.	Prior to final electrical and construction inspection	Approved construction documents	C405.6; ASHRAE 90.1 - 9.4.3; "FROM §101-07(c)3)iii)Cl4	YES
IIC5	Lighting controls: Each type of required lighting controls, including: occupant sensors manual-interrupt lighting controls light-reduction controls daylight responsive shut-off daylight zone controls sweeping unit controls exterior lighting controls shall be verified by visual inspection and tested for functionality and proper operation	Prior to final electrical and construction inspection	Approved construction documents, including control system narratives	C405.2; ASHRAE 90.1 - 9.4.1 (as modified by section ECC A103)	YES
IIC6	Exit signs: Installed exit signs shall be visually inspected to verify that the label indicates that they do not exceed maximum permitted wattage.	Prior to final electrical and construction inspection	Approved construction documents	**C405.4; ASHRAE 90.1 - 9.4.2**	YES
IIC7	Electric motors (including but not limited to fan motors): Where required by the construction documents for energy code compliance, motor listing or labels shall be visually inspected to verify that they comply with the respective energy requirements in the construction documents.	Prior to final electrical and construction inspection	Approved construction documents	C403.2.10; ASHRAE 90.1 - 10.4	YES

IID Other

IID1	Maintenance information: Maintenance manuals for mechanical, service hot water and electrical equipment and systems requiring preventive maintenance shall be reviewed for applicability to installed equipment and systems before such manuals are provided to the owner. Labels required for such equipment or systems shall be inspected for accuracy and completeness.	Prior to sign-off or issuance of Final Certificate of Occupancy	Approved construction documents, including electrical drawings where applicable; ASHRAE Guideline 4- Preparation of Operating and Maintenance Documentation for Building Systems	C303.3; C408.2.5.2; ASHRAE 90.1 - 4.2.2.3, 6.7.2.2, 8.7.2, 9.7.2.2	YES

BUROHAPPOLD ENGINEERING

Project: 159 Boerum Street		Project No.:
Design/Check : AG		Date: 15-Jul-19
Subject: Zone Green		PAA ISSUANCE

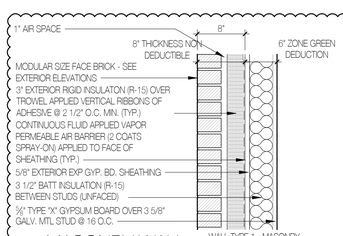
Wall Type	ID	System Type	Proposed Envelope Area (sf)	U-Value	Area Weighted	NYCCC Envelope Area (sf)	U-Value	Area Weighted
Opaque								
Brick Wall	WT-1A	Stud Wall with Brick Finish	36308.93	0.048	1742.83	36308.93	0.064	2323.77
Brick Wall	WT-1B	Slab Edge	4604.55	0.069	317.51	4604.55	0.090	414.41
Brick Wall		Curtain Wall System	0.00	0.000	0.00	0.00	0.000	0.00
3" EIFS Wall with CMU Backup	WT-2A	8" CMU Wall with 3" EIFS	1508.97	0.059	89.03	1508.97	0.090	135.81
3" EIFS Wall with CMU Backup	WT-2B	Slab Edge	54.95	0.060	3.30	54.95	0.090	4.95
Inactive Louvers	WT-3	Finish Area	995.87	0.038	37.84	995.87	0.050	49.79
EIFS Bulkhead Wall	WT-5	Concrete Wall with EIFS Finish	1753.25	0.059	103.44	1753.25	0.090	157.79
EIFS Bulkhead Wall	WT-6	Stud Wall with EIFS Finish	214.01	0.048	10.27	214.01	0.064	13.70
Total Opaque			45851.42		2509.87	45851.42		3305.02
Fenestrations								
Brick Wall	WT-1A	Vision Glazing - Fixed	13461.20	0.380	5115.26	13461.20	0.420	5653.70
3" EIFS Wall with CMU Backup	WT-2A	Vision Glazing - Fixed	25.89	0.380	9.84	25.89	0.420	10.87
Storefront	WT-4	Glazing Storefront	360.90	0.380	137.14	360.90	0.420	151.58
EIFS Bulkhead Wall	WT-5	Vision Glazing - Fixed	249.66	0.380	94.87	249.66	0.420	104.86
EIFS Bulkhead Wall	WT-6	Vision Glazing - Fixed	20.50	0.380	7.79	20.50	0.420	8.61
Total Fenestrations			14118.15		5364.90	14118.15		5929.62
Total Area			59969.57			59969.57		
Fenestration to Total Wall Ratio			24%					
Area Weighted Average of all Above Ground Assemblies			0.13			0.15		
Relationship of Proposed to Prescriptive Assembly						85%		
Pass ZoneGreen Target 27						PASS		
Area Weighted Average of all Above Ground Opaque Assemblies			0.05			0.07		
Relationship of Proposed to Prescriptive Assembly						76%		
Pass ZoneGreen Target 17						PASS		

BUROHAPPOLD ENGINEERING

Project: 159 Boerum Street		Project No.:
Design/Check : AG		Date: 16-Aug-19
Subject: Envelope Thermal Performance Chart		

Wall Type	ID	System Type	Component	Description	Thermal Performance: Visible Light - Glazing Transmission %	Reflectance % Int	Reflectance % Ext	SHGC - Glazing	U - Value - Glazing Summer	U - Value - Glazing Winter	U - Value - Glazing Combined	R - Value R - Cavity	R - Value R - Cont.	R - Value Eqi. U Value	Area (SF) approx. Boerum Street South	Graham Ave. West	Johnson Ave. North	Humboldt Street East	TOTAL
ABOVE GRADE																			
Brick Wall	WT-1A	Finish Area	Brick Finish	Stud Wall with Brick Finish	5.5" of batt insulation and 3" Semi - Rigid Insulation = 14.7 + 12.6							14.7	12.6	0.048	12096.78	13390.54	12089.47	12604.23	50181.02
	WT-1B	Slab Edge	Brick Finish	Concrete Slab with Brick Finish	3" of Semi-Rigid Insulation at Slab edge = 12.6							0	12.6	0.069	1150.54	1203.91	1106.24	1143.86	4604.55
		Opaque Door System	Opaque Metal Door								0.50				154.97	120.56	108.14	27.22	410.89
		Glazing Window System	Vision Glazing - Fixed	1" thk. IGU	41	9	7	0.38	0.28	0.29	0.38				4093.96	3227.01	3444.83	2695.40	13461.20
	WT-1C	PTAC	Active Louvers									0	2	0.5	482.20	676.05	418.09	572.81	2149.15
3" EIFS Wall with CMU Backup	WT-2A	Finish Area	3" EIFS	8" CMU Wall with 3" EIFS	3" Rigid Insulation = 15.0							0	15	0.059	0.00	0.00	600.12	908.85	1508.97
	WT-2B	Slab Edge	3" EIFS	Concrete Slab with 3" EIFS	3" Rigid Insulation = 15.0							0	15	0.060	0.00	0.00	0.00	54.95	54.95
		Glazing Window System	Vision Glazing - Fixed	1" thk. IGU	41	9	7	0.38	0.28	0.29	0.38				0.00	0.00	25.89	0.00	25.89
Inactive Louvers	WT-3	Finish Area	Inactive Louvers									0	25.2	0.038	458.97	78.89	398.37	59.74	995.87
Storefront	WT-4	Glazing Window System	Glazing Storefront	1" thk. Glass at Storefront System	70	9	7	0.38	0.28	0.29	0.38				360.90	0.00	0.00	0.00	360.90
EIFS Bulkhead Wall	WT-5	Finish Area	EIFS Finish	Concrete Wall with EIFS Finish	3" Rigid Insulation = 15							0	15	0.059	316.70	607.54	197.16	631.85	1753.25
		Glazing Window System	Vision Glazing - Fixed	1" thk. IGU	41	9	7	0.38	0.28	0.29	0.38				58.37	79.94	58.21	53.14	249.66
EIFS Bulkhead Wall	WT-6	Finish Area	EIFS Finish	Stud Wall with EIFS Finish	5.5" of batt insulation and 3" Rigid Insulation = 14.7 + 15							14.7	15	0.048	0.00	37.31	118.89	57.81	214.01
		Glazing Window System	Vision Glazing - Fixed	1" thk. IGU	41	9	7	0.38	0.28	0.29	0.38				0.00	20.50	0.00	0.00	20.50

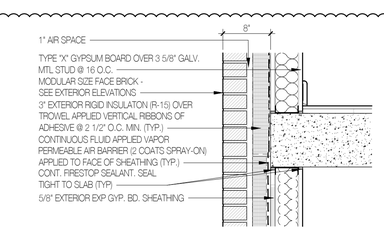
Roof Types	ID	System Type	Component	Description	Thermal Performance	R-Value	Area (SF) approx. 2nd Floor	2nd Floor	7th Floor	8th Floor	TOTAL
Private Terrace	RF-1	Finish Area	Pedestrian Access Roof	6" Insulation above the deck	6" of Rigid insulation = 30	30					4333.91
Paved Area	RF-2	Finish Area	2 Ply Paved area on Grade	6" Insulation above the deck and insulation below the slab	6" of Rigid insulation = 30 and 3" of spray foam	45					368.47
Bulkhead Roof	RF-3	Finish Area	Bulkhead Roof	6" Insulation above the deck	6" of Rigid insulation = 30	30					1026.13
Green Roof	RF-4	Finish Area	Green Roof	6" Insulation above the deck below growing substrate	6" of Rigid insulation = 30	30					877.16
Floor	FL-1	Finish Area	Slab-on-Grade	Insulation on underside of slab	3" of insulation = 15	15					5154.06



MASONRY WALL

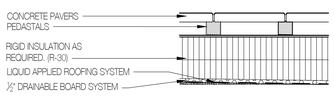
WALL TYPE 1 - MASONRY
TOTAL WALL THICKNESS 13"
ZONE GREEN DEDUCTION 6"

SCALE : 1" = 1'-0"



MASONRY WALL @ SLAB EDGE

SCALE : 1" = 1'-0"



IRMA ROOF WITH PAVERS

SCALE : 1" = 1'-0"

ENERGY NOTES: AS PER ASHRAE 90.1 (2013)

Compliance for continuous air barriers has been specified in the project specification as per the following:

AIR LEAKAGE

CONTINUOUS AIR BARRIER: The entire building envelope shall be designed and constructed with a continuous air barrier.

AIR BARRIER DESIGN: The air barrier shall be designed and noted in the following manner.

a. All air barrier components of each building envelope assembly shall be clearly identified or otherwise noted on construction documents.
b. The joints, interconnections, and penetrations of the air barrier components, including lighting fixtures, shall be detailed or otherwise noted.
c. The continuous air barrier shall extend over all surfaces of the building envelope (at the lowest floor, exterior walls and ceiling or roof).
d. The continuous air barrier shall be designed to resist positive and negative pressures from wind,stack effect, and mechanical ventilation.

AIR BARRIER INSTALLATION: The following areas of the continuous air barrier in the building envelope shall be wrapped, sealed, caulked, gasketed, or taped in an approved manner to minimize air leakage:

a. Joints around fenestration and door frames (both manufactured and site-built).
b. Junctions between walls and floors, between walls at building corners, and between walls, and roofs or ceilings.
c. Penetrations through the air barrier in building envelope roofs, walls, and floors.
d. Building assemblies used as ducts or plenums.
e. Joints, seams, connections between planes, and other changes in air barrier materials.

FENESTRATION AND DOORS : Air leakage for fenestration and doors shall be determined in accordance with AAMA/WDMA/CSA 101/I.S.2/A440, NFRC 400 OR ASTM E283 as specified below. Air leakage shall not exceed:

a. 1.0 cfm/ft² for glazed swinging entrance doors and revolving doors, tested at a pressure of at least 1.57 psf.
b. 0.06 cfm/ft² for curtain wall and storefront glazing, tested at a pressure of at least 1.57 psf or higher in accordance with NRFC 400 or ASTM E283.

OUTDOOR AIR INTAKES AND EXHAUST OPENINGS: Stair and elevator shaft vents and other outdoor air intakes and exhaust openings integral to the building envelope shall be equipped with not less than a Class I motorized, leakage-rated damper with a maximum leakage rate of 4 cfm/ft² (6.8 L/s m2) at 1.0 inch water guage (w.g.) (1250 Pa) when tested in acordance with AMCA 500D.

- Exception: Gravity (non-motorized) dampers are permitted to be used in buildings less than three stories in height above grade.

LOADING DOCK WEATHERSEALS: In Climate Zones 4 through 8, cargo doors and loading dock doors shall be equipped with weather-seals to restrict infiltration when vehicles are parked in the doorway.

VESTIBULES: Building entrances that separate conditioned space from the exterior shall be protected with an enclosed vestibule, with all doors opening into and out of the vestibule equipped with self-closing devices. Vestibules shall be designed so that in passing through the vestibule it is not necessary for the interior and exterior doors to open at the same time. Interior and exterior doors shall have a minimum distance between them of not less than 7ft when in the closed position. The floor area of each vestibule shall not exceed the greater of 50ft² or 2% of the gross conditioned floor area for that level of the building. The exterior envelope of conditioned vestibules shall comply with the requirements for a conditioned space. The interior and exterior envelope of unconditioned vestibules shall comply with the requirements for a semi-heated space.

RECESSED LIGHTING: Recessed luminaries installed in the building thermal envelope, shall be sealed to limit air leakage between conditioned and unconditioned spaces. All recessed luminaries shall be IC rated and labeled as meeting ASTM E283 when tested at 1.57 psf (75 Pa) pressure differential with no more than 2.30 cfm (0.944 L/s) of air movement from the conditioned space to the ceiling cavity. All recessed luminaries shall be sealed with a gasket or caulk between the housing and interior wall or ceiling covering.

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:
AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:
SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:
McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:
A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:
ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
1 08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
05.03.19	PAA TO D.O.B.
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
05.02.18	REVISED AS PER ENERGY COMMENTS
01.26.18	RE-ISSUED TO D.O.B. FOR REVIEW AND COMMENTS
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS

SHEET TITLE:

ENERGY ANALISYS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

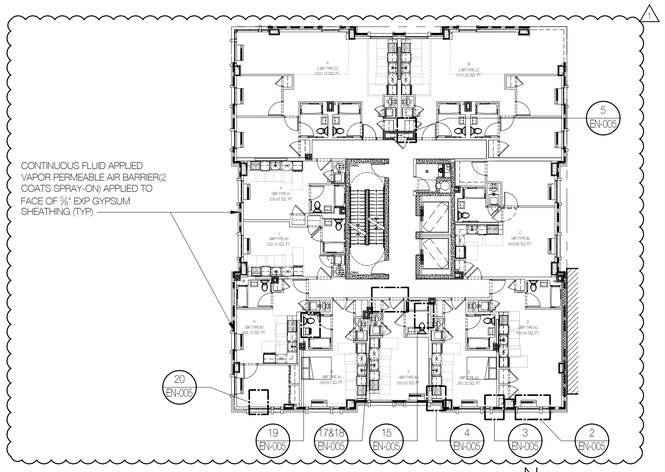
ISSUE DATE: 10-19-15 PROJECT NO: #1520

DRAWN BY: V.J. CHECKED BY: T.L.

SCALE: AS NOTED SHEET NO:

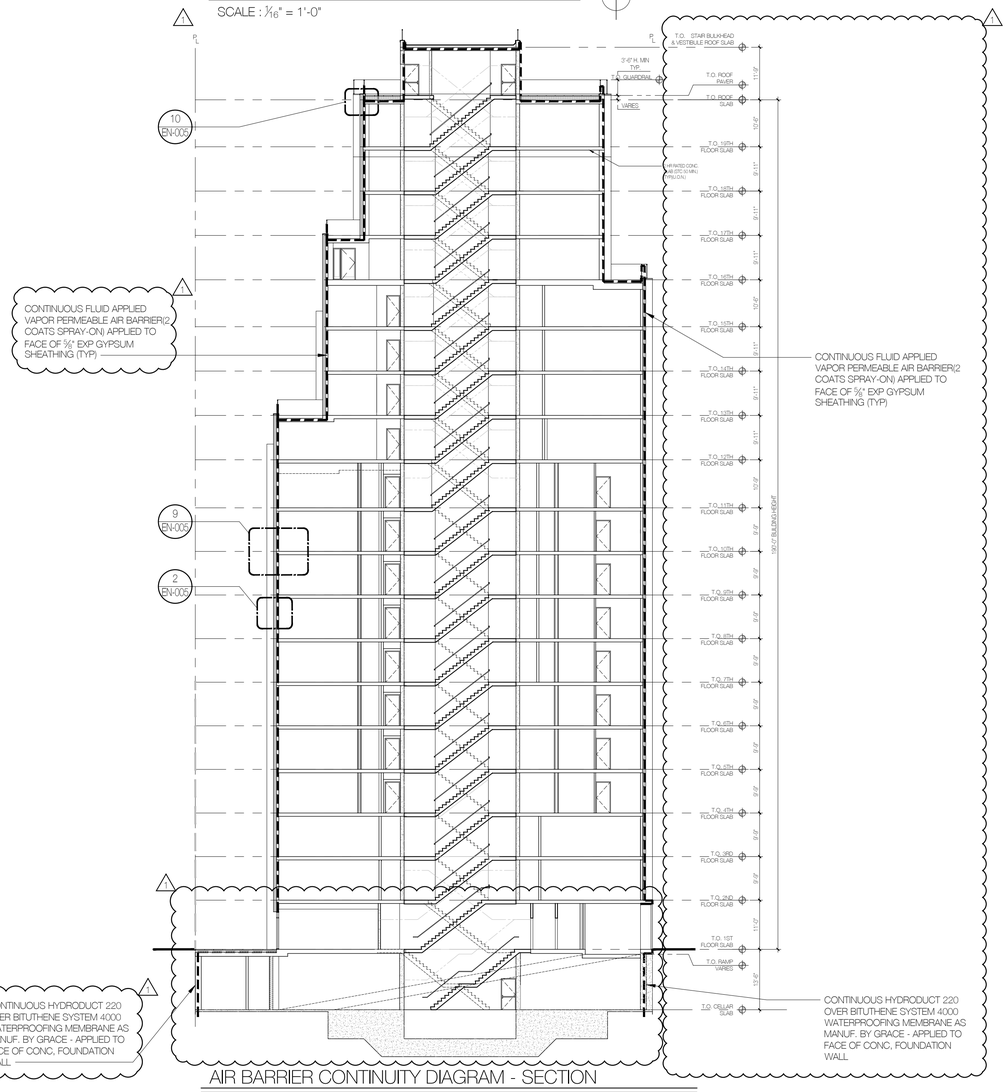
DRAWING NO: EN-003.01

NYC DOB NUMBER: 321191802



AIR BARRIER CONTINUITY DIAGRAM - PLAN

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



AIR BARRIER CONTINUITY DIAGRAM - SECTION

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

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:

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DATE	SUBMISSIONS / REVISIONS

SHEET TITLE:

CONTINUITY DIAGRAMS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

ISSUE DATE: 10-19-15 PROJECT NO: #1520

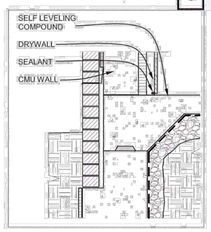
DRAWN BY: V.J. CHECKED BY: T.L.

SCALE: AS NOTED SHEET NO:

DRAWING NO: EN-004.01

NYC DOB NUMBER: 321191802

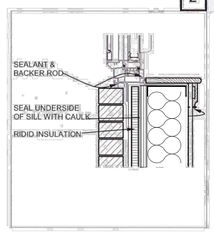
1 FLOOR DETAIL



a. *Stage of Construction: After framing*
b. Coordinate with gypsum board installation so that gap between bottom of gypsum board and concrete plank can be completely sealed by self leveling compound.
c. Follow manufacturer's recommended pour depth for self leveling compound. Typical thickness is 1/16" to 1/14"
d. Seal remaining gap, if any, with caulk or one-component polyurethane foam sealant.
e. If gap is 3/8" or less, use caulk. If gap is greater than 3/8", use foam.

Comments:

2 WINDOW - ROUGH OPENING AND UNDERSIDE OF SILL TO DRYWALL

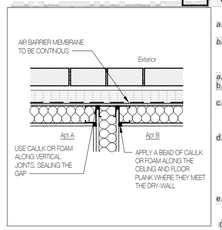


a. *Stage of Construction: Window installation & finishes*
b. Air barrier shall wrap in at masonry rough openings to be flush with inside edge of window frame.
c. Seal rough opening with continuous bead (eg 1/4") of caulk or one-component (low expansion) polyurethane foam.
d. If necessary insert backer rod into gap.

a. *Stage of construction: finishes*
b. Seal joint between underside of the window sill and drywall with caulk.

Comments:

3 EXTERIOR TENANT SEPARATION WALL DETAIL

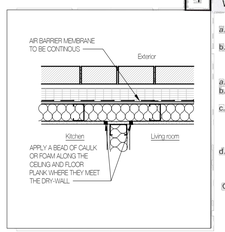


a. *Stage of construction: After structural wall construction*
b. Seal all cracks in masonry wall. Apply continuous air barrier membrane to exterior of structural CMU wall assembly.

a. *Stage of construction: Drywall installation*
b. Leave space for demising wall drywall to be inserted.
c. Drywall sequence must take into account sealing the vertical joint of the demising wall drywall to the exterior wall. Use caulk or one component polyurethane foam along vertical joints.
d. Drywall sequence must also take into account sealing the portion of the demising drywall that becomes inaccessible once the perimeter drywall is installed. Use a continuous bead of caulk or one component polyurethane foam to seal the inset portion of the drywall to the concrete plank/slab at the ceiling and floor.
e. All notches in drywall made for electrical cable, plumbing braces, etc. to be sealed with one component polyurethane foam or caulk.

Comments:

4 EXTERIOR PARTITION WALL DETAIL WITHIN APARTMENT UNITS

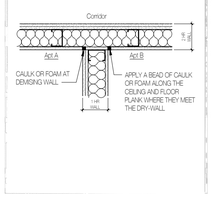


a. *Stage of construction: After structural wall construction*
b. Seal all cracks in masonry wall. Apply continuous air barrier membrane to exterior of structural CMU wall assembly.

a. *Stage of construction: During drywall installation*
b. During drywall installation, leave space so that perimeter drywall is continuous.
c. Drywall sequence must take into account sealing the gap at the ceiling and floor between the layers of party wall drywall before the party wall is installed. Apply a continuous bead of sealant to all gaps between the drywall, ceiling and floor.
d. All notches in drywall made for electrical cable, plumbing braces, etc. to be sealed with one component polyurethane foam or caulk.

Comments:

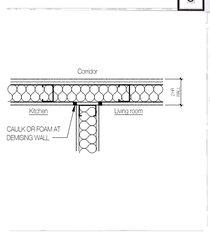
5 CORRIDOR TENANT SEPARATION WALL DETAIL



a. *Stage of construction: During drywall installation*
b. Leave space for demising wall drywall to be inserted.
c. Drywall sequence must take into account sealing the vertical joint of the demising wall drywall to the exterior wall. Use caulk or one component polyurethane foam along vertical joints.
d. Drywall sequence must also take into account sealing the portion of the demising drywall that becomes inaccessible once the perimeter drywall is installed. Use a continuous bead of caulk or one component polyurethane foam to seal the inset portion of the drywall to the concrete plank/slab at the ceiling and floor.
e. All notches in drywall made for electrical cable, plumbing braces, etc. to be sealed with one component polyurethane foam or caulk.

Comments:

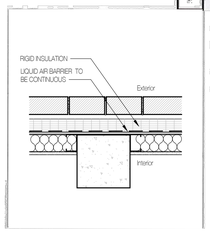
6 CORRIDOR PARTITION WALL DETAIL



a. *Stage of construction: During drywall installation*
b. During drywall installation, leave space so that perimeter drywall is continuous.
c. Drywall sequence must take into account sealing the gap at the ceiling and floor between the layers of party wall drywall before the party wall is installed. Apply a continuous bead of sealant to all gaps between the drywall, ceiling and floor.
d. All notches in drywall made for electrical cable, plumbing braces, etc. to be sealed with one component polyurethane foam or caulk.

Comments:

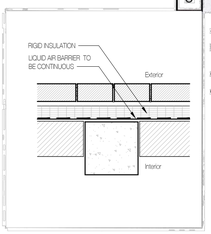
7 AIR BARRIER AT STEEL FRAME WALL & STEEL COLUMN



a. *Stage of construction: After structural wall construction*
b. Seal all cracks in masonry wall. Enclose structural steel column with spray on fireproofing.
c. Run sheet flashing membrane minimum 3" over masonry and fully adhere for air tight seal.
d. Run liquid air barrier over sheet flashing membrane.

Comments:

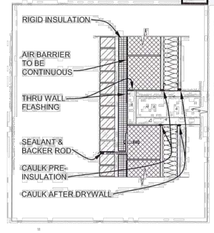
8 AIR BARRIER AT CMU WALL & STEEL COLUMN



a. *Stage of construction: After structural wall construction*
b. Seal all cracks in masonry wall. Enclose structural steel column with spray on fireproofing.
c. Run sheet flashing membrane minimum 3" over masonry and fully adhere for air tight seal.
d. Run liquid air barrier over sheet flashing membrane.

Comments:

9 FLOOR TO EXTERIOR WALL DETAIL

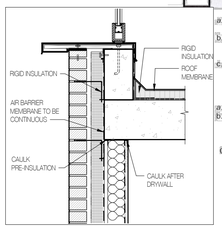


a. *Stage of construction: After framing*
b. Seal all cracks in masonry wall. Apply continuous air barrier membrane to exterior of structural CMU wall assembly. Seal where plank floor/ceiling and CMU wall meet with one continuous bead of sealant.

a. *Stage of construction: Finishes*
b. After installation of sheetrock, apply a continuous bead of sealant to the gap between sheetrock and plank.

Comments:

10 MASONRY ROOF ASSEMBLY

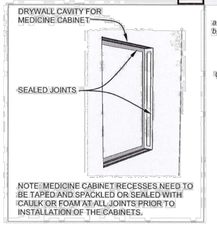


a. *Stage of construction: After structural wall construction*
b. Seal all cracks in masonry wall. Apply continuous air barrier membrane to exterior of structural CMU wall assembly.
c. Liquid air barrier must be brought up over grout edge part of roof plank and shall be sealed over the plank / grout joint.

a. *Stage of construction: Finishes*
b. After installation of sheetrock, apply a continuous bead of sealant to the gap between sheetrock and plank.

Comments:

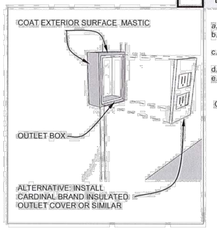
11 RECESSED MEDICINE CABINET



a. *Stage of construction: During drywall installation*
b. Seal all joints between gypsum board with tape and joint compound, caulk, or foam so that the cavity is completely sealed before installing medicine cabinets.

Comments:

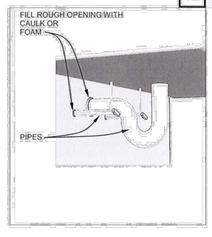
12 OUTLET AND ELECTRICAL BOXES – EXTERIOR & DEMISING WALLS



a. *Stage of Construction: Rough-in, after wiring*
b. Install mastic or putty pad to cover holes in electrical boxes.
c. OR use Cardinal brand insulated outlet covers instead of conventional outlet covers
d. Caulk outlet plate to sheetrock.
e. No outlets to be placed back to back on demising walls.

Comments:

13 PLUMBING, VENT, SPRINKLER, & GAS PIPE LINE PENETRATIONS

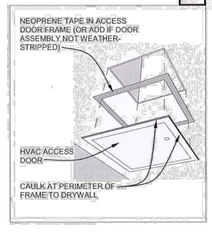


1. Plumbing Penetrations
a. *Stage of construction: Finishes*
b. Fill rough opening with caulk or foam to seal plumbing penetrations before installation of escutcheon.
c. Areas include around shower heads, and under bathroom and kitchen sinks including around drain lines.

2. Sprinkler, Gas Line, and Wiring Penetrations
a. *Stage of construction: Finishes*
b. Fill opening with caulk or foam to seal around all penetrations through drywall.

Comments:

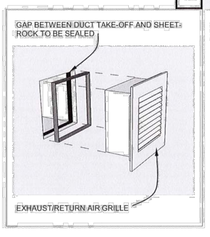
14 HVAC ACCESS DOOR (WALL & CEILING SIMILAR)



a. *Stage of construction: Finishes*
b. Option 1: Install caulk to seal perimeter of doorframe to drywall
c. Option 2: Install closed cell neoprene foam tape between rough opening and access door (if door not that originally weather-stripped).

Comments:

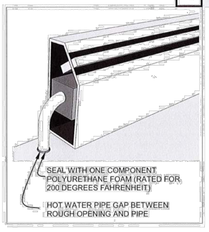
15 GAP BETWEEN TAKE-OFF DUCT AND GYPSUM BOARD



a. *Stage of construction: Finishes*
b. Apply mastic continuously around all joints between take-off ducts and drywall.

Comments:

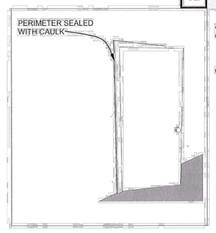
16 HEATING PIPE PENETRATION



a. *Stage of construction: After baseboard installation*
b. Option1: Use one component polyurethane foam or other sealant product rated for 200 degrees Fahrenheit to seal gap between pipe and drywall rough opening.
c. Option 2: Wrap copper heating pipe with closed cell foam rated for 200 degrees Fahrenheit. Then seal gap between foam and drywall rough opening with 1/4" to 3/8" caulk.
d. Where caulk is exposed to view, protect adjacent surfaces from damage and from sealant material and tool caulk flush with and in same plane as as wall and surface. Caulk beads shall be 1/4" to 3/8" diameter.

Comments:

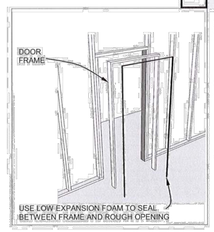
17 INTERIOR DOOR FRAME CONNECTION



a. *Stage of construction: After drywall installation*
b. Seal entire perimeter between door frame and drywall with caulk on both sides of all interior doors.

Comments:

18 EXTERIOR DOOR

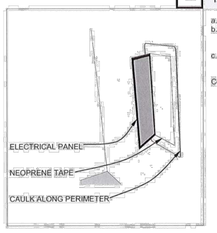


a. *Stage of construction: Rough-in*
b. Gaps between door frame (header, jambs, threshold) and rough opening shall be sealed as necessary on the interior with low expansion foam that is compatible with all surfaces applied to.

a. *Stage of Construction:* Finishes
b. For all exterior, stairwell-corridor, apartment-corridor doors, and any door separating a space that is vented to the outdoors (boiler room, meter room, refuse rooms, etc.) install weather stripping with rigid fastener and compressible neoprene sponge foam insert.

Comments:

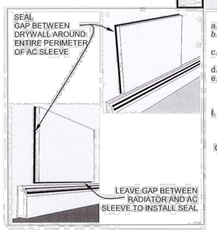
19 ELECTRICAL & TELECOMMUNICATION PANELS



a. *Stage of construction: After drywall installation*
b. Install closed cell neoprene foam tape on the interior side of the panel door. Ensure door tightly seals to panel when closed.
c. Seal entire perimeter gap between panel and drywall using caulk.

Comments:

20 A/C SLEEVE & INTERIOR DRYWALL



a. *Construction Stage: Finishes*
b. Seal rough opening with one component low expansion foam if needed.
c. Seal all joints between A/C sleeve and drywall with caulk.
d. If necessary, insert backer rod into gap.
e. Gaps between A/C sleeves and rough openings shall be sealed on the interior with backer rod as necessary and sealant that is compatible with all surfaces applied to where not sealed by grout.
f. Insulated interior cover with compressible gasket must be provided.

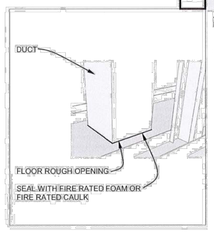
Comments:

21 RECESSED LIGHTING

a. *Stage of construction: Finishes*
b. Recessed luminaires installed in the building thermal envelope shall be sealed to limit air leakage between conditioned and unconditioned spaces.
c. All recessed luminaires shall be IC-rated and labeled as meeting ASTM E 283 when tested at 1.57 psf (75 Pa) pressure differential with no more than 2.0 cfm (0.944 L/s) of air movement from the conditioned space to the ceiling cavity.

Comments:

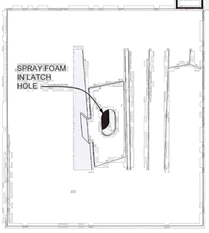
22 FIRESTOP PENETRATIONS IN PLANK AND CMU



a. *Stage of construction: Before drywall installation*
b. Ensure all penetrations in plank and CMU are sealed to reduce air infiltration and stack effect.

Comments:

23 DOOR LATCH HOLE



a. *Stage of Construction:* Finishes
b. If a blower door test indicates significant leakage at this location:
c. Spray one part polyurethane foam above and below latch hole in door frame cavity.
d. If necessary cut away any foam that expands into operating area of the latch hole.

Comments:

PROPOSED NEW DEVELOPMENT

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BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

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T: 307.760.6454

DATE	SUBMISSIONS / REVISIONS
08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
05.02.18	REVISED AS PER ENERGY COMMENTS
01.26.18	RE-ISSUED TO D.O.B. FOR REVIEW AND COMMENTS
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS

SHEET TITLE:

STANDARD AIR SEALING DETAILS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

ISSUE DATE: 10-19-15
PROJECT NO: #1520
DRAWN BY: V.J.
CHECKED BY: T.L.
SCALE: NTS
SHEET NO:

DRAWING NO:

EN-005

NYC DOB NUMBER: 321191802

ABBREVIATIONS:

&	AND
@	AT
AB	ANCHOR BOLT
A/C	AIR CONDITIONING
ACT	ACOUSTICAL TILE
ACU	AIR CONDITIONING UNIT
ADJ	ADJACENT/ADJOINING
ADJUST	ADJUSTABLE
AFF	ABOVE FINISH FLOOR
AGG	AGGREGATE
AHU	AIR HANDLING UNIT
ALT	ALTERNATE
ALUM	ALUMINUM
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
AUTO	AUTOMATIC
AVE	AVENUE
AVG	AVERAGE
BD	BOARD
BLDG	BUILDING
BLKG	BLOCKING
BM	BEAM
BOT	BOTTOM
BRG	BEARING
BTW	BETWEEN
CC	CUBIC CENTIMETER
C/C	CENTER TO CENTER
CEM	CEMENT
CFM	CUBIC FEET PER MINUTE
CJ	CONTROL JOINT (SEE EXP JT)
CLG	CEILING
CL	CLOSET
CLR	CLEAR/CLEARANCE
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCT/CONSTRUCTION
CONT	CONTINUOUS
CORR	CORRIDOR
CPT	CARPET
CT	CERAMIC TILE
CW	COLD WATER
DF	DRINKING FOUNTAIN (SEE EWC)
DIA	DIAMETER
DIM	DIMENSION
DL	DEAD LOAD
DN	DOWN
DTL	DETAIL
DWG	DRAWING
E	EAST
EA	EACH
EB	EXPANSION BOLT (SEE AB)
EIFS	EXTERIOR INSULATED FINISH SYSTEM
EJ	EXPANSION JOINT (SEE CJ)
EL	ELEVATION
ELEC	ELECTRICAL/ELECTRIC
ELEV	ELEVATOR
EMER	EMERGENCY
ENCL	ENCLOSURE/ENCLOSED
ENGR	ENGINEER
ENTR	ENTRANCE
EQ	EQUAL
EQUIP	EQUIPMENT
EXIST	EXISTING
EXH	EXHAUST
EXP	EXPOSED
EXPAN	EXPANDED/EXPANSION
EXT	EXTERIOR
FA	FIRE ALARM
FAB	FABRICATED
FD	FLOOR DRAIN
FE	FIRE EXTINGUISHER
FHC	FIRE HOSE CABINET
FIN	FINISH
FIX	FIXTURE
FL	FLOOR/FLOORING
FD	FLOOR DRAIN
FDN	FOUNDATION
FP	FIREPROOF
FT	FOOT/FEET
GA	GAGE (GAUGE)
GAL	GALLON
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GL	GLASS
GPM	GALLONS PER MINUTE
GYP	GYPSUM
GWB	GYPSUM WALL BOARD
H	HIGH
HB	HOSE BIB
HDW	HARDWARE
HM	HOLLOW METAL (STEEL)
HOR	HORIZONTAL
HP	HIGH POINT
HR	HOUR
HT	HEIGHT
HVAC	HEATING, VENTILATION AND AIR CONDITIONING
HW	HOT WATER
HWD	HARDWOOD
ID	INSIDE DIAMETER
IN	INCH(ES)
INCL	INCLUDING/INCLUDED
INSUL	INSULATE/INSULATED/INSULATION
INT	INTERIOR
INV	INVERTED/INVERT
JC	JANITORS CLOSET
JT	JOINT

K.	KITCHENETTE
KIT	KITCHEN
KO	KNOCKOUT
L	LONG/LENGTH
LAM	LAMINATED
LAV	LAVATORY
LB(S)	POUND(S)
LF	LINEAR FEET
LL	LIVE LOAD
LP	LOW POINT
MACH	MACHINE
MANUF	MANUFACTURER
MAX	MAXIMUM
MECH	MECHANICAL
MEP	MECHANICAL, ELECTRICAL & PLUMBING
MED	MEDIUM
MEMB	MEMBRANE
MTL	METAL
MEZZ	MEZZANINE
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MTD	MOUNTED
N	NORTH
NIC	NOT IN CONTRACT
NOM	NOMINAL
NTS	NOT TO SCALE
OC	ON CENTER(S)
OD	OUTSIDE DIAMETER
OPNG	OPENING
OPP	OPPOSITE
OZ	OUNCE
PB	PULL BOX
PCF	POUNDS PER CUBIC FOOT
PL	PLATE
P.LAM	PLASTIC LAMINATE
PR	PAIR
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT
PTD	PAINTED
PVC	POLYVINYL CHLORIDE
QT	QUARRY TILE
QTY	QUANTITY
R	RISER
RAD	RADIUS
REBAR	REINFORCING BAR
REF	REFERENCE/ REFER TO
REINF	REINFORCE/REINFORCING
REQ	REQUIRED
REV	REVISION
RM	ROOM
RO	ROUGH OPENING
RUB	RUBBER
S	SOUTH
SCHED	SCHEDULE
SECT	SECTION
SHT	SHEET
SIM	SIMILAR
SPEC	SPECIFICATION
SQ	SQUARE
SF	SQUARE FEET
SS	STAINLESS STEEL
ST	STREET
STC	SOUND TRANSMISSION CLASS
STD	STANDARD
STL	STEEL
STL DR	STEEL DOOR
STOR	STORAGE
STRUCT	STRUCTURE/STRUCTURAL
SUSP	SUSPEND/SUSPENDED
SYM	SYMMETRICAL
SYS	SYSTEM
T/CONC	TOP OF CONCRETE
T/STL	TOP OF STEEL
T/WALL	TOP OF WALL
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
TEL	TELEPHONE
TEMP	TEMPERATURE (IF UNLESS NOTED)
TEMP GL	TEMPERED GLASS
TF	TEMPORARY FIXTURE
THK	THICK/THICKNESS
T.O.S.	TOP OF SLAB
TV	TELEVISION
TYP	TYPICAL
UR	URINAL
U.O.N.	UNLESS OTHERWISE NOTED
UL	UNDERWRITERS LABORATORIES
VCB	VINYL COVE BASE
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
VEST	VESTIBULE
VIF	VERIFY IN FIELD
VOL	VOLUME
W	WEST
W/	WITH
W/O	WITHOUT
WC	WATER CLOSET
WD	WOOD
WGL	WIRE GLASS
WL	WORK LINE
WP	WORKING POINT
WT	WEIGHT
WWF	WELDED WIRE FABRIC

GENERAL NOTES:

1. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE 2014 NEW YORK CITY BUILDING CODE, ICC / ANSI A 117.1 - 2009, FIRE DEPARTMENT REGULATIONS, UTILITY COMPANY REQUIREMENTS AND THE BEST TRADE PRACTICES.
2. BEFORE COMMENCING WORK, THE CONTRACTOR SHALL FILE ALL REQUIRED CERTIFICATES OF INSURANCE WITH THE DEPARTMENT OF BUILDINGS, OBTAIN ALL REQUIRED PERMITS, AND PAY ALL FEES REQUIRED BY GOVERNING NEW YORK CITY AGENCIES.
3. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS IN THE FIELD PRIOR TO COMMENCING WORK, AND SHALL REPORT ANY DISCREPANCIES BETWEEN DRAWINGS AND FIELD CONDITIONS TO THE ARCHITECT IMMEDIATELY.
4. THE CONTRACTOR IS NOT TO SCALE DRAWINGS OR DETAILS. ONLY WRITTEN DIMENSIONS ARE TO BE USED.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL CONDITIONS AND MATERIALS WITHIN THE PROPOSED CONSTRUCTION AREA. THE CONTRACTOR SHALL DESIGN AND INSTALL ADEQUATE SHORING AND BRACING FOR ALL STRUCTURAL OR REMOVAL TASKS. THE CONTRACTOR SHALL HAVE SOLE RESPONSIBILITY FOR ANY DAMAGE OR INJURIES CAUSED BY OR DURING THE EXECUTION OF THE WORK.
6. THE CONTRACTOR SHALL LAY OUT HIS OWN WORK, AND SHALL PROVIDE ALL DIMENSIONS REQUIRED FOR OTHER TRADES (PLUMBING, ELECTRICAL, ETC.).
7. PLUMBING AND ELECTRICAL WORK SHALL BE PERFORMED BY PERSONS LICENSED IN THEIR TRADES, WHO SHALL ARRANGE FOR AND OBTAIN INSPECTIONS AND REQUIRED SIGN-OFFS.
8. THE CONTRACTOR SHALL DO ALL CUTTING, PATCHING AND REPAIRING AS REQUIRED TO COMPLETE ALL OF THE WORK INDICATED ON THE DRAWINGS, AND ALL OTHER WORK THAT MAY BE REQUIRED TO COMPLETE THE JOB.
9. TYPES OF CONSTRUCTION SHALL COMPLY WITH THE REQUIREMENTS OF CHAPTER 6 OF N.Y.C. BLDG. CODE. AT LEAST 24 HR. WRITTEN NOTICE SHALL BE GIVEN TO THE COMMISSIONER BEFORE COMMENCEMENT OF WORK.
10. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND SAMPLES ON ALL ITEMS SPECIFIED ON THE CONTRACT DOCUMENTS TO THE ARCHITECT FOR REVIEW AND APPROVAL PRIOR TO PURCHASING AND INSTALLATION.
11. ALL DEBRIS ON THE PROPERTY DUE TO CONSTRUCTION SHALL BE REMOVED.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR ARRANGING AND PAYING FOR ALL CONTROLLED INSPECTIONS REQUIRED BY LAW, AND FOR ARRANGING ALL CONSTRUCTION, PLUMBING, ELECTRICAL, OR OTHER INSPECTIONS RELATED TO THE PROPOSED WORK. A PROPOSED SCHEDULE OF THESE INSPECTIONS SHALL BE INCLUDED IN THE PROPOSED WORK SCHEDULE. CONTRACTOR SHALL PROVIDE INSPECTION SIGN-OFF'S TO OWNER AND ARCHITECT.
13. CONTRACTOR SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS AND CONDITIONS, ALSO HE SHALL NOTIFY THE ARCHITECT OF ANY VARIATIONS FROM THE DIMENSIONS AND CONDITIONS SHOWN ON THESE DRAWINGS PRIOR TO THE START OF WORK. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS.
14. DIMENSIONS SHOWN ON FLOOR PLANS, SECTIONS, ELEVATIONS, AND DETAILS ARE TO FINISH FACE OF WALLS OR CENTER LINE OF COLUMNS TYPICALLY, UNLESS OTHERWISE NOTED.
15. ABBREVIATIONS THROUGHOUT THE PLANS ARE THOSE IN COMMON USE. NOTIFY THE ARCHITECT OF ANY ABBREVIATIONS IN QUESTION.
16. CIVIL, ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS ARE COMPLEMENTARY. ANYTHING SHOWN ON ARCHITECTURAL DRAWINGS AND NOT SHOWN ON CIVIL, STRUCTURAL, MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS, OR SHOWN ON CIVIL, STRUCTURAL, MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS AND NOT SHOWN ON ARCHITECTURAL DRAWINGS SHALL BE INTERPRETED AS BEING SHOWN ON ALL TRADES.
17. FINISH FLOOR ELEVATIONS ARE AS ESTABLISHED DATUM LINE, UNLESS OTHERWISE NOTED. THE CONTRACTOR WILL BE RESPONSIBLE FOR VERIFYING FLOOR-TO-FLOOR ELEVATIONS.
18. IN THE CASE OF A CONFLICT BETWEEN THE DRAWINGS AND THE SPECIFICATIONS, SPECIFICATIONS SHALL TAKE PRECEDENCE. CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER OF ANY CONFLICT BEFORE PROCEEDING WITH THE WORK.
19. CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS AND EQUIPMENT AS REQUIRED TO PROPERLY AND FULLY COMPLETE THE WORK AS INDICATED BY THE DRAWINGS AND SPECIFICATIONS.
20. CONTRACTOR SHALL REMOVE, CUT, PATCH AND REFRAME WALLS, PARTITIONS, FLOORS, FRAMES, DOORS, MOLDINGS, PIPE FIXTURES AND CONDUIT AS REQUIRED TO PROPERLY EXECUTE THE WORK.
21. CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATELY BRACING AND PROTECTING ALL WORK DURING CONSTRUCTION AGAINST DAMAGE, BREAKS, COLLAPSE, DISTORTIONS, AND OFF-ALIGNMENT ACCORDING TO APPLICABLE STANDARD CODES (INCLUDING CHAPTER 33 OF THE NYC BUILDING CODE) AND GOOD PRACTICE.
22. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THE VARIOUS TRADE ITEMS WITHIN THE SPACE ABOVE ALL CEILINGS (INCLUDING, BUT NOT LIMITED TO: STRUCTURAL MEMBERS, MECHANICAL DUCTS AND INSTALLATION, CONDUITS, RACEWAYS, SPRINKLER SYSTEM, LIGHT FIXTURES, CEILING SYSTEMS, AND ANY SPECIAL STRUCTURAL SUPPORTS REQUIRED) AND SHALL BE RESPONSIBLE FOR MAINTAINING THE FINISH CEILING HEIGHT ABOVE THE FINISH FLOOR AS INDICATED ON THE DRAWINGS AND THE FINISH SCHEDULE. (CEILING HEIGHT DIMENSIONS ARE TO THE FINISH SURFACE OF CEILING.)
23. CONTRACTOR SHALL FURNISH AND INSTALL ACCESS PANELS WHERE SHOWN ON THE REFLECTED CEILING PLANS AND AS REQUIRED BY BUILDING CODE OR NORMAL GOOD PRACTICE TO PROVIDE ACCESS TO ALL MECHANICAL OR ELECTRICAL EQUIPMENT. NO ACCESS PANEL SHALL BE LOCATED, FRAMED, OR INSTALLED WITHOUT THE EXPRESSED APPROVAL OF THE ARCHITECT.
24. THE CONTRACTOR SHALL PROTECT ALL FINISH WORK SURFACES FROM DAMAGE DURING THE COURSE OF CONSTRUCTION AND SHALL REPLACE AND/OR REPAIR ALL DAMAGED SURFACES CAUSED BY CONTRACTOR OR SUBCONTRACTOR PERSONNEL TO THE SATISFACTION OF THE OWNER AND ARCHITECT.
25. CONTRACTOR SHALL PROPERLY PROTECT AND MAKE SAFE ADJACENT PROPERTY AS JOB CONDITIONS REQUIRE. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO ISOLATE ALL WORK AREAS AND CLEARLY DEFINE PATHS OF ACCESS TO THE WORK FOR WORKMEN IN ORDER TO INSURE MINIMIZATION OF DUST INFILTRATION TO OTHER AREAS OF THE BUILDING AND TO PREVENT DAMAGE TO FLOORS, WALLS AND CEILINGS OF PUBLIC AND/OR FREIGHT ACCESS AREAS. IF SUCH DAMAGE SHOULD OCCUR, CONTRACTOR SHALL CORRECT IT IMMEDIATELY AT HIS OWN COST.
26. ALL PRECAUTIONS ARE TO BE TAKEN TO PREVENT DIRT AND DUST FROM PERMEATING INTO OTHER PARTS OF THE BUILDING DURING THE PROGRESS OF THE WORK. MATERIALS AND RUBBISH SHALL BE PLACED IN BARRELS OR BAGS BEFORE BEING TAKEN OUT OF THE IMMEDIATE AREA OF CONSTRUCTION. ALL SUCH BARRELS, BAGS, RUBBISH, RUBBLE, DISCARDED EQUIPMENT, EMPTY PACKING CARTONS AND OTHER MATERIALS WILL BE TAKEN OUT OF THE BUILDING AND PROPERLY REMOVED FROM THE PREMISES AS PART OF THE WORK UNDER THIS CONTRACT.
27. SPECIAL NOTICE TO CONTRACTORS: ALL CONTRACTORS PERFORMING WORK ON THE PREMISES SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING AND SUPERVISING A REASONABLE AND PRUDENT SAFETY PROGRAM INCLUDING BUT NOT LIMITED TO THE ISOLATION OF WORK AREAS AND THE PROMPT REMOVAL OF ANY DEBRIS OR TOOLS WHICH MIGHT ENDANGER VISITORS AND STAFF OF THE OWNER OR ARCHITECT.
28. IF THE CONTRACTOR ASCERTAINS AT ANY TIME THAT REQUIREMENTS OF THIS CONTRACT CONFLICT WITH, OR ARE IN VIOLATION OF, APPLICABLE LAWS, CODES, REGULATIONS AND ORDINANCES, HE SHALL NOT PROCEED WITH WORK IN QUESTION, EXCEPT AT HIS OWN RISK, UNTIL ARCHITECT HAS BEEN NOTIFIED IN WRITING AND WRITTEN DETERMINATION IS MADE BY THE ARCHITECT. WHERE COMPLETED OR PARTIALLY COMPLETED WORK IS DISCOVERED TO BE IN VIOLATION WITH APPLICABLE LAWS, CODES, REGULATIONS AND ORDINANCES, CONTRACTOR SHALL BE REQUIRED TO REMOVE THAT WORK FROM THE PROJECT AND REPLACE SUCH WORK WITH ALL NEW COMPLYING WORK AT NO ADDITIONAL COST TO THE OWNER OR ARCHITECT.
29. ANY WORK INSTALLED IN CONFLICT WITH THE CONTRACT DOCUMENTS SHALL BE CORRECTED BY THE CONTRACTOR AT HIS EXPENSE AND AT NO ADDITIONAL EXPENSE TO THE OWNER, ARCHITECT, OR CONSULTANTS.
30. CONTRACTOR SHALL COORDINATE ALL AREAS OF WORK WITH ALL SUB-CONTRACTORS AND OTHER TRADES INVOLVED WITH THE PROJECT.
31. COORDINATE SPACE REQUIREMENTS AND INSTALLATION OF MECHANICAL AND ELECTRICAL WORK INDICATED ON DRAWINGS. VERIFY LOCATION AND REQUIRED OPENING SIZES FOR MECHANICAL EQUIPMENT, LOCATION AND SIZES OF EQUIPMENT FOR PADS AND BASES AND REQUIREMENT, AND LOCATION OF POWER AND WATER OR DRAIN INSTALLATION WITH EQUIPMENT MANUFACTURERS BEFORE PROCEEDING WITH THE WORK.
32. COMPLY WITH INSTALLATION REQUIREMENTS OF MANUFACTURER'S INSTRUCTIONS AND APPROVED SHOP DRAWINGS.
33. CONTRACTOR SHALL ANALYZE ELECTRICAL REQUIREMENTS OF EQUIPMENT TO BE INSTALLED AND ADVISE ARCHITECT OF THE NEED, IF ANY, TO UPGRADE EXISTING POWER SUPPLY PRIOR TO PROCEEDING WITH ELECTRICAL WORK.
34. CONTRACTOR SHALL PROVIDE OWNER WITH ALL MANUALS, MAINTENANCE SCHEDULES, AND OTHER REQUIREMENTS NECESSARY FOR THE MAINTENANCE OF EQUIPMENT INSTALLED AS PART OF THIS CONTRACT. ALL MANUFACTURER'S WARRANTIES SHALL BE TRANSFERRED TO OWNER UPON COMPLETION OF WORK.
35. CONTRACTOR SHALL IDENTIFY ALL NEW EXPOSED PIPES, VALVES, AND CONDUIT WITH STAMPED METAL TAGS AND SHALL LABEL ELECTRIC PANEL BOXES WITH CIRCUIT DESIGNATIONS UPON COMPLETION OF WORK.
36. CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP IN THIS CONTRACT FOR A PERIOD OF ONE YEAR FOLLOWING ARCHITECT'S CERTIFICATION OF SUBSTANTIAL COMPLETION, AND SHALL REMEDY ANY DEFECTS IN SUCH WORK THAT ARISES DURING THAT TIME AT NO COST TO THE OWNER.
37. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES BELOW GRADE AND RELATED SERVICE CONNECTIONS WITH THE RESPECTIVE UTILITY COMPANIES.
38. THE CONTRACTOR SHALL COORDINATE THE REMOVAL, ABANDONMENT, AND/OR RELOCATION OF EXISTING UTILITIES ABOVE OR BELOW GRADE WITH THE RESPECTIVE UTILITY COMPANIES.
39. TEMPORARY FACILITIES:
   A) THE CONTRACTOR SHALL PROVIDE A STAGING AND MATERIAL STORAGE AREA ADJACENT TO THE AREA OF CONSTRUCTION. LOCATION SHALL BE COORDINATED WITH THE OWNER. IN ACCORDANCE WITH CHAPTER 31 OF THE 2014 NYC BUILDING CODE.
   B) THE CONTRACTOR SHALL MAKE NECESSARY CONNECTIONS TO EXISTING UTILITIES FOR TEMPORARY POWER AND WATER SUPPLIES, AND SHALL COORDINATE SUCH USE WITH THE OWNER PRIOR TO CONNECTION. IN ACCORDANCE WITH CHAPTER 33 OF THE NYC BUILDING CODE)
   C) THE CONTRACTOR SHALL PROVIDE TEMPORARY BARRICADES TO SEPARATE CONSTRUCTION AREAS FOR PUBLIC SAFETY AROUND ENTIRE PERIMETER OF CONSTRUCTION AREA. IN ACCORDANCE WITH CHAPTER 31 & 33 OF THE 2014 NYC BUILDING CODE)
40. FIRE-RATED PARTITION WALLS AND FIRE-RATED OCCUPANCY SEPARATION WALLS SHALL EXTEND FROM CONCRETE FLOOR SLABS UP TO UNDERSIDE OF STRUCTURE ABOVE. ALL OPENINGS SHALL BE PROTECTED IN ACCORDANCE WITH CHAPTER 7 OF THE 2014 NYC BUILDING CODE.
41. ALL PENETRATIONS THRU FIRE-RATED WALLS, FLOORS AND CEILINGS SHALL BE INSTALLED WITH FIRE DAMPERS, FIRE SEAL, ETC., SO AS TO MAINTAIN THE FIRE RESISTIVE RATING AND STRUCTURAL INTEGRITY OF WALL OR CEILING ASSEMBLY. ALL OPENINGS SHALL BE PROTECTED IN ACCORDANCE WITH CHAPTER 7 OF THE 2014 NYC BUILDING CODE.
42. FINAL CLEAN UP AND DISPOSAL: REMOVE DEBRIS, RUBBISH AND WASTE MATERIAL FROM THE OWNER'S PROPERTY TO A LAWFUL DISPOSAL AREA AND PAY ALL HAULING AND DUMPING COSTS. CONFORM TO PERTAINING FEDERAL STATE AND LOCAL LAWS, REGULATIONS AND ORDERS UPON COMPLETION OF WORK, ALL CONSTRUCTION AREAS SHALL BE LEFT VACUUM-CLEAN AND FREE FROM DEBRIS. CLEAN ALL DUST, DIRT, STAINS, HAND MARKS, PAINT SPOTS, DROPPINGS, AND OTHER BLEMISHES FROM ALL FINISHED SURFACES.
43. PROVIDE CONC. LINTELS ABOVE ALL MASONRY OPENINGS (TYP) U.O.N. SEE STRUCTURAL DRAWINGS FOR LINTEL SCHEDULE.
44. G.C. SHALL COORDINATE SIZE & LOCATION OF ALL HVAC OPENINGS IN CONCRETE FLOOR & ROOF SLAB WITH MECHANICAL DRAWINGS & CONC. PLANK CONTRACTOR. ALL VERTICAL SHAFT WALLS ENCLOSING HVAC DUCTS SHALL BE 2-HR RATED (TYP) WHERE PENETRATES THREE STORIES OR MORE (BC 707.4) IF SHAFT EXTENDS UP TO THE UNDERSIDE OF A NON-COMBUSTIBLE ROOF AND HAVE A FLOOR AREA EXCEEDING 4 SQ.FT., PROVIDE A SMOKE VENT.
45. ALL DWELLING UNITS ARE HANDICAP ADAPTABLE (BC 1107) (U.O.N. ON PLANS)
47. FOR SIZE & LOCATION OF ALL REQUIRED CONCRETE PADS FOR MECHANICAL EQUIPMENT, SEE MECHANICAL & PLUMBING DRAWINGS.
48. IF A SPRINKLER LINE IS EXPOSED IN A LIVING AREA, ENCLOSE IN A GYP. BD. SOFFIT - SEE SPRINKLER DWGS. AND ARCH SPRINKLER SOFFIT DETAIL.
49. ALL STEEL COLUMNS & BEAMS SHALL BE FIRE PROTECTED W/ SPRAY-ON FIREPROOFING (2 HOUR RATED).
50. ALL EXTERIOR WALLS, INCLUDING ROOF BULKHEADS SHALL BE 1 HR RATED.
51. ALL INTERIOR BEARING WALLS, HOIST WAY, SHAFTS, VERTICAL EXITS AND EXIT PASSAGE WAYS SHALL BE 2 HOUR RATED.
52. PROVIDE NON-COMBUSTIBLE FIRE STOPPING AT THE PERIMETER OF ALL PENETRATIONS THROUGH RATED WALLS, FLOORS, ROOF AND CEILINGS.
53. ALL EXTERIOR CONCRETE BLOCK WALLS ADJACENT TO EXISTING BUILDINGS SHALL HAVE A DRY-BLOCK ADDITIVE (INCLUDING MORTAR) "ACME SHIELD".
54. PROVIDE CONTROL JOINTS IN GYP BD WALLS & CEILING @ 30'-0" O/C MAX. AS MANUF BY U.S.G.
55. PROVIDE CONTROL JOINTS IN BRICK @ 30'-0" O.C. MAX., CONTROL JOINTS IN CMU @ 30'-0" O.C., EXPANSION JOINTS IN CMU @ 60'-0" O/C.
56. MINIMUM ALLOWABLE CEILING HEIGHT IN APARTMENTS (BC 1208.2)
   * HABITABLE ROOMS _ 8'-0"
   * OCCUPIABLE SPACES _ (PUBLIC CORRIDORS & COMMUNITY ROOM) 7'-6"
   * BATHROOMS, KITCHENS, SOFFITS, APPT FOYER _ 7'-0"
57. PROVIDE MIN. STC 50 RATING AT PERIMETER WALLS, FLOORS & CEILING OF RESIDENTIAL APARTMENTS (BC 1207)
58. MECHANICAL & PLUMBING CONTRACTORS TO COORDINATE WITH G.C. & CONCRETE MANUFACTURER PENETRATION SIZE & LOCATIONS PRIOR TO DRILLING HOLES.
59. ALL WORK TO BE PERFORMED ON THIS PROJECT SHALL BE IN A WORKMEN LIKE MANNER.
60. ENCAPSULATED HORIZONTAL DUCTWORK WITH FYREWRAP EZ 1.5 2 HOUR RATED . NONCOMBUSTIBLE DUCT BLANKET INSULATION (SEE MECHANICAL DRAWINGS)
61. PROVIDE FIRE EXTINGUISHER PER NYC BUILDING CODE & ALL LOCAL FIRE AUTHORITIES.
62. THIS BUILDING DOES NOT INCLUDE MODULAR CONSTRUCTION
63. ELEVATORS SHALL BE IN COMPLIANCE WITH BC 3003.3.1 AND BE KEPT AVAILABLE FOR INMMEDIATE USE OF nycfd ALL OURS OF THE NIGHT AND DAY, INCLUDING HOLIDAYS, SATURDAY & SUNDAYS.
64. AS PER TPPN 10/88 PROTECTION SHALL BE PROVIDED TO AVOID DAMAGE TO HISTORIC LANDMARK STRUCTURES ADJACENT TO THE PROPERTY OR WITHIN 90FEET - THERE ARE NO LANDMARK STRUCTURES WITHIN 90 FEET.

NEW YORK CITY MULTIPLE DWELLING LAW:

1. IN MULTIPLE DWELLINGS BUILDINGS, WALLS, FLOORS, ROOF, STAIRS AND PUBLIC HALLS SHALL BE FIRE PROOFED. (CHAPTER 7)
2. ALL PARTITIONS BETWEEN APARTMENTS SHALL BE FIRE STOPPED AS PER SECTION BC 708
3. SOUND PROOFING BETWEEN APARTMENTS SHALL COMPLY WITH BC 1207.
4. PARTITIONS AND CEILING ENCLOSING KITCHENS & KITCHENETTES SHALL BE FIRE-RETARDED AS PER CHAPTER 7 OF NYC BC & SECTION 33 OF NEW YORK STATE MULTIPLE DWELLING LAW.
5. ALL COMBUSTIBLE MATERIALS UNDER OR WITHIN 1'-0" OF COOKING APPLIANCES SHALL BE FIRE RETARDED. THERE SHALL ALWAYS BE AT LEAST 2 FEET OF CLEAR SPACE ABOVE ANY EXPOSED COOKING SURFACES AS PER SECTION 33 OF NEW YORK STATE MULTIPLE DWELLING LAW.
6. NUMBER OF EXITS REQUIRED ACCORDING TO TABLE 1018.1 - STAIRS SHALL EXTEND FROM THE ENTRANCE STORY UP TO THE ROOF AND BE EQUIPPED WITH FIREPROOF SELF-CLOSING DOORS GLAZED WITH WIRE GLASS AND WITHOUT TRANSOMS. THE DOORS GIVING ACCESS TO SUCH STAIRS SHALL NOT BE HELD OPEN BY ANY DEVICE WHATEVER. (CHAPTER 10).
7. PROVIDE MIRROR IN SELF-SERVICE PASSENGER ELEVATORS AS PER CHAPTER 30, SECTION BC 3001.6.
8. THE FLOOR OF EVERY BATHROOM OR PUBLIC TOILET SHALL HAVE A SMOOTH, HARD, NONABSORBENT SURFACE THAT EXTENDS UPWARD ONTO THE WALLS AT LEASE 6" OR MORE ABOVE THE FLOOR, EXCEPT AT DOORS, AS PER SECTION BC 1210.
9. EVERY BATHROOM SHALL BE PROVIDED WITH NATURAL VENTILATION IN ACCORDANCE WITH SECTION 1203.4.1.3, UNLESS PROVIDED WITH EXHAUST VENTILATION IN ACCORDANCE WITH THE NEW YORK CITY MECHANICAL CODE . (SECTION 1203.4.1.3).
10. EVERY MULTIPLE DWELLING SHALL COMPLY WITH CHAPTERS 11 & 12 (LIGHTING, GAS METERS, AND GAS APPLIANCES).
11. PROVIDE USPS APPROVED MAILBOXES.
12. PROVIDE INTERCOMMUNICATION SYSTEM IN ENTRANCE LOBBY AS PER CHAPTER 1008.4.4.
13. PROVIDE AND MAINTAIN A PEEPHOLE IN THE ENTRANCE DOOR OF EACH HOUSING UNIT. SUCH PEEPHOLE SHALL BE SO LOCATED AS TO ENABLE A PERSON TO VIEW FROM INSIDE OF THE ENTRANCE DOOR.
14. PROVIDE FRONT, INTERIOR COURT AND REAR YARD LIGHTING AS PER SECTION BC 1206.4
15. PROVIDE LIGHTING AND VENTILATION OF PUBLIC HALLS AND STAIRS AS PER SECTION BC 1203 & SECTION BC 1205.
16. ANY HABITABLE ROOM IN BASEMENT OR CELLAR SHALL COMPLY WITH CHAPTER 12.
17. ALL STAIRS SHALL COMPLY WITH CHAPTER 10, SECTION BC 1009.
18. EVERY STAIR SHALL BE VENTILATED BY A WINDOW OR BY MOVABLE LOUVERS IN THE SKYLIGHT HAVING AN OPENING OF AT LEAST 3.5% OF THE MAX. SHAFT AREA AT ANY FLOOR, BUT NOT LESS THAN 72 SQ. IN. OF THE TOTAL REQUIRED VENT AREA, AT LEAST 1/3 SHALL BE CLEAR OPENING TO THE EXTERIOR 10'-0" MIN. AWAY FROM ANY OPENING)

NEW YORK CITY HOUSING MAINTENANCE CODE:

1. BUILDING SHALL COMPLY WITH SECTION 27-2027 - DRAINAGE OF ROOFS AND COURT YARDS.
2. BUILDING SHALL COMPLY WITH SECTION 27-2028 - CENTRAL HEATING.
3. BUILDING SHALL COMPLY WITH SECTION 27-2031 - SUPPLY OF HOT WATER.
4. BUILDING SHALL COMPLY WITH SECTION 27-2040 - LIGHTS NEAR ENTRANCE WAYS AND IN YARDS AND COURTS.
5. BUILDING SHALL COMPLY WITH SECTION 27-2038 & BC 1006 - LIGHTING PUBLIC HALLS AND STAIRS.
6. BUILDING SHALL COMPLY WITH SECTION 27-2041 - PEEPHOLES IN ENTRANCE DOORS TO APARTMENTS.
7. BUILDING SHALL COMPLY WITH SECTION 27-2047 - MAIL SERVICE.
8. BUILDING SHALL COMPLY WITH SECTION 27-2048 - FLOOR SIGNS.
9. BUILDING SHALL COMPLY WITH SECTION 27-2049 - STREET NUMBERS.
10. BUILDING SHALL COMPLY WITH SECTION 27-2050 - INSPECTION OF SPRINKLERS.
11. BUILDING SHALL COMPLY WITH ARTICLE 13 - JANITORIAL SERVICES.
12. BUILDING SHALL COMPLY WITH H.P.D. DESIGN GUIDELINES DATED MAY 1988, REVISED AUGUST 1, 2000 FOR ROOM SIZES.
13. BUILDING SHALL COMPLY WITH SECTION 27-2097 - REGISTRATION: TIME TO FILE.
14. BUILDING SHALL COMPLY WITH SECTION 27-2104 - POSTING OF SERIAL NUMBER.
15. BUILDING SHALL COMPLY WITH SECTION 27-2105 - IDENTIFICATION OF MANAGING AGENT OR OWNER
16. BUILDING SHALL COMPLY WITH SECTION 27-2021 - RECEPTACLES FOR WASTE MATTER.
17. BUILDING SHALL COMPLY WITH SECTION 27-2022 - FREQUENCY OF COLLECTION OF WASTE MATTER.
18. PROVIDE A HEAVY DUTY LATCH SET AND A HEAVY DUTY DEAD BOLT OPERABLE BY A KEY FROM THE OUTSIDE AND A THUMB-TURN FROM THE INSIDE AT EVERY APARTMENT ENTRANCE (SECTION 27-2043)
19. PROVIDE FIRE EXTINGUISHERS PER NYC BUILDING CODE AND PER LOCAL FIRE AUTHORITIES.

FINISH NOTES:

1. INTERIOR FINISHES SHALL BE CLASSIFIED IN ACCORDANCE WITH SURFACE FLAME SPREAD RATINGS AS NOTED IN CHAPTER 8.
2. INTERIOR WALL AND CEILING FINISHES SHALL BE CLASSIFIED IN ACCORDANCE WITH ASTM E 84 AS PER SECTION BC 803.
3. ATTACHMENT AND FURRED CONSTRUCTION FOR INTERIOR FINISH SHALL BE IN ACCORDANCE WITH BC 803.4.1
4. NO MATERIAL OTHER THAN TEXTILES, SHALL BE USED IN ANY INTERIOR LOCATION WHICH WILL PRODUCE PRODUCTS MORE TOXIC THAN THOSE GIVEN OFF BY WOOD OR PAPER WHEN DECOMPOSING OR BURNING AS PER SECTION BC 803.
5. INSTALLATION OF ALL REQUIRED SPRAYED-ON FIRE PROTECTION SHALL BE SUBJECT TO THE SPECIAL INSPECTION REQUIREMENTS (BC 1704.11).
6. FOR CONSTRUCTION CLASS I, COMBUSTIBLE FLOORING MAY BE USED WHEN IN COMPLIANCE WITH SECTION BC 804.
7. IN ALL EXITS & EXIT PASSAGEWAYS OF ANY OCCUPANCY GROUP, FLOOR FINISHES SHALL BE OF NONCOMBUSTIBLE MATERIALS (BC 804.5).
8. CARPET - TYPE FLOOR COVERING ARE PERMITTED WHEN CEMENTED DIRECTLY TO THE TOP SURFACE OF APPROVED FIRE-RESISTANCE-RATED CONSTRUCTION (BC 804.4.4).
9. ALL GLASS PANELS USED IN WINDOWS, IN DOORS, AS INTERIOR PARTITIONS, ETC. SHALL BE IN COMPLIANCE WITH CHAPTER 24.
10. EXCEPT FOR MISCELLANEOUS TRIMS, MOLDINGS, ETC. ALL WOOD USED SHALL BE FIRE RETARDANT, IE., COUNTERTOPS, CABINETS, DOORS, ETC. (BC 603)

SUSPENDED CEILING NOTES:

1. NEW, NON RATED, SUSPENDED ACOUSTICAL TILE CEILINGS TO BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF APPENDIX "R".
2. INSTALLATION OF CEILING SUSPENSION SYSTEMS TO SUPPORT ACOUSTICAL PANELS WEIGHING LESS THAN 4 POUNDS PER SQ. FT., NOT CONTRIBUTING TO THE FIRE RESISTANCE RATING OF A FLOOR OR ROOF ASSEMBLY (APPENDIX R101.1).
3. HANGER TO BE 1/4" DIAMETER GALVANIZED STEEL RODS, OR 1" X 1/8" THICK FLAT STEEL BAR. NOT TO EXCEED 4'-6" O.C., PER SECTION BC R103
4. CARRYING CHANNELS TO BE 1-1/2" COLD-ROLLED 0.475#, NOT TO EXCEED 4'-6" O.C., AS PER SECTION R103.
5. CARRYING CHANNELS, CROSS RUNNERS, HANGERS, MAIN RUNNERS AND ALL OTHER COMPONENTS OF SUSPENSION SYSTEM TO BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF APPENDIX R102.

NEW YORK CITY BUILDING CODE REQUIREMENTS:

OCCUPANCY CLASSIFICATIONS:

R2- RESIDENTIAL (MULTI-FAMILY)
INCIDENTAL (MECHANICAL ROOMS, LAUNDRY ROOM, JANITOR CLOSETS, STORAGE) (SAME OCCUPANCY AS BUILDING'S MAIN USE)
S2- PARKING

CONSTRUCTION CLASSIFICATION:

PROPOSED NEW BUILDING TO COMPLY WITH CONSTRUCTION CLASSIFICATION PER SECTION BC 601: (TYPE I-B (NON-COMBUSTIBLE - 2HR. PROTECTED))

SECTION BC 601
GENERAL

601.1 Scope. The provisions of this chapter shall control the classification of buildings as to type of construction.

TABLE 601
FIRE-RESISTANCE RATING REQUIREMENTS FOR BUILDING ELEMENTS (hours)

BUILDING ELEMENT	TYPE I A	TYPE I B	TYPE II A^d	TYPE II B	TYPE III A^d	TYPE III B	TYPE IV HT	TYPE V^j A^d	TYPE V^j B
Primary structural frame^{g,k} (see Section 202)	3^a	2^a	1	0	1	0	HT	1	0
Bearing walls Exterior^{f,g,h}	3	2	1	0	2	2	2	1	0
Bearing walls Interior	3^a	2^a	1	0	1	0	1/HT	1	0
Nonbearing walls and partitions Exterior	See Table 602								
Nonbearing walls and partitions Interior^e	0	0	0	0	0	0	See Section 602.4.6	0	0
Floor construction^i and secondary members (see Section 202)	2	2	1	0	1	0	HT	1	0
Roof construction and secondary members (see Section 202)	$1\frac{1}{2}^{b,c}$	$1^{b,c}$	$1^{b,c}$	$0^{b,c}$	$1^{b,c}$	0	HT	$1^{b,c}$	0

For SI: 1 foot = 304.8 mm.
a. Roof supports: Fire-resistance ratings of primary structural frame and bearing walls are permitted to be reduced by 1 hour where supporting a roof only.
b. 1. Except in Group F-1, H, M and S-1 occupancies, fire protection of structural members shall not be required, including protection of roof framing and decking where every part of the roof construction is 20 feet or more above any floor immediately below. Fire-retardant-treated wood members shall be allowed to be used for such unprotected members.
2. Except in Group F occupancies subject to regulation under Sections 264(1) and 264(2) of the *New York State Labor Law*, and in Group I-1, R-1, and R-2 occupancies, in Types I and II construction, fire-retardant-treated wood shall be allowed in buildings including girders and trusses as part of the roof construction when the building is:
i. Type II construction of any height; or
ii. Type I construction two stories or less; or when over two stories, the vertical distance from the upper floor to the roof is 20 feet or more.
c. Except in Group F occupancies subject to regulation under Sections 264(1) and 264(2) of the *New York State Labor Law*, and in Group I-1, R-1 and R-2 occupancies, heavy timber shall be allowed where a 1-hour or less fire-resistance rating is required.
d. An approved automatic sprinkler system in accordance with Section 903.3.1.1 shall be allowed to be substituted for 1-hour fire-resistance-rated construction, provided such system is not otherwise required by other provisions of the code or used for an allowable area increase in accordance with Section 506.3 or an allowable height increase in accordance with Section 504.2. The 1-hour substitution for the fire resistance of exterior walls shall not be permitted.
e. Not less than the fire-resistance rating required by other sections of this code.
f. Not less than the fire-resistance rating based on fire separation distance (see Table 602).
g. Not less than the fire-resistance rating as referenced in Section 704.10.
h. See note g of Table 602.
i. See Section 712.3 for additional requirements.
j. Type V construction is not permitted inside fire districts except as provided for in Section D105.1 of Appendix D.
k. See Section BC 403.2.1 for additional requirements for high-rise buildings.

TABLE 602
FIRE-RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS BASED ON FIRE SEPARATION DISTANCE^{a,e,g,h}

FIRE SEPARATION DISTANCE = X (feet)	TYPE OF CONSTRUCTION	OCCUPANCY GROUP H^f	OCCUPANCY GROUP F-1, M, S-1^e	OCCUPANCY GROUP A, B, E, F-2, I, R, S-2, U^b
X < 5^c	All	3	2	1
5 ≤ X < 10	IA	3	2	1
	Others	2	1	1
10 ≤ X < 30	IA,IB	2	1	1^d
	IIB,VB	1	0	0
	Others	1	1	1^d
X ≥ 30	All	0	0	0

For SI: 1 foot = 304.8 mm.
a. Load-bearing exterior walls shall also comply with the fire-resistance rating requirements of Table 601.
b. Group U when used as accessory to Group R-3 shall not be required to have a fire-resistance rating where the fire separation distance is 5 feet or more for free standing private garages in compliance with Section 406.1, and when the separation distance is 3 feet or more for other freestanding Group U buildings. For free standing private garages where the fire separation distance is less than 5 feet, refer to Section 406.1 for required fire-resistance rating for exterior walls.
c. See Section 706.1.1 for party walls.
d. Open parking garages complying with Section 406 shall not be required to have a fire resistance rating.
e. The fire-resistance rating of an exterior wall is determined based upon the fire separation distance of the exterior wall and the story in which the wall is located.
f. For special requirements for Group H occupancies, see Section 415.3.
g. Inside the fire district, exterior load-bearing walls of Type II buildings shall have a fire-resistance rating not less than prescribed below:
X < 5 — 2 hours
5 ≤ X < 10 — 2 hours
10 ≤ X < 30 — 1 hour
X ≥ 30 — As per table 602.
h. Inside the fire district, exterior nonload-bearing walls of Type II buildings shall have a fire-resistance rating not less than prescribed below:

ENERGY CONSERVATION NOTES:

TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE ASHRAE 90.1 2013 AS AMENDED BY APPENDIX CA OF NEW YORK STATE, AS NOTED IN 2014 NEW YORK CITY BUILDING CODE - SECTION BC 1301 -

PLANS MEET ALL APPLICABLE CODES INCLUDING THE FOLLOWING:

- NEW YORK CITY OFFICIAL COMPILATION OF CODES, RULES AND REGULATIONS.
- N.F.P.A. - NATIONAL FIRE PROTECTION ASSOCIATION.
- A.D.A - ICC/ANSI A-117.1-2009
- FEDERAL FAIR HOUSING

IF TWO OR MORE OF THESE BUILDING CODES DIFFER ON A PARTICULAR SUBJECT MATTER, THE MORE STRINGENT OF THE TWO SHALL GOVERN.

GENERAL NOTES:

1. EXITS, EXIT DISCHARGE AND PUBLIC CORRIDORS SHALL BE ILLUMINATED AT ALL TIMES AS PER BC 1006.2
2. BUILDING ENTRANCE DOORS AND OTHER EXTERIOR EXIT DOORS WILL BE EQUIPPED WITH HEAVY DUTY LOCK SETS WITH AUXILIARY LATCH BOLTS AS PER BC 1008.4.1
3. A LIGHT OR LIGHTS SHALL BE PROVIDED AT OR NEAR THE OUTSIDE OF THE FRONT ENTRANCEWAY OF THE BUILDING PROVIDING NOT LESS THAN 5 FOOT CANDLES (53.82 LUX) INTENSITY MEASURED AT THE FLOOR LEVEL FOR THE FULL WIDTH OF THE ENTRANCEWAY AS PER BC 1008.4.1
4. DOORS TO DWELLING UNITS SHALL BE EQUIPPED WITH A HEAVY DUTY LATCH SET AND A HEAVY DUTY DEAD BOLT OPERABLE BY A KEY FORM THE OUTSIDE AND A THUMB-TURN FROM THE INSIDE AS WELL AS A CHAIN GUARD AND VIEWING DEVICE AS PER BC 1008.4.2
5. BUILDINGS CONTAINING 8 OR MORE DWELLING UNITS SHALL BE PROVIDED WITH AN INTERCOMMUNICATION SYSTEM AT THE DOOR GIVING ACCESS TO THE MAIN ENTRANCE LOBBY AS PER BC 1008.4.4
6. ALL OPERABLE WINDOWS SHALL BE EQUIPPED WITH SASH LOCKS DESIGNED TO BE OPERABLE FROM THE INSIDE ONLY AS PER BC 1008.4.3
7. A SIGN SHALL BE PROVIDED AT EACH FLOOR LANDING IN INTERIOR VERTICAL EXIT ENCLOSURES CONNECTING MORE THAN THREE STORIES DESIGNATING THE FLOOR LEVEL AS PER BC 1019.1.7
8. EXIT SIGNS SHALL BE INSTALLED IN COMPLIANCE WITH BC 1011.1
9. STAIRWAY DOOR OPERATION SHALL BE IN COMPLIANCE WITH BC 403.12
10. ELEVATOR SHALL BE IN COMPLIANCE WITH BC 3003.3.2 AND BE KEPT AVAILABLE FOR IMMEDIATE USE BY THE FIRE DEPARTMENT ALL HOURS OF THE NIGHT AND DAY, INCLUDING HOLIDAYS, SATURDAYS AND SUNDAYS
11. WHERE A FLOOR IS SERVICED BY THREE OR FEWER ELEVATOR CARS, EVERY CALL SHALL BE KEPT AVAILABLE FOR SOLE USE BY THE FIRE DEPARTMENT AS PER BC 3003.3.2.1
12. ENERGY CODE PROFESSIONAL STATEMENT: "TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE ASHRAE 90.1 2013 AS AMENDED BY APPENDIX CA
13. THIS PROJECT DOES NOT INCLUDE MODULAR CONSTRUCTION
14. A TACTILE SIGN INDICATING "EXIT" SHALL BE PROVIDED ADJACENT TO EACH DOOR TO AN EGRESS STAIR, AN EXIT PASSAGEWAY, AND EXIT DISCHARGE AREA AS PER BC 1011.3
15. AS PER TPPN 10/88, PROTECTION SHALL BE PROVIDED TO AVOID DAMAGE TO HISTORIC LANDMARK STRUCTURES ADJACENT TO PROPERTY OR WITHIN 90 FEET
16. THIS BUILDING SHALL BE DESIGNED IN COMPLIANCE WITH BC 1601 STRUCTURAL DESIGN
17. DWELLING UNITS SHALL COMPLY WITH THE 2014 BUILDING CODE AND CHAPTER 1 THROUGH 10 OF THE ICC A117.1 - 2009
18. BC 403.2.1 {2} FOR HIGH RISE BUILDINGS NOT GREATER THAN 420 FEET (128000 MM) IN BUILDING HEIGHT, AND CONSTRUCTED TO MEET THE FIRE REISTANCE RATING REQUIREMENTS OF TYPE IB OR IIA CONSTRUCTION, THE REQUIRED FIRE-RESISTANCE RATING OF COLUMNS SUPPORTING FLOORS SHALL BE CONSTRUCTED TO MEET TYPE IA CONSTRUCTION.
19. BC 403.2.3 FOR ALL HIGH-RISE BUILDINGS, EXIT ENCLOSURES AND ELEVATOR HOIST WAY ENCLOSURES SHALL COMPLY WITH SECTIONS 403.2.3.1 THROUGH 403.2.3.4.
20. BC 403.4.3. AN EMERGENCY VOICE / ALARM COMMUNICATION SYSYTEM SHALL BE PROVIDED IN ACCORDANCE WITH SECTION 907.5.2.2.
21. BC 403.4.5 FIRE COMMAND. A FIRE COMMAND CENTER COMPLYING WITH SECTION 911 SHALL BE PROVIDED IN A LOCATION APPROVED BY THE FIRE DEPARTMENT
22. SMOKE PROOF ENCLOSURES TO BE PROVIDED AS PER BC 403.5 FOR BUILDINGS ABOVE 75 FEET IN HEIGHT
23. DOORS OPENING INTO INTERIOR STAIR ENCLOSURES SHALL NOT BE LOCKED FROM EITHER SIDE AS PER BC 403.5.3
24. BC 403.5.3.1 STAIRWAY COMMUNICATION SYSTEM SHALL BE PROVIDED AT NOT LESS THAN EVERY FIFTH FLOOR
25. EMERGENCY POWER SYSTEM SHALL BE DESIGNED TO SUPPORT EXIT SIGN AND MEANS OF EGRESS ILLUMINATION, EMERGENCY VOICE COMMUNICATION, ELECTRICALLY POWERED FIRE PUMPS UNLESS ELECTRICAL POWER TO THE MOTOR IS TAKEN AHEAD OF THE MAIN FROM THE STREET SIDE OF HOUSE SERVICE SWITCH AS PER BC 403.4.8.2
26. ELEVATOR MACHINE EQUIPMENT TO COMPLY WITH BC 3006.7 ISOLATOR PAD WITH MIN. ½ INCH THICK TO BE PROVIDED FOR GEAR DRIVEN MACHINERY, GEARLESS MACHINERY AND MOTOR GENERSATORS
27. ADJACENT ROOFS TO BE PROTECTED AS PER BC 3309.10, PROTECTION SHALL EXTEND MINIMUM 20 FEET FROM THE EDGE OF THE BUILDING BEING CONSTRUCTED AND MATERIAL SHALL BE 2" OF FLAME RETARDANT FOAM UNDER 2" FLAME RETARDANT PLYWOOD
28. THIS PROJECT DOES NOT CONTAIN ANY OPEN WEB STEEL JOISTS.
29. POST FIRE SMOKE PURGE SYSTEM TO BE PROVIDED AS PER BC 403.4.6
30. AT LEAST ONE FIRE SERVICE ACCESS ELEVATOR IN COMPLAINCE WITH BC 3007 SHALL BE PROVIDED IN HIGH RISE BUILDINGS, WITH OCCUPIABLE FLOOR HIGHER THAN 120 FT, AS PER BC 403.6.1 STAIR SHALL BE MARKED AT THE STREET AND FLOOR LEVELS WITH A SIGN INDICATING THAT THE STAIRWAY CONTINUES TO THE ROOF.

GRAPHIC SYMBOLS:

(X) — — —	COLUMN REFERENCE GRID LINE FOR NEW STEEL
NUMBER WHERE DRAWN X / A-XXX	WALL SECTION KEY
NUMBER WHERE DRAWN X / A-XXX	BUILDING SECTION KEY
NUMBER WHERE DRAWN X / A-XXX	ELEVATION KEY
NUMBER WHERE DRAWN X / A-XXX	DETAIL KEY
NUMBER WHERE DRAWN X / A-XXX DRAWING TITLE SCALE : ⅛" = 1'-0"	DRAWING TITLE
1 2 3 4	INTERIOR ELEVATIONS
LR/DA	ROOM/SPACE NAME
TYPE-X / X BR.	APARTMENT DESIGNATION
3K	APARTMENT NUMBER
X	PARTITION TYPE
X	REVISION KEY & CLOUD
X	DOOR IDENTIFICATION TAG
WX	WINDOW IDENTIFICATION TAG
LX	LOUVER IDENTIFICATION TAG
SCM	SMOKE / CARBON MONOXIDE DETECTOR IDENTIFICATION TAG
3RD FLOOR EL: XX.XX'	ELEVATION DESIGNATION
(handicap symbol)	HANDICAP ACCESSIBLE TAG
A-XXX — DRAWING NUMBER; TRADE: A = ARCHITECTURAL, S = STRUCTURAL, M = MECHANICAL, E = ELECTRICAL, P = PLUMBING	DRAWING NUMBERING SYSTEM

SPECIAL / PROGRESS INSPECTIONS

TEST INSPECTIONS SHALL BE IN ACCORDANCE WITH THE APPLICABLE BUILDING CODE SECTIONS. SIGNED COPIES OF ALL TESTS AND INSPECTIONS REPORTS SHALL BE FILED WITH THE DEPARTMENT OF BUILDINGS THROUGH THE APPLICANT.

THE FOLLOWING ITEMS OF WORK SHALL BE SUBJECT TO INSPECTIONS / TESTS:

2014 CODE SPECIAL INSPECTIONS

SPECIAL INSPECTIONS	CODE / SECTION (REPORTS REQUIRED)	REQUIRED YES / NO
FLOOD ZONE COMPLIANCE	BC G105	*
FIRE ALARM TEST	BC 907, BC 1705.15	*
PHOTOLUMINESCENCE EXIT PATH MARKINGS	BC 1024.4 (TR-7)	*
EMERGENCY POWER SYSTEMS (GENERATORS)	BC 1704.13, BC 2702	*
STRUCTURAL STEEL - WELDING	BC 1704.3.1	*
STRUCTURAL STEEL - ERECTION & BOLTING	BC 1704.3.2, BC 1704.3.3	*
STRUCTURAL STEEL - FORMED STEEL	BC 1704.3.4	*
CONCRETE - CAST-IN-PLACE	BC 1704.4	YES
CONCRETE - PRECAST	BC 1704.4	*
CONCRETE - PRESTRESSED	BC 1704.4	*
CONCRETE - TEST CYLINDERS	BC 1905.6 (TR-2)	*
CONCRETE - DESIGN MIX	BC 1905.3 (TR-3)	*
MASONRY	BC 1704.5	YES
SOILS - SITE PREPARATION	BC 1704.7.1	YES
SOILS - FILL PLACEMENT & IN-PLACE DENSITY	BC 1704.7.2, BC 1704.7.3	*
SOILS - INVESTIGATIONS (BORINGS / TEST PITS)	BC 1704.7.4 (TR-4)	*
PILE FOUNDATIONS & DRILLED PIER INSTALLATION	BC 1704.8 (TR-5)	*
PILE FOUNDATIONS	BC 1704.9	*
UNDERPINNING	BC 1704.9.1	*
WALL PANELS, CURTAIN WALLS, AND VENEERS	BC 1704.10	*
SPRAYED FIRE-RESISTANT MATERIALS	BC 1704.11	YES
EXTERIOR INSULATION FINISH SYSTEMS (EIFS)	BC 1704.13	YES
SMOKE CONTROL SYSTEMS	BC 1704.15	YES
MECHANICAL SYSTEMS	BC 1704.16	YES
FUEL-OIL STORAGE AND FUEL-OIL PIPING SYSTEM	BC 1704.17	*
HIGH-PRESSURE STEAM PIPING (WELDING)	BC 1704.18	*
FUEL-GAS PIPING (WELDING)	BC 1704.19	*
STRUCTURAL SAFETY - STRUCTURAL STABILITY	BC 1704.20	*
MECHANICAL DEMOLITION	BC 1704.20.4, BC 3306.6	YES
EXCAVATION - SHEETING, SHORING, AND BRACING	BC 1704.20.2, BC 3304.4.1	YES
SOIL PERCOLATION TEST - DRYWELL	BC 1704.21.1.2	YES
SOIL PERCOLATION TEST - SEPTIC	BC 1704.21.1.2	*
SOIL STORM DRAINAGE DISPOSAL AND DETENTION SYSTEM INSTALLATION	BC 1704.21.1.2	YES
SEPTIC SYSTEM INSTALLATION	BC 1704.21.1.2	*
SPRINKLER SYSTEMS	BC 1704.23	*
STANDPIPE SYSTEMS	BC 1704.24	*
HEATING SYSTEMS	BC 1704.25	YES
CHIMNEYS	BC 1704.26	*
FIRESTOP, DRAFTSTOP, AND FIREBLOCK SYSTEMS	BC 1704.27	YES
ALUMINUM WELDING	BC 1704.28	*
SEISMIC ISOLATION SYSTEMS	BC 1707.8	*

2014 CODE PROGRESS INSPECTIONS

PRELIMINARY	28-116.2.1, BC 110.2	*
FOOTING AND FOUNDATION	BC 110.3.1	YES
LOWEST FLOOR ELEVATION (ATTACH FEMA FORM)	BC 110.3.2	*
FRAME INSPECTION	BC 110.3.3	*
ENERGY CODE COMPLIANCE INSPECTIONS	BC 110.3.5	YES
FIRE-RESISTANCE RATED CONSTRUCTION	BC 110.3.4	YES
PUBLIC ASSEMBLY EMERGENCY LIGHTING	28-116.2.2	*
FINAL	28-116.2.4.2 AND BC 110.5 AND DIRECTIVE 14 OF 1975	*

BUILDING TO BE FULLY SPRINKLED

SPRINKLERS BEING FILED UNDER SPRINKLER APPLICATION

ASSOCIATED APPLICATIONS	DOB #
BUILDER'S PAVEMENT PLAN	340574275
SPRINKLER / STANDPIPE	340581221
FIRE ALARM	321664356
FOUNDATION PLAN	321191802

* DOB APPLICATION NUMBER TO BE PROVIDED UPON APPLICATION APPROVAL

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:
AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

AUFGANG ARCHITECTS

DEVELOPER:
SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:
McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:
A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

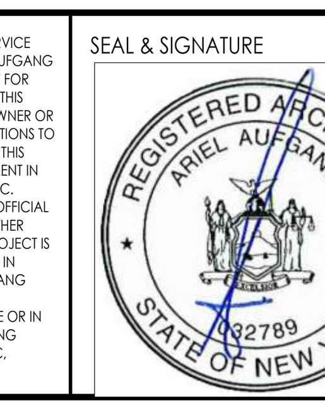
INTERIOR DESIGNER:
ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

DATE	SUBMISSIONS / REVISIONS
08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
01.26.18	RE-ISSUED TO D.O.B. FOR REVIEW AND COMMENTS
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS

SHEET TITLE:

GENERAL NOTES

SEAL & SIGNATURE



ISSUE DATE: 10-19-15
PROJECT NO: #1520
DRAWN BY: A.F.M.
CHECKED BY: T.L.
SCALE: AS NOTED
SHEET NO: 12 of 41
DRAWING NO: A-001.01
NYC DOB NUMBER: 321191802

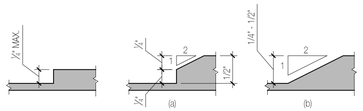
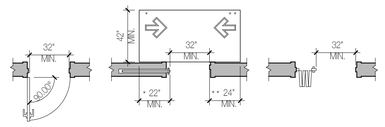


FIG 303.2
VERTICAL

FIG 303.3
BEVELED

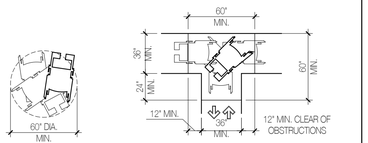
CHANGES IN ELEVATION



(a)
HINGED DOOR

(b)
SLIDING POCKET DOOR

(c)
FOLDING DOOR

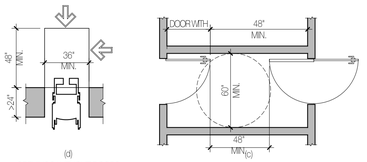


(a)
CIRCULAR

(b)
T-SHAPED

FIG 304.3

SIZE OF TURNING SPACE



(d)
OPENINGS WITHOUT DOORS

TWO DOORS IN A SERIES

FIG 404.2.2 & 404.2.5
CLEAR WIDTH OF DOORWAYS

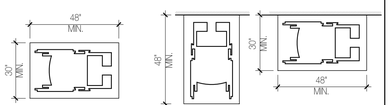
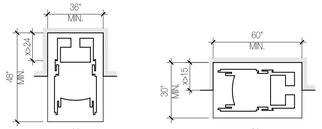


FIG 305.3
SIZE OF CLEAR FLOOR SPACE

(a)
FORWARD

(b)
PARALLEL

FIG 305.5
APPROACH



FORWARD APPROACH

PARALLEL APPROACH

MANEUVERING CLEARANCE IN AN ALCOVE

FIG 305.7

CLEAR FLOOR SPACES AND APPROACH

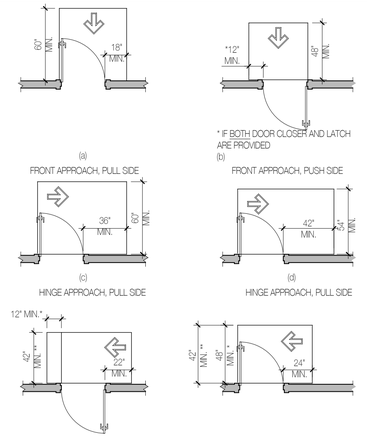


FIG 404.2.3.2
MANEUVERING CLEARANCE AT MANUAL SWINGING DOORS

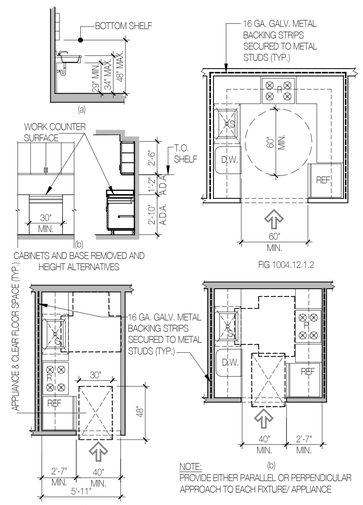


FIG 1004.12.1.1
KITCHEN HEIGHT REQUIREMENTS & MINIMUM KITCHEN CLEARANCE

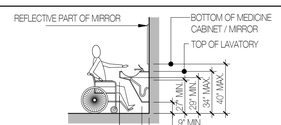
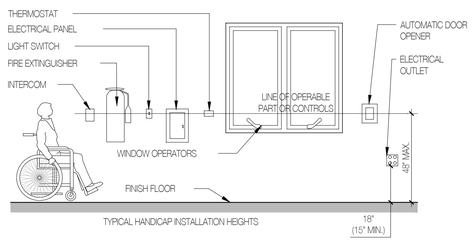


FIG 606.3, 306.2 & 306.3

HEIGHT OF LAVATORIES & SINKS

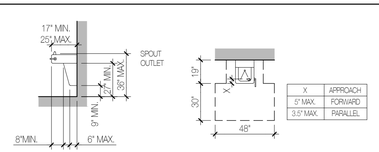


TYPICAL HANDICAP INSTALLATION HEIGHTS

ICC/ANSI A117.1-2009

PROPOSED WORK TO COMPLY WITH APPLICABLE REQUIREMENTS OF ICC / ANSI A 117.1 - 2009

- PROTRUDING OBJECTS SHALL NOT REDUCE THE CLEAR WIDTH REQUIRED FOR ACCESSIBLE ROUTES. (307.3)
- RAMPS RUN SHALL HAVE A SLOPE NOT STEEPER THAN 1:12 (405.2) & A CROSS SLOPE SHALL NOT BE STEEPER THAN 1:48 (405.3)
- ALL ELEVATOR REQUIREMENTS (CALL BUTTONS, VISIBLE & AUDIBLE SIGNALS, ETC.)
- SHALL COMPLY WITH SECTION 407 THRU 410.
- CAR PARKING SPACES SHALL BE 96" MIN. & VAN PARKING SPACES SHALL BE 132" MIN. IN WIDTH. (502.2)
- ACCESS AISLE SERVING CAR OR VAN SHALL BE 60" MIN. IN WIDTH (502.4.2)
- VERTICAL CLEARANCE FOR VAN PARKING SPACES, ACCESS AISLES SERVING THEM
- AND VEHICULAR ROUTES SHALL BE 98" MIN. (502.6)
- TREADS AND RISERS SHALL BE UNIFORM ON A STAIR FLIGHT. RISERS 4" MIN. & 7⅞" MAX. - TREADS 9½" + NOSE MIN. (504.2)
- TOP GRIPPING SURFACE OF HANDRAILS SHALL BE AT 34" MIN. & 38" MAX. AFF (505.4) - SHALL HAVE A CLEAR DISTANCE OF 1½" MIN. FROM THE ADJACENT WALL (505.5) - SHALL HAVE AN OUTSIDE DIAMETER OF 1¼" MIN. & 2" MAX. (505.7.1)
- PROVIDE A HAND HELD SHOWER WITH A HOSE 59" MIN. IN LENGTH (607.6)
- FOR WASHING MACHINES AND CLOTHES DRYERS PROVIDE A 30"X48" CLEAR FLOOR SPACE FOR PARALLEL APPROACH. FOR TOP LOADING MACHINES, THE CLEAR FLOOR SPACE SHALL BE CENTERED ON THE APPLIANCE, FOR FRONT LOADING MACHINES, THE CENTERLINE OF THE CLEAR FLOOR SPACE SHALL BE OFFSET 24 INCHES (610 MM) MAXIMUM FROM THE CENTERLINE OF THE DOOR OPENING. (611.2)
- TOP LOADING MACHINES SHALL HAVE THE DOOR COMPARTMENT 36" AFF & FRONT LOADING MACHINES SHALL HAVE THE BOTTOM OF THE OPENING COMPARTMENT 15" MIN. & 36" MAX. AFF. (611.4)
- TOP OF DINING OR WORK SURFACES SHALL BE 28" MIN. & 34" MAX.
- IN HEIGHT AFF. (902.4)
- ACCESSIBLE STORAGE ELEMENTS SHALL COMPLY WITH AT LEASE ONE OF THE REACH RANGES SPECIFIED IN SECTION 308 (905.3)
- THE ACCESSIBLE PRIMARY ENTRANCE SHALL BE ON AN ACCESSIBLE ROUTE FROM PUBLIC AND COMMON AREAS (1004.2) - DOORWAYS SHALL HAVE A CLEAR OPENING OF 32" MIN. (1004.5.2.1)
- THE LATERAL DISTANCE FROM THE CENTERLINE OR THE WATER CLOSET TO A BATHTUB OR A LAVATORY SHALL BE 18" MIN. ON THE OPPOSITE SIDE OF APPROACH & 15" MIN. ON THE OTHER SIDE. (1004.11.3.1.2)



KNEE CLEARANCE
Fig 306.2 & 306.3

DRINKING FOUNTAIN
Fig 602.5

DRINKING FOUNTAIN

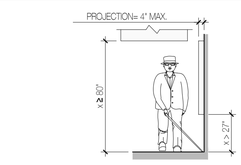
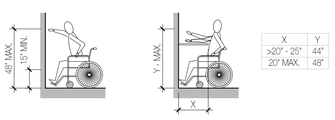


FIG 307.2

LIMITS OF PROTRUDING OBJECTS



UNOBSTRUCTED FORWARD REACH
FIG 308.2.1

OBSTRUCTED HIGH FORWARD REACH
FIG 308.2.2

UNOBSTRUCTED SIDE REACH
FIG 308.3.1

OBSTRUCTED HIGH SIDE REACH
FIG 308.3.2

UNOBSTRUCTED & OBSTRUCTED REACHES

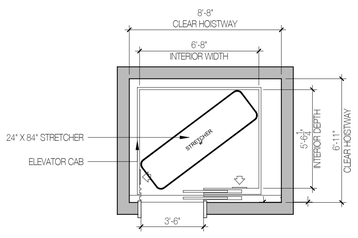
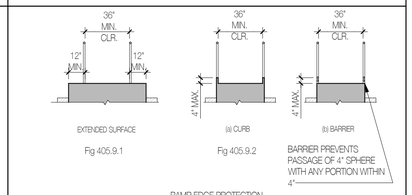


Fig 407.4.1

DIMENSIONS OF ELEVATOR CAB AND PANEL



RAMP EDGE PROTECTION

Fig 405.7

RAMP LANDINGS

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:

AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:

SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:

McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:

A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:

ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
01.26.18	RE-ISSUED TO D.O.B. FOR REVIEW AND COMMENTS
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS

SHEET TITLE:

ACCESSIBILITY NOTES & DIAGRAMS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

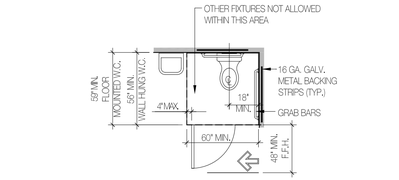
ISSUE DATE: 10-19-15
PROJECT NO: #1520

DRAWN BY: A.F.M.
CHECKED BY: T.L.

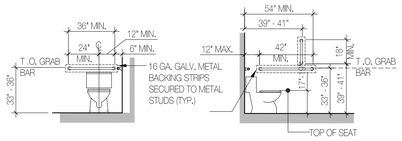
SCALE: AS NOTED
SHEET NO:

DRAWING NO: A-002.00

NYC DOB NUMBER: 321191802



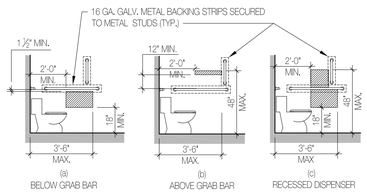
WATER CLOSET CLEARANCE
FIG 604.3, 604.2



REAR GRAB BAR
FIG 604.5.2

SIDE GRAB BAR
FIG 604.4 & 604.5.1

GRAB BAR FOR WATER CLOSET

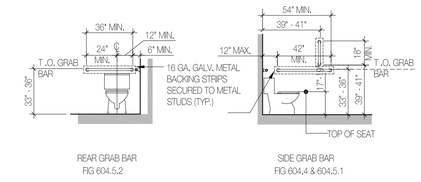


BELOW GRAB BAR

ABOVE GRAB BAR

RECESSED DISPENSER

FIG 604.7
DISPENSER LOCATION



REAR GRAB BAR
FIG 604.5.2

SIDE GRAB BAR
FIG 604.4 & 604.5.1

GRAB BAR FOR WATER CLOSET

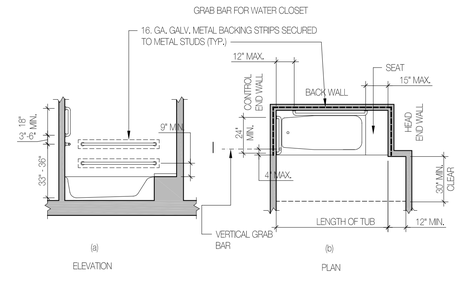
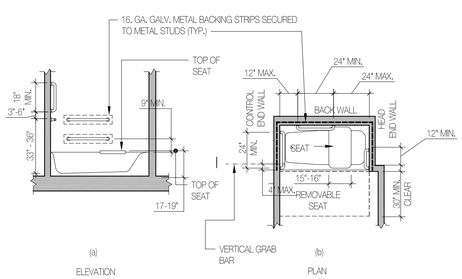


Fig 607.4.1

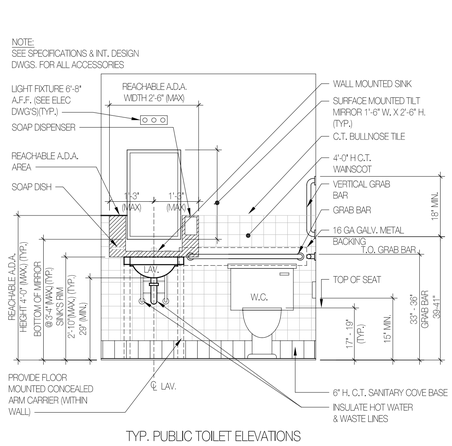
GRAB BARS FOR BATHTUBS WITH PERMANENT SEATS



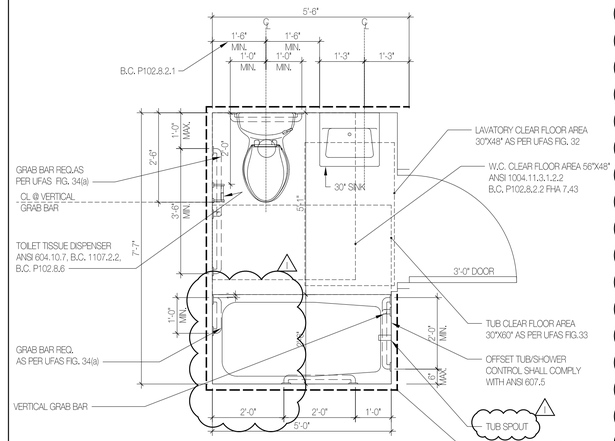
GRAB BARS FOR BATHTUBS WITHOUT PERMANENT SEATS

Fig 607.4.2/610.2

BATHTUB SEATS & GRAB BARS



TYP. PUBLIC TOILET ELEVATIONS



ADAPTABLE APARTMENT BATHROOM.
(PRIMARY; 2ND BATHROOM DOES NOT NEED TO COMPLY)
MEETS ANSI 2009, APPENDIX "F" NYC 2014 BC, FFH

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:

AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

AUFGANG ARCHITECTS

DEVELOPER:

SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:

McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
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MEP ENGINEER:

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2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:

ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

DATE	SUBMISSIONS / REVISIONS
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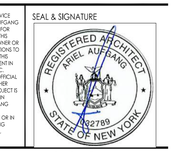
SHEET TITLE:

ACCESSIBILITY NOTES & DIAGRAMS

SEAL & SIGNATURE



ISSUE DATE: 10-19-15
PROJECT NO: #1520

DRAWN BY: A.F.M.
CHECKED BY: T.L.

SCALE: AS NOTED
SHEET NO:

DRAWING NO: A-003.01

NYC DOB NUMBER: 321191802

FIRE PROTECTION:

BUILDING IS FULLY SPRINKLERED AND EQUIPPED WITH AN ALTERNATIVE FIRE EXTINGUISHING SYSTEM, A STAND PIPE SYSTEM, SMOKE VENTS, A FIRE ALARM AND DETECTION SYSTEM & A FIRE COMMAND CENTER. IN COMPLIANCE WITH THE NYC BUILDING CODE (2014), NYC FIRE CODE & LOCAL FIRE DEPARTMENT REQUIREMENTS .

EGRESS NOTES: CHAPTER 10

1. MEANS OF EGRESS SHALL HAVE A CEILING HEIGHT NOT LESS THAN 7'-6" (BC 1003.2).

2. OCCUPANT LOAD AS DETERMINED ON TABLE 1004.1.1

3. EXIT AND ACCESS REQUIREMENTS ARE TO BE CALCULATED AS PER TABLE 1005.1 AS PER SECTION BC 1005.

4. EXITS, EXIT DISCHARGES AND PUBLIC CORE F. RM.DORS SHALL BE ILLUMINATED AT ALL TIMES. AS PER BC 1006.

   4.A. PUBLIC CORE F. RM.DORS AND EXITS SHALL BE PROVIDED WITH ARTIFICIAL LIGHT FIXTURES SUPPLYING AT LEAST TWO FOOT CANDLES MEASURED AT THE FLOOR LEVEL. TO BE MAINTAINED CONTINUOUSLY THROUGHOUT EXITS AND THEIR ACCESS FACILITIES FOR THEIR FULL LENGTH (BC 1006.2).

   4.B. EXIT LIGHTING, EXIT SIGNS & THE PORTION OF THE EXTERIOR EXIT DISCHARGE IMMEDIATELY ADJACENT TO EXIT DISCHARGE DOORWAYS SHALL BE CONNECTED TO AN EMERGENCY POWER SYSTEM FOR A DURATION NOT LESS THAN 90 MINUTES & SHALL CONSIST OF STORAGE BATTERIES, UNIT EQUIPMENT OR AN ON-SITE GENERATOR. (BC 1006.3).

5. ALL EXITS SHALL BE KEPT READILY ACCESSIBLE AND UNOBSTRUCTED AT ALL TIMES AS PER SECTION BC 1007.

6. DOORS ARE TO COMPLY WITH ALL APPLICABLE REQUIREMENTS OF SECTION BC 1008 INCLUDING, BUT NOT LIMITED TO THE FOLLOWING:

   6.A. CLEAR OPENING OF 32"(MIN.) IS REQUIRED AND SHALL BE MEASURED BETWEEN THE FACE OF THE DOOR AND THE STOP, WITH THE DOOR OPEN 90 DEGREES. (SECTION BC 1008.1.1).

   6.B. DOOR HEIGHT NOT TO BE LESS THAN 6'-8" (BC 1008.1.1.3).

   6.C. ALL EXIT DOORS ARE TO OPEN IN THE DIRECTION OF EGRESS (1008.1.2.2) FLOOR LEVELS ON BOTH SIDES OF ALL EXIT AND CORE F. RM.DOR DOORS ARE TO BE LEVEL AND AT THE SAME ELEVATION FOR A DISTANCE AT LEAST EQUAL TO THE WIDTH OF THE DOOR (1008.1.5).

   6.D. EXIT DOORS SHALL BE READILY OPENABLE AT ALL TIMES FROM THE SIDE FROM WHICH EGRESS IS TO BE MADE. DOORS OPENING ONTO INTERIOR ENCLOSED STAIRS SHALL NOT BE LOCKED FROM EITHER SIDE EXCEPT THAT DOORS MAY BE LOCKED TO PREVENT ACCESS TO THE STAIR FROM THE OUTSIDE AT STREET LEVEL AS PER SECTION 1008.1.9.10

   6.E. PANIC AND FIRE EXIT HARDWARE SHALL BE INSTALLED ON ALL EGRESS DOORS FROM OCCUPANCY GROUP "A" OR "E" HAVING AN OCCUPANT LOAD OF 50 PEOPLE OR MORE AS PER SECTION 1008.1.10.

   6.F. REQUIRED EXITS & SMOKE DOORS ARE TO BE SELF-CLOSING (BC 715.4) WITH A 1-1/2 HOUR FIRE PROTECTION RATING (TABLE 715.4), EXCEPT IN THE FIRST STORY OF EXTERIOR WALLS FACING A STREET THAT HAVE A FIRE SEPARATION DISTANCE OF GREATER THAN 15'-0" (BC 704.8.2) THEN DOORS NEED NOT TO BE RATED.

   6.G. BUILDING ENTRANCE DOORS AND OTHER EXTERIOR EXIT DOORS SHOULD BE EQUIPPED WITH HEAVY DUTY LOCK SET WITH AUXILIARY LATCH BOLTS (BC 1008.4.1)

   6.H. LIGHTS SHALL BE PROVIDED AT OR NEAR THE OUTSIDE OF THE FRONT ENTRYWAY OF THE BUILDING PROVIDING NOT LESS THAT 5 FOOT CANDLES (53.82 lux) INTENSITY MEASURED AT THE FLOOR LEVEL FOR THE FULL WIDTH OF THE ENTRANCES WAY AS PER BC 1008.4.1

7. STAIRWAYS SHALL COMPLY WITH ALL APPLICABLE REQUIREMENTS STATED IN SECTIONS BC 1009 & 1019 INCLUDING, BUT NOT LIMITED TO THE FOLLOWING:

   7.A. STAIR WIDTH SHALL BE DETERMINED AS SPECIFIED IN SECTION 1005.1, BUT SUCH WIDTH SHALL NOT BE LESS THAN 44" (BC 1009.1) OR 36" (BC 1009.1.1.2).

   7.B. AREA OF RESCUE ASSISTANCE SHALL BE 30" X 48" FOR EACH 200 OCCUPANTS. AS PER SECTION 1007.6.1.

   7.C. THE CLEAR HEADROOM SHALL BE AT LEAST 6'-8" MINIMUM, AS SPECIFIED IN SECTION 1009.2.1 (R-2 OCCUPANCY).

   7.D. LANDINGS AND PLATFORMS PROVIDED AT THE HEAD AND FOOT OF EACH FLIGHT OF STAIRS SHALL HAVE A MINIMUM WIDTH, PERPENDICULAR TO THE DIRECTION OF TRAVEL, OF AT LEAST THE WIDTH OF THE STAIR. IN STRAIGHT RUN STAIRS, THE DISTANCE BETWEEN STAIRS WITHIN THE RUN SHALL NEED NOT BE MORE THAN 48". NO DOOR SHALL SWING ONTO A LANDING AND REDUCE THE EGRESS REQUIRED CLEAR WIDTH OF THE STAIR OR STAIR PLATFORM TO BE LESS THAN 75% OF THE REQUIRED WIDTH. OR WHEN FULLY OPEN, THE DOOR SHALL NOT PROJECT MORE THAN 7" INTO THE LANDING AS PER SECTION 1009.1.6.

   7.E. RISERS, TREADS, STRINGERS, LANDINGS, PLATFORMS AND GUARDS EXCLUSIVE OF HANDRAILS, SHALL BE BUILT OF NONCOMBUSTIBLE MATERIALS. WHEN TWO STAIRS ARE CONTAINED WITHIN THE SAME ENCLOSURE, EACH STAIR SHALL BE SEPARATED FROM THE OTHER BY NONCOMBUSTIBLE CONSTRUCTION HAVING A FIRE RESISTANCE RATING EQUAL TO THAT REQUIRED FOR THE STAIR ENCLOSURE (BC 1009.4).

   7.F. STAIRS SHALL HAVE HANDRAILS ON EACH SIDE (EXCEPT STAIRS LESS THAN 44" IN WIDTH) HAVING FINGER CLEARANCE OF 1-1/2" MIN., PROJECTING NOT MORE THAN 4-1/2" INTO THE REQUIRED STAIR WIDTH. HEIGHT OF HANDRAIL SHALL BE UNIFORM, NOT LESS THAN 34" AND NOT MORE THAN 38" MEASURED ABOVE THE STAIR TREAD NOSING. HANDRAILS SHALL BE DESIGNED IN COMPLIANCE WITH SECTION 1009.12.

   7.G. THE MAXIMUM VERTICAL RISE OF A SINGLE FLIGHT OF STAIRS BETWEEN FLOORS IS NOT TO EXCEED 12' (SECTION 1009.7).

   7.H. ALL INTERIOR STAIRS SHALL EXTEND UP TO THE ROOF (BC 1009.13).

   7.I. INTERIOR REQUIRED STAIRS EXTENDING TO THE ROOF SHALL BE VENTED AS PER THE REQUIREMENTS OF SECTION 910.4.

   7.J. STAIR EXIT DOORS SHALL BE PLACED A DISTANCE APART EQUAL TO NO LESS THAN 15'-0" IN R2 OCCUPANCY (SECTION 1015.2.1.3).

   7.K. A SIGN SHALL BE PROVIDED AT EACH FLOOR LANDING INDICATING LEVEL SHALL BE PROVIDED BC1022.8.2

   7.L. STAIRWAY DOOR OPERATION SHALL BE IN COMPLIANCE WITH BC403.5.3

   7.M. A TACTILE SIGN INDICATIONG "EXIT" SHALL BE PROVIDED ADJACENT TO EACH DOOR TO AN EGRESS STAIR, AN EXIT PASSAGEWAY AND EXIT DISCHARGE AREA AS PER BC1011.3

8. EGRESS CORE F. RM.DORS SHALL COMPLY WITH ALL APPLICABLE REQUIREMENTS STATED IN SECTIONS BC 1011, 1013 THRU 1018, 1020 THRU 1023, 1024 & 1026 INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

   8.A. PROTRUDING OBJECTS ARE PERMITTED TO EXTEND BELOW THE MIN. CEILING HEIGHT REQUIRED PROVIDE THAT A MIN. HEADROOM OF 7'-0" IN HEIGHT IS REQUIRED OVER ANY WALKING SURFACE NOT MORE THAN 50% OF THE CEILING AREA CAN BE REDUCED IN HEIGHT BY PROTRUDING OBJECTS SO AS TO OBSTRUCT FULL VIEW OF EXIT SIGNS. (SECTION 1003.3.1).

   8.B. CORE F. RM.DOR WIDTH SHALL BE DETERMINED AS PER SECTION 1005.1, BUT NOT LESS THAN 44".

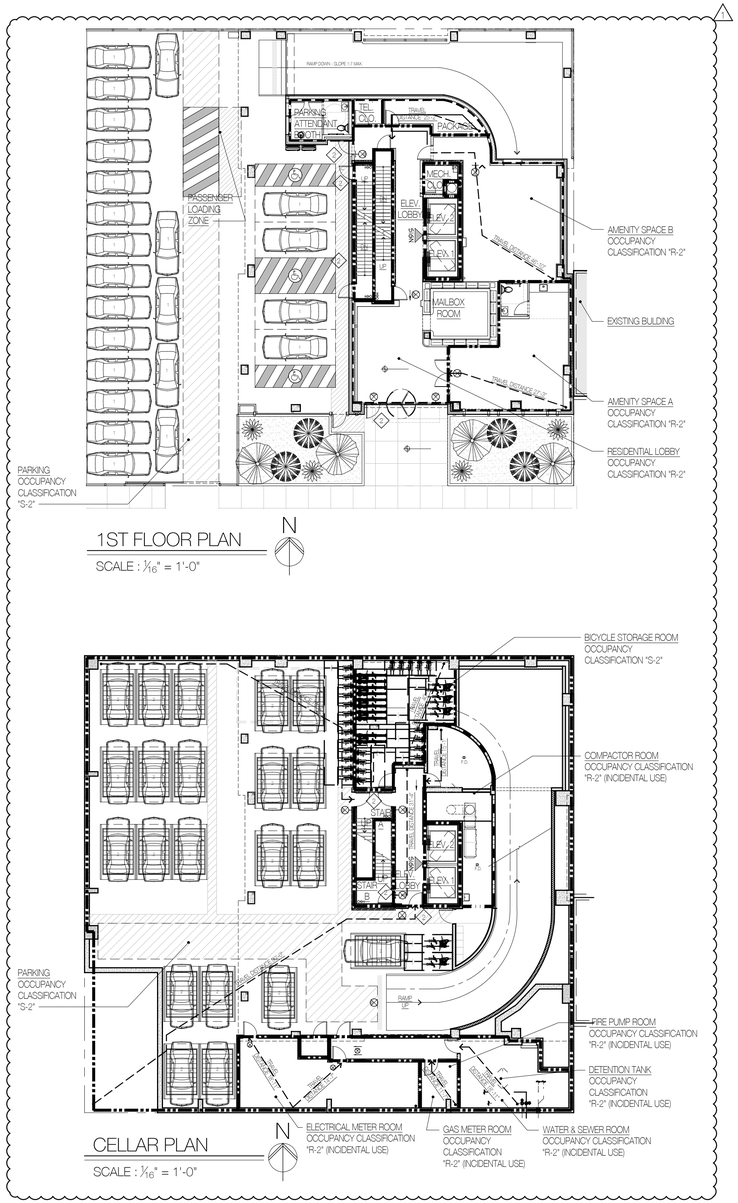
   8.C. DEAD END CORE F. RM.DORS SHALL NOT EXCEEDED 80'-0" IN LENGTH (BC 1018.4).

   8.D. DOORS WHEN THEY FULLY OPEN & HANDRAILS SHALL NOT REDUCE THE REQUIRED WIDTH BY MORE THAN 7". DOORS IN ANY POSITION SHALL NOT REDUCE THE REQUIRED WIDTH BY MORE THAN 1/2. OTHER NONSTRUCTURAL PROJECTIONS ARE PERMITTED TO PROJECT INTO THE REQUIRED WIDTH 1.5" ON EACH SIDE (BC 1020.2).

   8.E. THE FINISHES IN ALL EXITS SHALL BE OF NONCOMBUSTIBLE MATERIALS AS PER CHAPTER 8 AND SUB-SECTION 1003.4 OF SECTION BC 1003.

   8.F. THE LOCATION OF EVERY EXIT ON EVERY FLOOR SHALL BE CLEARLY INDICATED BY EXIT SIGNS, (SECTION BC 1011) EXIT SIGN SHALL BE PLACED APART, SO THAT NO POINT IN THE EXIT CORE F. RM.DOR IS MORE THAN 100'-0"

   8.G. EXIT SIGN SHALL BE INSTALLED IN COMPLIANCE WITH BC1011.4



SYMBOL LEGEND

	3 HR RATED WALL
	2 HR RATED WALL
	1 HR RATED WALL
	CEILING MOUNTED EXIT SIGN
	WALL MOUNTED EXIT SIGN
SIGN	SIGN AT ELEVATOR LANDING
	3'-0" WIDE DOOR (2 LEAFS) EXIT CAPACITY = 68" / 0.2 = 340
	3'-0" WIDE DOOR (1 LEAF) EXIT CAPACITY = 34" / 0.2 = 170
S	SMOKE DETECTOR
H	HEAT DETECTOR
CO/S	SMOKE / CARBON MONOXIDE DETECTOR

MAXIMUM TRAVEL DISTANCE (W/ SPRINKLERS) TABLE 1016.1 (*)

OCCUPANCY GROUP		MAX. PERMITTED (Ft.)	PROVIDED (Ft.)
RESIDENTIAL	R-2	200'-0"	65'-8"
STORAGE (PARKING)	S-2	250'-0"	100'-0"
ASSEMBLY	A-3	250'-0"	33'-0"

* DEAD END IN R-2 OCCUPANCY SHALL NOT EXCEED 80'
ALL FLOORS COMPLY - BC 1016.3

MINIMUM WIDTH OF EGRESS

	NYC BUILDING CODE SECTION	MIN. REQUIRED (in.)	PROVIDED (in.)
STAIRWAYS	1009.1	44"	44"
CORE F. RM.DOR	1018.2	44"	60"

SPACES WITH ONE MEANS OF EGRESS TABLE 1015.1

OCCUPANCY GROUP		MAXIMUM OCCUPANT LOAD	PROPOSED OCCUPANCY LOAD	REMARKS
ASSEMBLY	A-3	74	133	(2) M.O.E. HAS BEEN PROVIDED
RESIDENTIAL	R-2	20	28	(2) M.O.E. HAS BEEN PROVIDED
STORAGE	S-2	29	35	(2) M.O.E. HAS BEEN PROVIDED
ASSEMBLY	A-3	74	131	(2) M.O.E. HAS BEEN PROVIDED

MAXIMUM BUILDING OCCUPANCY TABLE 1004.1.1

FLOOR	OCCUPANCY GROUP		FLOOR AREA PER OCCUPANT (Sq.Ft.)	FLOOR AREA (Sq.Ft.)	MAX. NUMBER OF OCCUPANTS
CELLAR	PARKING	S-2	200 GROSS	10,988.85	55
	GAS METER RM	R-2	300 GROSS	96 SQ. FT.	1
	WATER & SEWER RM	R-2	300 GROSS	148 SQ. FT.	1
	ELECTRIC METER RM	R-2	300 GROSS	433 SQ. FT.	1
	FIRE PUMP RM	R-2	300 GROSS	249 SQ. FT.	1
	COMPACTOR RM	R-2	300 GROSS	383 SQ. FT.	1
	BICYCLE STORAGE	S-2	200 GROSS	486.34 SQ. FT.	2
1st	AMENITY SPACE A	R-2	15 NET	596.58 SQ. FT.	40
	AMENITY SPACE B	R-2	15 NET	626.35 SQ. FT.	42
	PACKAGE	S-2	200 GROSS	133.84 SQ. FT.	1
	RESIDENTIAL LOBBY	R-2	200 GROSS	390.96 SQ. FT.	1
2nd - 3rd	RESIDENTIAL	R-2	200 GROSS	6338.74 SQ. FT.	32
4th - 6th	RESIDENTIAL	R-2	200 GROSS	6338.74 SQ. FT.	32
7th - 11th	RESIDENTIAL	R-2	200 GROSS	6338.74 SQ. FT.	32
12th	RESIDENTIAL	R-2	200 GROSS	5719.09 SQ. FT.	29
13th	RESIDENTIAL	R-2	200 GROSS	5513.80 SQ. FT.	28
14th - 15th	RESIDENTIAL	R-2	200 GROSS	5513.80 SQ. FT.	28
16th	RESIDENTIAL	R-2	200 GROSS	4351.58 SQ. FT.	22
17th - 19th	RESIDENTIAL	R-2	200 GROSS	4195.84 SQ. FT.	21
ROOF	OUTDOOR REC.	R-2	200 GROSS	2584.08 SQ. FT.	13

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:

AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
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DATE	SUBMISSIONS / REVISIONS
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08.02.19	99% CONSTRUCTION SET
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07.27.18	90% PROGRESS SET
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01.26.18	RE-ISSUED TO D.O.B. FOR REVIEW AND COMMENTS
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS

SHEET TITLE:

EGRESS PLANS CELLAR AND 1ST FLOOR

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

ISSUE DATE: 10-19-15

PROJECT NO: #1520

DRAWN BY: V.J.

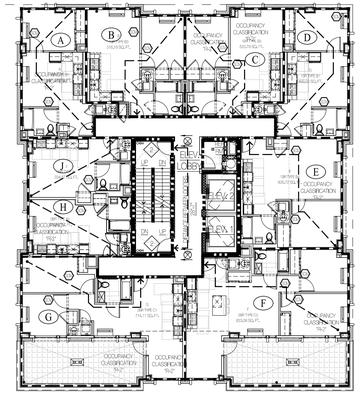
CHECKED BY: T.L.

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

SHEET NO:

DRAWING NO: A-004.01

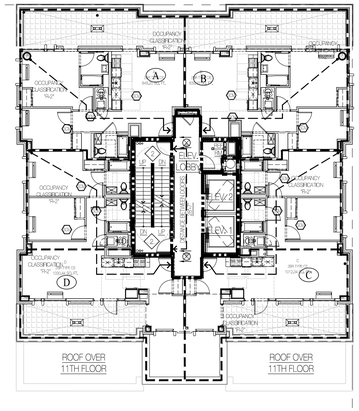
NYC DOB NUMBER: 321191802



APARTMENTS TRAVEL DISTANCE 12TH FLOOR PLAN	
APT. DESIGNATION	DISTANCES (FT) MAX. 75'-0"
12 A	33'-11"
12 B	29'-11"
12 C	29'-11"
12 D	33'-11"
12 E	38'-7"
12 F	39'-8"
12 G	36'-0"
12 H	22'-11"
12 J	22'-11"

12TH FLOOR PLAN

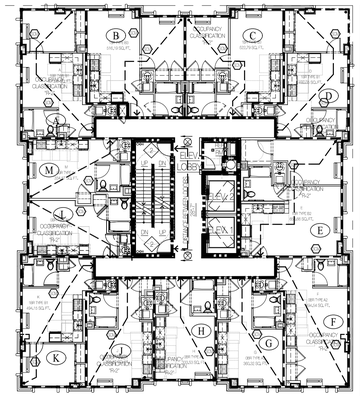
SCALE : 1/16" = 1'-0"



APARTMENTS TRAVEL DISTANCE 17TH FLOOR PLAN	
APT. DESIGNATION	DISTANCES (FT) MAX. 75'-0"
16 A	40'-6"
16 B	39'-4"
16 C	52'-9"
16 D	53'-11"

16TH FLOOR PLAN

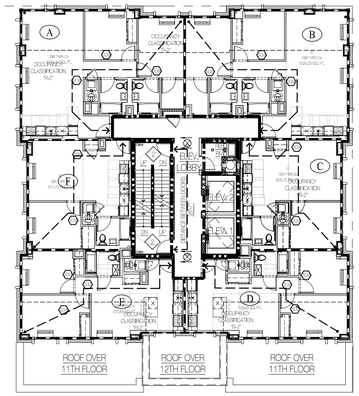
SCALE : 1/16" = 1'-0"



APARTMENTS TRAVEL DISTANCE 4TH - 11TH FLOOR PLAN	
APT. DESIGNATION	DISTANCES (FT) MAX. 75'-0"
4 - 11 A	33'-11"
4 - 11 B	29'-11"
4 - 11 C	29'-11"
4 - 11 D	33'-11"
4 - 11 E	40'-2"
4 - 11 F	32'-4"
4 - 11 G	26'-10"
4 - 11 H	24'-9"
4 - 11 J	25'-11"
4 - 11 K	33'-3"
4 - 11 L	22'-11"
4 - 11 M	22'-11"

4TH - 11TH FLOOR PLAN

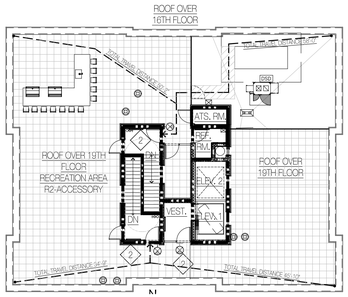
SCALE : 1/16" = 1'-0"



APARTMENTS TRAVEL DISTANCE 14TH - 15TH FLOOR PLAN	
APT. DESIGNATION	DISTANCES (FT) MAX. 75'-0"
14-15 A	48'-9"
14-15 B	48'-9"
14-15 C	38'-7"
14-15 D	39'-8"
14-15 E	39'-8"
14-15 F	39'-1"

14TH - 15TH FLOOR PLAN

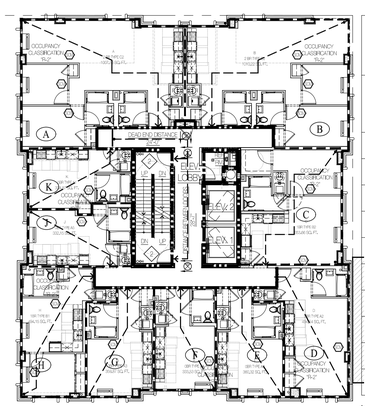
SCALE : 1/16" = 1'-0"



ROOF PLAN

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

SYMBOL LEGEND	
	3 HR RATED WALL
	2 HR RATED WALL
	1 HR RATED WALL
	CEILING MOUNTED EXIT SIGN
	WALL MOUNTED EXIT SIGN
SIGN	SIGN AT ELEVATOR LANDING
	3'-0" WIDE DOOR (2 LEAFS) EXIT CAPACITY = 68" / 0.2 = 340
	3'-0" WIDE DOOR (1 LEAF) EXIT CAPACITY = 34" / 0.2 = 170
S	SMOKE DETECTOR
H	HEAT DETECTOR
SCM	SMOKE / CARBON MONOXIDE DETECTOR

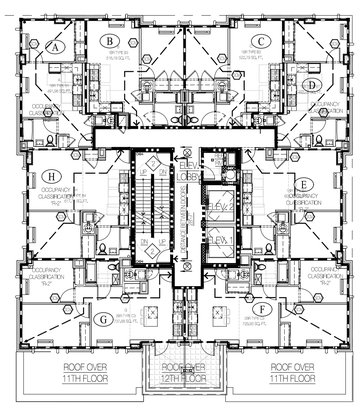


APARTMENTS TRAVEL DISTANCE 2ND - 3RD FLOOR PLAN	
APT. DESIGNATION	DISTANCES (FT) MAX. 75'-0"
2 - 3 A	47'-0"
2 - 3 B	47'-0"
2 - 3 C	39'-0"
2 - 3 D	32'-4"
2 - 3 E	26'-10"
2 - 3 F	24'-9"
2 - 3 G	25'-11"
2 - 3 H	33'-3"
2 - 3 J	20'-1"
2 - 3 K	20'-1"

MOST REMOTE TRAVEL DISTANCE + DEAD END UNITS "I"
47'-0" + 24'-0" = 71'-0"

2ND - 3RD FLOOR PLAN

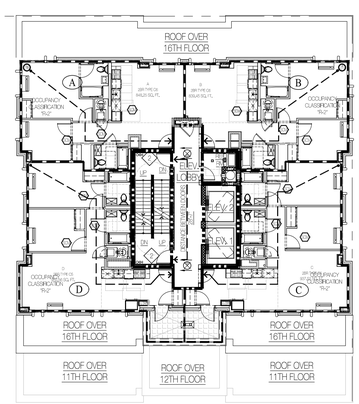
SCALE : 1/16" = 1'-0"



APARTMENTS TRAVEL DISTANCE 16TH FLOOR PLAN	
APT. DESIGNATION	DISTANCES (FT) MAX. 75'-0"
13 A	33'-11"
13 B	29'-11"
13 C	29'-11"
13 D	33'-11"
13 E	43'-3"
13 F	41'-1"
13 G	43'-3"
13 H	37'-7"

13TH FLOOR PLAN

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



APARTMENTS TRAVEL DISTANCE 18TH - 20TH FLOOR PLAN	
APT. DESIGNATION	DISTANCES (FT) MAX. 75'-0"
17 - 19 A	41'-6"
17 - 19 B	39'-10"
17 - 19 C	53'-4"
17 - 19 D	53'-11"

17TH - 19TH FLOOR PLAN

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

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:

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11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS

SHEET TITLE:

EGRESS PLANS 2ND FLOOR - ROOF

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

ISSUE DATE: 10-19-15

PROJECT NO: #1520

DRAWN BY: V.J.

CHECKED BY: T.L.

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

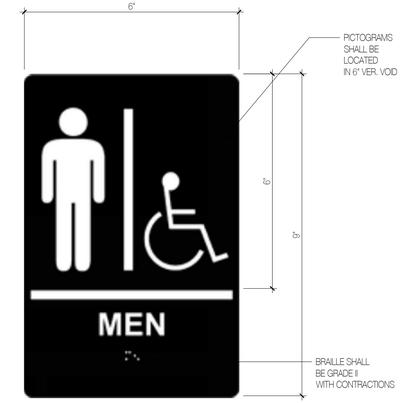
SHEET NO:

DRAWING NO: A-005.01

NYC DOB NUMBER: 321191802

1 A-006 ADA COMPLIANT UNI-SEX RESTROOM

SCALE : 6" = 1'-0"



2 A-006 ADA COMPLIANT MEN'S RESTROOM

SCALE : 6" = 1'-0"

NOTE: WOMEN'S RESTROOM SIMILAR

3 A-006 ADA COMPLIANT SIGN OF ACCESSIBILITY

SCALE : 6" = 1'-0"

4 A-006 STAIR SIGNAGE @ EACH FLOOR IN STAIR TOWER

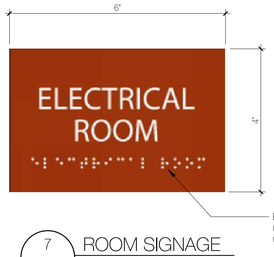
SCALE : 6" = 1'-0"

5 A-006 ADA COMPLIANT SIGN IN CASE OF FIRE

SCALE : 6" = 1'-0"

6 A-006 ADA COMPLIANT NO SMOKING SIGN

SCALE : 6" = 1'-0"

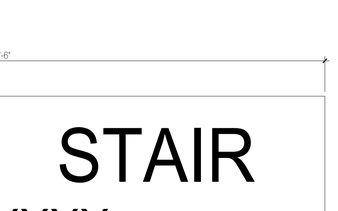


7 A-006 ROOM SIGNAGE

SCALE : 6" = 1'-0"

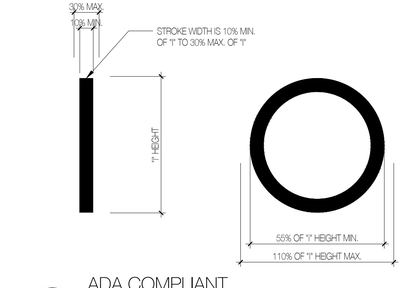
8 A-006 STAIR SIGNAGE LOCATED @ EXT. FACE OF STAIR DOOR

SCALE : 6" = 1'-0"



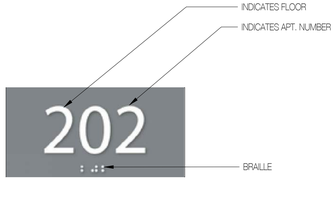
9 A-006 SIGNAGE HEIGHT A.F.F. WHEN ADJACENT TO DOOR

SCALE : ⅜" = 1'-0"



11 A-006 ADA COMPLIANT CHARACTER PROPORTIONS

SCALE : 6" = 1'-0"

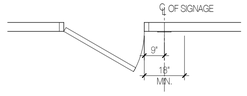


12 A-006 APARTMENT NUMERING SIGNAGE

SCALE : 6" = 1'-0"

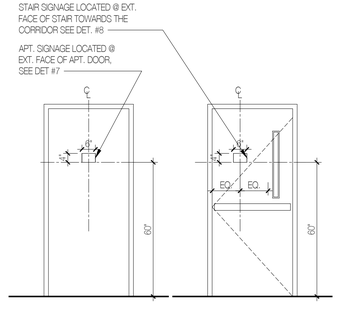
SIGNAGE TEXT	
ELECTRICAL METER ROOM	CELLAR
GAS METER ROOM	CELLAR
FIRE PUMP ROOM	CELLAR
COMPACTOR ROOM	CELLAR
BIKE STORAGE	CELLAR
DETENTION TANK	CELLAR
WATER & SEWER ROOM	CELLAR
AMENITY SPACE A	1ST FLOOR
AMENITY SPACE B	1ST FLOOR
TOILET UNISEX	1ST FLOOR
PACKAGE ROOM	1ST FLOOR
BIKE STORAGE	1ST FLOOR
TELECOM CLOSET	1ST FLOOR
MECHANICAL CLOSET	1ST FLOOR
PARKING ATTENDANT BOOTH	1ST FLOOR
TELEPHONE & TV CLOSET	2ND THROUGH 19TH
REFUSE ROOM	2ND THROUGH 19TH
ELEVATOR CONTROL CLOSET	ROOF

1 DIMENSIONS & SIGNAGE LOCATION ADDED



10 A-006 SIGNAGE HEIGHT AFF WHEN ADJACENT TO DOOR

SCALE : ⅜" = 1'-0"



13 A-006 SIGNAGE HEIGHT A.F.F. WHEN CENTERED ON DOOR

SCALE : ⅜" = 1'-0"

NOTE:

1. BRAILLE IS TO BE PLACED DIRECTLY BELOW THE CORRESPONDING RAISED CHARACTER.
2. IF TEXT IS MULTI-LINED , BRAILLE IS PLACED BELOW ENTIRE TEXT AND SEPARATED 3/8" FROM ANY OTHER TACTILE CHARACTERS AND 3/8" MINIMUM FROM RAISED BORDERS AND DECORATIVE ELEMENTS
3. THE SHAPE OF BRAILLE CHARACTERS MUST ALWAYS BE ROUNDED.
4. ALMOST ALWAYS LOWER CASE. UPPERCASE IS ONLY USED BEFORE THE FIRST WORD OF SENTENCES, PROPER NOUNS AND NAMES, INDIVIDUAL LETTER OF THE ALPHABET, INITIALS AND ACRONYMS

NOTE:

1. GC SHALL SUBMIT TO ARCHITECT, SHOP DRAWINGS OF ALL REQUIRED SIGNAGE FOR APPROVAL PRIOR TO INSTALLATION.
2. GC SHALL FURNISH AND INSTALL SIGNAGE THROUGHOUT THE BUILDING AND SITE AS REQUIRED BY ALL APPLICABLE BUILDING CODES (NYS, NYC, ANSI, ETC.)
3. REQUIRED SIGNAGE IS NOT LIMITED TO WHAT IS SHOWN ON THESE DRAWINGS.

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

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AUFGANG ARCHITECTS

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08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
07.27.18	90% PROGRESS SET

SHEET TITLE:

SIGNAGE DETAILS

SEAL & SIGNATURE

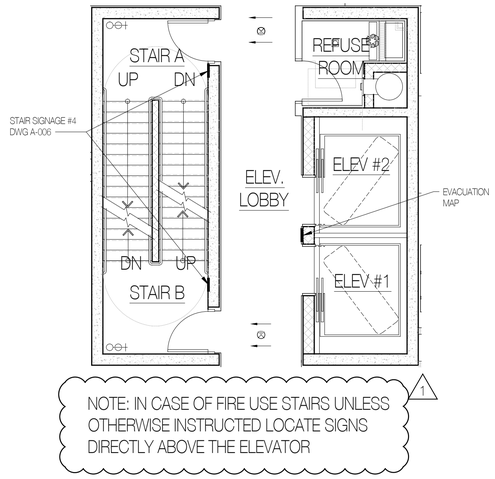
REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

ISSUE DATE:	PROJECT NO:
10-19-15	#1520
DRAWN BY:	CHECKED BY:
MB	AM
SCALE:	SHEET NO:
1/8"=1'-0"	

DRAWING NO:

A-006.00

NYC DOB NUMBER: 321191802



NOTE: IN CASE OF FIRE USE STAIRS UNLESS OTHERWISE INSTRUCTED LOCATE SIGNS DIRECTLY ABOVE THE ELEVATOR (1)

1 / A-007 TYPICAL CORRIDOR FLOOR PLAN 4TH THROUGH 11TH

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

N

HEIGHT ABOVE FLOOR TO BASELINE	HORIZONTAL VIEWING DISTANCE	MINIMUM CHARACTER HEIGHT
40 INCHES TO LESS THAN OR EQUAL TO 70 INCHES	LESS THAN 6 FEET	5/8 INCH
	6 FEET AND GREATER	5/8" INCH , PLUS 1/8" INCH PER FOOT OF VIEWING DISTANCE ABOVE 6 FEET
GREATER THAN 70 INCHES TO LESS THAN OR EQUAL TO 120 INCHES	LESS THAN 15 FEET	2 INCHES
	15 FEET AND GREATER	2 INCHES , PLUS 1/8" INCH PER FOOT OF VIEWING DISTANCE ABOVE 15 FEET
GREATER THAN 120 INCHES	LESS THAN 21 FEET	3 INCHES
	21 FEET AND GREATER	3 INCHES , PLUS 1/8" INCH PER FOOT OF VIEWING DISTANCE ABOVE 21 FEET

ANSI 2009 TABLE 703.2.4
VISUAL CHARACTER HEIGHT

SCALE : 1/32" = 1'-0"

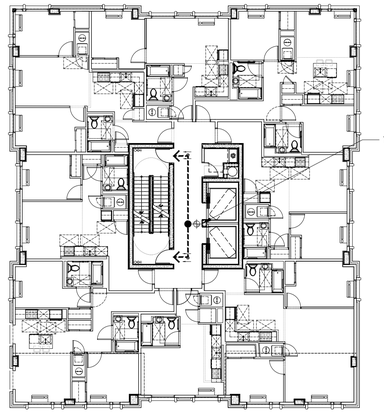
DIMENSIONS & SIGNAGE LOCATION ADDED (1)

EVACUATION MAP

LEVEL X

ADDRESS

EMERGENCY DIAL 911



LEGEND

- YOU ARE HERE
- FIRE EXTINGUISHER — FE
- FIRE ALARM — FA
- ELEVATOR
- EXIT ROUTE
- STAIRS

IN CASE OF FIRE USE STAIRS UNLESS OTHERWISE INSTRUCTED

LOCATE SIGN DIRECTLY ABOVE ELEVATOR CALL BUTTON

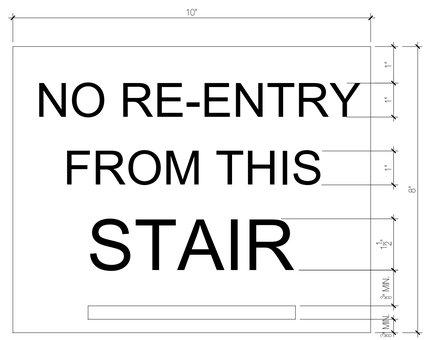
2 / A-007 ADA COMPLIANT LOCATION AND EVACUATION MAP TYPICAL FLOOR

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

(NOTE: SEE DRAWINGS A-100 TO A-105 FOR EACH FLOOR PLAN LAYOUT) (1)

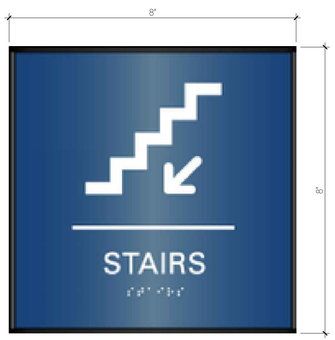
ADDITIONAL SIGNAGE WORDING
RE- ENTRY ON THIS FLOOR
NO RE-ENTRY FROM THIS STAIR EXCEPT DURING FIRE EMERGENCY
NO RE-ENTRY , NEAREST RE-ENTRY ON THE_____AND FLOORS _____

ADDITIONAL SIGNAGE
EMERGENCY GAS SHUTOFF
SPRINKLER SHUT OFF VALVE BOX _____FEET FROM THIS SIGN (INCLUDE DIRECTIONAL ARROW)
SIAMESE CONNECTION



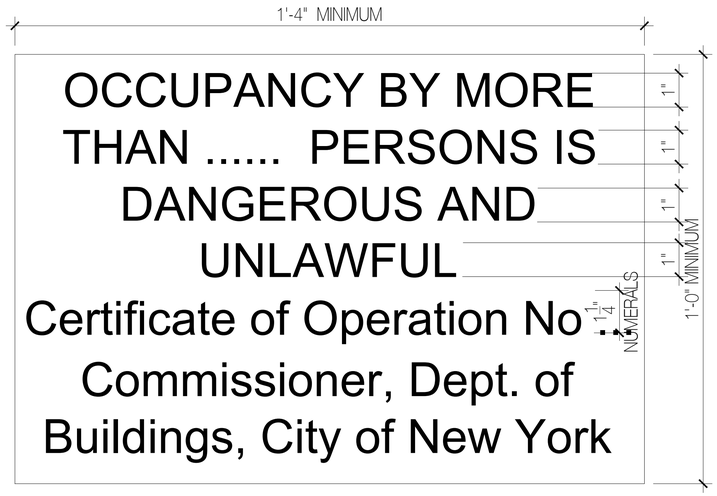
3 / A-007 ADA COMPLIANT STAIR RE-ENTRY SIGNS

SCALE : 6" = 1'-0"



4 / A-007 ADA COMPLIANT STAIR EXIT SIGNAGE

SCALE : 6" = 1'-0"



1. TEXT SHALL BE 1" MIN.
2. NUMERALS SHALL BE 1 1/4" MIN.

5 / A-007 OCCUPANCY SIGNAGE

SCALE : 3" = 1'-0"

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:
AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:
SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:
McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:
A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:
ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
08.15.19 (1)	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
07.27.18	90% PROGRESS SET

SHEET TITLE:

SIGNAGE DETAILS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 027789 STATE OF NEW YORK

ISSUE DATE: 10-19-15

PROJECT NO: #1520

DRAWN BY: MB

CHECKED BY: AM

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

SHEET NO:

DRAWING NO: A-007.00

NYC DOB NUMBER: 321191802

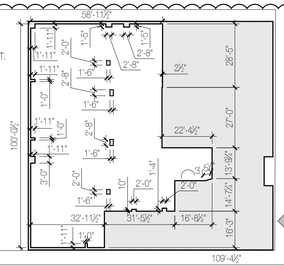
CELLAR FLOOR PARKING AREA CALCULATIONS:

GROSS AREA:
(5358.64 SQ. FT. PROV. AREA) - (14.00 SQ. FT. STRUCT. DED.) = 5,344.64 SQ. FT.

21 GROUND SPOTS (200) = 4,200 SQ. FT.
21 LIFTED SPOTS (47) = 987 SQ. FT.
= 42 SPOTS PROVIDED

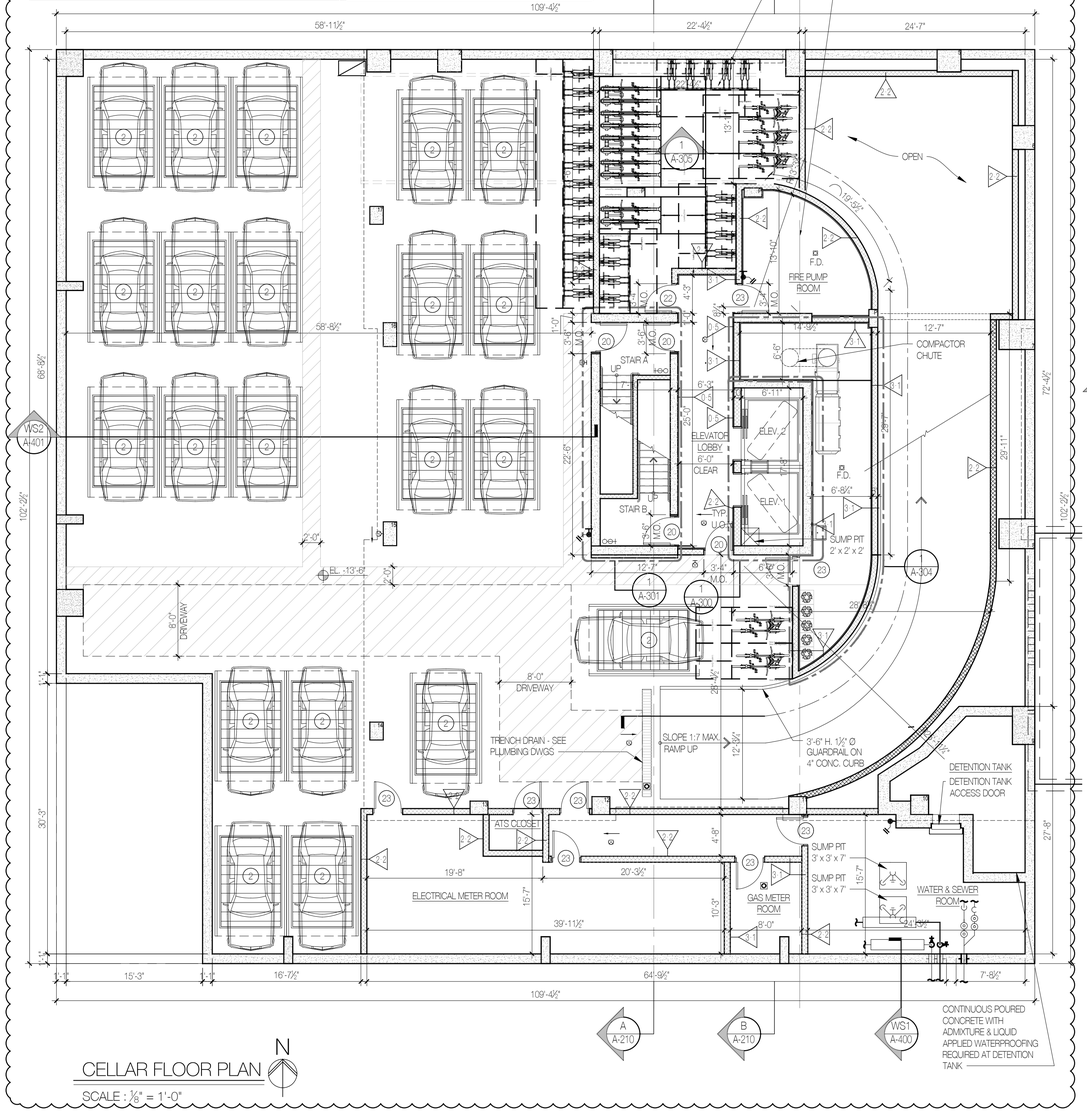
5,187 SQ. FT. < 5,344.64 SQ. FT. (COMPLIES)

*HATCHED AREAS NOT INCLUDED IN GROSS AREA CALCULATION



BIKE STORAGE
491.78 SQ. FT. / 81 SPACES = 6.00 SQ.FT. PER BIKE
81 SPACES REQUIRED
81 SPACES PROVIDED

COMPACTOR ROOM
REQUIRED AREA: 161 UNITS x 1.5 SQ.FT.=241.5 SQ.FT.
TOTAL AREA PROVIDED: 252.55 SQ. FT.



CELLAR FLOOR PLAN
SCALE : ⅛" = 1'-0"

FIRST FLOOR PARKING AREA CALCULATIONS:

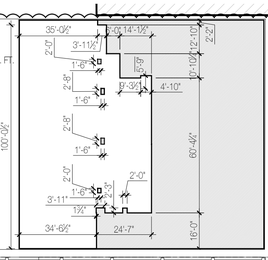
GROSS AREA:
(5177.15 SQ. FT. PROV. AREA) - (14.00 SQ. FT. STRUCT. DED.) = 5,163.15 SQ. FT.

23 GROUND SPOTS (200) = 4,600 SQ. FT.

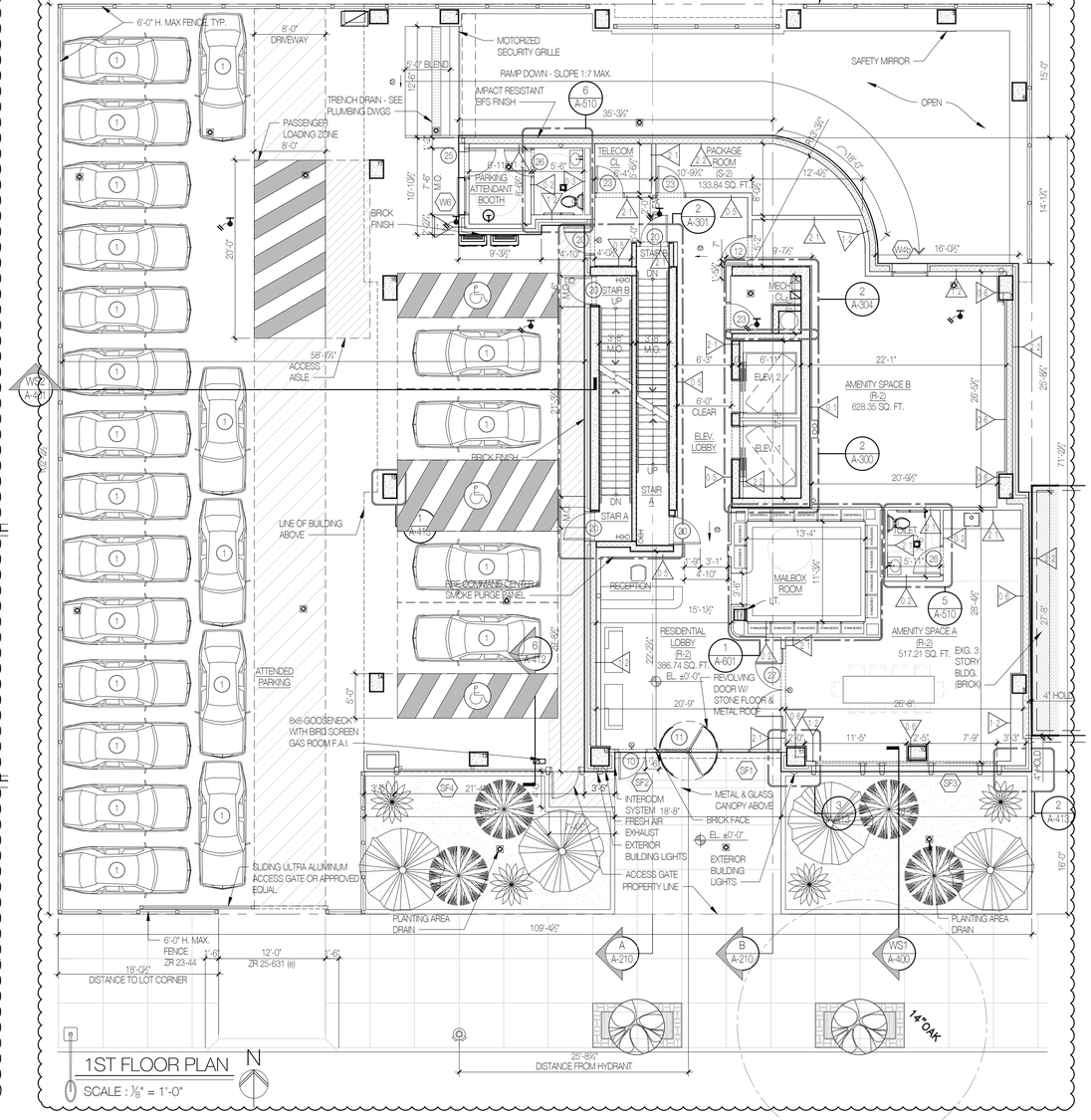
= 23 SPOTS PROVIDED

4,600 SQ. FT. < 5,163.15 SQ. FT. (COMPLIES)

*HATCHED AREAS NOT INCLUDED IN GROSS AREA CALCULATION



PARKING CALCULATION: REQUIRED 70% MARKET RATE
161 UNITS - 20% (INCOME RESTRICTED) = 128 UNITS
18 EXISTING SPOTS WAIVED AS PER BSA DETERMINATION
128 UNITS (70%) = 90 TOTAL REQUIRED
42 SPOTS (CELLAR FLOOR) + 23 SPOTS (GROUND FLOOR) + 25 SPOTS (OFFSITE AT 222 JOHNSON AVE.) = 90 SPOTS (COMPLIES)



1ST FLOOR PLAN
SCALE : ⅛" = 1'-0"

WALL TYPE LEGEND:

NON RATED

1 FURRING AT INTERIOR CMU WALL - (1) LAYER 5/8" TYPE "X" GYPSUM BOARD OVER 1½" METAL GALVANIZED STUDS @ 16" O.C.

2 TYPICAL PARTITION - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON EACH SIDE OF 2½" METAL STUDS @ 16" O.C. 50-54

3 BATHROOM CHASE WALL PARTITION - (1) LAYER ⅝" TYPE "X" WATER RESISTANT GYPSUM BOARD ONE SIDE OF 3⅝" METAL STUDS @ 16" O.C. *SEE INTERIOR DESIGN DRAWINGS FOR WALL THICKNESSES.

4 PARTITION - (1) LAYER OF ⅝" TYPE "X" GYPSUM BOARD, ON EACH SIDE OF 3 ⅝" METAL STUDS @ 16" O.C. (@ APARTMENT ELECTRICAL PANEL/ NETWORK INTERFACE DEVICE PANEL)

5 FURRING AT INTERIOR CMU WALL (PUBLIC CORRIDOR SIDE) - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD OVER ⅞" GALV. METAL STUDS @ 16 O.C.

6 FURRING AT EXTERIOR CMU WALL - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON 1½" GALV. METAL Z FURRING @ 16 O.C. W/ 1 ½" SEMI-RIGID INSULATION (R7.5) UNFACED

1 HOUR RATED

1 TENANT SEPARATION PARTITION - (1) LAYER OF ⅝" TYPE "X" GYPSUM BOARD ON (1) SIDE, (2) LAYERS OF ⅝" TYPE "X" GYPSUM BOARD ON OTHER SIDE OF 3 ⅝" METAL STUDS @ 16" O.C. WITH 3 ½" SOUND ATTENUATION INSULATION. EXTEND STUDS & GYPSUM BOARD UP TO UNDERSIDE OF SLAB & SEAL TIGHT TO UNDERSIDE OF SLAB AND/OR ROOF DECK W/ CONT. FIRESTOP SEALANT& FIRESAFING INSULATION (GA FILE #WP-1052) (STC 50-54)

2 EXTERIOR PARTITION - ⅝" TYPE "X" GYPSUM BOARD, INSIDE) ⅝" EXP EXTERIOR GYPSUM BOARD SHEATHING (OUTSIDE) OVER 3⅝" METAL STUDS @ 16" O.C. WITH 3½" BATT INSULATION (UNFACED) (R-15) (UL #U419)

3 TENANT SEPARATION CHASE WALL - (2) ROWS OF (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½" METAL STUDS @ 16" O.C. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF SLAB OR ROOF SLAB. SEAL TIGHT TO SLAB WITH cONT. FIRESTOP SEALANT. SEAL ALL PENETRATIONS THRU CHASE WALL WITH FIRESAFING INSULATION AND CONT. FIRESTOP SEALANT AS REQ. PROVIDE HORIZONTAL 2½"MTL STUD BRACING @ 48" O.C. MAX. (UL#V442) PROVIDE INSULATION AS REQUIRED TO ACHIEVE A MIN. STC RATING OF 50)

2 HOUR RATED

INTERIOR PARTITION - (2) LAYERS 5/8" TYPE "X" GYPSUM BOARD ON EACH SIDE 3 ⅝" METAL STUDS @ 16" O.C. WITH 3½" SOUND ATTENUATION INSULATION. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF FLOOR DECK OR ROOF DECK. SEAL TIGHT TO DECK W/ CONT. FIRESTOP SEALANT & FIRESAFING. (GA FILE #WP-1522 STC 55-59).

1 CMU WALL - CMU WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE BLOCK COURSES. SEAL TOP OF CONCRETE/METAL BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE DECK OR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESAFING INSULATION WHERE GAP EXIST. BETWEEN TOP OF WALL AND BOTTOM OF DECK (UL #U906)

2 MECHANICAL SHAFT WALL - (2) LAYERS OF ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½" METAL C-H STUDS @ 24" O.C. WITH (1) LAYER OF 1" TYPE "X" GYPSUM LINER PANEL ON SHAFT SIDE. W/ 1" MINERAL FIBER INSULATION IN CAVITY SEAL TOP OF WALL TIGHT TO UNDERSIDE OF CONCRETE DECK W/ CONT. FIRESTOP SEALANT. GA FILE #7095 (STC-45-49)

3 PLUMBING CHASE WALL - (2) ROWS OF (2) LAYERS ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½"METAL STUDS @ 16" O.C. EXTEND GYPSUM BOARD & STUD UP TO UNDERSIDE OF CONCRETE SLAB. SEAL TIGHT TO SLAB WITH CONTINUOUS FIRESTOP SEALANT. SEAL ALL PENETRATIONS THRU CHASE WALL WITH FIRESAFING INSULATION AND CONTINUOUS FIRESTOP SEALANT AS REQUIRED PROVIDE HORIZONTAL 2½" MTL. STUD BRACING @ 48" O.C. MAX (UL #V442) (PROVIDED INSULATION AS REQUIRED TO ACHIEVE A MIN. STC RATING OF 50)

3 HOUR RATED

1 (1) LAYER ⅝" TYPE "X" GYPSUM BOARD OVER ⅞" METAL HAT CHANNELS @ 24" O.C. OVER 2 HR RATED CONCRETE BLOCK WALL WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF SLAB ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESAFING INSULATION WHERE A GAP EXISTS BETWEEN TOP OF WALL AND BOTTOM OF CONCRETE DECK (UL #U914) (PROVIDE STC RATING OF 50-54 AT COMPACTOR CHUTE ENCLOSURE ADJACENT TO DWELLING UNITS)

GENERAL NOTES:

1. ALL ENLARGED PLAN DIMENSIONS ARE TAKEN FINISH TO FINISH (U.O.N.).
2. G.C. SHALL SUBMIT SHOP DRAWINGS TO ARCHITECT FOR REVIEW INDICATING SIZE, GAUGE AND SPACING OF ALL METAL STUDS AND REQUIRED METAL BOXED HEADERS SIGNED AND SEALED BY A NYS LICENSED ENGINEER
3. AS PER NYCBC 1107.2.8, AT THE OPTION OF THE OWNER, LAUNDRY EQUIPMENT CONFORMING TO THIS SECTION WITHIN THE DWELLING UNIT OR SLEEPING UNIT MAY BE PROVIDED AT THE TIME A PERSON WITH PHYSICAL DISABILITIES TAKES OCCUPANCY OF THE UNIT, OR WITHIN 10 DAYS OF THE DATE THE REQUEST IS MADE BY A PERSON WITH PHYSICAL DISABILITIES, WHICHEVER IS LATER, AT THE OWNER'S EXPENSE.
4. WATER CURTAIN TYPE SPRINKLER HEADS PROVIDED ON ALL FLOORS
5. ALL FURNITURE IS FOR REFERENCE ONLY. PLEASE SEE ID DRAWINGS FOR MORE INFORMATION.
6. 6'-6" MIN. CLEAR OPENING UNDER SMOKESTOP

LEGEND:

- CONCRETE FOUNDATION WALL
- CONCRETE BLOCK WALL - 2HR FIRE RATED
- GYPSUM BOARD PARTITION - SEE PLAN FOR SIZE.
- MASONRY VENEER

- REMOVABLE KITCHEN BASE CABINET - 2'-6" WIDE x 2'-0" DEEP
- HANDICAP ADAPTABLE APARTMENT UNIT
- PARTITION - SEE WALL TYPE LEGEND
- 5'-0" DIAMETER CLEAR HANDICAP FLOOR TURNING SPACE.
- "T" FLOOR TURNING SPACE
- 30" x 48" CLEAR FLOOR SPACE
- FIRE RATED SHAFT WALL.
- W WINDOW - SEE WINDOW SCHEDULE ON DWG. A-601
- X DOOR & FRAME - SEE DOOR SCHEDULE DRAWING A-600
- CO/A HARDWIRED CARBON MONOXIDE DETECTOR (BC 907) NO MORE THAN 15FT AWAY FROM BEDROOM DOORS

- EXIT LIGHT AND SIGN - WALL MOUNTED
- EXIT LIGHT AND SIGN - CEILING MOUNTED
- ELECTRICAL PANEL UNIT
- NETWORK INTERFACE DEVICE PANEL
- SUSPENDED GYPSUM BOARD
- COLUMN & COLUMN NUMBER
- BATHROOM DOORS & FRAMES SHALL BE PROVIDED W/ MORTISED HINGE & LATCH BLANKS TO PERMIT FUTURE REVERSAL OF DOOR ON THE SAME FRAME
- # OF PARKING SPACES
- X PARKING STACKER UNIT

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:
AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
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T: 718.872.6112

INTERIOR DESIGNER:
ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
1 08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
05.03.19	PAA TO D.O.B.
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
01.26.18	REISSUED TO D.O.B.
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS

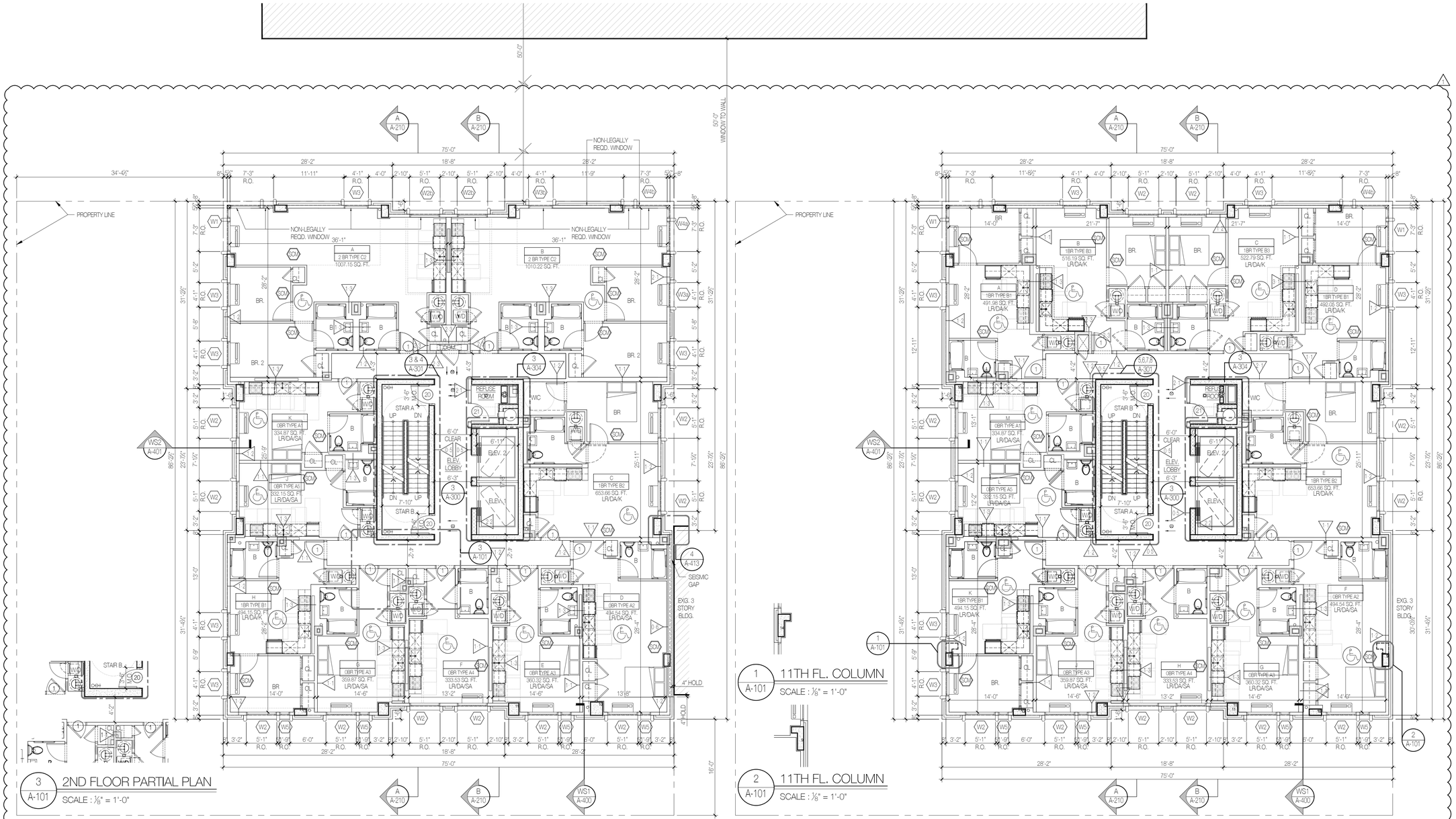
SHEET TITLE:

CELLAR & 1ST FLOOR PLAN

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

ISSUE DATE: 10-19-15
PROJECT NO: #1520
DRAWN BY: MB
CHECKED BY: AM
SCALE: 1/8"=1'-0"
SHEET NO:
DRAWING NO: A-100.01
NYC DOB NUMBER: 321191802



PENETRATIONS @ 3RD FLOOR SLAB ONLY

GROSS FLOOR AREA:	6338.74 SQ. FT.
RENTAL AREA:	5396 SQ. FT.
EFFICIENCY	88.36%

WINDOW NOTES:
W#a LOCATED AT FLOORS - 2, 3, 6, 7, 10, 11, 14 & 15
W#b LOCATED AT FLOORS - 4, 5, 8, 9, 12, 13, 16, 17, 18 & 19

*SEE ELEVATIONS ON PAGES A-200 & A-201 FOR ADDITIONAL INFORMATION.

GROSS FLOOR AREA:	6338.74 SQ. FT.
RENTAL AREA:	5391.04 SQ. FT.
EFFICIENCY:	88.75%

WINDOW NOTES:
W#a LOCATED AT FLOORS - 2, 3, 6, 7, 10, 11, 14 & 15
W#b LOCATED AT FLOORS - 4, 5, 8, 9, 12, 13, 16, 17, 18 & 19

*SEE ELEVATIONS ON PAGES A-200 & A-201 FOR ADDITIONAL INFORMATION.

WALL TYPE LEGEND:
NON RATED

A1 FURRING AT INTERIOR CMU WALL - (1) LAYER 5/8" TYPE "X" GYPSUM BOARD OVER 1½" METAL GALVANIZED STUDS @ 16" O.C.

A2 TYPICAL PARTITION - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON EACH SIDE OF 2½" METAL STUDS @ 16" O.C.

A3 BATHROOM CHASE WALL PARTITION - (1) LAYER ⅝" TYPE "X" WATER RESISTANT GYPSUM BOARD ONE SIDE OF 3⅝" METAL STUDS @ 16" O.C. *SEE INTERIOR DESIGN DRAWINGS FOR WALL THICKNESSES.

A4 PARTITION - (1) LAYER OF ⅝" TYPE "X" GYPSUM BOARD, ON EACH SIDE OF 3 ⅝" METAL STUDS @ 16" O.C. (@ APARTMENT ELECTRICAL PANEL/ NETWORK INTERFACE DEVICE PANEL)

A5 FURRING AT INTERIOR CMU WALL (PUBLIC CORRIDOR SIDE) - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD OVER ½" GALV. METAL STUDS @ 16 O.C.

A6 FURRING AT EXTERIOR CMU WALL - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON 1½" GALV. METAL Z FURRING @ 16 O.C. W/ 1 ½" SEMI-RIGID INSULATION (R7.5) UNFACED

1 HOUR RATED

1 TENANT SEPARATION PARTITION - (1) LAYER OF ⅝" TYPE "X" GYPSUM BOARD ON (1) SIDE, (2) LAYERS OF ⅝" TYPE "X" GYPSUM BOARD ON OTHER SIDE OF 3 ⅝" METAL STUDS @ 16" O.C. WITH 3½" SOUND ATTENUATION INSULATION. EXTEND STUDS & GYPSUM BOARD UP TO UNDERSIDE OF SLAB & SEAL TIGHT TO UNDERSIDE OF SLAB AND/OR ROOF DECK W/ CONT. FIRESTOP SEALANT& FIRESAFING INSULATION (GA FILE #WP-1052) (STC 50-54)

2 EXTERIOR PARTITION - ⅝" TYPE "X" GYPSUM BOARD, (INSIDE) ⅝" EXP.EXTERIOR GYPSUM BOARD SHEATHING (OUTSIDE) OVER 3⅝" METAL STUDS @ 16" O.C. WITH 3½" BATT INSULATION (UNFACED) (R-15) (UL #U419)

3 TENANT SEPARATION CHASE WALL - (2) ROWS OF (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½" METAL STUDS @ 16" O.C. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF SLAB OR ROOF SLAB. SEAL TIGHT TO SLAB WITH cONT. FIRESTOP SEALANT. SEAL ALL PENETRATIONS THRU CHASE WALL WITH FIRESAFING INSULATION AND CONT. FIRESTOP SEALANT AS REQ. PROVIDE HORIZONTAL 2½"MTL. STUD BRACING @ 48" O.C. MAX. (UL#V442) PROVIDE INSULATION AS REQUIRED TO ACHIEVE A MIN. STC RATING OF 50)

2 HOUR RATED

1 INTERIOR PARTITION - (2) LAYERS 5/8" TYPE "X" GYPSUM BOARD ON EACH SIDE 3 ⅝" METAL STUDS @ 16" O.C. WITH 3½" SOUND ATTENUATION INSULATION. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF FLOOR. DECK OR ROOF DECK. SEAL TIGHT TO DECK W/ CONT. FIRESTOP SEALANT & FIRESAFING. (GA FILE #WP-1522 STC 55-59).

1 CMU WALL - CMU WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE BLOCK COURSES. SEAL TOP OF CONCRETE/METAL BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE DECK OR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESAFING INSULATION WHERE GAP EXIST. BETWEEN TOP OF WALL AND BOTTOM OF DECK (UL #U906)

2 MECHANICAL SHAFT WALL - (2) LAYERS OF ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½" METAL C-H STUDS @ 24" O.C. WITH (1) LAYER OF 1" TYPE "X" GYPSUM LINER PANEL ON SHAFT SIDE. W/ 1" MINERAL FIBER INSULATION IN CAVITY SEAL TOP OF WALL TIGHT TO UNDERSIDE OF CONCRETE DECK W/ CONT. FIRESTOP SEALANT. GA FILE #7095 (STC-45-49)

3 PLUMBING CHASE WALL - (2) ROWS OF (2) LAYERS ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½"METAL STUDS @ 16" O.C. EXTEND GYPSUM BOARD & STUD UP TO UNDERSIDE OF CONCRETE SLAB. SEAL TIGHT TO SLAB WITH CONTINUOUS FIRESTOP SEALANT. SEAL ALL PENETRATIONS THRU CHASE WALL WITH FIRESAFING INSULATION AND CONTINUOUS FIRESTOP SEALANT AS REQUIRED PROVIDE HORIZONTAL 2½" MTL. STUD BRACING @ 48" O.C. MAX (UL #V442) (PROVIDED INSULATION AS REQUIRED TO ACHIEVE A MIN. STC RATING OF 50)

3 HOUR RATED

1 (1) LAYER 2" TYPE "X" GYPSUM BOARD OVER ½" METAL HAT CHANNELS @ 24" O.C. OVER 2 HR RATED CONCRETE BLOCK WALL WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF SLAB ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESAFING INSULATION WHERE A GAP EXISTS BETWEEN TOP OF WALL AND BOTTOM OF CONCRETE DECK (UL #U914) (PROVIDE STC RATING OF 50-54 AT COMPACTOR CHUTE ENCLOSURE ADJACENT TO DWELLING UNITS)

GENERAL NOTES:

1. ALL ENLARGED PLAN DIMENSIONS ARE TAKEN FINISH TO FINISH (U.O.N.).
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3. AS PER NYCBC 1107.2.8, AT THE OPTION OF THE OWNER, LAUNDRY EQUIPMENT CONFORMING TO THIS SECTION WITHIN THE DWELLING UNIT OR SLEEPING UNIT MAY BE PROVIDED AT THE TIME A PERSON WITH PHYSICAL DISABILITIES TAKES OCCUPANCY OF THE UNIT, OR WITHIN 10 DAYS OF THE DATE THE REQUEST IS MADE BY A PERSON WITH PHYSICAL DISABILITIES, WHICHEVER IS LATER, AT THE OWNER'S EXPENSE.
4. WATER CURTAIN TYPE SPRINKLER HEADS PROVIDED ON ALL FLOORS
5. ALL FURNITURE IS FOR REFERENCE ONLY. PLEASE SEE ID DRAWINGS FOR MORE INFORMATION.
6. 6'-6" MIN. CLEAR OPENING UNDER SMOKESTOP

LEGEND:

- CONCRETE FOUNDATION WALL
- CONCRETE BLOCK WALL - 2HR FIRE RATED
- GYPSUM BOARD PARTITION - SEE PLAN FOR SIZE.
- MASONRY VENEER

- REMOVABLE KITCHEN BASE CABINET - 2'-6" WIDE x 2'-0" DEEP
- HANDICAP ADAPTABLE APARTMENT UNIT
- PARTITION - SEE WALL TYPE LEGEND
- 5'-0" DIAMETER CLEAR HANDICAP FLOOR TURNING SPACE.
- "T" FLOOR TURNING SPACE
- 30" x 48" CLEAR FLOOR SPACE
- FIRE RATED SHAFT WALL.
- W WINDOW - SEE WINDOW SCHEDULE ON DWG. A-601
- X DOOR & FRAME - SEE DOOR SCHEDULE DRAWING A-600
- CM HARDWIRED CARBON MONOXIDE DETECTOR (BC 907) NO MORE THAN 15FT AWAY FROM BEDROOM DOORS
- EXIT LIGHT AND SIGN - WALL MOUNTED
- EXIT LIGHT AND SIGN - CEILING MOUNTED
- ELECTRICAL PANEL UNIT
- NETWORK INTERFACE DEVICE PANEL
- SUSPENDED GYPSUM BOARD
- COLUMN & COLUMN NUMBER
- BATHROOM DOORS & FRAMES SHALL BE PROVIDED W/ MORTISED HINGE & LATCH BLANKS TO PERMIT FUTURE REVERSAL OF DOOR ON THE SAME FRAME
- # OF PARKING SPACES
- PARKING STACKER UNIT

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

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06.04.18	RE-ISSUED TO D.O.B.
01.26.18	REISSUED TO D.O.B.
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS

SHEET TITLE:

2ND - 11TH FLOOR PLANS

SEAL & SIGNATURE

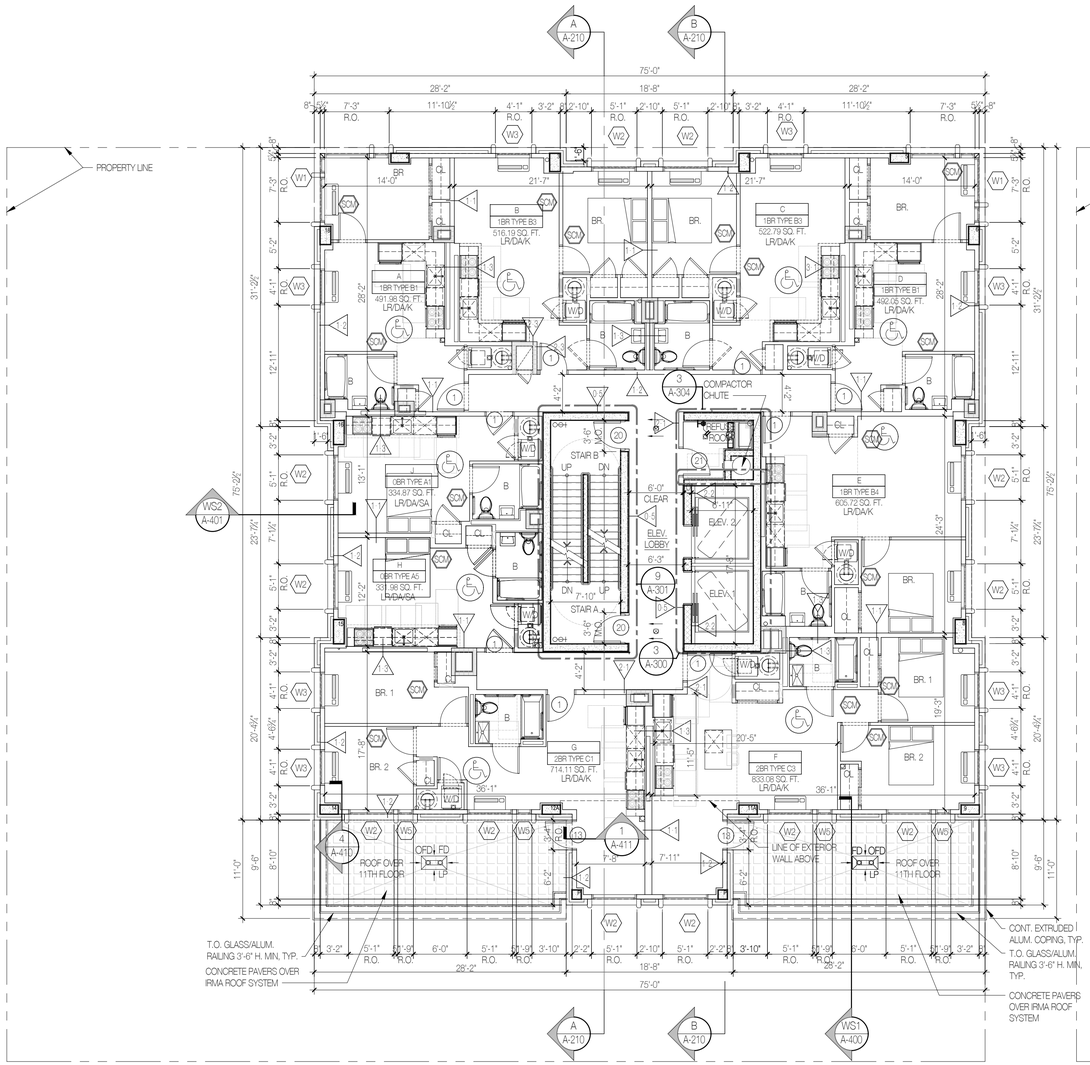
REGISTERED ARCHITECT ARIEL AUFGANG 027789 STATE OF NEW YORK

ISSUE DATE:	10-19-15
PROJECT NO:	#1520
DRAWN BY:	MB
CHECKED BY:	AM
SCALE:	1/8"=1'-0"
SHEET NO:	

DRAWING NO:

A-101.01

NYC DOB NUMBER: 321191802



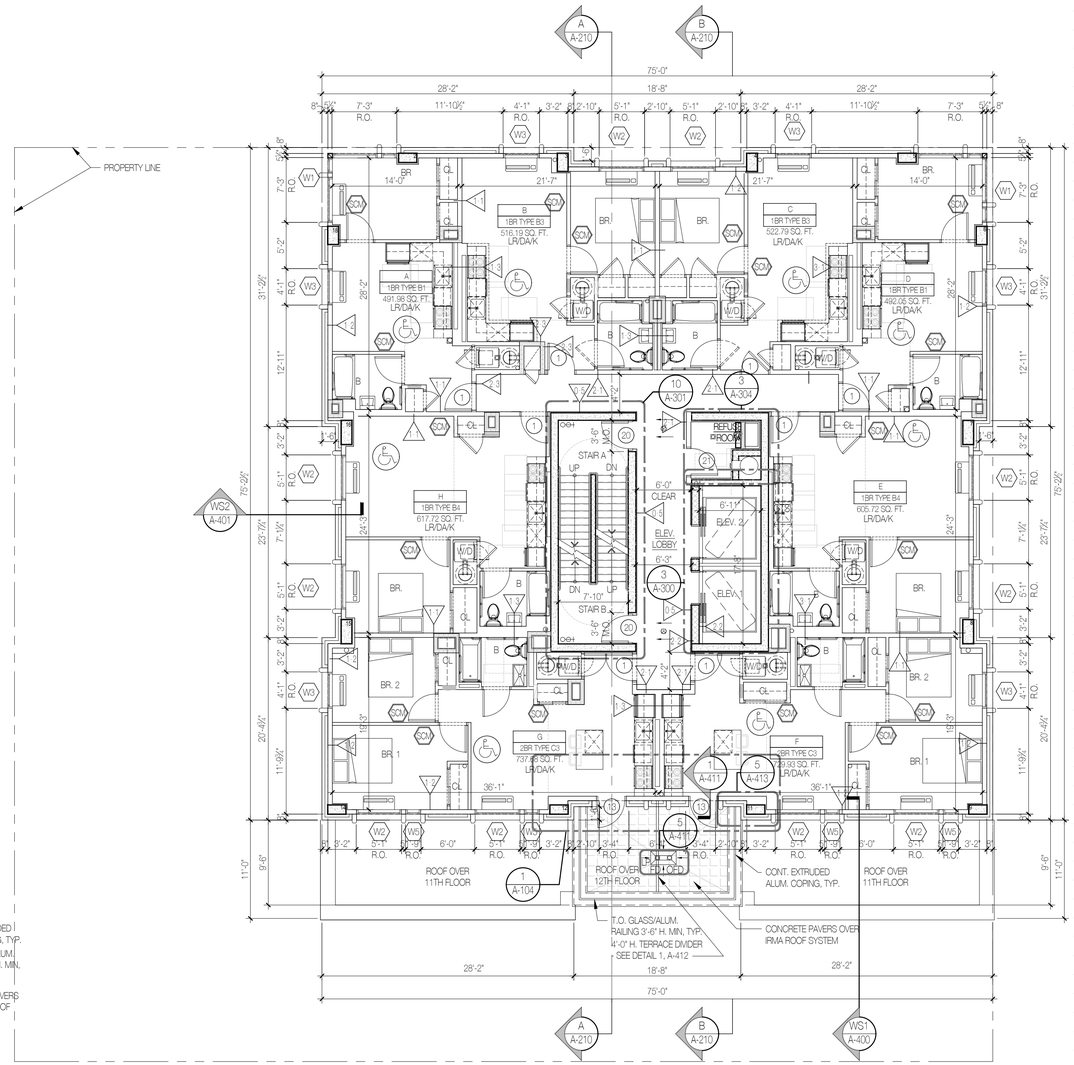
12TH FLOOR PLAN

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

GROSS FLOOR AREA:	5719.09 SQ. FT.
RENTAL AREA:	4844 SQ. FT.
EFFICIENCY:	87.43%

WINDOW NOTES:
W#a LOCATED AT FLOORS - 2, 3, 6, 7, 10, 11, 14 & 15
W#b LOCATED AT FLOORS - 4, 5, 8, 9, 12, 13, 16, 17, 18 & 19

*SEE ELEVATIONS ON PAGES A-200 & A-201 FOR ADDITIONAL INFORMATION.



13TH FLOOR PLAN

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

GROSS FLOOR AREA:	5513.80
RENTAL AREA:	4727.09 SQ. FT.
EFFICIENCY:	86.97%

WINDOW NOTES:
W#a LOCATED AT FLOORS - 2, 3, 6, 7, 10, 11, 14 & 15
W#b LOCATED AT FLOORS - 4, 5, 8, 9, 12, 13, 16, 17, 18 & 19

*SEE ELEVATIONS ON PAGES A-200 & A-201 FOR ADDITIONAL INFORMATION.

WALL TYPE LEGEND:
NON RATED

1/A-5 FURRING AT INTERIOR CMU WALL - (1) LAYER 5/8" TYPE "X" GYPSUM BOARD OVER 1½" METAL GALVANIZED STUDS @ 16" O.C.

2/A-5 TYPICAL PARTITION - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON EACH SIDE OF 2½" METAL STUDS @ 16" O.C.

3/A-5 BATHROOM CHASE WALL PARTITION - (1) LAYER ⅝" TYPE "X" WATER RESISTANT GYPSUM BOARD ONE SIDE OF 3⅝" METAL STUDS @ 16" O.C. *SEE INTERIOR DESIGN DRAWINGS FOR WALL THICKNESSES.

4/A-5 PARTITION - (1) LAYER OF ⅝" TYPE "X" GYPSUM BOARD, ON EACH SIDE OF 3 ⅝" METAL STUDS @ 16" O.C. (@ APARTMENT ELECTRICAL PANEL/ NETWORK INTERFACE DEVICE PANEL)

5/A-5 FURRING AT INTERIOR CMU WALL (PUBLIC CORRIDOR SIDE) - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD OVER ⅞" GALV. METAL STUDS @ 16 O.C.

6/A-5 FURRING AT EXTERIOR CMU WALL - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON 1½" GALV. METAL Z FURRING @ 16 O.C. W/ 1 ½" SEMI-RIGID INSULATION (R7.5) UNFACED

1 HOUR RATED

1/A-6 TENANT SEPARATION PARTITION - (1) LAYER OF ⅝" TYPE "X" GYPSUM BOARD ON (1) SIDE, (2) LAYERS OF ⅝" TYPE "X" GYPSUM BOARD ON OTHER SIDE OF 3 ⅝" METAL STUDS @ 16" O.C. WITH 3 ½" SOUND ATTENUATION INSULATION. EXTEND STUDS & GYPSUM BOARD UP TO UNDERSIDE OF SLAB & SEAL TIGHT TO UNDERSIDE OF SLAB AND/OR ROOF DECK W/ CONT. FIRESTOP SEALANT& FIRESAFING INSULATION (GA FILE #WP-1052) (STC 50-54)

2/A-6 EXTERIOR PARTITION - ⅝" TYPE "X" GYPSUM BOARD, INSIDE) ⅝" EXP EXTERIOR GYPSUM BOARD SHEATHING (OUTSIDE) OVER 3⅝" METAL STUDS @ 16" O.C., WITH 3½" BATT INSULATION (UNFACED) (R-15) (UL #U419)

3/A-6 TENANT SEPARATION CHASE WALL - (2) ROWS OF (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½" METAL STUDS @ 16" O.C. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF SLAB OR ROOF SLAB. SEAL TIGHT TO SLAB WITH cONT. FIRESTOP SEALANT. SEAL ALL PENETRATIONS THRU CHASE WALL WITH FIRESAFING INSULATION AND CONT. FIRESTOP SEALANT AS REQ. PROVIDE HORIZONTAL 2½"MTL STUD BRACING @ 48" O.C. MAX. (UL#V442) PROVIDE INSULATION AS REQUIRED TO ACHIEVE A MIN. STC RATING OF 50)

2 HOUR RATED

1/A-7 INTERIOR PARTITION - (2) LAYERS 5/8" TYPE "X" GYPSUM BOARD ON EACH SIDE 3 ⅝" METAL STUDS @ 16" O.C. WITH 3½" SOUND ATTENUATION INSULATION. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF FLOOR DECK OR ROOF DECK. SEAL TIGHT TO DECK W/ CONT. FIRESTOP SEALANT & FIRESAFING. (GA FILE #WP-1522 STC 55-59).

2/A-7 CMU WALL - CMU WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE BLOCK COURSES. SEAL TOP OF CONCRETE/METAL BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE DECK OR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESAFING INSULATION WHERE GAP EXIST. BETWEEN TOP OF WALL AND BOTTOM OF DECK (UL #U906)

3/A-7 MECHANICAL SHAFT WALL - (2) LAYERS OF ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½" METAL C-H STUDS @ 24" O.C. WITH (1) LAYER OF 1" TYPE "X" GYPSUM LINER PANEL ON SHAFT SIDE. W/ 1" MINERAL FIBER INSULATION IN CAVITY SEAL TOP OF WALL TIGHT TO UNDERSIDE OF CONCRETE DECK W/ CONT. FIRESTOP SEALANT. GA FILE #7095 (STC-45-49)

4/A-7 PLUMBING CHASE WALL - (2) ROWS OF (2) LAYERS ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½"METAL STUDS @ 16" O.C. EXTEND GYPSUM BOARD & STUD UP TO UNDERSIDE OF CONCRETE SLAB. SEAL TIGHT TO SLAB WITH CONTINUOUS FIRESTOP SEALANT. SEAL ALL PENETRATIONS THRU CHASE WALL WITH FIRESAFING INSULATION AND CONTINUOUS FIRESTOP SEALANT AS REQUIRED PROVIDE HORIZONTAL 2½" MTL. STUD BRACING @ 48" O.C. MAX (UL #V442) (PROVIDED INSULATION AS REQUIRED TO ACHIEVE A MIN. STC RATING OF 50)

3 HOUR RATED

1/A-8 (1) LAYER ⅝" TYPE "X" GYPSUM BOARD OVER ½" METAL HAT CHANNELS @ 24" O.C. OVER 2 HR RATED CONCRETE BLOCK WALL WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF SLAB ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESAFING INSULATION WHERE A GAP EXISTS BETWEEN TOP OF WALL AND BOTTOM OF CONCRETE DECK (UL #U914) (PROVIDE STC RATING OF 50-54 AT COMPACTOR CHUTE ENCLOSURE ADJACENT TO DWELLING UNITS)

GENERAL NOTES:

1. ALL ENLARGED PLAN DIMENSIONS ARE TAKEN FINISH TO FINISH (U.O.N.).
2. G.C. SHALL SUBMIT SHOP DRAWINGS TO ARCHITECT FOR REVIEW INDICATING SIZE, GAUGE AND SPACING OF ALL METAL STUDS AND REQUIRED METAL BOXED HEADERS SIGNED AND SEALED BY A NYS LICENSED ENGINEER
3. AS PER NYCBC 1107.2.8, AT THE OPTION OF THE OWNER, LAUNDRY EQUIPMENT CONFORMING TO THIS SECTION WITHIN THE DWELLING UNIT OR SLEEPING UNIT MAY BE PROVIDED AT THE TIME A PERSON WITH PHYSICAL DISABILITIES TAKES OCCUPANCY OF THE UNIT, OR WITHIN 10 DAYS OF THE DATE THE REQUEST IS MADE BY A PERSON WITH PHYSICAL DISABILITIES, WHICHEVER IS LATER, AT THE OWNER'S EXPENSE.
4. WATER CURTAIN TYPE SPRINKLER HEADS PROVIDED ON ALL FLOORS
5. ALL FURNITURE IS FOR REFERENCE ONLY. PLEASE SEE ID DRAWINGS FOR MORE INFORMATION.
6. 6'-6" MIN. CLEAR OPENING UNDER SMOKESTOP

LEGEND:

- CONCRETE FOUNDATION WALL
- CONCRETE BLOCK WALL - 2HR FIRE RATED
- GYPSUM BOARD PARTITION - SEE PLAN FOR SIZE.
- MASONRY VENEER

- REMOVABLE KITCHEN BASE CABINET - 2'-6" WIDE x 2'-0" DEEP
- HANDICAP ADAPTABLE APARTMENT UNIT
- PARTITION - SEE WALL TYPE LEGEND
- 5'-0" DIAMETER CLEAR HANDICAP FLOOR TURNING SPACE.
- "T" FLOOR TURNING SPACE
- 30" x 48" CLEAR FLOOR SPACE
- FIRE RATED SHAFT WALL.
- W WINDOW - SEE WINDOW SCHEDULE ON DWG. A-601
- X DOOR & FRAME - SEE DOOR SCHEDULE DRAWING A-600
- CO HARDWIRED CARBON MONOXIDE DETECTOR (BC 907) NO MORE THAN 15FT AWAY FROM BEDROOM DOORS
- EXIT LIGHT AND SIGN - WALL MOUNTED
- EXIT LIGHT AND SIGN - CEILING MOUNTED
- ELECTRICAL PANEL UNIT
- NETWORK INTERFACE DEVICE PANEL
- SUSPENDED GYPSUM BOARD
- COLUMN & COLUMN NUMBER
- BATHROOM DOORS & FRAMES SHALL BE PROVIDED W/ MORTISED HINGE & LATCH BLANKS TO PERMIT FUTURE REVERSAL OF DOOR ON THE SAME FRAME
- # OF PARKING SPACES
- X PARKING STACKER UNIT

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:
AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:
SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:
McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:
A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:
ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
1 08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
05.03.19	PAA TO D.O.B.
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
01.26.18	REISSUED TO D.O.B.
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS

SHEET TITLE:

12TH - 13TH FLOOR PLANS

SEAL & SIGNATURE

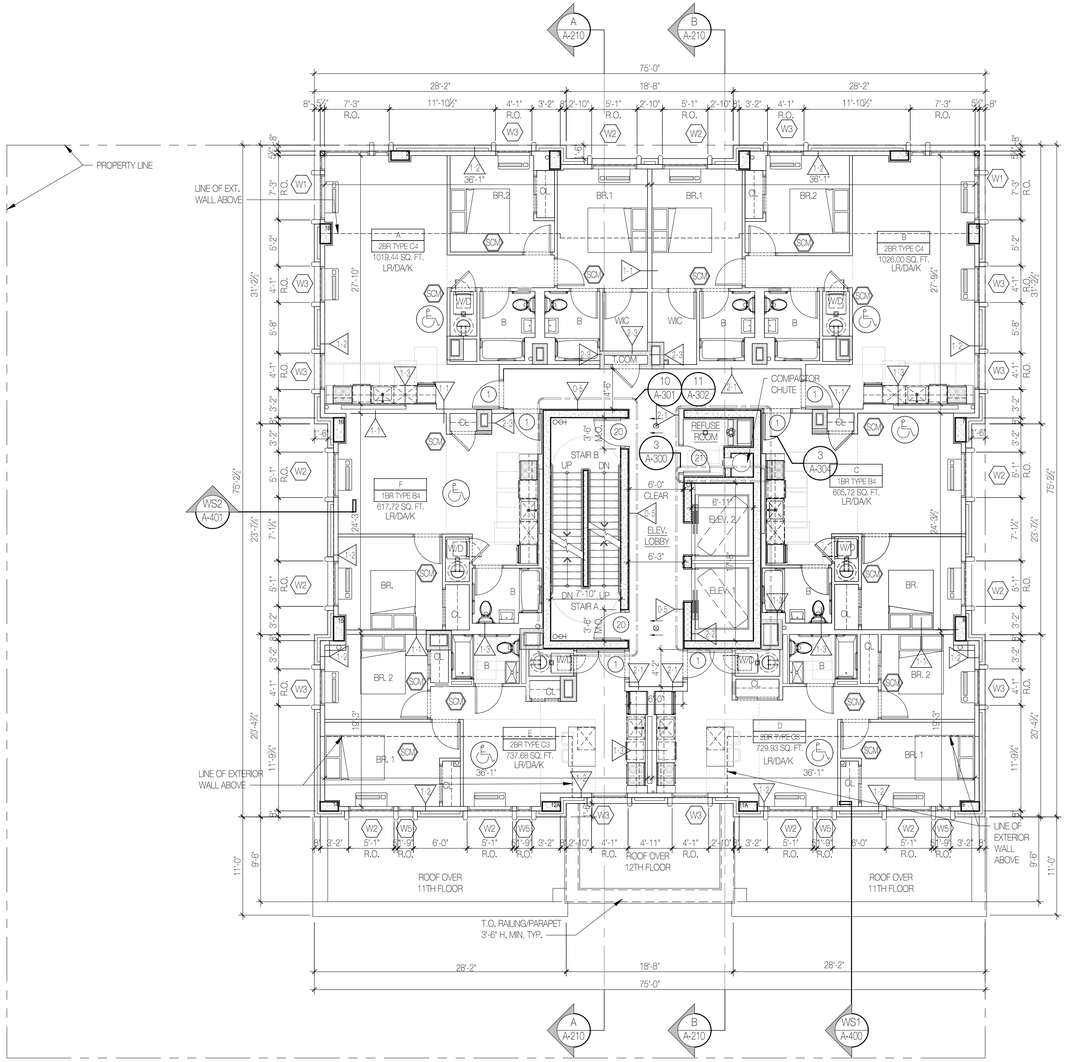
REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

ISSUE DATE:	PROJECT NO:
10-19-15	#1520
DRAWN BY:	CHECKED BY:
MB	AM
SCALE:	SHEET NO:
1/8"=1'-0"	

DRAWING NO:

A-102.01

NYC DOB NUMBER: 321191802



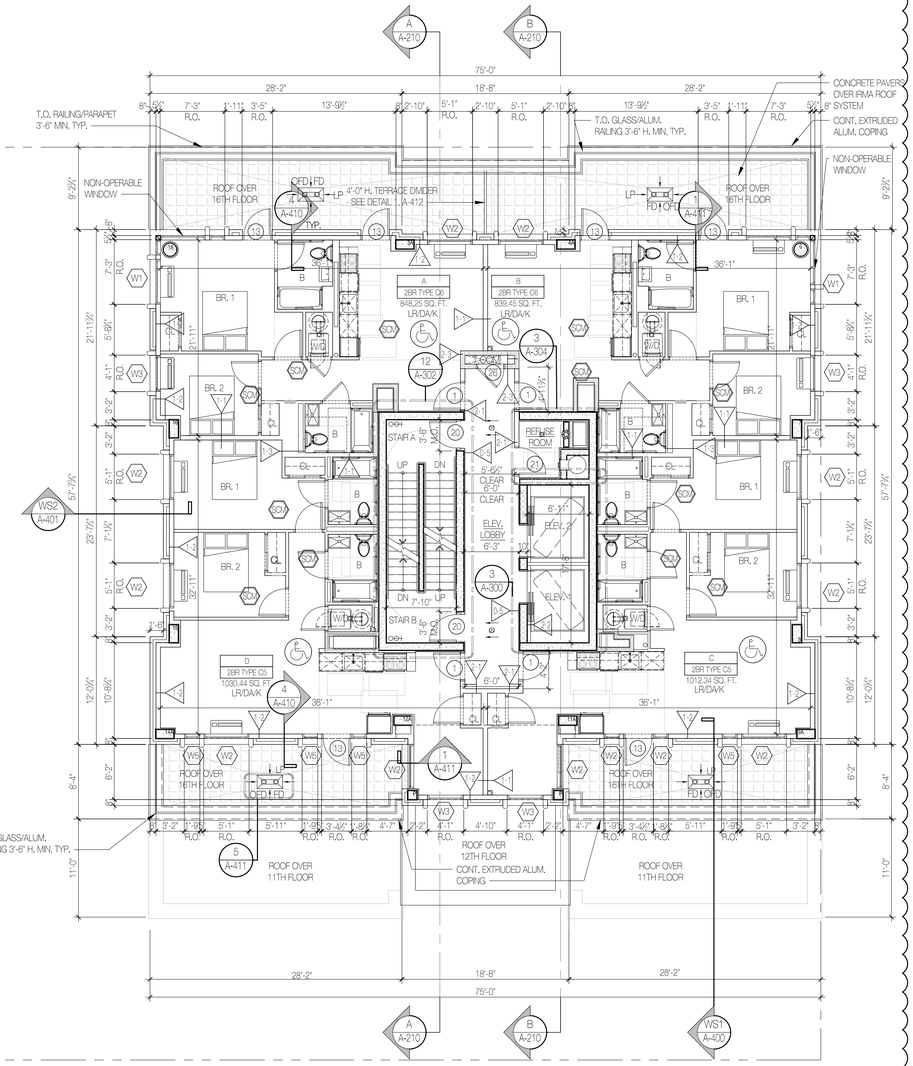
14TH - 15TH FLOOR PLAN

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

GROSS FLOOR AREA: 5513.80 SQ. FT.
RENTAL AREA: 4745.06 SQ. FT.
EFFICIENCY: 86.52%

WINDOW NOTES:
W#a LOCATED AT FLOORS - 2, 3, 6, 7, 10, 11, 14 & 15
W#b LOCATED AT FLOORS - 4, 5, 8, 9, 12, 13, 16, 17, 18 & 19

*SEE ELEVATIONS ON PAGES A-200 & A-201 FOR ADDITIONAL INFORMATION.



16TH FLOOR PLAN

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

GROSS FLOOR AREA: 4351.58 SQ. FT.
RENTAL AREA: 3741.21 SQ. FT.
EFFICIENCY: 85.36%

WINDOW NOTES:
W#a LOCATED AT FLOORS - 2, 3, 6, 7, 10, 11, 14 & 15
W#b LOCATED AT FLOORS - 4, 5, 8, 9, 12, 13, 16, 17, 18 & 19

*SEE ELEVATIONS ON PAGES A-200 & A-201 FOR ADDITIONAL INFORMATION.

WALL TYPE LEGEND:
NON RATED

1. FURRING AT INTERIOR CMU WALL - (1) LAYER 5/8" TYPE "X" GYPSUM BOARD OVER 1½" METAL GALVANIZED STUDS @ 16" O.C.
2. TYPICAL PARTITION - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON EACH SIDE OF 2½" METAL STUDS @ 16" O.C.
3. BATHROOM CHASE WALL PARTITION - (1) LAYER ⅝" TYPE "X" WATER RESISTANT GYPSUM BOARD ONE SIDE OF 3⅝" METAL STUDS @ 16" O.C. *SEE INTERIOR DESIGN DRAWINGS FOR WALL THICKNESSES.
4. PARTITION - (1) LAYER OF ⅝" TYPE "X" GYPSUM BOARD, ON EACH SIDE OF 3 ⅝" METAL STUDS @ 16" O.C. (@ APARTMENT ELECTRICAL PANEL/ NETWORK INTERFACE DEVICE PANEL)
5. FURRING AT INTERIOR CMU WALL (PUBLIC CORRIDOR SIDE) - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD OVER ½" GALV. METAL STUDS @ 16 O.C.
6. FURRING AT EXTERIOR CMU WALL - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON 1½" GALV. METAL Z FURRING @ 16 O.C. W/ 1 ½" SEMI-RIGID INSULATION (R7.5) UNFACED

1 HOUR RATED

1. TENANT SEPARATION PARTITION - (1) LAYER OF ⅝" TYPE "X" GYPSUM BOARD ON (1) SIDE, (2) LAYERS OF ⅝" TYPE "X" GYPSUM BOARD ON OTHER SIDE OF 3 ⅝" METAL STUDS @ 16" O.C. WITH 3 ½" SOUND ATTENUATION INSULATION. EXTEND STUDS & GYPSUM BOARD UP TO UNDERSIDE OF SLAB & SEAL TIGHT TO UNDERSIDE OF SLAB AND/OR ROOF DECK W/ CONT. FIRESTOP SEALANT& FIRESAFING INSULATION (GA FILE #WP-1052) (STC 50-54)
2. EXTERIOR PARTITION - ⅝" TYPE "X" GYPSUM BOARD, INSIDE) ½" EXP EXTERIOR GYPSUM BOARD SHEATHING (OUTSIDE) OVER 3⅝" METAL STUDS @ 16" O.C. WITH 3½" BATT INSULATION (UNFACED) (R-15) (UL #U419)
3. TENANT SEPARATION CHASE WALL - (2) ROWS OF (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½" METAL STUDS @ 16" O.C. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF SLAB OR ROOF SLAB, SEAL TIGHT TO SLAB WITH cONT. FIRESTOP SEALANT, SEAL ALL PENETRATIONS THRU CHASE WALL WITH FIRESAFING INSULATION AND CONT. FIRESTOP SEALANT AS REQ. PROVIDE HORIZONTAL 2½" MTL. STUD BRACING @ 48" O.C. MAX. (UL#V442) PROVIDE INSULATION AS REQUIRED TO ACHIEVE A MIN. STC RATING OF 50)

2 HOUR RATED

1. INTERIOR PARTITION - (2) LAYERS 5/8" TYPE "X" GYPSUM BOARD ON EACH SIDE 3 ⅝" METAL STUDS @ 16" O.C. WITH 3½" SOUND ATTENUATION INSULATION. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF FLOOR DECK OR ROOF DECK, SEAL TIGHT TO DECK W/ CONT. FIRESTOP SEALANT & FIRESAFING, (GA FILE #WP-1522 STC 55-59).
2. CMU WALL - CMU WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE BLOCK COURSES. SEAL TOP OF CONCRETE/METAL BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE DECK OR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESAFING INSULATION WHERE GAP EXIST. BETWEEN TOP OF WALL AND BOTTOM OF DECK (UL #U806)
3. MECHANICAL SHAFT WALL - (2) LAYERS OF ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½" METAL C-H STUDS @ 24" O.C. WITH (1) LAYER OF 1" TYPE "X" GYPSUM LINER PANEL ON SHAFT SIDE. W/ 1" MINERAL FIBER INSULATION IN CAVITY SEAL TOP OF WALL TIGHT TO UNDERSIDE OF CONCRETE DECK W/ CONT. FIRESTOP SEALANT, GA FILE #7095 (STC-45-49)
4. PLUMBING CHASE WALL - (2) ROWS OF (2) LAYERS ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½"METAL STUDS @ 16" O.C. EXTEND GYPSUM BOARD & STUD U P TO UNDERSIDE OF CONCRETE SLAB. SEAL TIGHT TO SLAB WITH CONTINUOUS FIRESTOP SEALANT, SEAL ALL PENETRATIONS THRU CHASE WALL WITH FIRESAFING INSULATION AND CONTINUOUS FIRESTOP SEALANT AS REQUIRED PROVIDE HORIZONTAL 2½" MTL. STUD BRACING @ 48" O.C. MAX (UL #V442) (PROVIDED INSULATION AS REQUIRED TO ACHIEVE A MIN. STC RATING OF 50)

3 HOUR RATED

1. (1) LAYER 2½" TYPE "X" GYPSUM BOARD OVER 2½" METAL HAT CHANNELS @ 24" O.C. OVER 2 HR RATED CONCRETE BLOCK WALL WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF SLAB ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESAFING INSULATION WHERE A GAP EXISTS BETWEEN TOP OF WALL AND BOTTOM OF CONCRETE DECK (UL #U914) (PROVIDE STC RATING OF 50-54 AT COMPACTOR CHUTE ENCLOSURE ADJACENT TO DWELLING UNITS)

GENERAL NOTES:

1. ALL ENLARGED PLAN DIMENSIONS ARE TAKEN FINISH TO FINISH (U.O.N.).
2. G.C. SHALL SUBMIT SHOP DRAWINGS TO ARCHITECT FOR REVIEW INDICATING SIZE, GAUGE AND SPACING OF ALL METAL STUDS AND REQUIRED METAL BOXED HEADERS SIGNED AND SEALED BY A NYS LICENSED ENGINEER
3. AS PER NYCBC 1107.2.8, AT THE OPTION OF THE OWNER, LAUNDRY EQUIPMENT CONFORMING TO THIS SECTION WITHIN THE DWELLING UNIT OR SLEEPING UNIT MAY BE PROVIDED AT THE TIME A PERSON WITH PHYSICAL DISABILITIES TAKES OCCUPANCY OF THE UNIT, OR WITHIN 10 DAYS OF THE DATE THE REQUEST IS MADE BY A PERSON WITH PHYSICAL DISABILITIES, WHICHEVER IS LATER, AT THE OWNER'S EXPENSE.
4. WATER CURTAIN TYPE SPRINKLER HEADS PROVIDED ON ALL FLOORS
5. ALL FURNITURE IS FOR REFERENCE ONLY. PLEASE SEE ID DRAWINGS FOR MORE INFORMATION.
6. 6'-6" MIN. CLEAR OPENING UNDER SMOKESTOP

LEGEND:

- CONCRETE FOUNDATION WALL
- CONCRETE BLOCK WALL - 2HR FIRE RATED
- GYPSUM BOARD PARTITION - SEE PLAN FOR SIZE.
- MASONRY VENEER

- REMOVABLE KITCHEN BASE CABINET - 2'-6" WIDE x 2'-0" DEEP
- HANDICAP ADAPTABLE APARTMENT UNIT
- PARTITION - SEE WALL TYPE LEGEND
- 5'-0" DIAMETER CLEAR HANDICAP FLOOR TURNING SPACE.
- "T" FLOOR TURNING SPACE
- 30" x 48" CLEAR FLOOR SPACE
- FIRE RATED SHAFT WALL.
- WINDOW - SEE WINDOW SCHEDULE ON DWG. A-601
- DOOR & FRAME - SEE DOOR SCHEDULE DRAWING A-600
- HARDWIRED CARBON MONOXIDE DETECTOR (BC 907) NO MORE THAN 15FT AWAY FROM BEDROOM DOORS
- EXIT LIGHT AND SIGN - WALL MOUNTED
- EXIT LIGHT AND SIGN - CEILING MOUNTED
- ELECTRICAL PANEL UNIT
- NETWORK INTERFACE DEVICE PANEL
- SUSPENDED GYPSUM BOARD
- COLUMN & COLUMN NUMBER
- BATHROOM DOORS & FRAMES SHALL BE PROVIDED W/ MORTISED HINGE & LATCH BLANKS TO PERMIT FUTURE REVERSAL OF DOOR ON THE SAME FRAME
- # OF PARKING SPACES
- PARKING STACKER UNIT

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:
AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:
SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:
McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:
A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:
ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
1 08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
05.03.19	PAA TO D.O.B.
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
01.26.18	REISSUED TO D.O.B.
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS

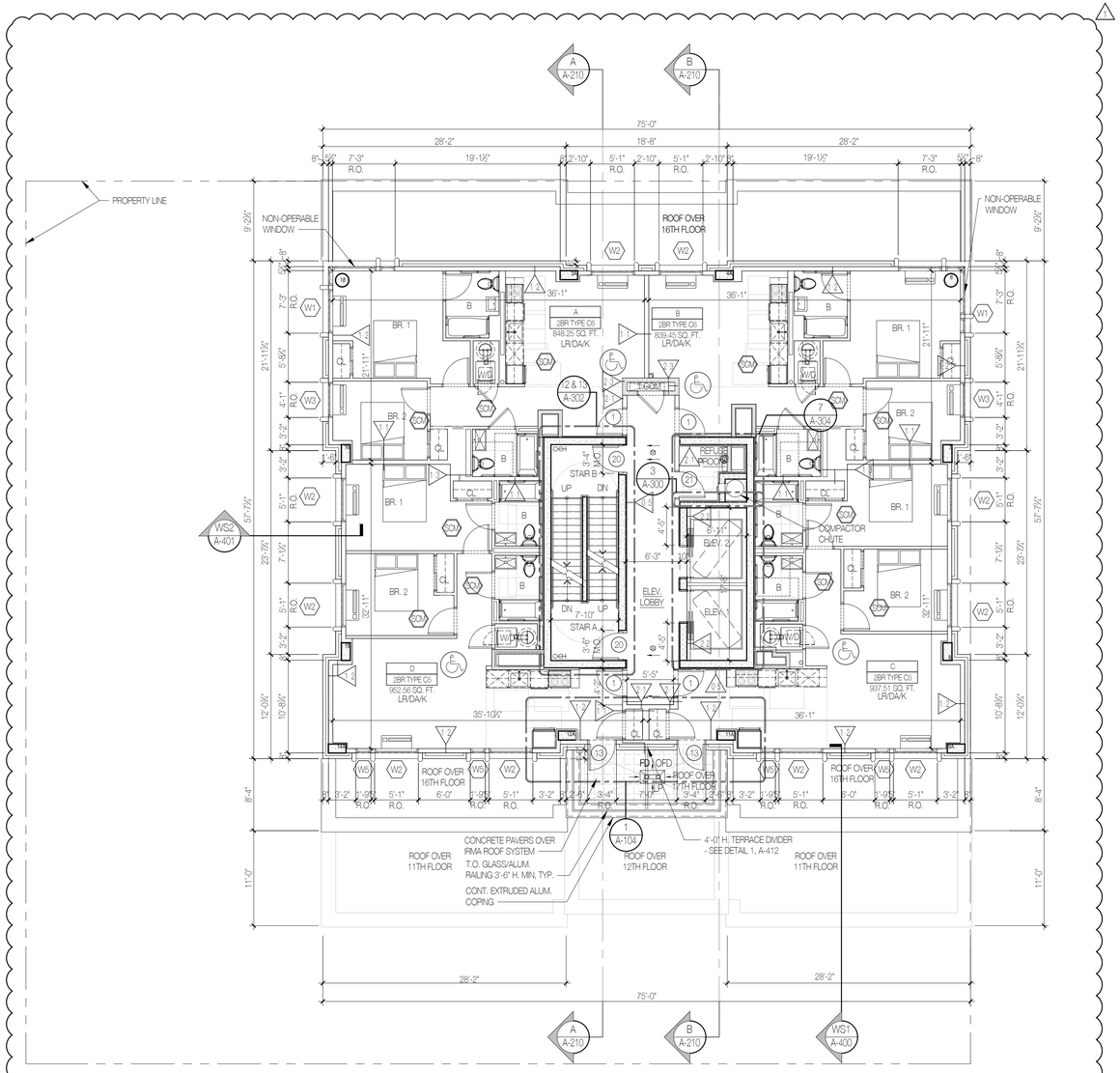
SHEET TITLE:

14TH - 16TH FLOOR PLANS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

ISSUE DATE: 10-19-15
PROJECT NO: #1520
DRAWN BY: S.Z.
CHECKED BY: T.L.
SCALE: 1/8"=1'-0"
SHEET NO:
DRAWING NO: A-103.01
NYC DOB NUMBER: 321191802



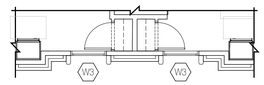
GROSS FLOOR AREA: 4195.84 SQ. FT.
RENTAL AREA: 3597.76 SQ. FT.
EFFICIENCY: 84.98%

WINDOW NOTES:
W#a LOCATED AT FLOORS - 2, 3, 6, 7, 10, 11, 14 & 15
W#b LOCATED AT FLOORS - 4, 5, 8, 9, 12, 13, 16, 17, 18 & 19

*SEE ELEVATIONS ON PAGES A-200 & A-201 FOR ADDITIONAL INFORMATION

17TH - 19TH FLOOR PLAN

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



1 A-104

PARTIAL PLAN @ 18TH-19TH FLOOR

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

WALL TYPE LEGEND:

NON RATED

A1 FURRING AT INTERIOR CMU WALL - (1) LAYER 5/8" TYPE "X" GYPSUM BOARD OVER 1½" METAL GALVANIZED STUDS @ 16" O.C.

A2 TYPICAL PARTITION - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON EACH SIDE OF 2½" METAL STUDS @ 16" O.C.

A3 BATHROOM CHASE WALL PARTITION - (1) LAYER ⅝" TYPE "X" WATER RESISTANT GYPSUM BOARD ONE SIDE OF 3⅝" METAL STUDS @ 16" O.C. *SEE INTERIOR DESIGN DRAWINGS FOR WALL THICKNESSES.

A4 PARTITION - (1) LAYER OF ⅝" TYPE "X" GYPSUM BOARD, ON EACH SIDE OF 3 5/8" METAL STUDS @ 16" O.C. (@ APARTMENT ELECTRICAL PANEL/ NETWORK INTERFACE DEVICE PANEL)

A5 FURRING AT INTERIOR CMU WALL (PUBLIC CORRIDOR SIDE) - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD OVER ⅞" GALV. METAL STUDS @ 16 O.C.

A6 FURRING AT EXTERIOR CMU WALL - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON 1½" GALV. METAL Z FURRING @ 16 O.C. W/ 1 ½" SEMI-RIGID INSULATION (R7.5) UNFACED

1 HOUR RATED

A1 TENANT SEPARATION PARTITION - (1) LAYER OF ⅝" TYPE "X" GYPSUM BOARD ON (1) SIDE, (2) LAYERS OF ⅝" TYPE "X" GYPSUM BOARD ON OTHER SIDE OF 3 ⅝" METAL STUDS @ 16" O.C. WITH 3 ½" SOUND ATTENUATION INSULATION. EXTEND STUDS & GYPSUM BOARD UP TO UNDERSIDE OF SLAB & SEAL TIGHT TO UNDERSIDE OF SLAB AND/OR ROOF DECK W/ CONT. FIRESTOP SEALANT& FIRESAFING INSULATION (GA FILE #WP-1052) (STC 50-54)

A2 EXTERIOR PARTITION - ⅝" TYPE "X" GYPSUM BOARD, (INSIDE) ⅝" EXP EXTERIOR GYPSUM BOARD SHEATHING (OUTSIDE) OVER 3⅝" METAL STUDS @ 16" O.C. WITH 3½" BATT INSULATION (UNFACED) (R-15) (UL #U419)

A3 TENANT SEPARATION CHASE WALL - (2) ROWS OF (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½" METAL STUDS @ 16" O.C. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF SLAB OR ROOF SLAB. SEAL TIGHT TO SLAB WITH cONT. FIRESTOP SEALANT. SEAL ALL PENETRATIONS THRU CHASE WALL WITH FIRESAFING INSULATION AND CONT. FIRESTOP SEALANT AS REQ. PROVIDE HORIZONTAL 2½"MTL STUD BRACING @ 48" O.C. MAX. (UL#V442) PROVIDE INSULATION AS REQUIRED TO ACHIEVE A MIN. STC RATING OF 50)

2 HOUR RATED

A1 INTERIOR PARTITION - (2) LAYERS 5/8" TYPE "X" GYPSUM BOARD ON EACH SIDE 3 ⅝" METAL STUDS @ 16" O.C. WITH 3½" SOUND ATTENUATION INSULATION. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF FLOOR DECK OR ROOF DECK. SEAL TIGHT TO DECK W/ CONT. FIRESTOP SEALANT & FIRESAFING. (GA FILE #WP-1522 STC 55-59).

A2 CMU WALL - CMU WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE BLOCK COURSES. SEAL TOP OF CONCRETE/METAL BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE DECK OR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESAFING INSULATION WHERE GAP EXIST. BETWEEN TOP OF WALL AND BOTTOM OF DECK (UL #U306)

A3 MECHANICAL SHAFT WALL - (2) LAYERS OF ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½" METAL C-H STUDS @ 24" O.C. WITH (1) LAYER OF 1" TYPE "X" GYPSUM LINER PANEL ON SHAFT SIDE. W/ 1" MINERAL FIBER INSULATION IN CAVITY SEAL TOP OF WALL TIGHT TO UNDERSIDE OF CONCRETE DECK W/ CONT. FIRESTOP SEALANT. GA FILE #7095 (STC-45-49)

A4 PLUMBING CHASE WALL - (2) ROWS OF (2) LAYERS ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½"METAL STUDS @ 16" O.C. EXTEND GYPSUM BOARD & STUD UP TO UNDERSIDE OF CONCRETE SLAB. SEAL TIGHT TO SLAB WITH CONTINUOUS FIRESTOP SEALANT. SEAL ALL PENETRATIONS THRU CHASE WALL WITH FIRESAFING INSULATION AND CONTINUOUS FIRESTOP SEALANT AS REQUIRED PROVIDE HORIZONTAL 2½" MTL. STUD BRACING @ 48" O.C. MAX (UL #V442) (PROVIDED INSULATION AS REQUIRED TO ACHIEVE A MIN. STC RATING OF 50)

3 HOUR RATED

A1 (1) LAYER 5/8" TYPE "X" GYPSUM BOARD OVER 5/8" METAL HAT CHANNELS @ 24" O.C. OVER 2 HR RATED CONCRETE BLOCK WALL WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF SLAB ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESAFING INSULATION WHERE A GAP EXISTS BETWEEN TOP OF WALL AND BOTTOM OF CONCRETE DECK (UL #U914) (PROVIDE STC RATING OF 50-54 AT COMPACTOR CHUTE ENCLOSURE ADJACENT TO DWELLING UNITS)

GENERAL NOTES:

1. ALL ENLARGED PLAN DIMENSIONS ARE TAKEN FINISH TO FINISH (U.O.N.).
2. G.C. SHALL SUBMIT SHOP DRAWINGS TO ARCHITECT FOR REVIEW INDICATING SIZE, GAUGE AND SPACING OF ALL METAL STUDS AND REQUIRED METAL BOXED HEADERS SIGNED AND SEALED BY A NYS LICENSED ENGINEER
3. AS PER NYCBC 1107.2.9, AT THE OPTION OF THE OWNER, LAUNDRY EQUIPMENT CONFORMING TO THIS SECTION WITHIN THE DWELLING UNIT OR SLEEPING UNIT MAY BE PROVIDED AT THE TIME A PERSON WITH PHYSICAL DISABILITIES TAKES OCCUPANCY OF THE UNIT, OR WITHIN 10 DAYS OF THE DATE THE REQUEST IS MADE BY A PERSON WITH PHYSICAL DISABILITIES, WHICHEVER IS LATER, AT THE OWNER'S EXPENSE.
4. WATER CURTAIN TYPE SPRINKLER HEADS PROVIDED ON ALL FLOORS
5. ALL FURNITURE IS FOR REFERENCE ONLY. PLEASE SEE ID DRAWINGS FOR MORE INFORMATION.
6. 6'-6" MIN. CLEAR OPENING UNDER SMOKESTOP

LEGEND:

- CONCRETE FOUNDATION WALL
- CONCRETE BLOCK WALL - 2HR FIRE RATED
- GYPSUM BOARD PARTITION - SEE PLAN FOR SIZE.
- MASONRY VENEER

- REMOVABLE KITCHEN BASE CABINET - 2'-6" WIDE x 2'-0" DEEP
- HANDICAP ADAPTABLE APARTMENT UNIT
- PARTITION - SEE WALL TYPE LEGEND
- 5'-0" DIAMETER CLEAR HANDICAP FLOOR TURNING SPACE.
- "T" FLOOR TURNING SPACE
- 30" x 48" CLEAR FLOOR SPACE
- FIRE RATED SHAFT WALL.
- W WINDOW - SEE WINDOW SCHEDULE ON DWG. A-601
- X DOOR & FRAME - SEE DOOR SCHEDULE DRAWING A-600
- SOM HARDWIRED CARBON MONOXIDE DETECTOR (BC 907) NO MORE THAN 15FT AWAY FROM BEDROOM DOORS
- EXIT LIGHT AND SIGN - WALL MOUNTED
- EXIT LIGHT AND SIGN - CEILING MOUNTED
- ELECTRICAL PANEL UNIT
- NETWORK INTERFACE DEVICE PANEL
- SUSPENDED GYPSUM BOARD
- COLUMN & COLUMN NUMBER
- BATHROOM DOORS & FRAMES SHALL BE PROVIDED W/ MORTISED HINGE & LATCH BLANKS TO PERMIT FUTURE REVERSAL OF DOOR ON THE SAME FRAME
- # OF PARKING SPACES
- PARKING STACKER UNIT

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:
AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:
SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:
McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:
A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:
ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
05.03.19	PAA TO D.O.B.
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
01.26.18	REISSUED TO D.O.B.
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS

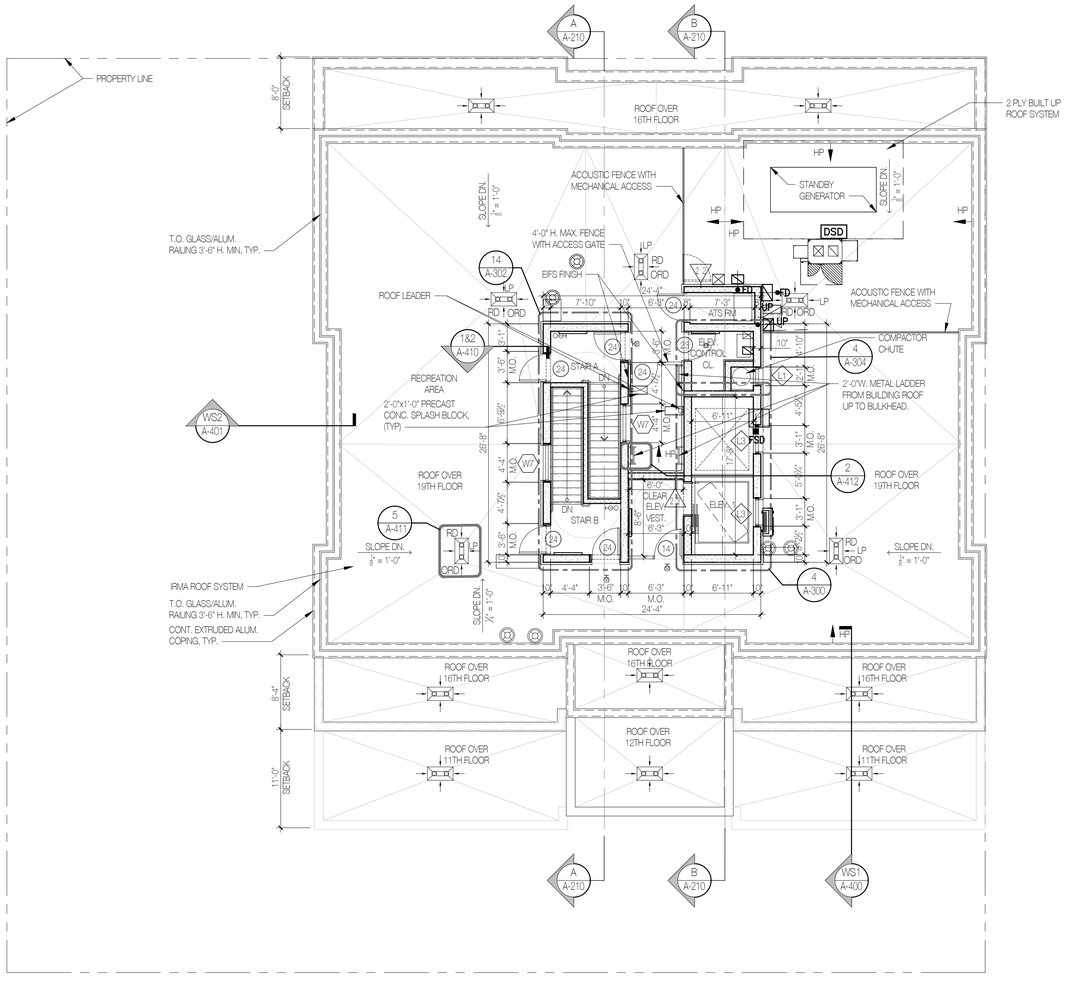
SHEET TITLE:

17TH - 19TH FLOOR PLANS

SEAL & SIGNATURE

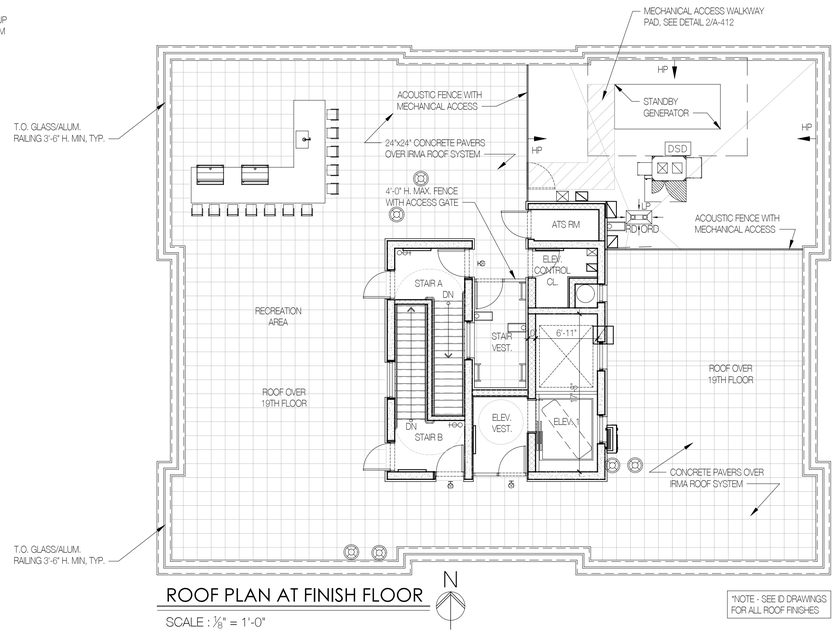
REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

ISSUE DATE: 10-19-15
PROJECT NO: #1520
DRAWN BY: S.Z.
CHECKED BY: T.L.
SCALE: 1/8"=1'-0"
SHEET NO:
DRAWING NO: A-104.01
NYC DOB NUMBER: 321191802



ROOF PLAN AT SLAB

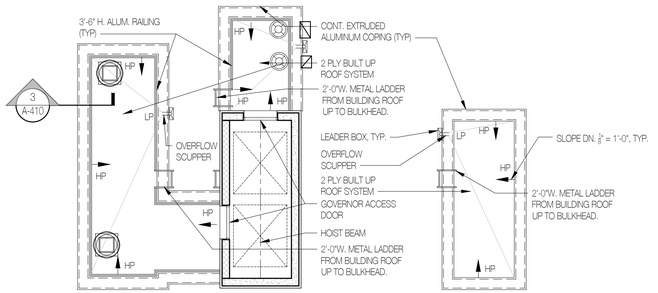
SCALE : 1/8" = 1'-0"



ROOF PLAN AT FINISH FLOOR

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

*NOTE - SEE ID DRAWINGS FOR ALL ROOF FINISHES



STAIR BULKHEAD ROOF PLAN

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

ELEVATOR BULKHEAD ROOF PLAN

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

WALL TYPE LEGEND:
NON RATED

A1 FURRING AT INTERIOR CMU WALL - (1) LAYER 5/8" TYPE "X" GYPSUM BOARD OVER 1½" METAL GALVANIZED STUDS @ 16" O.C.

A2 TYPICAL PARTITION - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON EACH SIDE OF 2½" METAL STUDS @ 16" O.C.

A3 BATHROOM CHASE WALL PARTITION - (1) LAYER ⅝" TYPE "X" WATER RESISTANT GYPSUM BOARD ONE SIDE OF 3⅝" METAL STUDS @ 16" O.C. *SEE INTERIOR DESIGN DRAWINGS FOR WALL THICKNESSES.

A4 PARTITION - (1) LAYER OF ½" TYPE "X" GYPSUM BOARD, ON EACH SIDE OF 3 ⅝" METAL STUDS @ 16" O.C. (@ APARTMENT ELECTRICAL PANEL/ NETWORK INTERFACE DEVICE PANEL)

A5 FURRING AT INTERIOR CMU WALL (PUBLIC CORRIDOR SIDE) - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD OVER ⅞" GALV. METAL STUDS @ 16 O.C.

A6 FURRING AT EXTERIOR CMU WALL - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON 1½" GALV. METAL Z FURRING @ 16 O.C. W/ 1 ½" SEMI-RIGID INSULATION (R7.5) UNFACED

1 HOUR RATED

1 TENANT SEPARATION PARTITION - (1) LAYER OF ⅝" TYPE "X" GYPSUM BOARD ON (1) SIDE, (2) LAYERS OF ⅝" TYPE "X" GYPSUM BOARD ON OTHER SIDE OF 3 ⅝" METAL STUDS @ 16" O.C. WITH 3 ½" SOUND ATTENUATION INSULATION. EXTEND STUDS & GYPSUM BOARD UP TO UNDERSIDE OF SLAB & SEAL TIGHT TO UNDERSIDE OF SLAB AND/OR ROOF DECK W/ CONT. FIRESTOP SEALANT& FIRESAFING INSULATION (GA FILE #WP-1052) (STC 50-54)

1 EXTERIOR PARTITION - ⅝" TYPE "X" GYPSUM BOARD, (INSIDE) ⅝" EXP EXTERIOR GYPSUM BOARD SHEATHING (OUTSIDE) OVER 3⅝" METAL STUDS @ 16" O.C. WITH 3½" BATT INSULATION (UNFACED) (R-15) (UL #U419)

1 TENANT SEPARATION CHASE WALL - (2) ROWS OF (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½" METAL STUDS @ 16" O.C. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF SLAB OR ROOF SLAB. SEAL TIGHT TO SLAB WITH cONT. FIRESTOP SEALANT. SEAL ALL PENETRATIONS THRU CHASE WALL WITH FIRESAFING INSULATION AND CONT. FIRESTOP SEALANT AS REQ. PROVIDE HORIZONTAL 2½"MTL STUD BRACING @ 48" O.C. MAX. (UL#V442) PROVIDE INSULATION AS REQUIRED TO ACHIEVE A MIN. STC RATING OF 50)

2 HOUR RATED

1 INTERIOR PARTITION - (2) LAYERS 5/8" TYPE "X" GYPSUM BOARD ON EACH SIDE 3 ⅝" METAL STUDS @ 16" O.C. WITH 3½" SOUND ATTENUATION INSULATION. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF FLOOR DECK OR ROOF DECK. SEAL TIGHT TO DECK W/ CONT. FIRESTOP SEALANT & FIRESAFING. (GA FILE #WP-1522 STC 55-59).

1 CMU WALL - CMU WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE BLOCK COURSES. SEAL TOP OF CONCRETE/METAL BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE DECK OR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESAFING INSULATION WHERE GAP EXIST. BETWEEN TOP OF WALL AND BOTTOM OF DECK (UL #U306)

1 MECHANICAL SHAFT WALL - (2) LAYERS OF ¾" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½" METAL C-H STUDS @ 24" O.C. WITH (1) LAYER OF 1" TYPE "X" GYPSUM LINER PANEL ON SHAFT SIDE. W/ 1" MINERAL FIBER INSULATION IN CAVITY SEAL TOP OF WALL TIGHT TO UNDERSIDE OF CONCRETE DECK W/ CONT. FIRESTOP SEALANT. GA FILE #7095 (STC-45-49)

1 PLUMBING CHASE WALL - (2) ROWS OF (2) LAYERS ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½"METAL STUDS @ 16" O.C. EXTEND GYPSUM BOARD & STUD UP TO UNDERSIDE OF CONCRETE SLAB. SEAL TIGHT TO SLAB WITH CONTINUOUS FIRESTOP SEALANT. SEAL ALL PENETRATIONS THRU CHASE WALL WITH FIRESAFING INSULATION AND CONTINUOUS FIRESTOP SEALANT AS REQUIRED PROVIDE HORIZONTAL 2½" MTL. STUD BRACING @ 48" O.C. MAX (UL #V442) (PROVIDED INSULATION AS REQUIRED TO ACHIEVE A MIN. STC RATING OF 50)

3 HOUR RATED

1 (1) LAYER 7/8" TYPE "X" GYPSUM BOARD OVER 7/8" METAL HAT CHANNELS @ 24" O.C. OVER 2 HR RATED CONCRETE BLOCK WALL WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF SLAB ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESAFING INSULATION WHERE A GAP EXISTS BETWEEN TOP OF WALL AND BOTTOM OF CONCRETE DECK (UL #U914) (PROVIDE STC RATING OF 50-54 AT COMPACTOR CHUTE ENCLOSURE ADJACENT TO DWELLING UNITS)

GENERAL NOTES:

1. ALL ENLARGED PLAN DIMENSIONS ARE TAKEN FINISH TO FINISH (U.O.N.).
2. G.C. SHALL SUBMIT SHOP DRAWINGS TO ARCHITECT FOR REVIEW INDICATING SIZE, GAUGE AND SPACING OF ALL METAL STUDS AND REQUIRED METAL BOXED HEADERS SIGNED AND SEALED BY A NYS LICENSED ENGINEER
3. AS PER NYCBC 1107.2.9, AT THE OPTION OF THE OWNER, LAUNDRY EQUIPMENT CONFORMING TO THIS SECTION WITHIN THE DWELLING UNIT OR SLEEPING UNIT MAY BE PROVIDED AT THE TIME A PERSON WITH PHYSICAL DISABILITIES TAKES OCCUPANCY OF THE UNIT, OR WITHIN 10 DAYS OF THE DATE THE REQUEST IS MADE BY A PERSON WITH PHYSICAL DISABILITIES, WHICHEVER IS LATER, AT THE OWNER'S EXPENSE.
4. WATER CURTAIN TYPE SPRINKLER HEADS PROVIDED ON ALL FLOORS
5. ALL FURNITURE IS FOR REFERENCE ONLY. PLEASE SEE ID DRAWINGS FOR MORE INFORMATION.
6. 6'-6" MIN. CLEAR OPENING UNDER SMOKESTOP

LEGEND:

- CONCRETE FOUNDATION WALL
- CONCRETE BLOCK WALL - 2HR FIRE RATED
- GYPSUM BOARD PARTITION - SEE PLAN FOR SIZE.
- MASONRY VENEER

- REMOVABLE KITCHEN BASE CABINET - 2'-6" WIDE x 2'-0" DEEP
- HANDICAP ADAPTABLE APARTMENT UNIT
- PARTITION - SEE WALL TYPE LEGEND
- 5'-0" DIAMETER CLEAR HANDICAP FLOOR TURNING SPACE.
- "T" FLOOR TURNING SPACE
- 30" x 48" CLEAR FLOOR SPACE
- FIRE RATED SHAFT WALL.
- WINDOW - SEE WINDOW SCHEDULE ON DWG. A-601
- DOOR & FRAME - SEE DOOR SCHEDULE DRAWING A-600
- HARDWIRED CARBON MONOXIDE DETECTOR (BC 907) NO MORE THAN 15FT AWAY FROM BEDROOM DOORS
- EXIT LIGHT AND SIGN - WALL MOUNTED
- EXIT LIGHT AND SIGN - CEILING MOUNTED
- ELECTRICAL PANEL UNIT
- NETWORK INTERFACE DEVICE PANEL
- SUSPENDED GYPSUM BOARD
- COLUMN & COLUMN NUMBER
- BATHROOM DOORS & FRAMES SHALL BE PROVIDED W/ MORTISED HINGE & LATCH BLANKS TO PERMIT FUTURE REVERSAL OF DOOR ON THE SAME FRAME
- # OF PARKING SPACES
- PARKING STACKER UNIT

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:
AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:
SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:
McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:
A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:
ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
1 08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
01.26.18	REISSUED TO D.O.B.
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS.

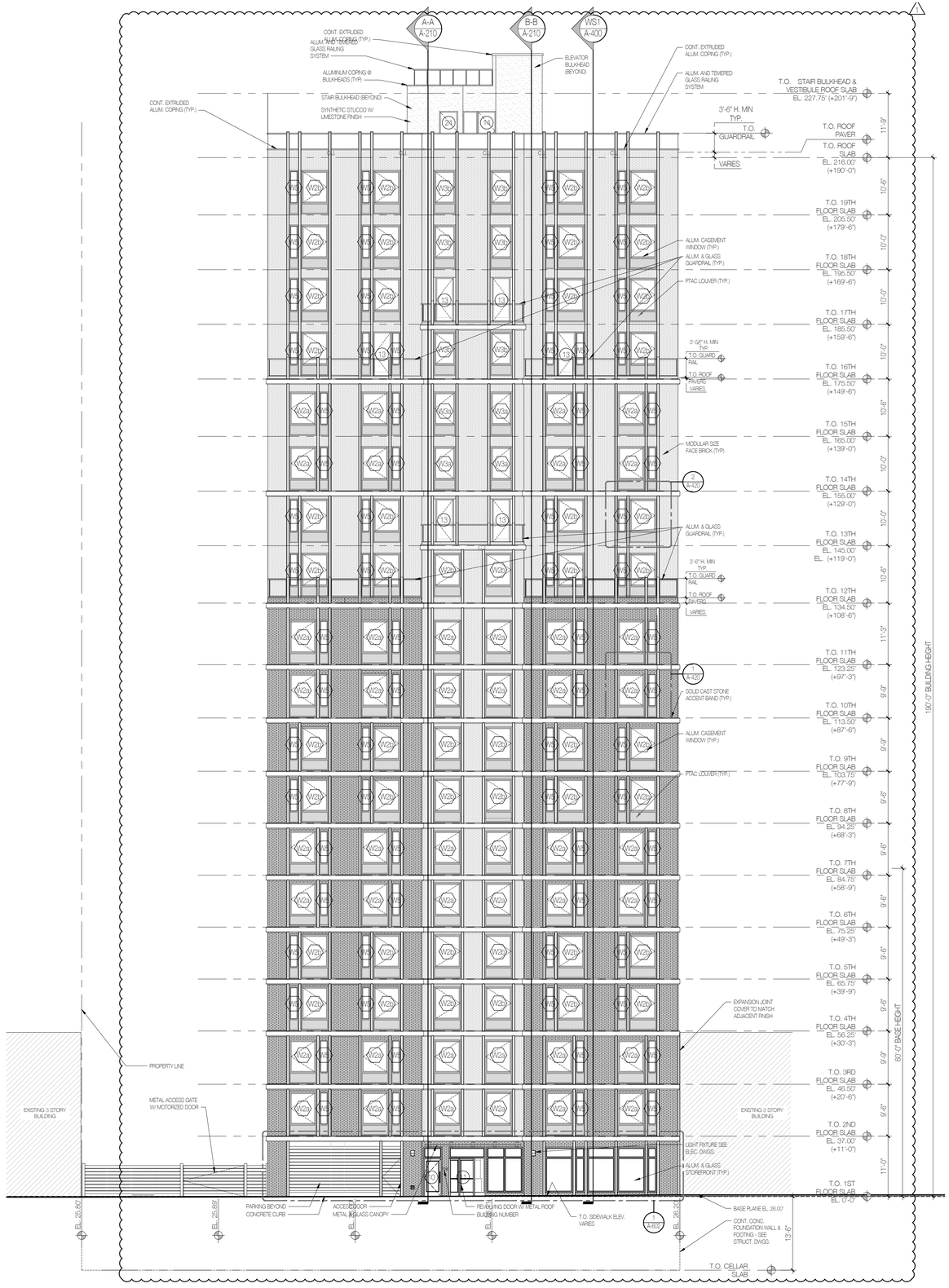
SHEET TITLE:

ROOF PLAN & BULKHEAD ROOF PLAN

SEAL & SIGNATURE

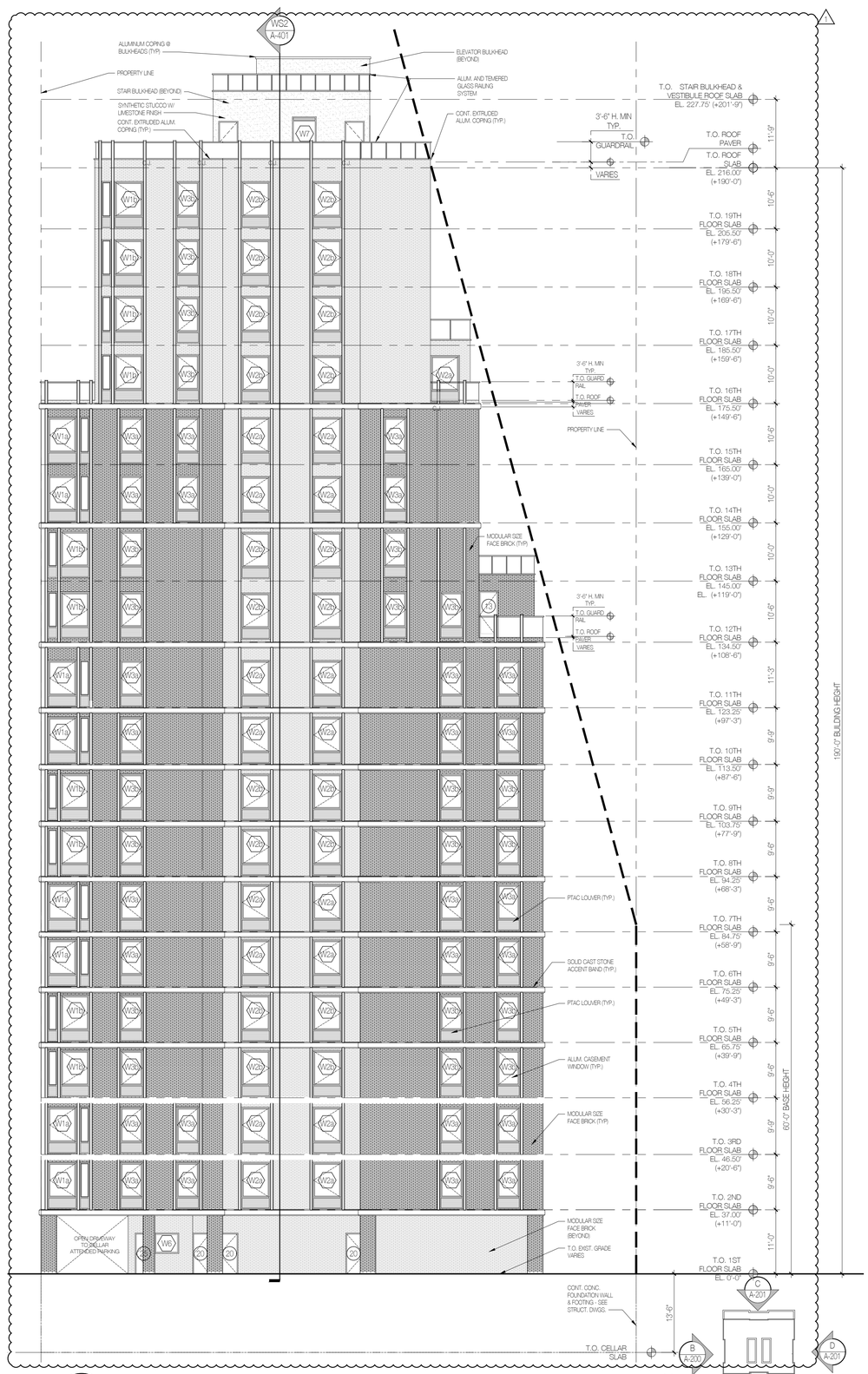
REGISTERED ARCHITECT ARIEL AUFGANG 027789 STATE OF NEW YORK

ISSUE DATE: 10-19-15
PROJECT NO: #1520
DRAWN BY: S.Z.
CHECKED BY: T.L.
SCALE: 1/8"=1'-0"
SHEET NO:
DRAWING NO: A-105.01
NYC DOB NUMBER: 321191802



A NORTH ELEVATION (BOERUM STREET)

SCALE : 3/32" = 1'-0"

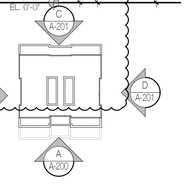


B WEST ELEVATION

SCALE : 3/32" = 1'-0"

KEY PLAN

NOT TO SCALE



PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:

AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:

SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:

McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
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MEP ENGINEER:

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2606 E. 15TH STREET, SUITE #304
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AUFGANG ARCHITECTS

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05.03.19	PAA TO D.O.B.
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
01.26.18	REISSUED TO D.O.B.
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS

SHEET TITLE:

NORTH & WEST EXTERIOR ELEVATIONS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

ISSUE DATE: 10-19-15

PROJECT NO: #1520

DRAWN BY: S.Z.

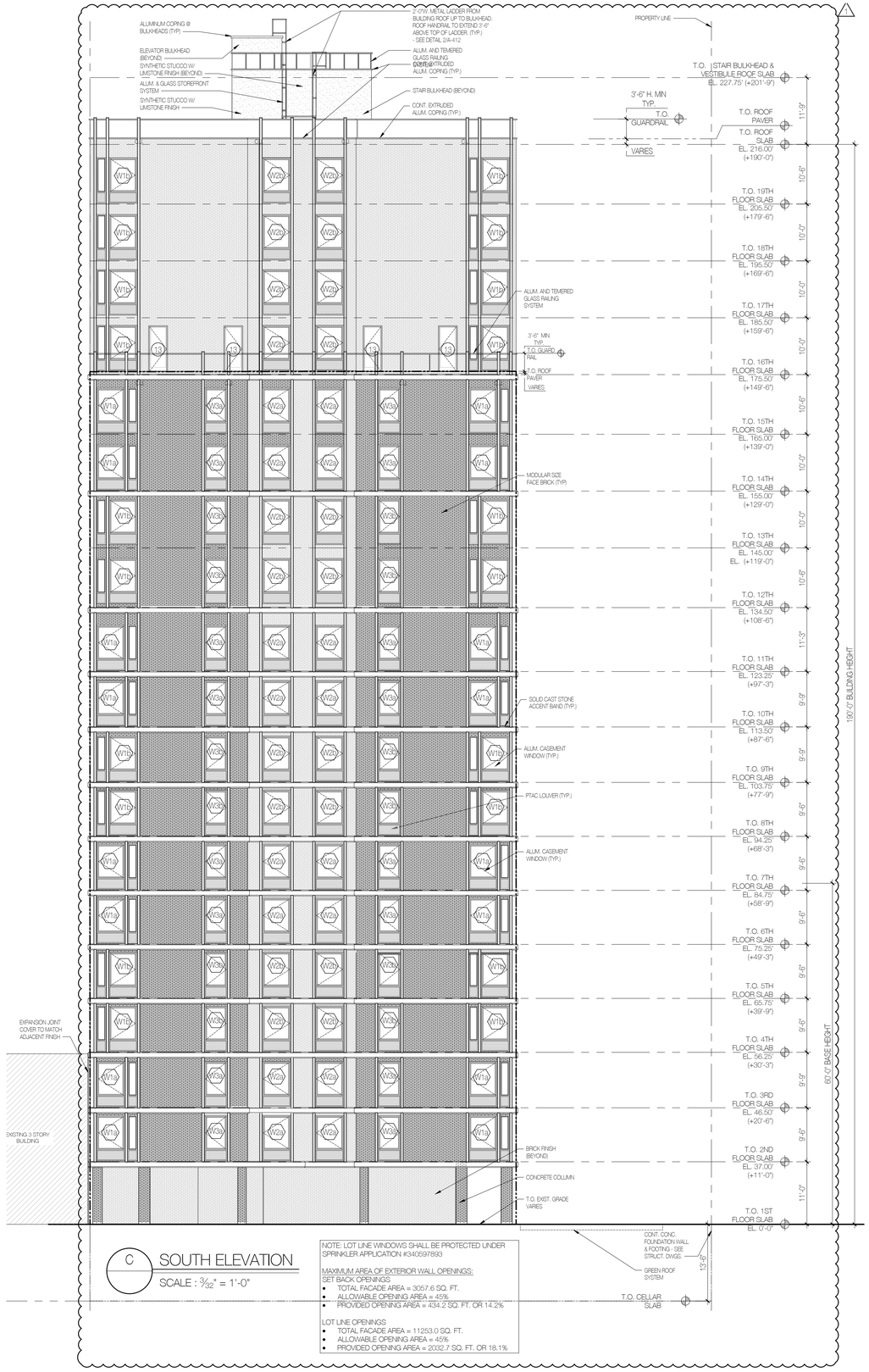
CHECKED BY: T.L.

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

SHEET NO:

DRAWING NO: A-200.01

NYC DOB NUMBER: 321191802



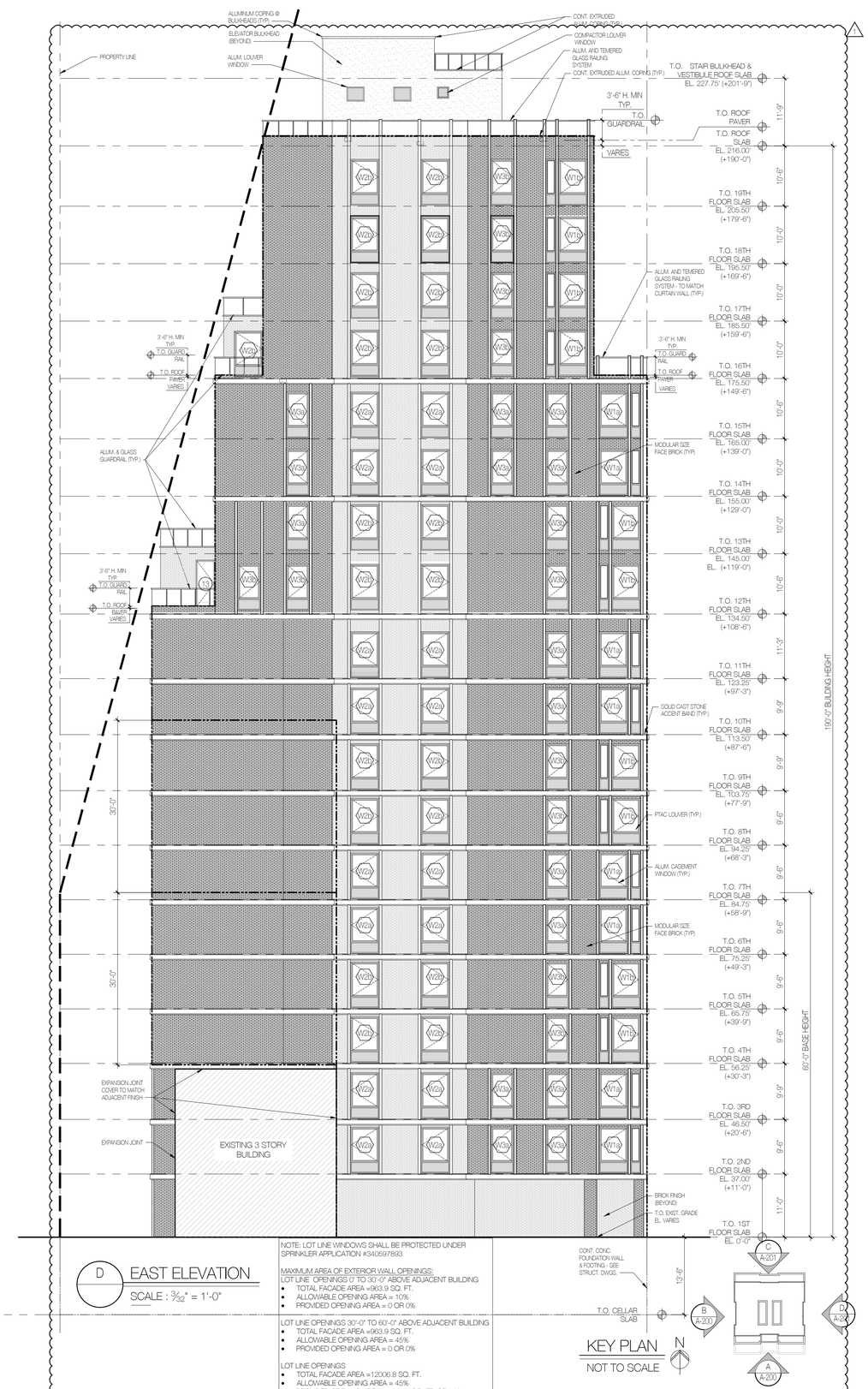
C SOUTH ELEVATION

SCALE : 3/32" = 1'-0"

NOTE: LOT LINE WINDOWS SHALL BE PROTECTED UNDER SPRINKLER APPLICATION #340597893

MAXIMUM AREA OF EXTERIOR WALL OPENINGS:
SET BACK OPENINGS
- TOTAL FACADE AREA = 3057.6 SQ. FT.
- ALLOWABLE OPENING AREA = 45%
- PROVIDED OPENING AREA = 434.2 SQ. FT. OR 14.2%

LOT LINE OPENINGS
- TOTAL FACADE AREA = 11253.0 SQ. FT.
- ALLOWABLE OPENING AREA = 45%
- PROVIDED OPENING AREA = 2032.7 SQ. FT. OR 18.1%



D EAST ELEVATION

SCALE : 3/32" = 1'-0"

NOTE: LOT LINE WINDOWS SHALL BE PROTECTED UNDER SPRINKLER APPLICATION #340597893

MAXIMUM AREA OF EXTERIOR WALL OPENINGS:
LOT LINE OPENINGS 0' TO 30'-0" ABOVE ADJACENT BUILDING
- TOTAL FACADE AREA =963.9 SQ. FT.
- ALLOWABLE OPENING AREA = 10%
- PROVIDED OPENING AREA = 0 OR 0%

LOT LINE OPENINGS 30'-0" TO 60'-0" ABOVE ADJACENT BUILDING
- TOTAL FACADE AREA =963.9 SQ. FT.
- ALLOWABLE OPENING AREA = 45%
- PROVIDED OPENING AREA = 0 OR 0%

LOT LINE OPENINGS
- TOTAL FACADE AREA =12006.8 SQ. FT.
- ALLOWABLE OPENING AREA = 45%
- PROVIDED OPENING AREA = 1924.4 SQ. FT. OR 16%

KEY PLAN

NOT TO SCALE

N

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:

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ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
05.03.19	PAA TO D.O.B.
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
01.26.18	REISSUED TO D.O.B.
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS

SHEET TITLE:

SOUTH & EAST EXTERIOR ELEVATIONS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

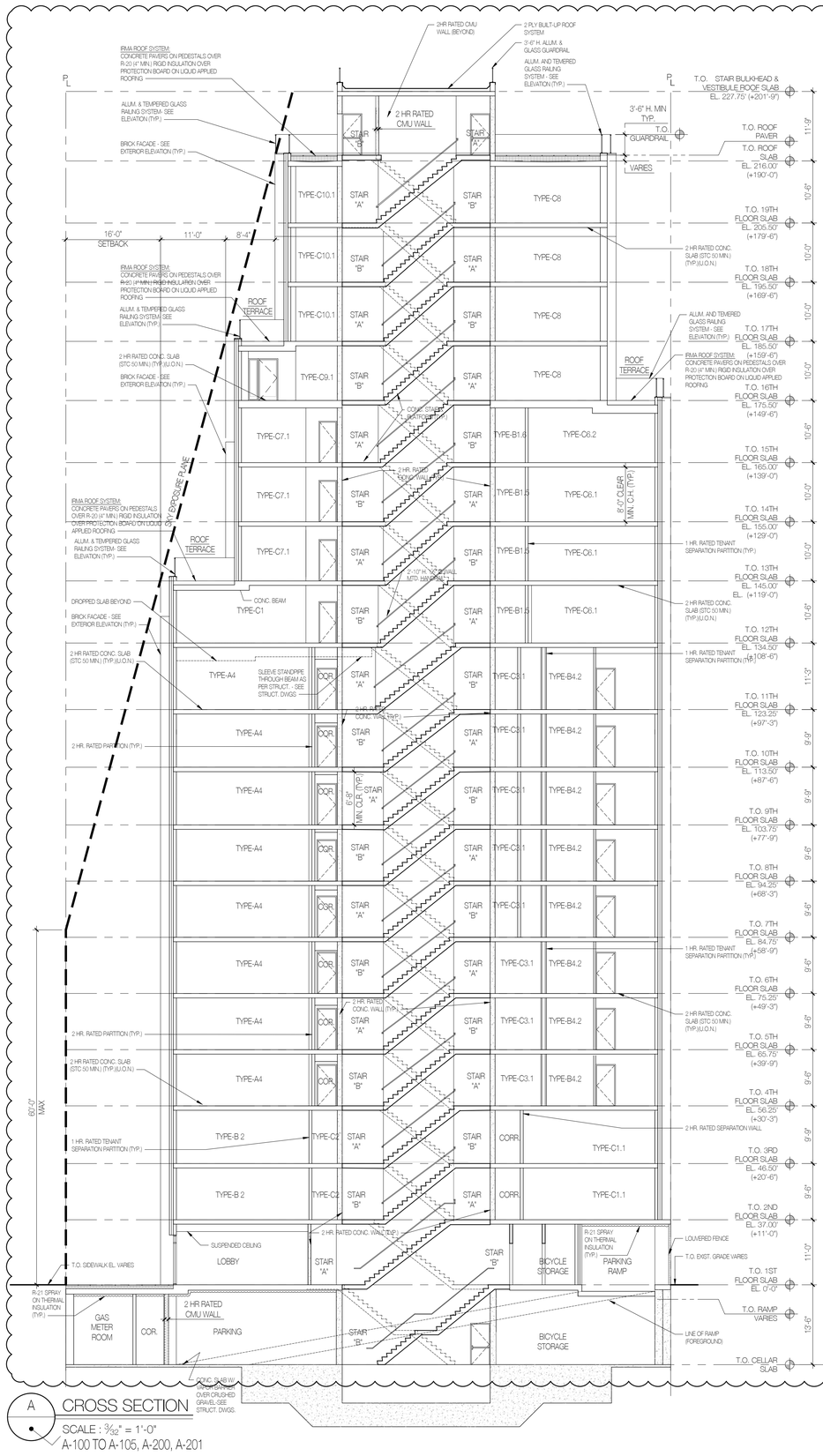
ISSUE DATE: 10-19-15 PROJECT NO: #1520

DRAWN BY: S.Z. CHECKED BY: T.L.

SCALE: 1/8"=1'-0" SHEET NO:

DRAWING NO: A-201.01

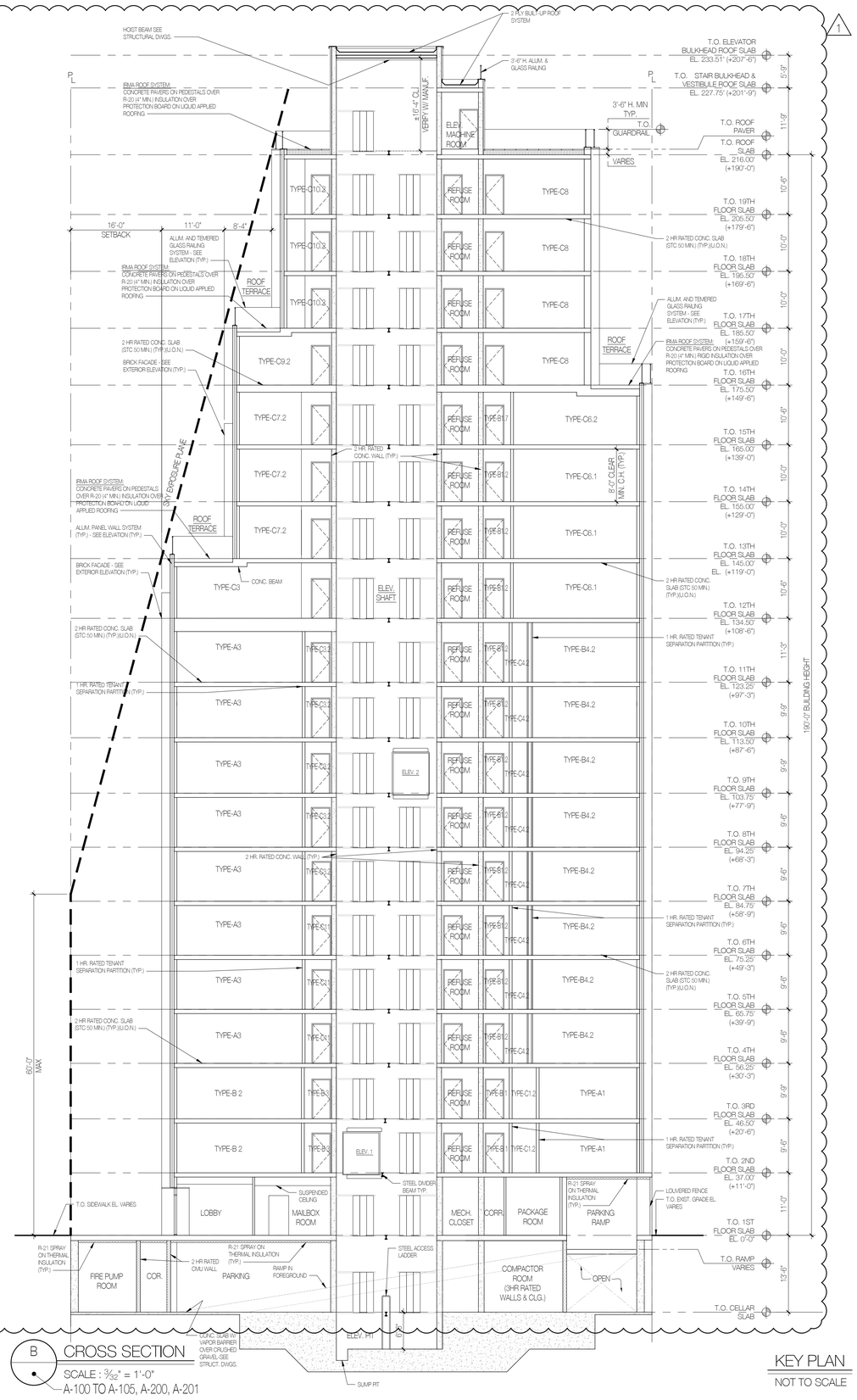
NYC DOB NUMBER: 321191802



A CROSS SECTION

SCALE : 3/32" = 1'-0"

A-100 TO A-105, A-200, A-201



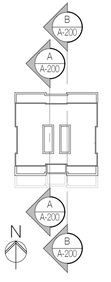
B CROSS SECTION

SCALE : 3/32" = 1'-0"

A-100 TO A-105, A-200, A-201

KEY PLAN

NOT TO SCALE



PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:

AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

AUFGANG ARCHITECTS

DEVELOPER:

SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:

McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:

A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:

ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
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05.03.19	PAA TO D.O.B.
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01.26.18	REISSUED TO D.O.B.
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS
DATE	SUBMISSIONS / REVISIONS

SHEET TITLE:

BUILDING CROSS SECTIONS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

ISSUE DATE: 10-19-15

PROJECT NO: #1520

DRAWN BY: S.Z.

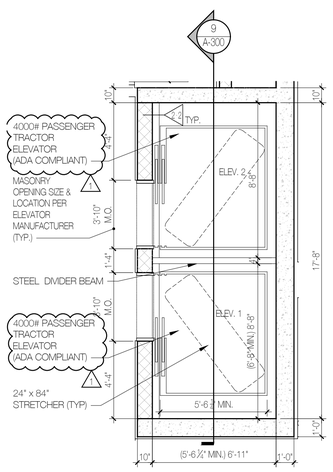
CHECKED BY: T.L.

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

SHEET NO:

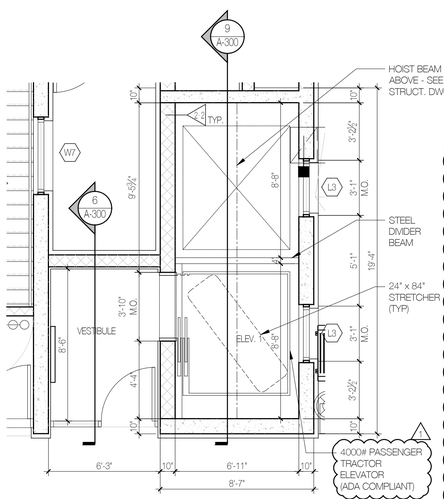
DRAWING NO: A-210.01

NYC DOB NUMBER: 321191802



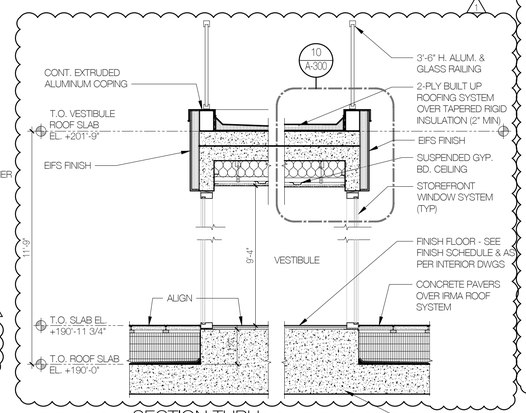
2 A-100 **1ST FLOOR PLAN** N

SCALE : ¼" = 1'-0"



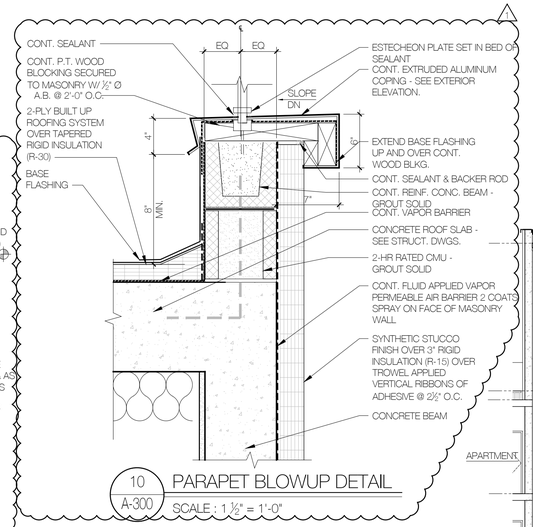
4 A-105 **PLAN @ ROOF LEVEL** N

SCALE : ¼" = 1'-0"



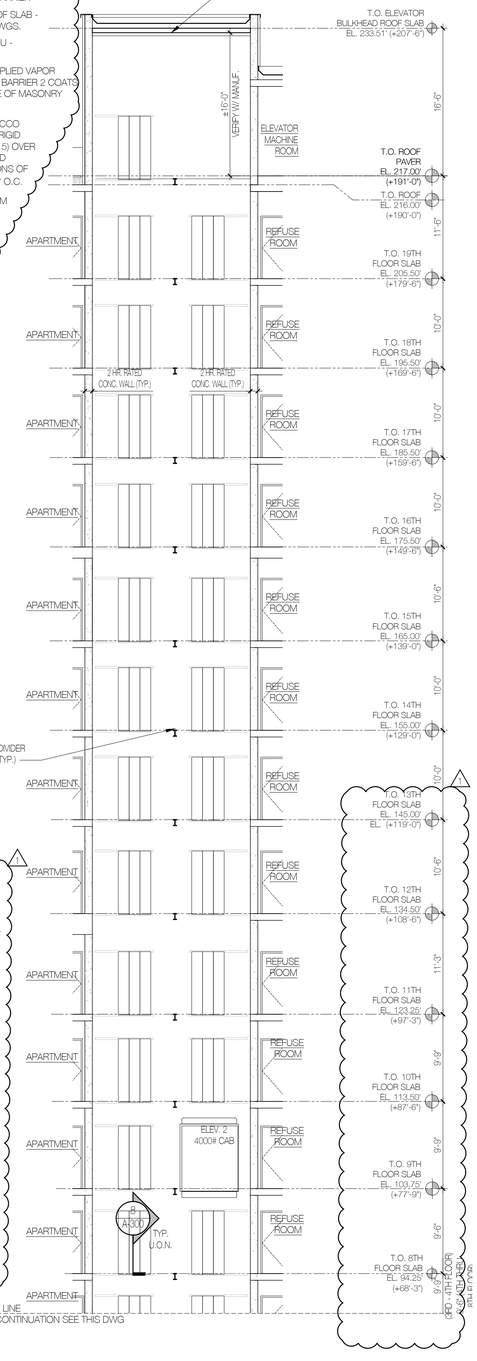
6 A-300 **SECTION THRU ROOF TOP ELEVATOR LOBBY**

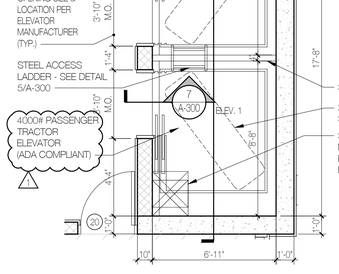
SCALE : ½" = 1'-0"



10 A-300 **PARAPET BLOWUP DETAIL**

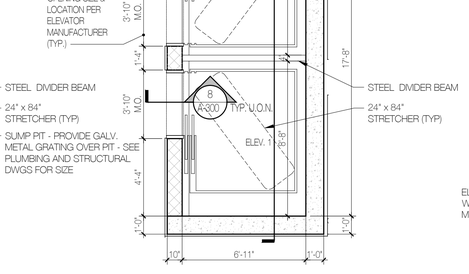
SCALE : 1 ½" = 1'-0"





1 A-100 **CELLAR FLOOR PLAN** N

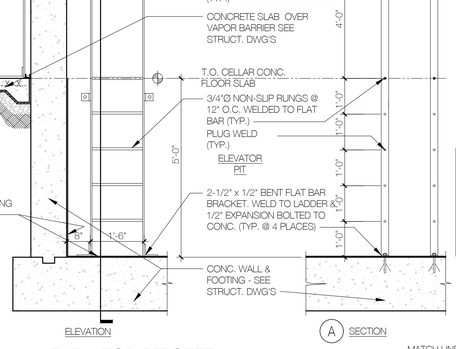
SCALE : ⅛" = 1'-0"



3 **2ND - 19TH FLOOR PLAN**

SCALE : ⅛" = 1'-0"

A-101, 102, 103, 104



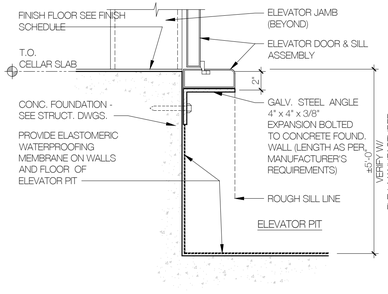
ELEVATION

A SECTION

5 A-300 **ELEVATOR PIT STEEL ACCESS LADDER DETAIL**

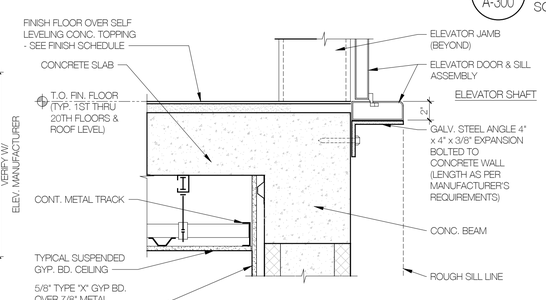
SCALE : ½" = 1'-0"

NOTES:
1. ALL COMPONENTS OF STEEL LADDER SHALL BE GALVANIZED/PAINTED.
2. ALL CONNECTIONS SHALL BE WELDED & GROUND SMOOTH.
3. ELEVATOR SHALL BE IN COMPLIANCE WITH BC 3003.3.2 AND BE KEPT AVAILABLE FOR IMMEDIATE USE BY THE FIRE DEPARTMENT ALL HOURS OF THE NIGHT AND DAY, INCLUDING HOLIDAYS, SATURDAYS AND SUNDAYS



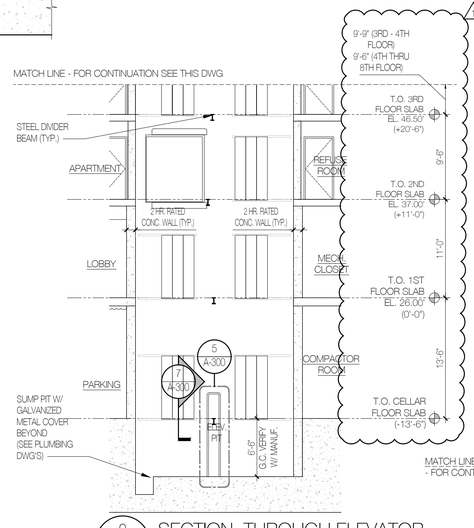
7 A-300 **TYP. ELEV. SILL DETAIL @ CELLAR LEVEL**

SCALE : 1 ½" = 1'-0"



8 A-300 **TYP. ELEV. SILL DETAIL @ 1ST FL. THROUGH 20TH FL. & ROOF LEVEL**

SCALE : 1 ½" = 1'-0"



9 A-300 **SECTION THROUGH ELEVATOR**

SCALE : ⅛" = 1'-0"

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:
AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:
SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:
McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:
A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:
ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
1 08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
05.03.19	PAA TO D.O.B.
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS

SHEET TITLE:

ENLARGED ELEVATOR PLANS, SECTION AND DETAILS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

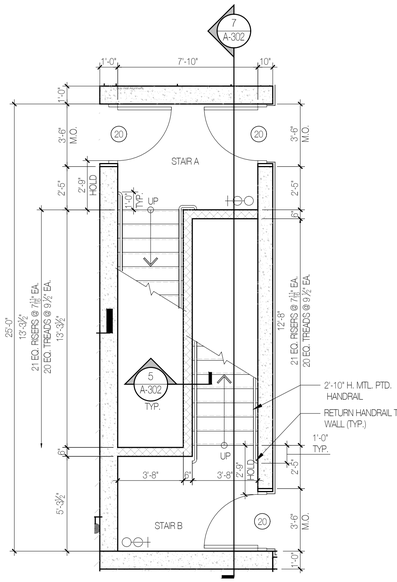
ISSUE DATE: PROJECT NO:
10-19-15 #1520

DRAWN BY: CHECKED BY:
MB AM

SCALE: SHEET NO:
AS NOTED

DRAWING NO:
A-300.01

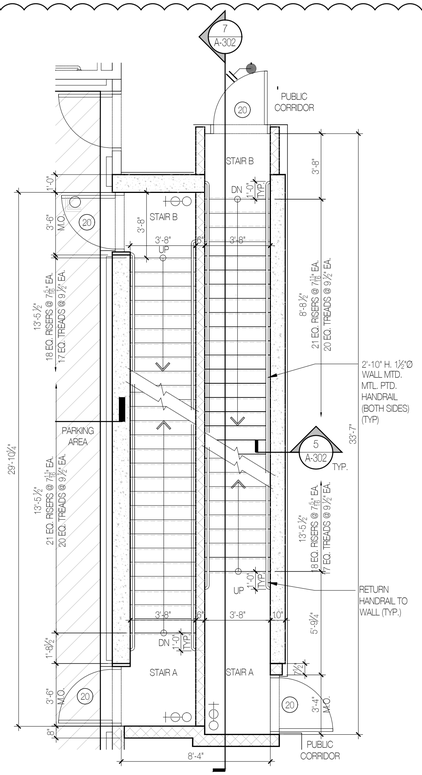
NYC DOB NUMBER: 321191802



1 A-100 CELLAR FLOOR PLAN

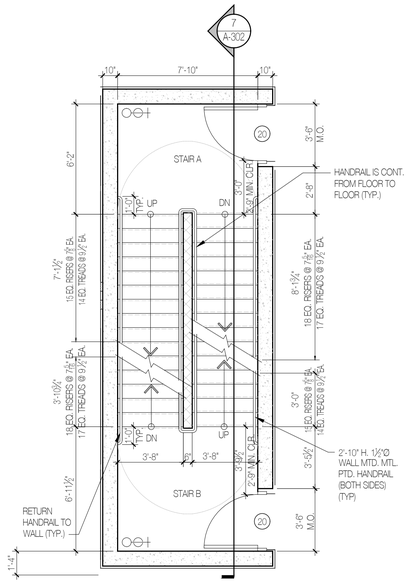
SCALE : ¼" = 1'-0"

N



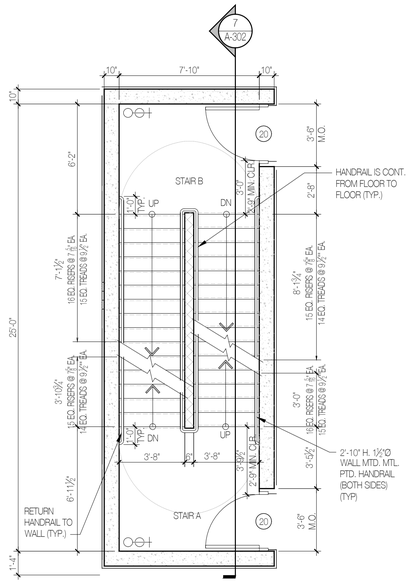
2 A-100 1ST FLOOR PLAN

SCALE : ¼" = 1'-0"



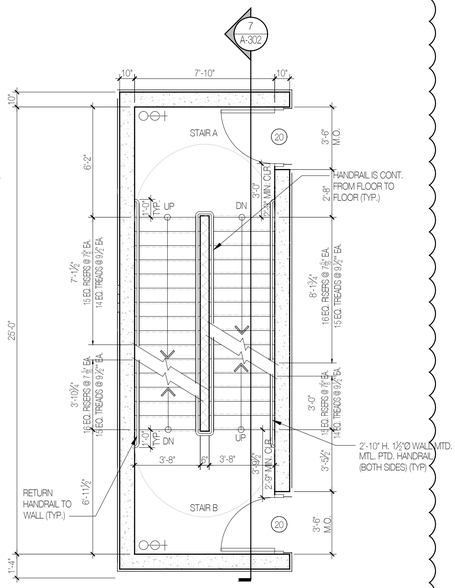
3 A-101 2ND FLOOR PLAN

SCALE : ¼" = 1'-0"



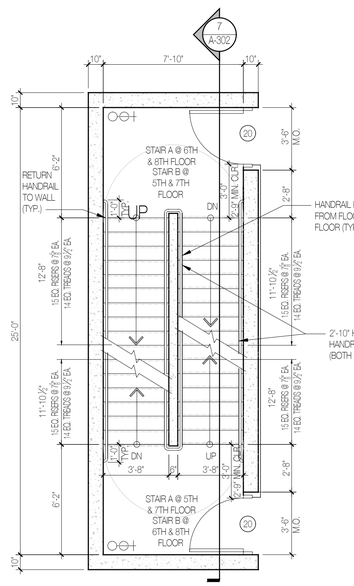
4 A-101 3RD FLOOR PLAN

SCALE : ¼" = 1'-0"



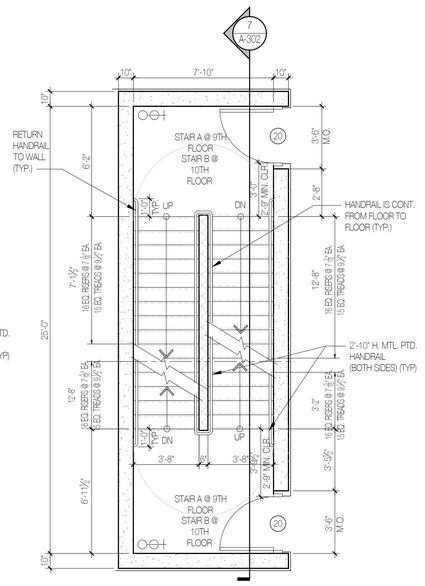
5 A-101 4TH FLOOR PLAN

SCALE : ¼" = 1'-0"



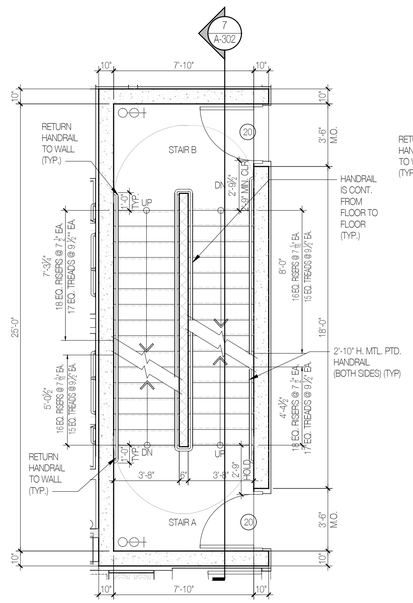
6 A-101 5TH - 8TH FLOOR PLAN

SCALE : ¼" = 1'-0"



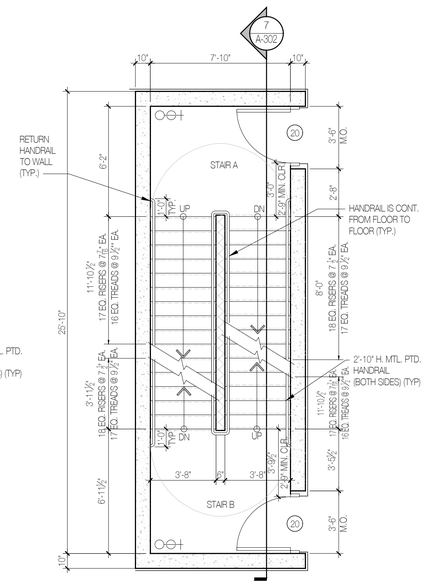
7 A-101 9TH & 10TH FLOOR PLAN

SCALE : ¼" = 1'-0"



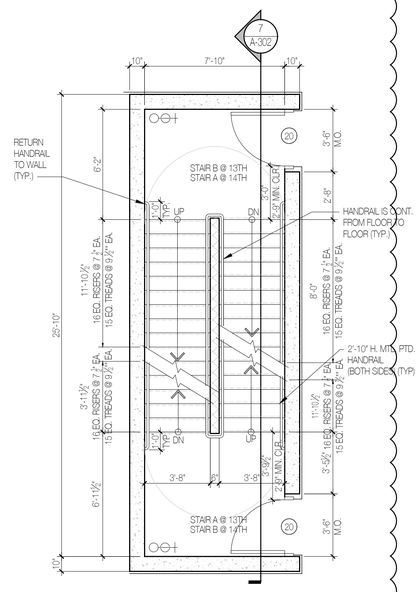
8 A-101 11TH FLOOR PLAN

SCALE : ¼" = 1'-0"



9 A-102 12TH FLOOR PLAN

SCALE : ¼" = 1'-0"



10 A-102, A-103

SCALE : ¼" = 1'-0"

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:

AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:

SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:

McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:

A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:

ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

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	05.03.19 PAA TO D.O.B.
	07.27.18 90% PROGRESS SET
	06.04.18 RE-ISSUED TO D.O.B.
	01.26.18 REISSUED TO D.O.B.
	11.03.17 ISSUED TO D.O.B. FOR REVIEW AND COMMENTS
DATE	SUBMISSIONS / REVISIONS

SHEET TITLE:

ENLARGED STAIR PLANS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 022789 STATE OF NEW YORK

ISSUE DATE: 10-19-15

PROJECT NO: #1520

DRAWN BY: MB

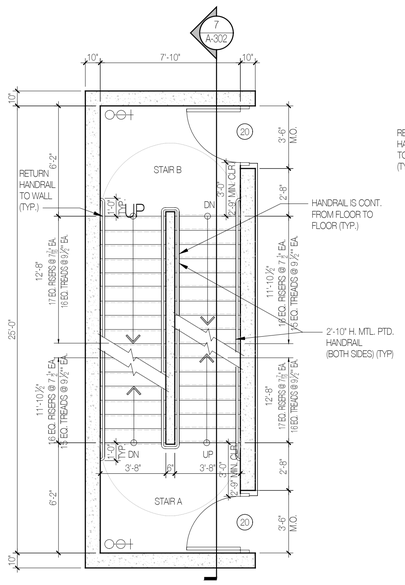
CHECKED BY: AM

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

SHEET NO:

DRAWING NO: A-301.01

NYC DOB NUMBER: 321191802



11 A-103 15TH FLOOR PLAN

SCALE : ¼" = 1'-0"

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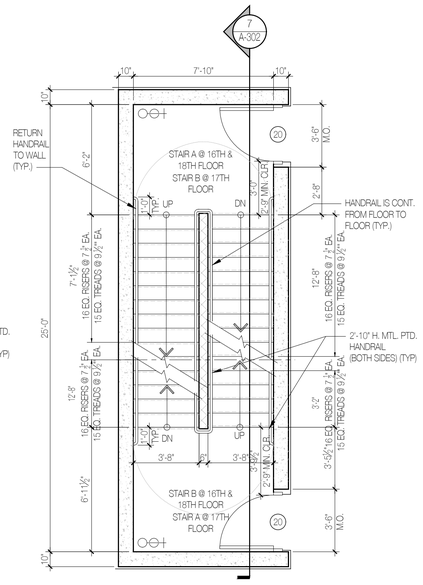
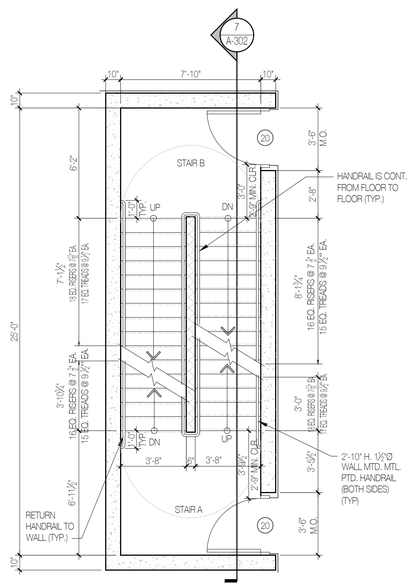


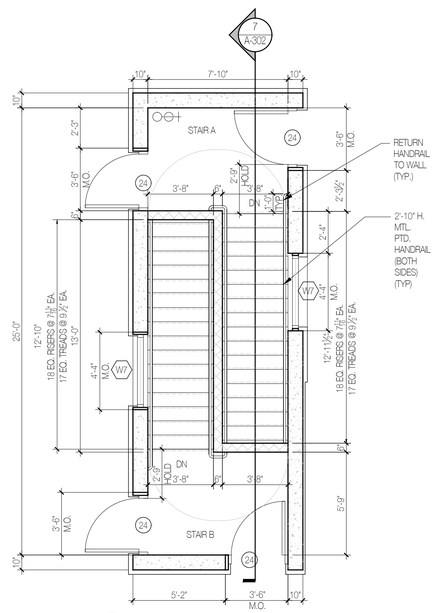
12 A-103, A-104 16TH - 18TH FLOOR PLAN

SCALE : ¼" = 1'-0"



13 A-104 19TH FLOOR PLAN

SCALE : ¼" = 1'-0"



14 A-105 ROOF PLAN

SCALE : ¼" = 1'-0"

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:

AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:

SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:

McNAMARA - SALVIA
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NEW YORK, NY 10036
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MEP ENGINEER:

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2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:

ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS
01.26.18	REISSUED TO D.O.B.
06.04.18	RE-ISSUED TO D.O.B.
07.27.18	90% PROGRESS SET
03.05.19	PAA TO D.O.B.
05.31.19	BID SET
08.02.19	99% CONSTRUCTION SET
1 08.15.19	PAA TO D.O.B.

SHEET TITLE:

ENLARGED STAIR PLANS

SEAL & SIGNATURE

ISSUE DATE: 10-19-15

PROJECT NO: #1520

DRAWN BY: MB

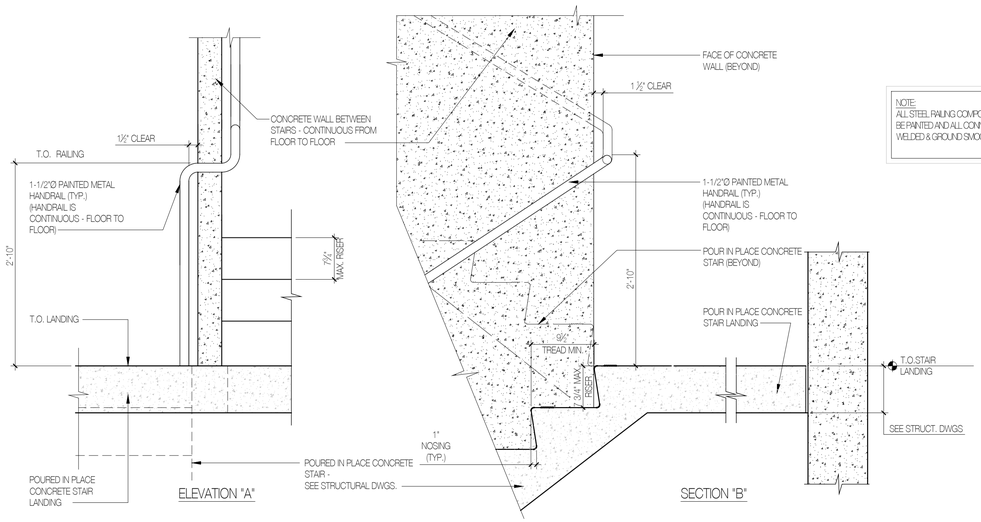
CHECKED BY: AM

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

SHEET NO:

DRAWING NO: A-302.01

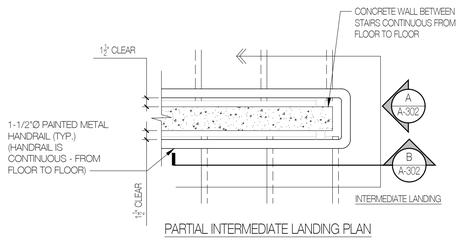
NYC DOB NUMBER: 321191802



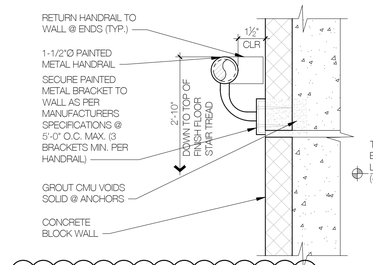
1 A-302 TYP. STAIR LANDING DETAILS

SCALE : 1" = 1'-0"

NOTE:
ALL STEEL RAILING COMPONENTS SHALL BE PAINTED AND ALL CONNECTIONS ARE WELDED & GROUND SMOOTH.

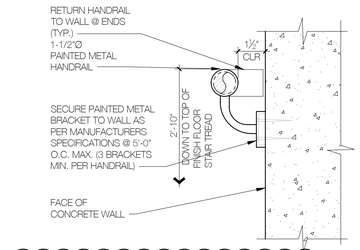


PARTIAL INTERMEDIATE LANDING PLAN



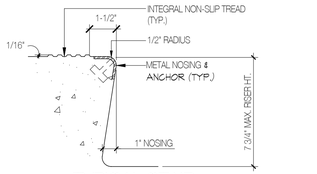
4 A-302 TYPICAL HANDRAIL DETAIL @ C.M.U FINISH

SCALE : 3" = 1'-0"



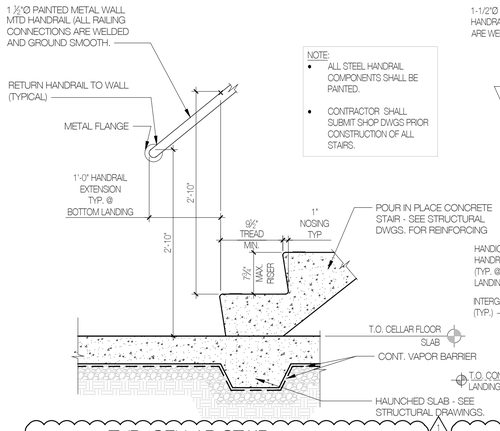
5 A-302 TYPICAL HANDRAIL DETAIL @ CONCRETE FINISH

SCALE : 3" = 1'-0"



6 A-302 TYPICAL STAIR NOSING DETAIL

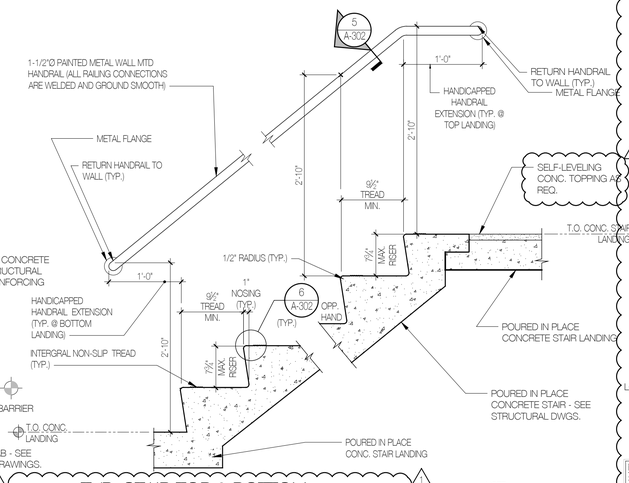
SCALE : 3" = 1'-0"



NOTE:
- ALL STEEL HANDRAIL COMPONENTS SHALL BE PAINTED.
- CONTRACTOR SHALL SUBMIT SHOP DWGS PRIOR CONSTRUCTION OF ALL STAIRS.

2 A-302 TYP. CELLAR STAIR LANDING DETAIL

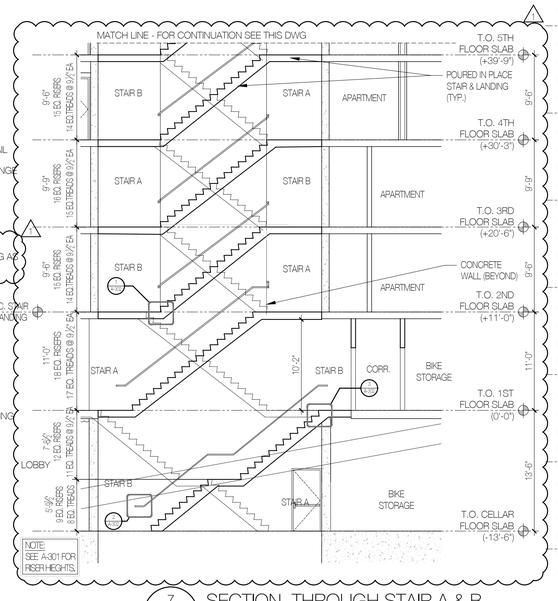
SCALE : 1" = 1'-0"



3 A-302 TYP. STAIR TOP & BOTTOM LANDING DETAILS

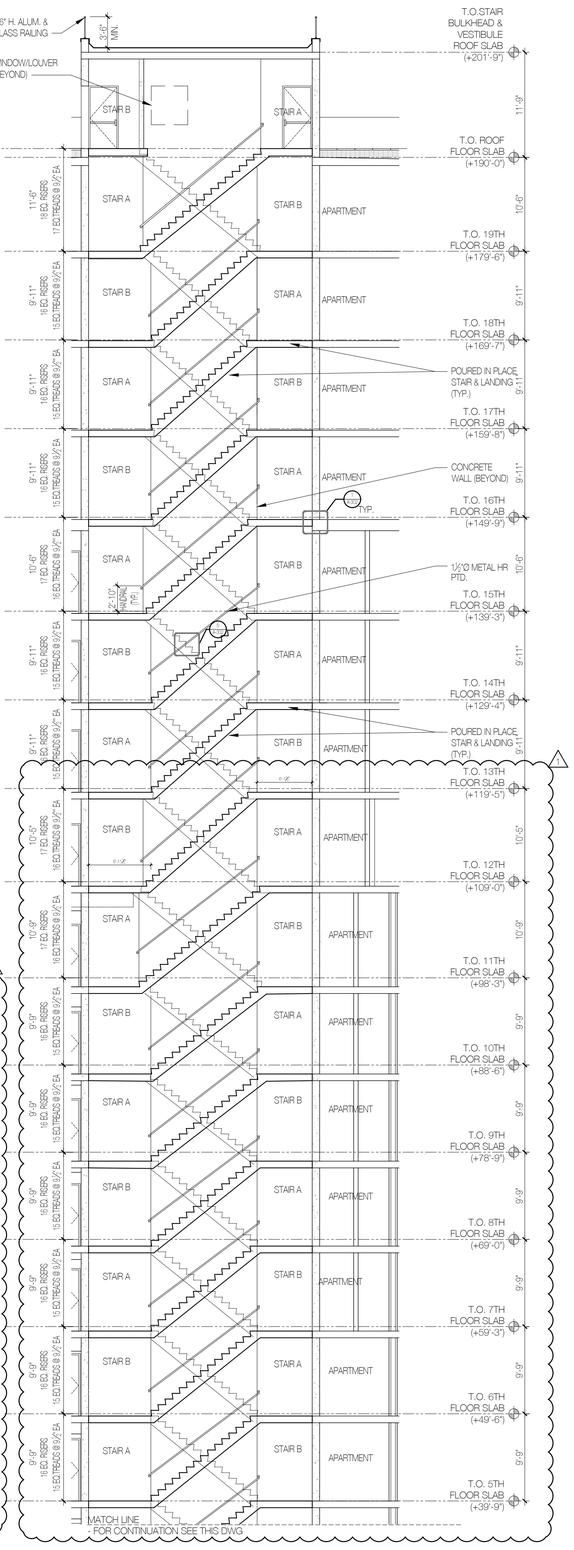
SCALE : 1" = 1'-0"

NOTE
FOR ADD'L INFO & REINFORCING SEE STRUCT. DWGS.



7 A-302 SECTION THROUGH STAIR A & B

SCALE : ⅛" = 1'-0"



PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:

AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:

SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:

McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:

A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:

ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

1 08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
05.03.19	PAA TO D.O.B.
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
01.26.18	REISSUED TO D.O.B.
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS
DATE	SUBMISSIONS / REVISIONS

SHEET TITLE:

ENLARGED STAIR SECTION AND DETAILS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

ISSUE DATE: 10-19-15

PROJECT NO: #1520

DRAWN BY: MB

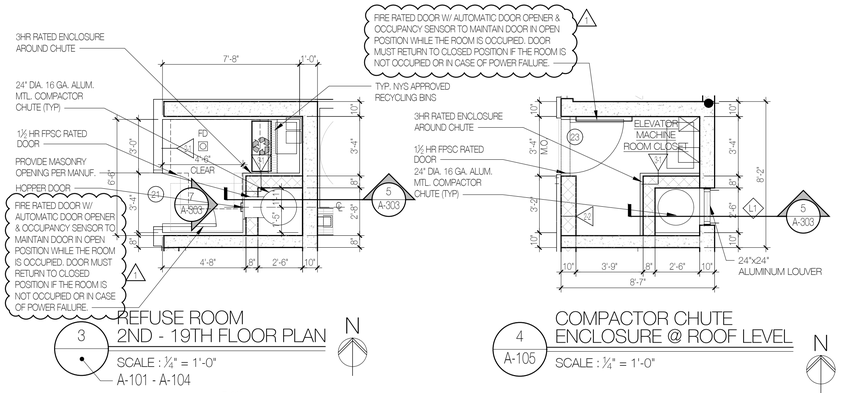
CHECKED BY: AM

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

SHEET NO:

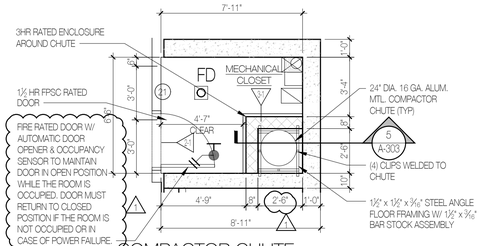
DRAWING NO: A-303.01

NYC DOB NUMBER: 321191802

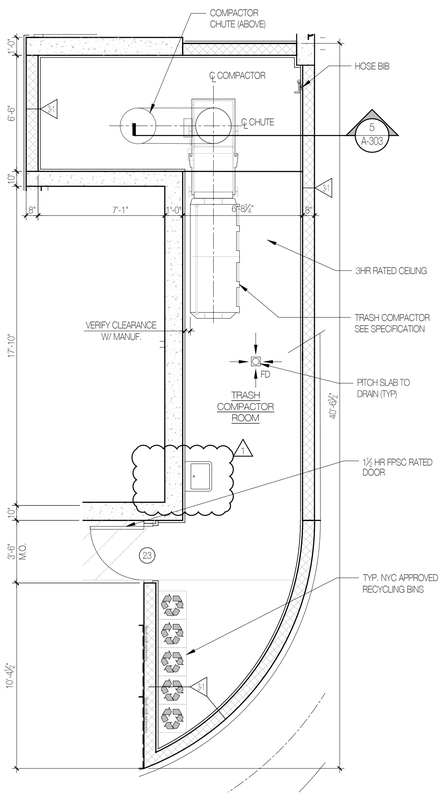


3 REFUSE ROOM 2ND - 19TH FLOOR PLAN
SCALE : ¼" = 1'-0"
A-101 - A-104

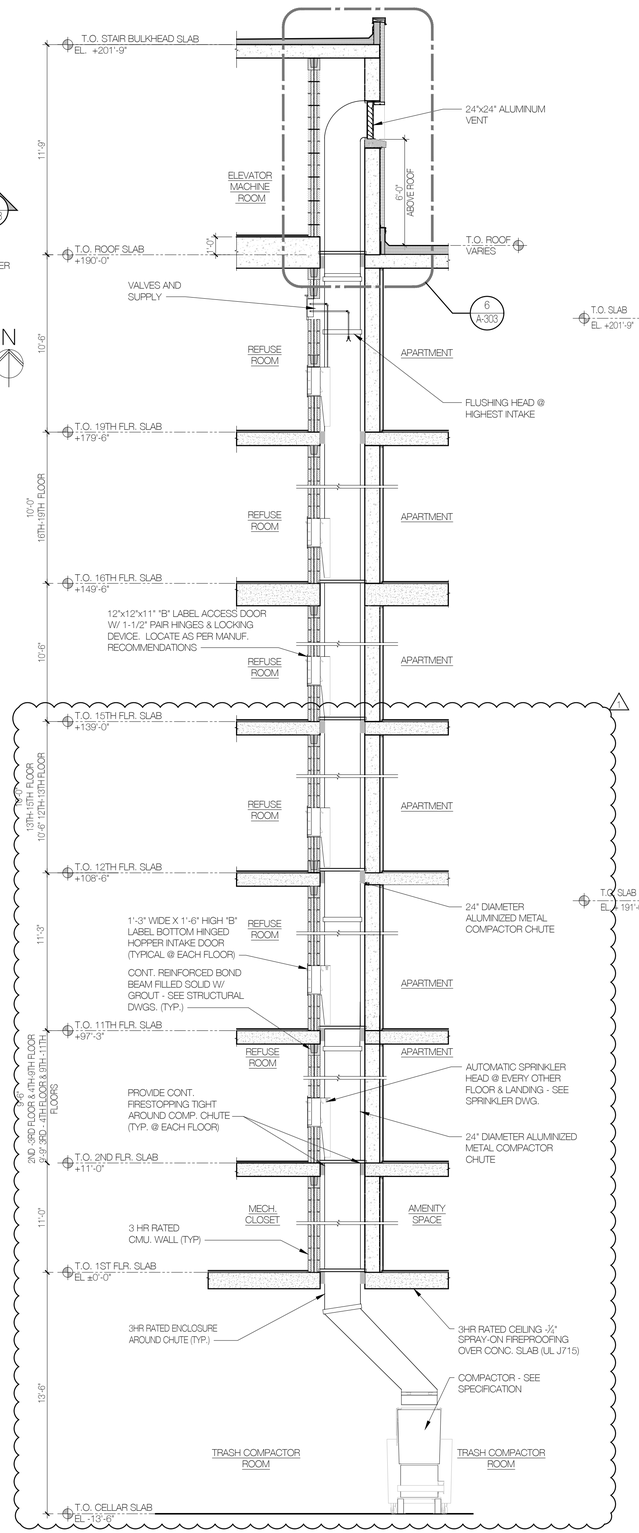
4 COMPACTOR CHUTE ENCLOSURE @ ROOF LEVEL
A-105
SCALE : ¼" = 1'-0"



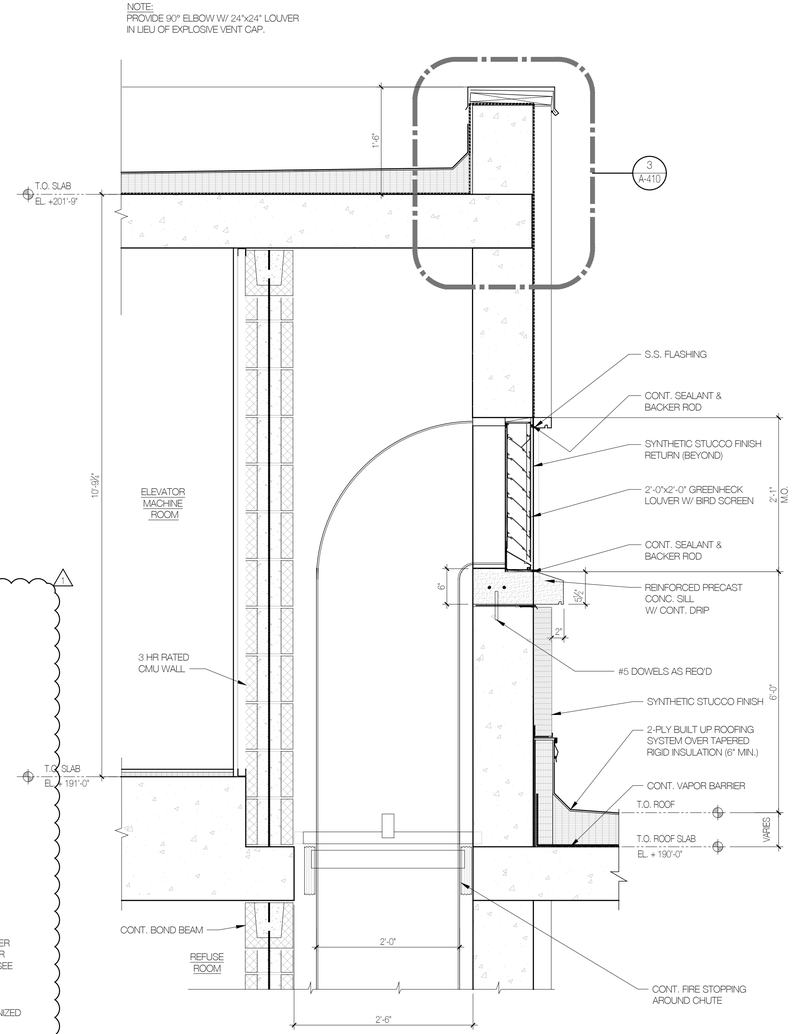
2 COMPACTOR CHUTE ENCLOSURE 1ST FLOOR PLAN
A-100
SCALE : ¼" = 1'-0"



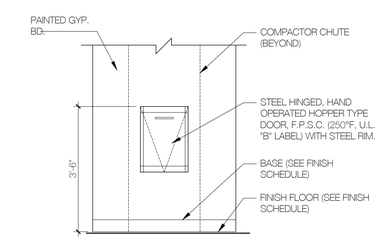
1 COMPACTOR ROOM CELLAR FLOOR PLAN
A-100
SCALE : ¼" = 1'-0"



5 SECTION THRU COMPACTOR CHUTE
A-303
SCALE : ¼" = 1'-0"



6 COMPACTOR CHUTE LOUVER DETAIL
A-303
SCALE : 1" = 1'-0"



7 REFUSE ROOM CHUTE ACCESS DOOR
A-303
SCALE : ½" = 1'-0"

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:
AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:
SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
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STRUCTURAL ENGINEER:
McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
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MEP ENGINEER:
A & D ENGINEERING, PLLC
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T: 718.872.6112

INTERIOR DESIGNER:
ALCHEMY STUDIO NYC
154 GRAND STREET
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T: 307.760.6454

AUFGANG ARCHITECTS

1	08.15.19 PAA TO D.O.B.
	08.02.19 99% CONSTRUCTION SET
	05.31.19 BID SET
	05.03.19 PAA TO D.O.B.
	07.27.18 90% PROGRESS SET
	06.04.18 RE-ISSUED TO D.O.B.
	01.26.18 REISSUED TO D.O.B.
	11.03.17 ISSUED TO D.O.B. FOR REVIEW AND COMMENTS
DATE	SUBMISSIONS / REVISIONS

SHEET TITLE:

ENLARGED COMPACTOR CHUTE PLANS, SECTION AND DETAILS

SEAL & SIGNATURE

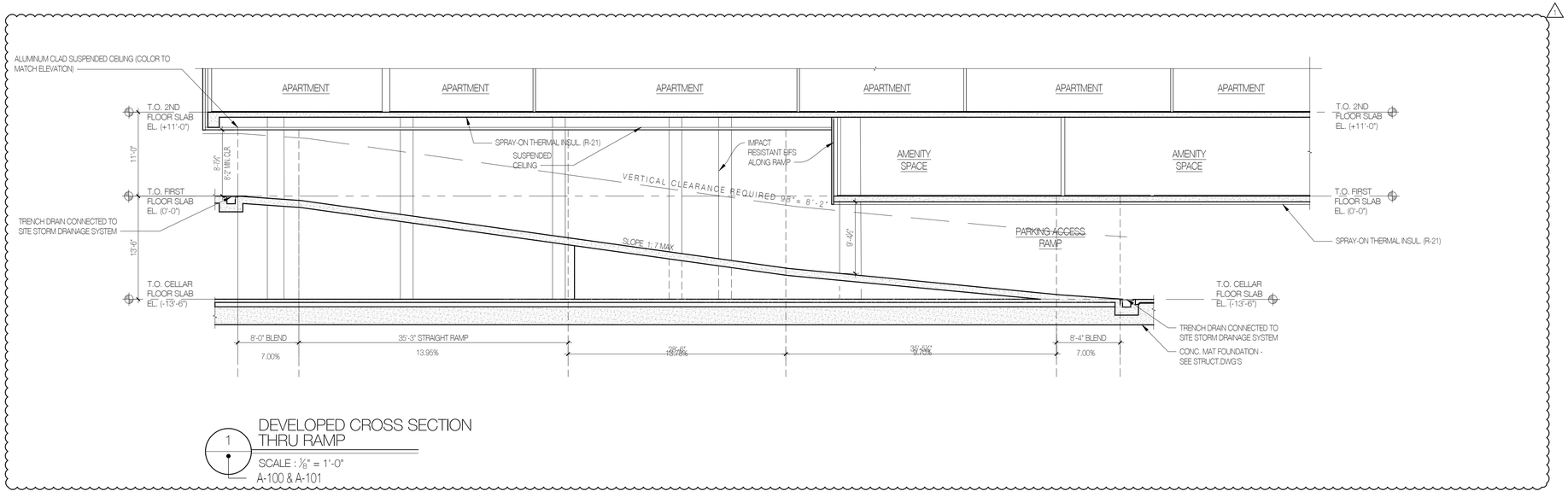
REGISTERED ARCHITECT ARIEL AUFGANG 027879 STATE OF NEW YORK

ISSUE DATE:	PROJECT NO:
10-19-15	#1520
DRAWN BY:	CHECKED BY:
MB	AM
SCALE:	SHEET NO:
AS NOTED	

DRAWING NO:

A-304.01

NYC DOB NUMBER: 321191802



1 DEVELOPED CROSS SECTION THRU RAMP

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

A-100 & A-101

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:

AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:

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STRUCTURAL ENGINEER:

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MEP ENGINEER:

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INTERIOR DESIGNER:

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T: 307.760.6454

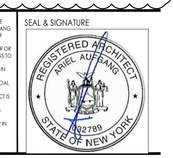
AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS
01.26.18	REISSUED TO D.O.B.
06.04.18	RE-ISSUED TO D.O.B.
07.27.18	90% PROGRESS SET
05.03.19	PAA TO D.O.B.
05.31.19	BID SET
08.02.19	99% CONSTRUCTION SET
1 05.15.19	PAA TO D.O.B.

SHEET TITLE:

CROSS SECTION THROUGH RAMP

SEAL & SIGNATURE



ISSUE DATE: 10-19-15

PROJECT NO: #1520

DRAWN BY: S.Z.

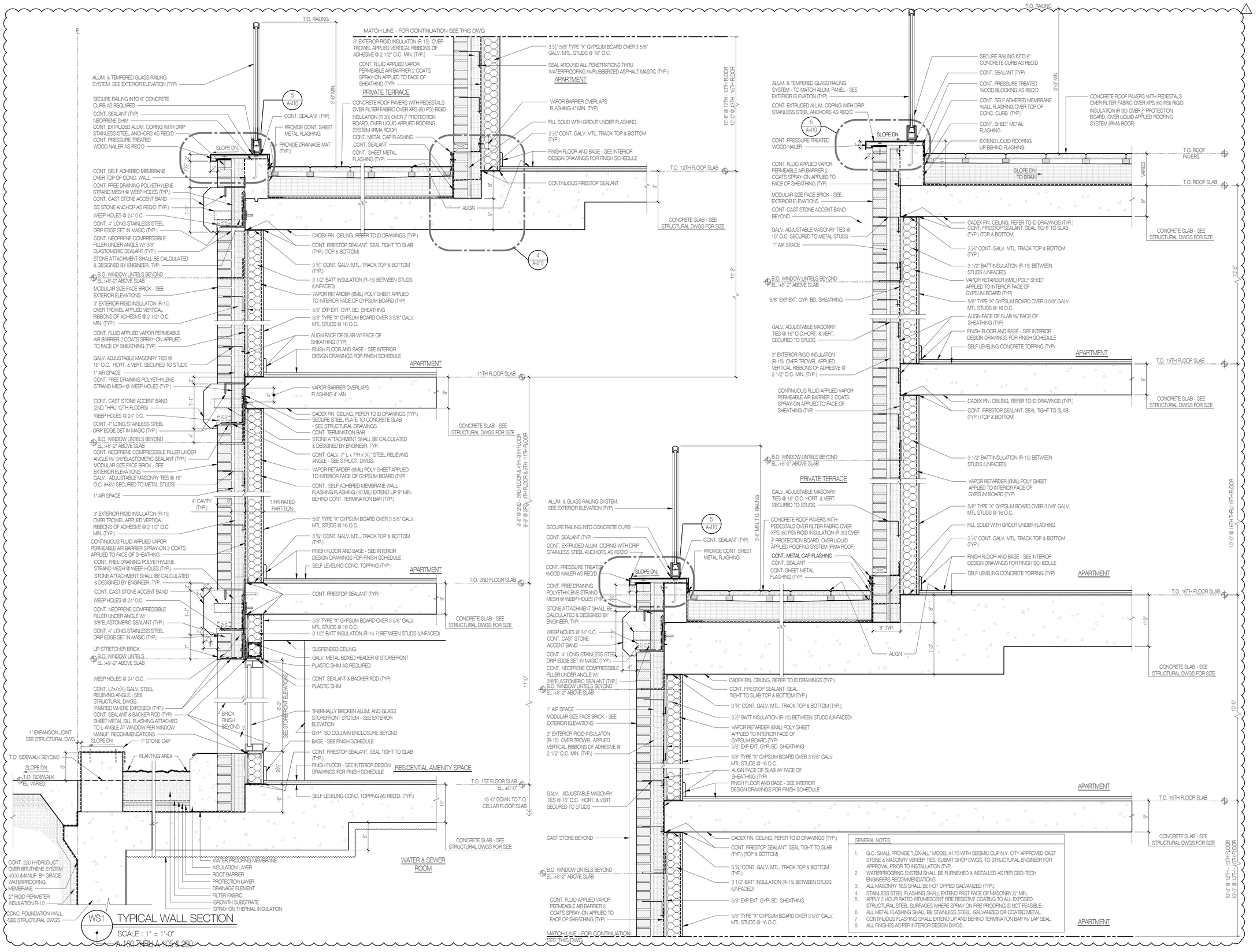
CHECKED BY: T.L.

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

SHEET NO:

DRAWING NO: A-305.00

NYC DOB NUMBER: 321191802



PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:
AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:
SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
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STRUCTURAL ENGINEER:
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62 WEST 45TH STREET, 11TH FLOOR
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MEP ENGINEER:
A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
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T: 718.872.6112

INTERIOR DESIGNER:
ALCHEMY STUDIO NYC
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NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

1	08.15.19 PAA TO D.O.B.
	08.02.19 99% CONSTRUCTION SET
	05.31.19 BID SET
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	06.04.18 RE-ISSUED TO D.O.B.
	05.02.18 REVISED AS PER ENERGY COMMENTS
	01.26.18 REISSUED TO D.O.B.
	11.03.17 ISSUED TO D.O.B. FOR REVIEW AND COMMENTS
DATE	SUBMISSIONS / REVISIONS

SHEET TITLE:

TYPICAL WALL SECTION

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032780 STATE OF NEW YORK

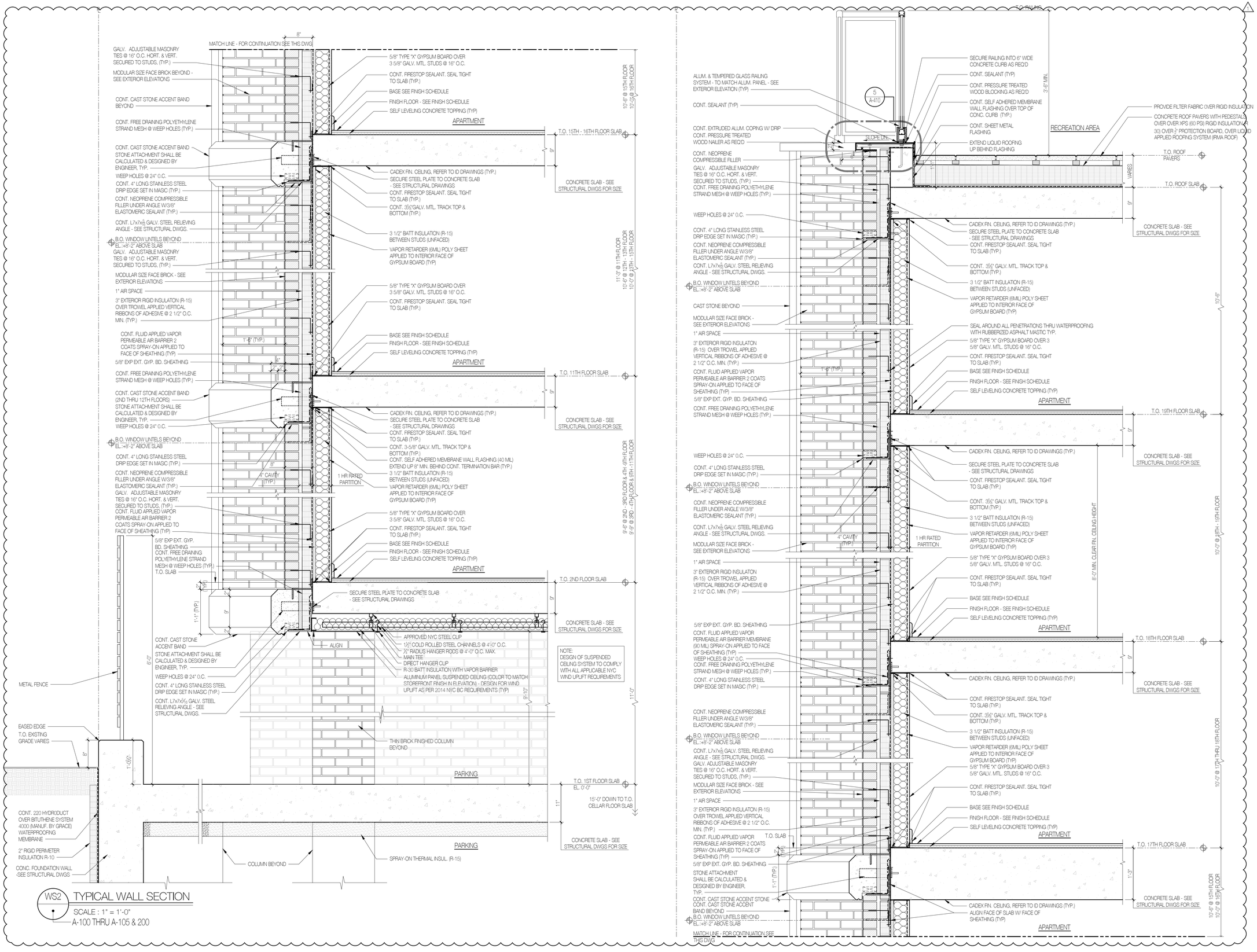
ISSUE DATE: 10-19-15 PROJECT NO: #1520

DRAWN BY: MB CHECKED BY: AM

SCALE: 1/8"=1'-0" SHEET NO:

DRAWING NO: A-400.01

NYC DOB NUMBER: 321191802



WS2 TYPICAL WALL SECTION

SCALE : 1" = 1'-0"

A-100 THRU A-105 & 200

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:

AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:

SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
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STRUCTURAL ENGINEER:

McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
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MEP ENGINEER:

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T: 718.872.6112

INTERIOR DESIGNER:

ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
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07.27.18	90% PROGRESS SET
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05.02.18	REVISED AS PER ENERGY COMMENTS
01.26.18	REISSUED TO D.O.B.
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS

SHEET TITLE:

TYPICAL WALL SECTION

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

ISSUE DATE: 10-19-15

PROJECT NO: #1520

DRAWN BY: MB

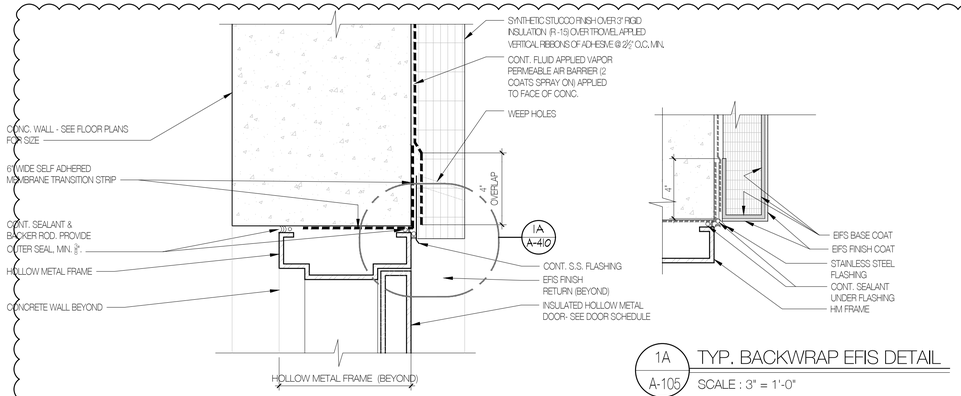
CHECKED BY: AM

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

SHEET NO:

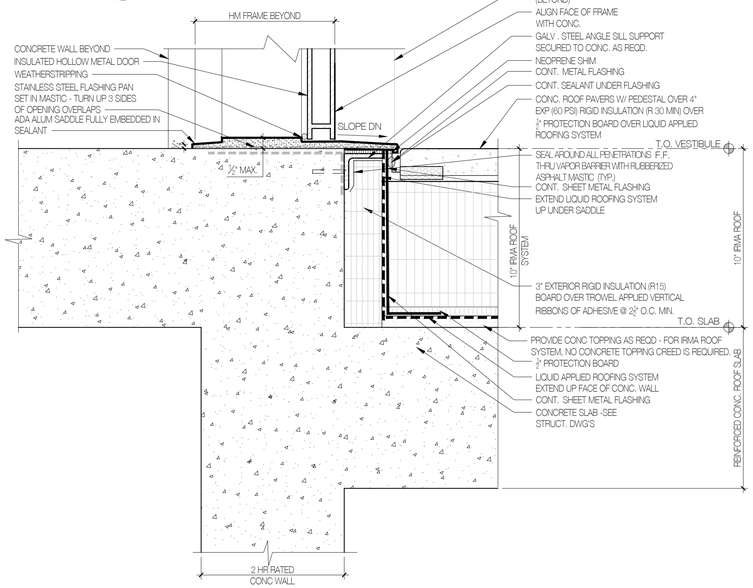
DRAWING NO: A-401.00

NYC DOB NUMBER: 321191802

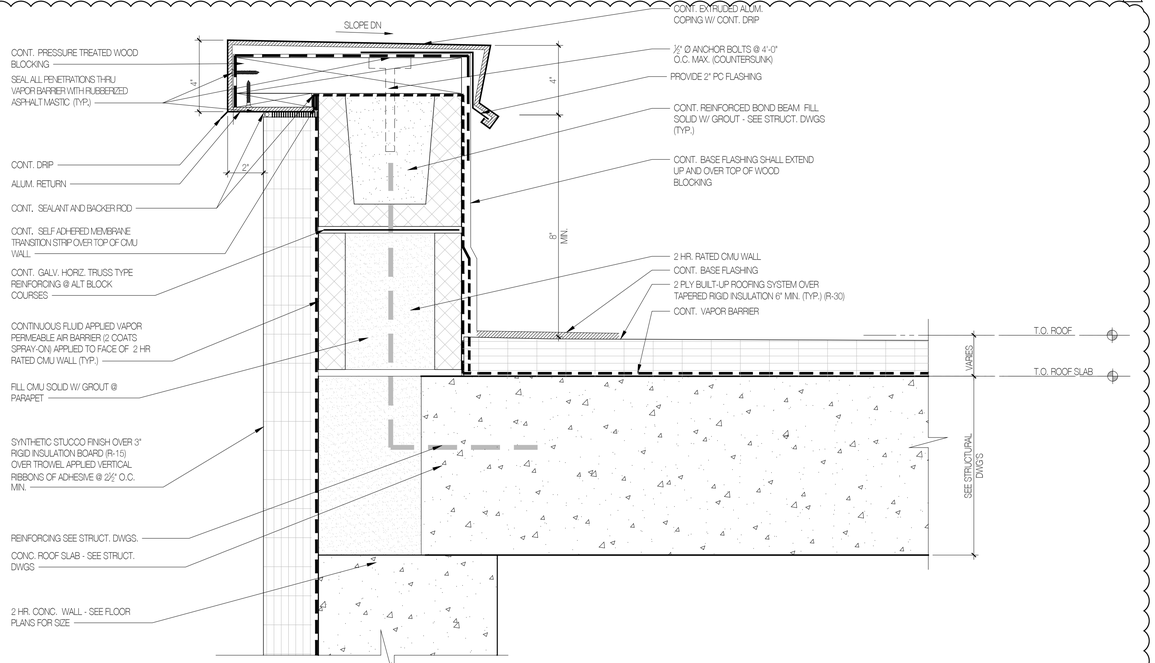


1A A-105 TYP. BACKWRAP EFIS DETAIL
SCALE : 3" = 1'-0"

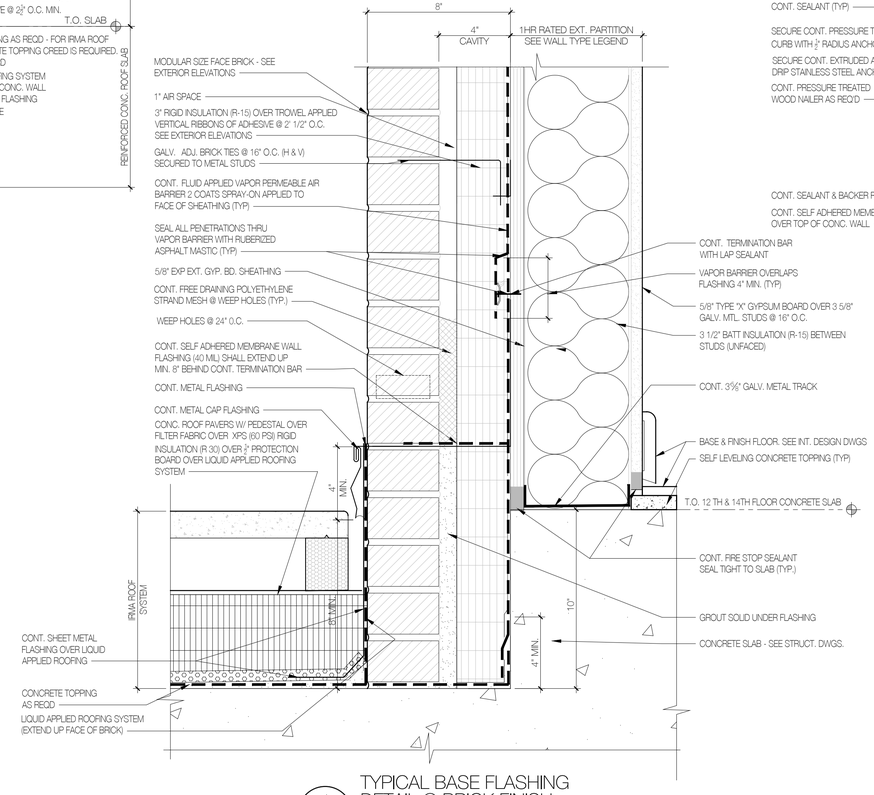
1 A-105 TYPICAL ROOF BULKHEAD DOOR HEAD DETAIL (JAMB SIMILAR)
SCALE : 3" = 1'-0"



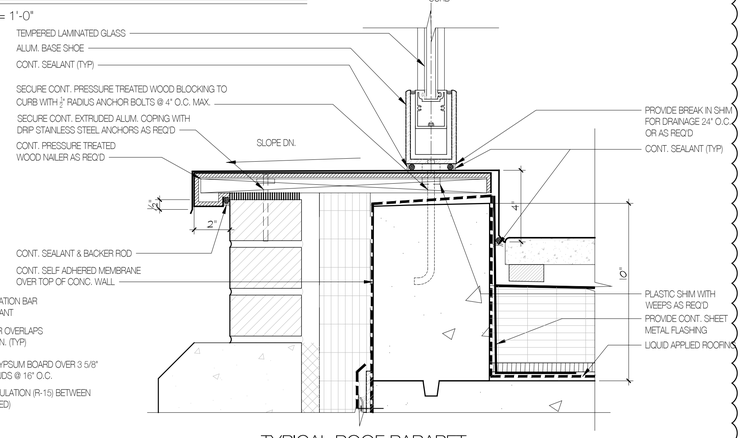
2 A-105 TYPICAL ROOF BULKHEAD DOOR SILL DETAIL
SCALE : 3" = 1'-0"



3 A-105 TYPICAL ROOF BULKHEAD PARAPET DETAIL
SCALE : 3" = 1'-0"



4 A-104 TYPICAL BASE FLASHING DETAIL @ BRICK FINISH
SCALE : 3" = 1'-0"



5 A-104 TYPICAL ROOF PARAPET DETAIL @ RAILING
SCALE : 3" = 1'-0"

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:
AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:
SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:
McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:
A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:
ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
05.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
05.03.19	PAA TO D.O.B.
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
09.29.17	REVISED AS PER DOB COMMENTS
09.15.17	80% PROGRESS SET

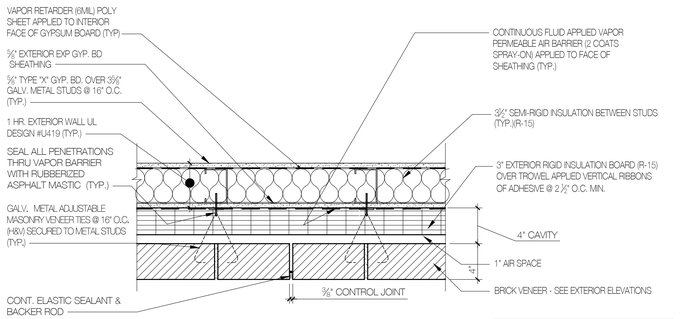
SHEET TITLE:

MISC. DETAILS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

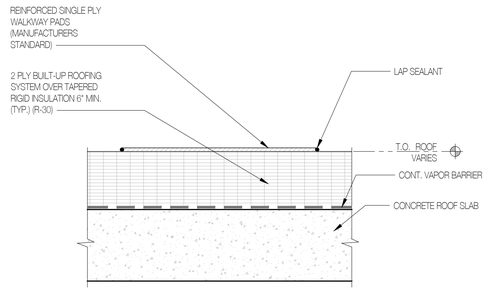
ISSUE DATE: 10-19-15
PROJECT NO: #1520
DRAWN BY: A.F.M.
CHECKED BY: T.L.
SCALE: AS NOTED
SHEET NO:
DRAWING NO: A-410.01
NYC DOB NUMBER: 321191802



2 TYP. CONTROL JOINT PLAN DETAIL AT BRICK VENEER ON FRAMED WALL

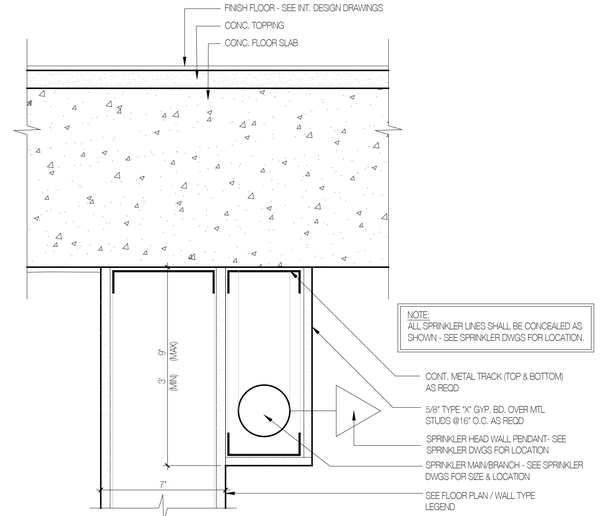
SCALE : 1 ½" = 1'-0"

A-200 - 201



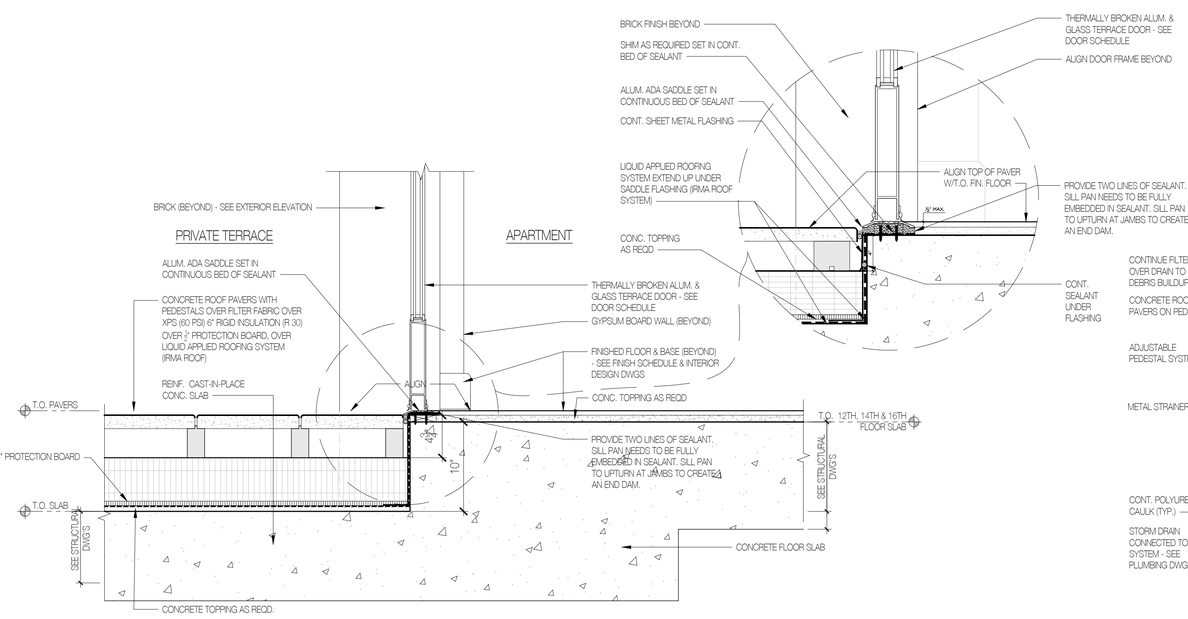
3 A-105 TYP. ROOF WALKWAY PAD DETAIL @ BUR SYSTEM

SCALE : 1 ½" = 1'-0"



4 A-411 SPRINKLER SOFFIT DETAIL

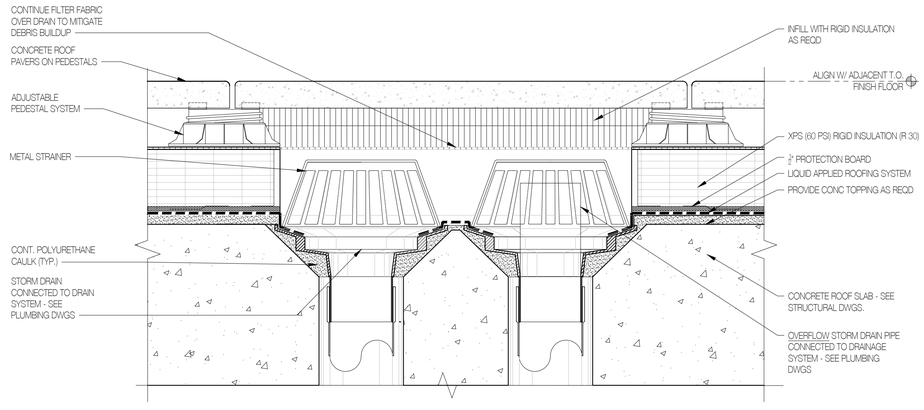
SCALE : 3" = 1'-0"



1 TYPICAL EXTERIOR DOOR SILL DETAIL @ TERRACE

SCALE : 1 ½" = 1'-0"

A-102, A-103 & A-104



5 ROOF DRAIN AND OVERFLOW DRAIN DETAIL

SCALE : 3" = 1'-0"

A-103, A-104 & A-105

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:
AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

AUFGANG ARCHITECTS

DEVELOPER:
SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:
McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
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MEP ENGINEER:
A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:
ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

DATE	SUBMISSIONS / REVISIONS
08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
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05.03.19	PAA TO D.O.B.
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
09.29.17	REVISED AS PER DOB COMMENTS
09.15.17	80% PROGRESS SET

SHEET TITLE:

MISC. DETAILS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

ISSUE DATE: 10-19-15

PROJECT NO: #1520

DRAWN BY: A.F.M.

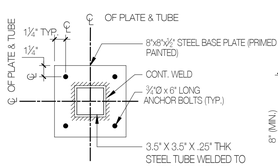
CHECKED BY: T.L.

SCALE: AS NOTED

SHEET NO:

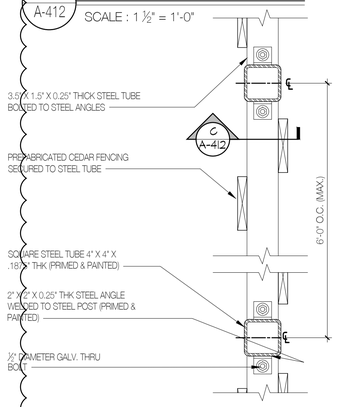
DRAWING NO: A-411.01

NYC DOB NUMBER: 321191802



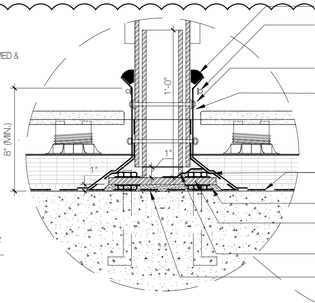
A A-412 BASE PLATE PLAN DETAIL

SCALE : 1 ½" = 1'-0"



B A-412 POST PLAN DETAIL

SCALE : 1 ½" = 1'-0"



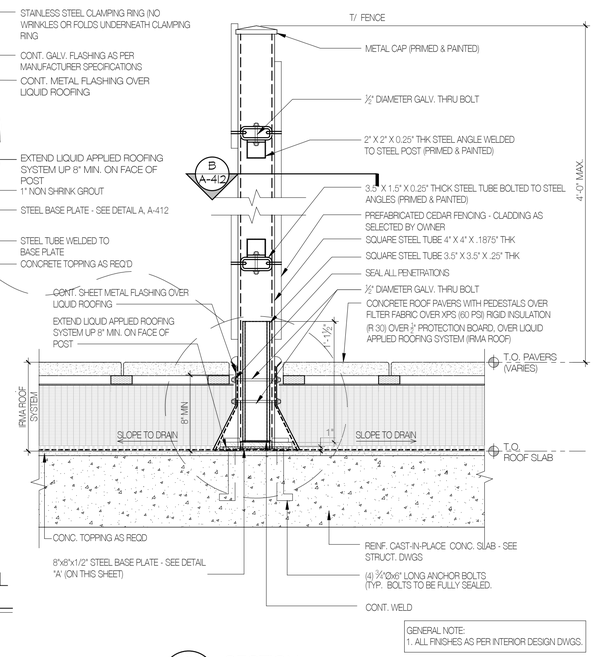
GENERAL NOTES:

- ALL BOLTS TO BE GALVANIZED
- ALL STEEL MEMBERS SHALL BE PRIMED AND PAINTED, COLOR AS SELECTED BY OWNER
- SCREEN BETWEEN TERRACES SHOULD BE AT LEAST 50% OPEN

1 PRIVACY FENCE DETAIL @ ROOF TERRACE

SCALE : 1 ½" = 1'-0"

A-103 & A-104



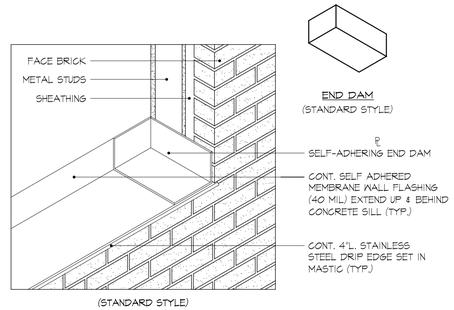
GENERAL NOTE:
1. ALL FINISHES AS PER INTERIOR DESIGN DWGS.

C A-412 SECTION

SCALE : 1 ½" = 1'-0"

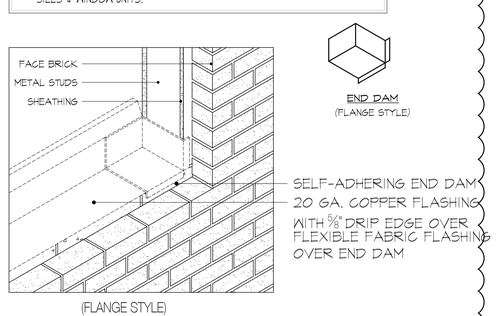
GENERAL NOTES:

1. 6" WIDE SELF ADHERED MEMBRANE @ ALL WALL OPENINGS (TYP.).
2. CONT. FLUID APPLIED VAPOR PERMEABLE AIR BARRIER APPLIED TO FACE OF EXT. EXP GYP BD SHEATHING.
3. EXTEND CONT. 4" LONG STAINLESS STEEL DRIP EDGE ¼" BEYOND FACE OF MASONRY (TYP.).
4. FURNISH & INSTALL CONT. SELF ADHERED MEMBRANE WALL FLASHING (40 MIL) (TYP.).
5. FORM AND DAM FLASHING AT TERMINATION OF ALL FLASHING MEMBERS (INCLUDING WINDOW & DOOR HEADS). END DAM FLASHING SHALL BE FORMED TO LEAD WATER OUT TO WEEP HOLES LOCATED AT THE EXTERIOR FACE OF BUILDING.
6. OVERLAP FLASHING @ JOINTS 6" TO 8" MINIMUM.
7. PROVIDE END DAM FLASHING AT ENDS OF ALL BRICK CAVITIES.
8. CONTRACTOR SHALL CONSTRUCT TYPICAL MOCKUP @ JOB SITE FOR ARCHITECT TO REVIEW & APPROVE PRIOR TO INSTALLATION OF WINDOW SILLS & WINDOW UNITS.



END DAM (STANDARD STYLE)

(STANDARD STYLE)



END DAM (FLANGE STYLE)

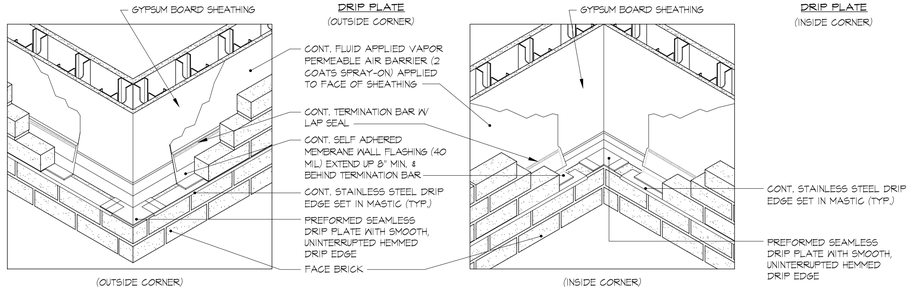
(FLANGE STYLE)

3 A-412 END DAM WINDOW SILL DETAIL

SCALE : ¾" = 1'-0"

DRIP PLATE (OUTSIDE CORNER)

DRIP PLATE (INSIDE CORNER)

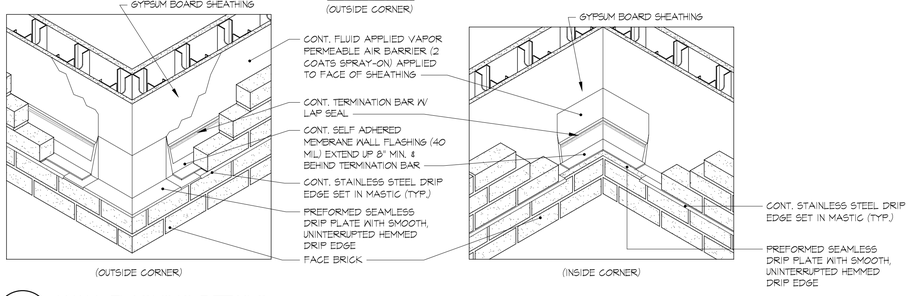


4 A-412 DRIP PLATE FLASHING DETAILS

SCALE : ¾" = 1'-0"

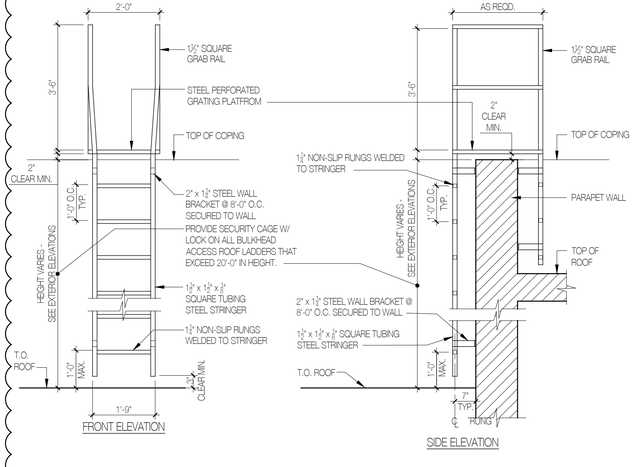
WALL FLASHING (OUTSIDE CORNER)

WALL FLASHING (INSIDE CORNER)



5 A-412 WALL FLASHING DETAILS

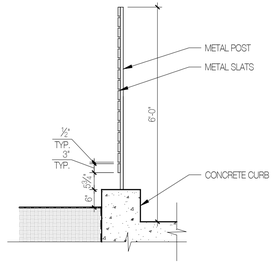
SCALE : ¾" = 1'-0"



2 TYPICAL ROOF LADDER DETAIL

SCALE : ½" = 1'-0"

A-105, A-201



6 A-100 METAL FENCE DETAIL

SCALE : ½" = 1'-0"

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:
AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:
SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:
McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:
A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:
ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
06.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
05.03.19	PAA TO D.O.B.
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
09.29.17	REVISED AS PER DOB COMMENTS
09.15.17	80% PROGRESS SET

SHEET TITLE:

MISC. DETAILS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 022789 STATE OF NEW YORK

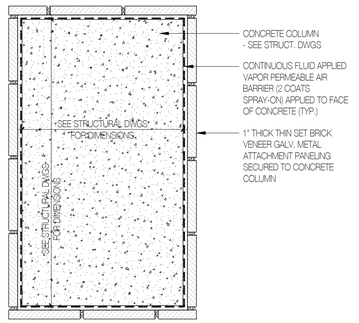
ISSUE DATE: 10-19-15 PROJECT NO: #1520

DRAWN BY: A.F.M. CHECKED BY: T.L.

SCALE: AS NOTED SHEET NO:

DRAWING NO: A-412.01

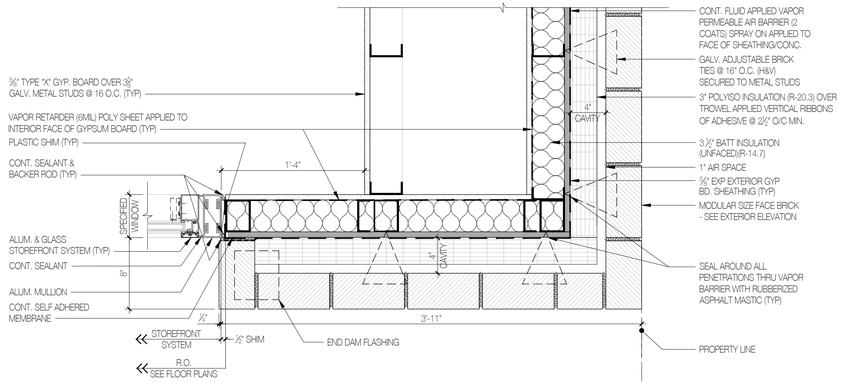
NYC DOB NUMBER: 321191802



1 A-100

EXTERIOR PLAN DETAIL @ THIN SET BRICK ON COLUMN

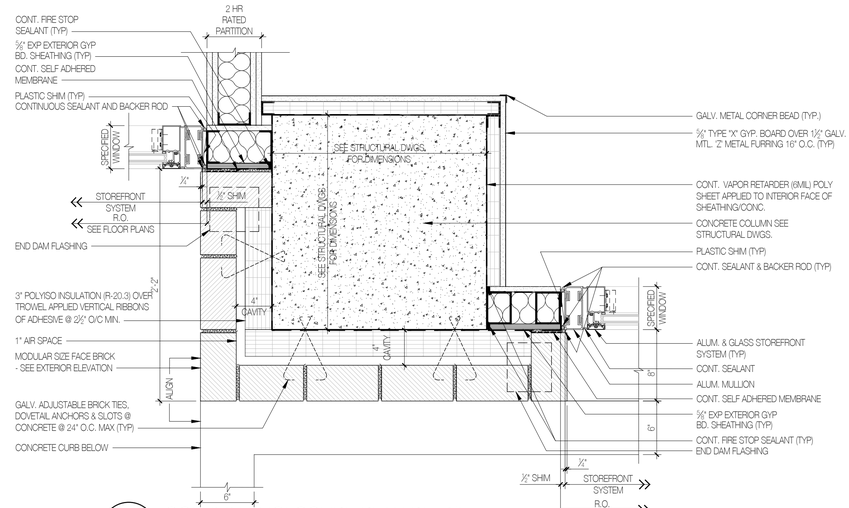
SCALE : 1 ½" = 1'-0"



2 A-100

CORNER ENCLOSURE PLAN DETAIL

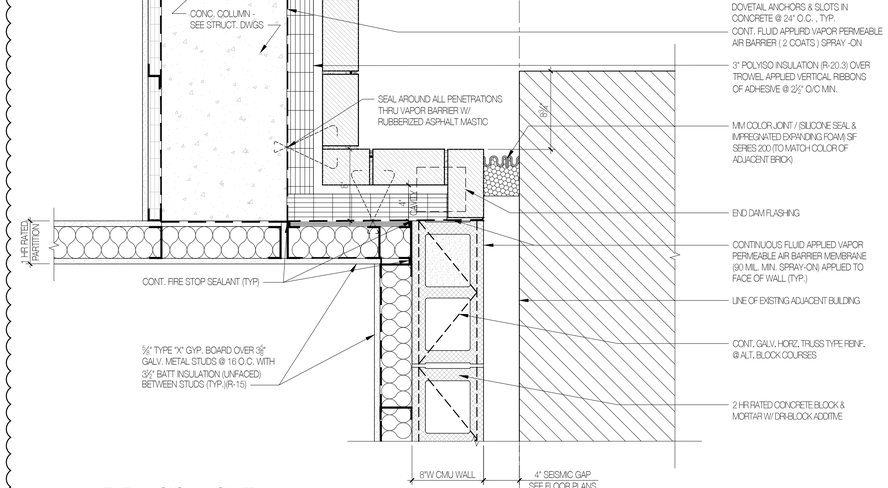
SCALE : 1 ½" = 1'-0"



3 A-100

COLUMN ENCLOSURE PLAN DETAIL

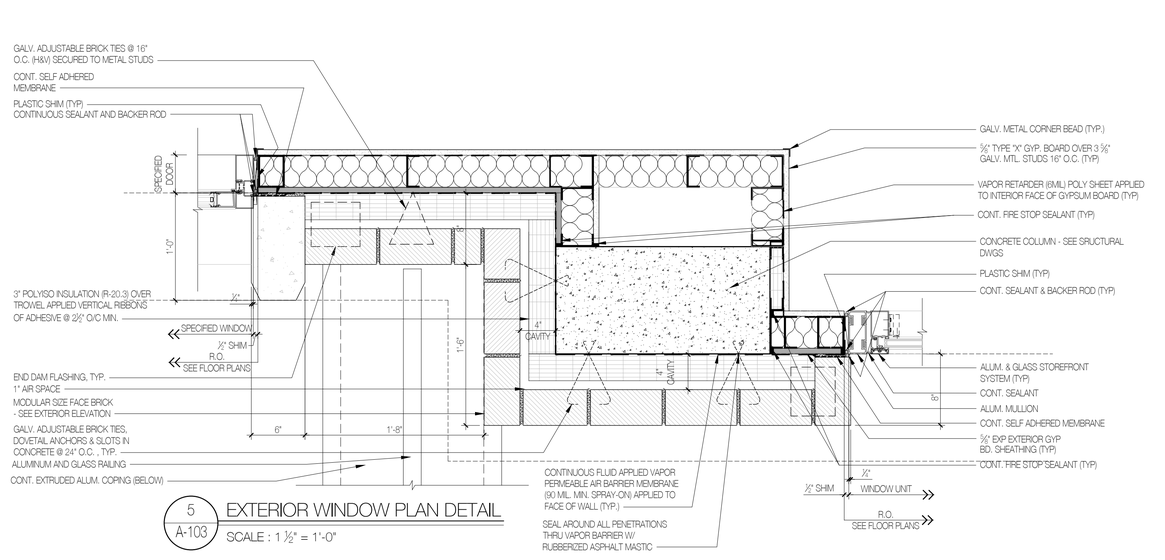
SCALE : 1 ½" = 1'-0"



4 A-101

EXPANSION JOINT PLAN DETAIL @ EXISTING BLDG

SCALE : 1 ½" = 1'-0"



5 A-103

EXTERIOR WINDOW PLAN DETAIL

SCALE : 1 ½" = 1'-0"

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:

AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:

SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:

McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:

A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:

ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
05.03.19	PAA TO D.O.B.

SHEET TITLE:

MISC. DETAILS

SEAL & SIGNATURE

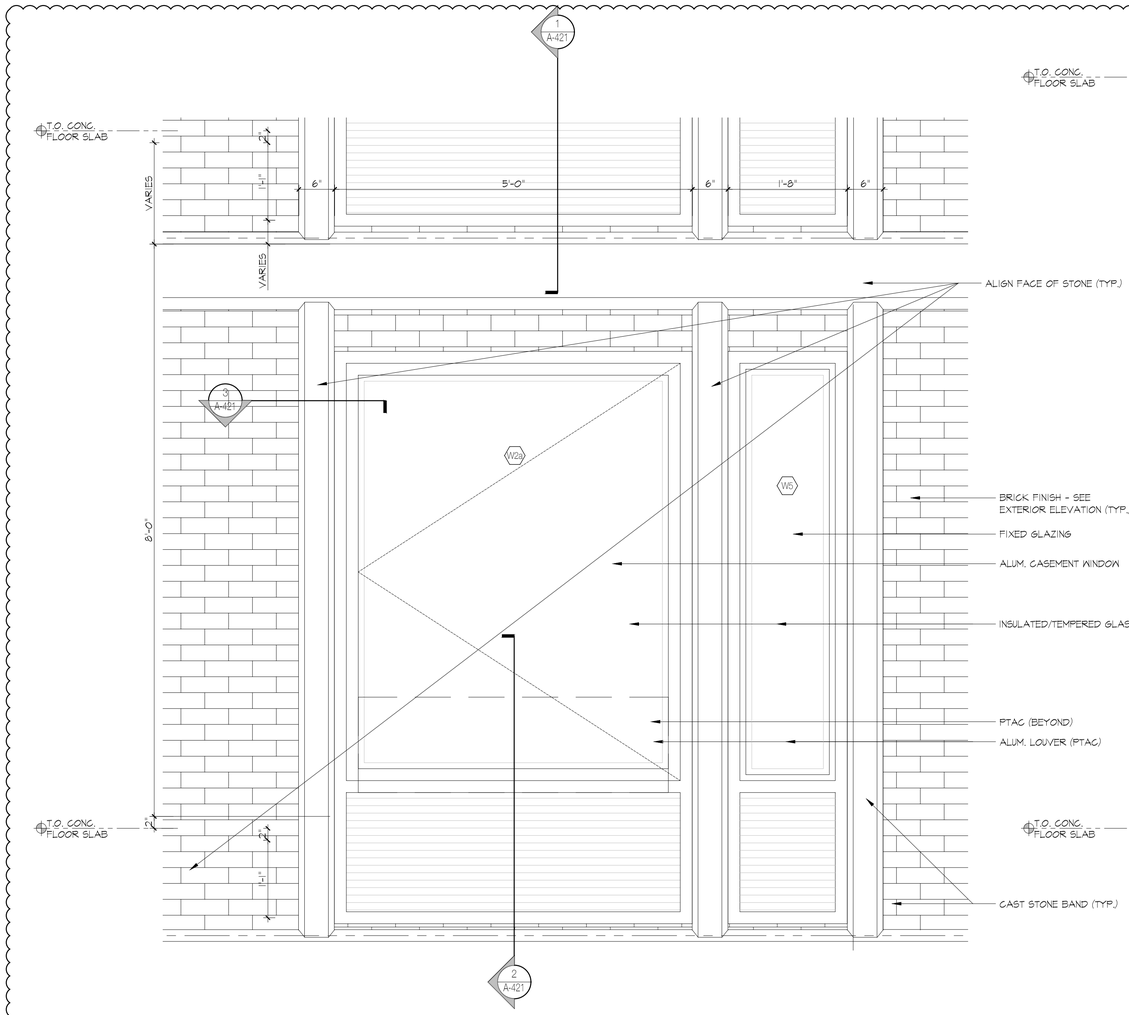
REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

ISSUE DATE:	PROJECT NO:
10-19-15	#1520
DRAWN BY:	CHECKED BY:
A.F.M.	T.L.
SCALE:	SHEET NO:
1/8"=1'-0"	

DRAWING NO:

A-413.00

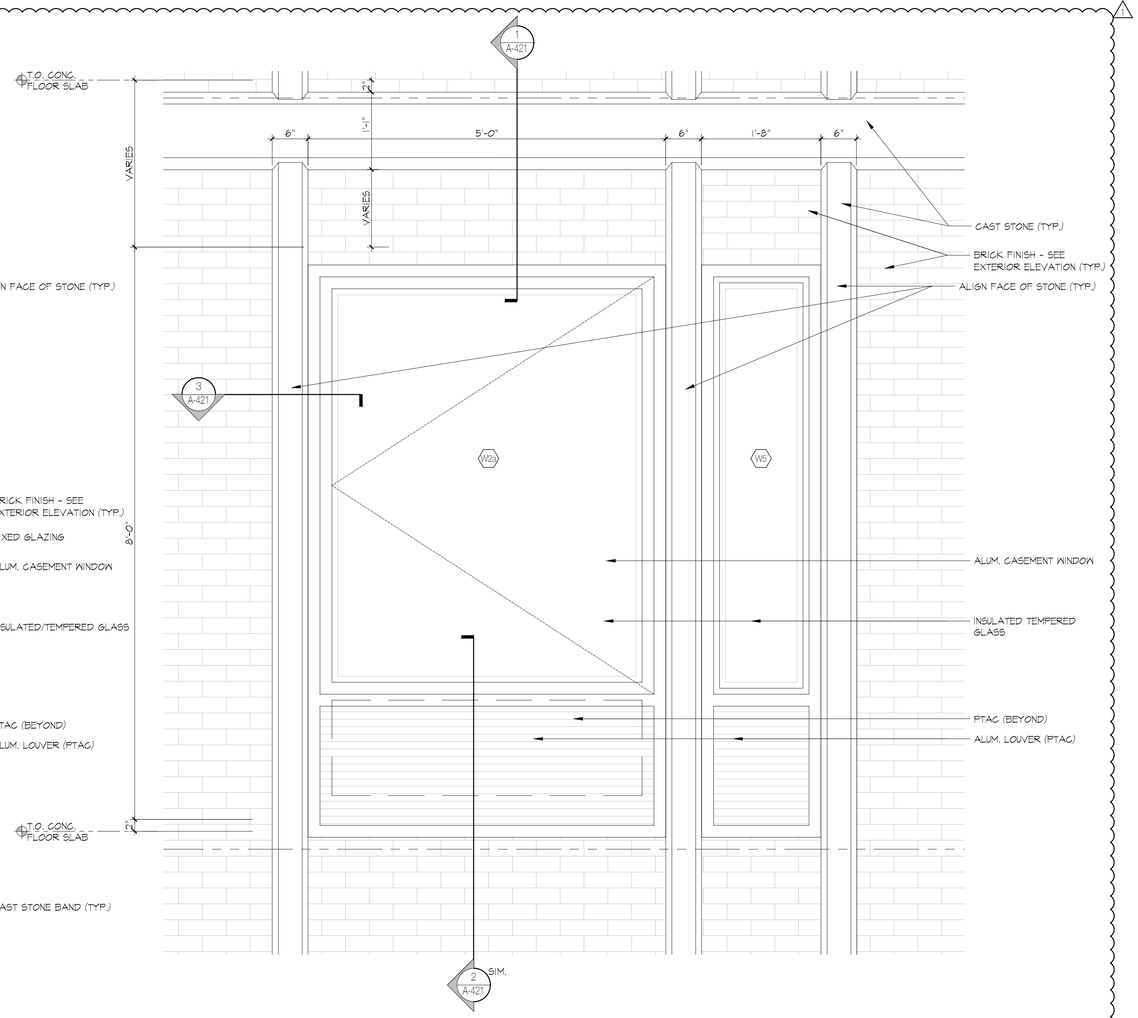
NYC DOB NUMBER: 321191802



1 A-200 — ALUM. WINDOW ELEVATION @ BRICK FINISH / CAST STONE BAND

SCALE : 1" = 1'-0"

NOTES:
G.C. SHALL COORDINATE SIZE OF PTAC LOUVER REQUIRED WITH WINDOW MANUFACTURER



2 A-200 — ALUM. WINDOW ELEVATION @ BRICK FINISH

SCALE : 1" = 1'-0"

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:
AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:
SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:
McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
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MEP ENGINEER:
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BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:
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154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
1 08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
05.03.19	PAA TO D.O.B.
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
01.05.18	REVISED & ISSUED TO D.O.B. FOR REVIEW AND COMMENTS
09.29.17	REVISED AS PER DOB COMMENTS
09.15.17	80% PROGRESS SET
08.11.17	REVISED AS PER DOB COMMENTS

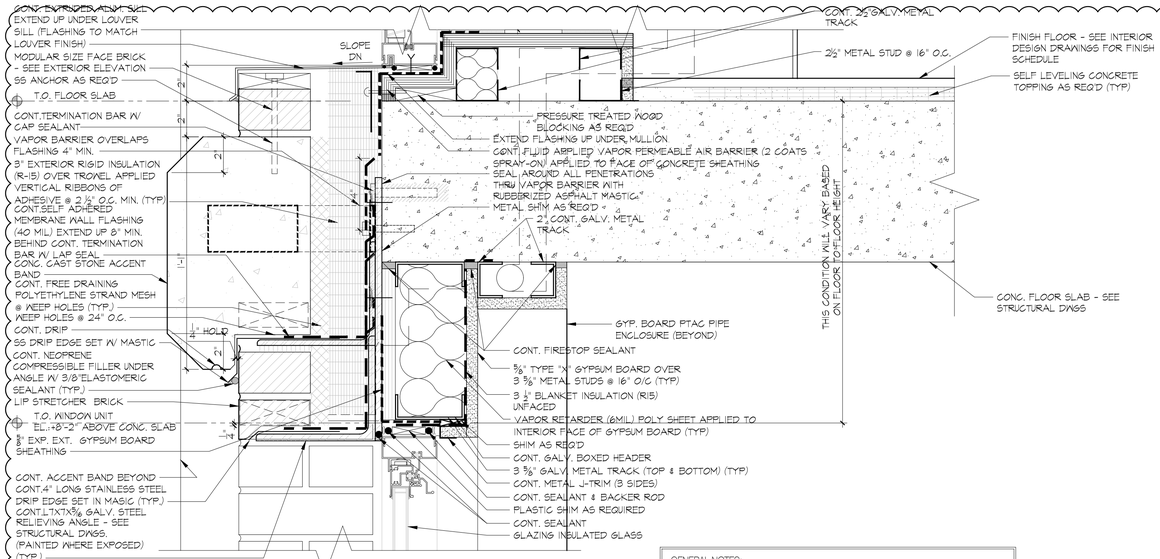
SHEET TITLE:

TYPICAL WINDOW ELEVATIONS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

ISSUE DATE: 10-19-15
PROJECT NO: #1520
DRAWN BY: A.F.M.
CHECKED BY: T.L.
SCALE: AS NOTED
SHEET NO:
DRAWING NO: A-420.01
NYC DOB NUMBER: 321191802

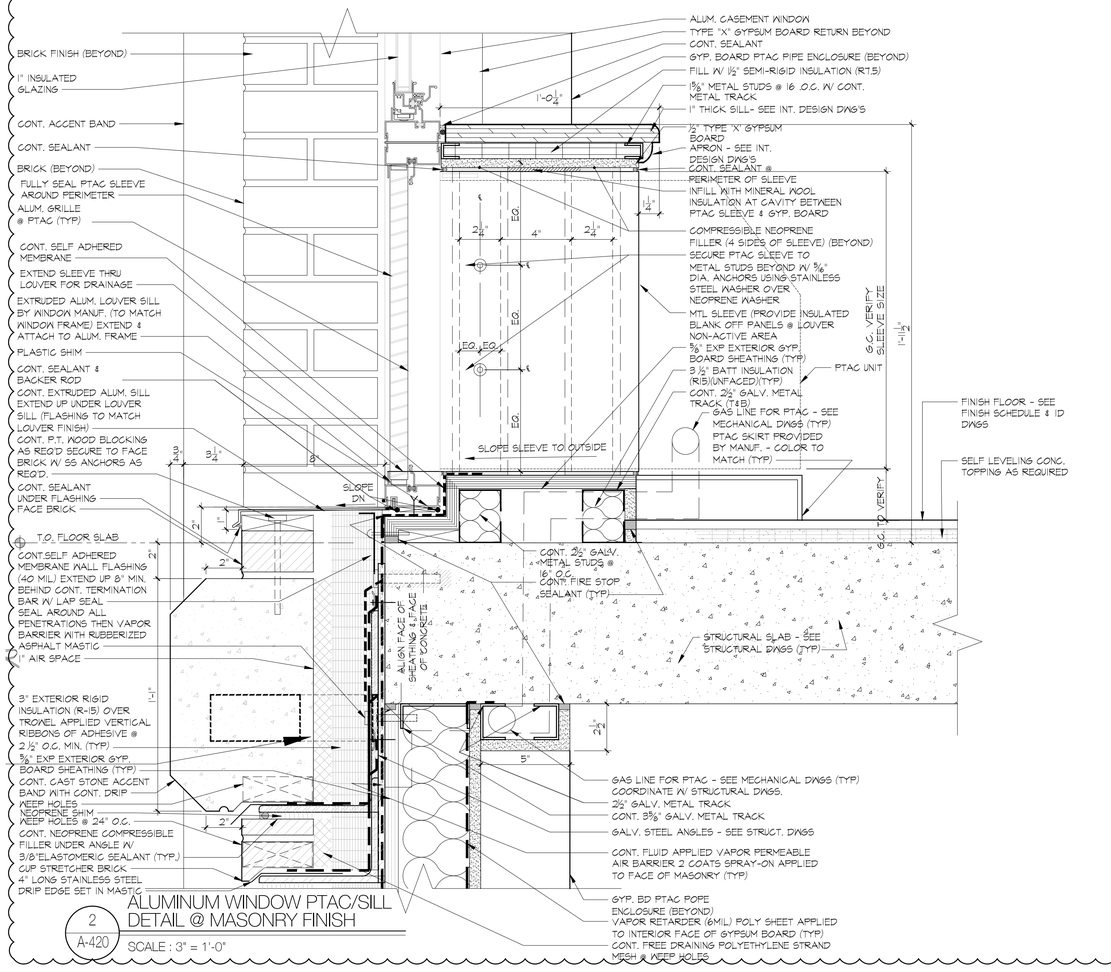


1 / A-420 — ALUMINUM WINDOW HEAD DETAIL @ MASONRY FINISH

SCALE : 3" = 1'-0"

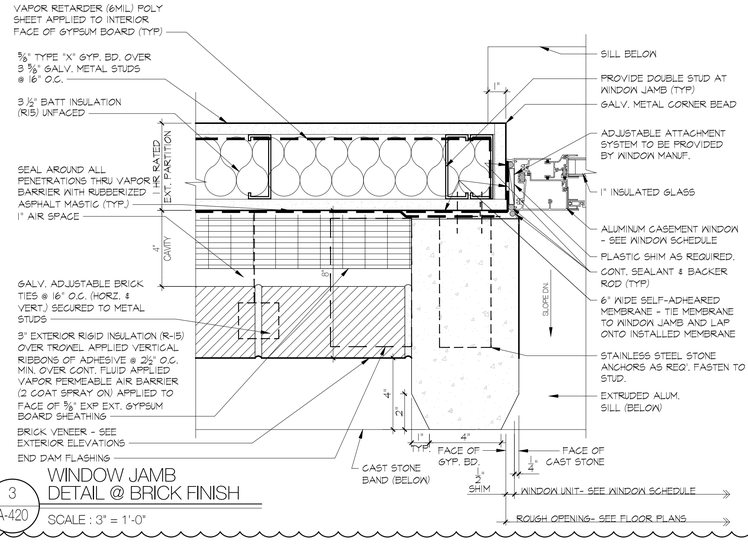
GENERAL NOTES:

1. ALL PTAC GAS PIPING SHALL BE CONCEALED IN ⅝" TYPE "X" GYPSUM BOARD SOFFITS (HORIZONTAL LINES) AND A GYPSUM BOARD ENCLOSURE OF ALL VERTICAL PIPES
2. NO PIPING SHALL BE LEFT EXPOSED
3. FOR END DAM FLASHING DETAIL - SEE DWG A-412
4. SEAL ALL PENETRATIONS THRU EXTERIOR SHEATHING WITH FIRE STOP SEALANT AS REQ'D.
5. PROVIDE BRICK TIES AS REQ'D.



2 / A-420 — ALUMINUM WINDOW PTAC/SILL DETAIL @ MASONRY FINISH

SCALE : 3" = 1'-0"



3 / A-420 — WINDOW JAMB DETAIL @ BRICK FINISH

SCALE : 3" = 1'-0"

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:

AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:

SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:

McNAMARA - SALVIA
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MEP ENGINEER:

A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:

ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

1	05.15.19 PAA TO D.O.B.
	08.02.19 99% CONSTRUCTION SET
	05.31.19 BID SET
	05.03.19 PAA TO D.O.B.
	07.27.18 90% PROGRESS SET
	06.04.18 RE-ISSUED TO D.O.B.
	01.05.18 REVISED & ISSUED TO D.O.B. FOR REVIEW AND COMMENTS
	09.29.17 REVISED AS PER DOB COMMENTS
	09.15.17 80% PROGRESS SET
	08.11.17 REVISED AS PER DOB COMMENTS
DATE	SUBMISSIONS / REVISIONS

SHEET TITLE:

TYPICAL WINDOW DETAILS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

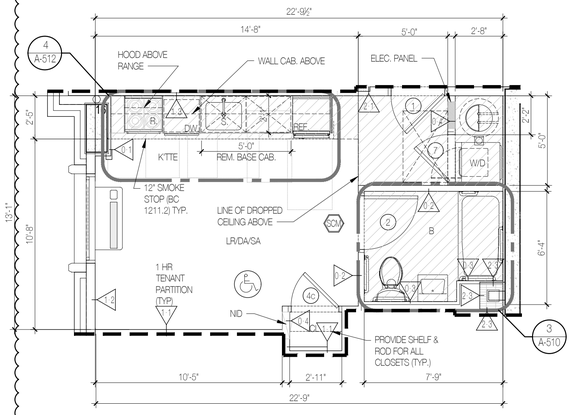
ISSUE DATE: 10-19-15 PROJECT NO: #1520

DRAWN BY: A.F.M. CHECKED BY: T.L.

SCALE: AS NOTED SHEET NO:

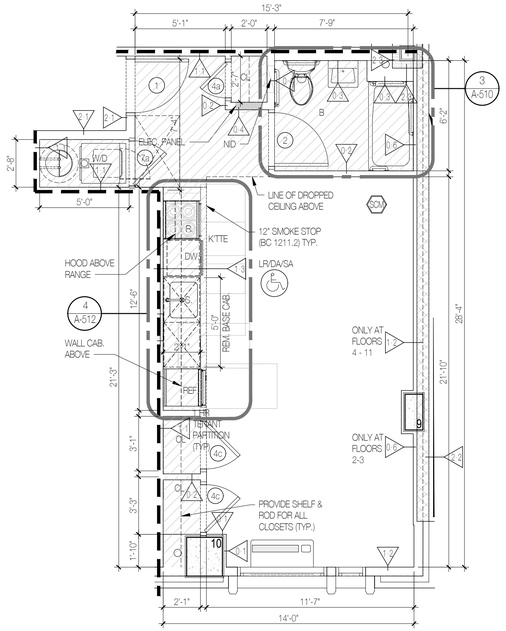
DRAWING NO: A-421.01

NYC DOB NUMBER: 321191802



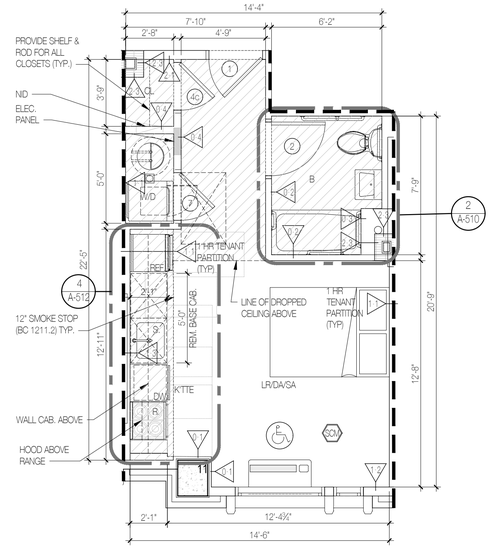
APARTMENT TYPE A1
GROSS AREA: 334.91 SQ. FT.
NET AREA: 292.98 SQ. FT.

SCALE : ⅛" = 1'-0"



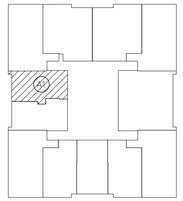
APARTMENT TYPE A2
GROSS AREA: 491.21 SQ. FT.
NET AREA: 423.67 SQ. FT.

SCALE : ⅛" = 1'-0"



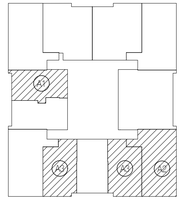
APARTMENT TYPE A3
GROSS AREA: 359.27 SQ. FT.
NET AREA: 321.38 SQ. FT.

SCALE : ⅛" = 1'-0"



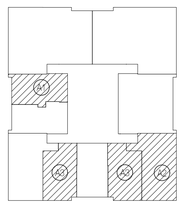
KEY AT 12TH

NOT TO SCALE



KEY AT 4TH -11TH

NOT TO SCALE



KEY AT 2ND - 3RD

NOT TO SCALE

N

LIGHT AND VENTILATION SCHEDULE					
ROOM NAME	FLOOR AREA (sq.ft.)	LIGHT		VENT	
		10% REQ.	PROV.	5% REQ.	PROV.
GROSS AREA: 334.91 SQ. FT.					
LR./DA./SA.	179.03 SQ. FT.	17.90 SQ. FT.	23.83 SQ. FT.	8.95 SQ. FT.	27.22 SQ. FT.

LIGHT AND VENTILATION SCHEDULE					
ROOM NAME	FLOOR AREA (sq.ft.)	LIGHT		VENT	
		10% REQ.	PROV.	5% REQ.	PROV.
GROSS AREA: 491.21 SQ. FT.					
LR./DA./SA.	294.24 SQ. FT.	29.42 SQ. FT.	30.44 SQ. FT.	14.71 SQ. FT.	27.22 SQ. FT.

LIGHT AND VENTILATION SCHEDULE					
ROOM NAME	FLOOR AREA (sq.ft.)	LIGHT		VENT	
		10% REQ.	PROV.	5% REQ.	PROV.
GROSS AREA: 359.27 SQ. FT.					
LR./DA./SA.	203.02 SQ. FT.	20.30 SQ. FT.	30.44 SQ. FT.	10.15 SQ. FT.	27.22 SQ. FT.

WALL TYPE LEGEND:

NON RATED

W1 FURRING AT INTERIOR CMU WALL - (1) LAYER 5/8" TYPE "X" GYPSUM BOARD OVER 1½" METAL GALVANIZED STUDS @ 16" O.C.

W2 TYPICAL PARTITION - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON EACH SIDE OF 2½" METAL STUDS @ 16" O.C.

W3 BATHROOM CHASE WALL PARTITION - (1) LAYER ⅝" TYPE "X" WATER RESISTANT GYPSUM BOARD ONE SIDE OF 3⅝" METAL STUDS @ 16" O.C. *SEE INTERIOR DESIGN DRAWINGS FOR WALL THICKNESSES.

W4 PARTITION - (1) LAYER OF ⅝" TYPE "X" GYPSUM BOARD, ON EACH SIDE OF 3 ⅝" METAL STUDS @ 16" O.C. (@ APARTMENT ELECTRICAL PANEL/ NETWORK INTERFACE DEVICE PANEL)

W5 FURRING AT INTERIOR CMU WALL (PUBLIC CORRIDOR SIDE) - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD OVER ½" GALV. METAL STUDS @ 16 O.C.

W6 FURRING AT EXTERIOR CMU WALL - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON 1½" GALV. METAL Z FURRING @ 16 O.C. W/ 1 ½" SEMI-RIGID INSULATION (R7.5) UNFACED

1 HOUR RATED

W1 TENANT SEPARATION PARTITION - (1) LAYER OF ⅝" TYPE "X" GYPSUM BOARD ON (1) SIDE, (2) LAYERS OF ⅝" TYPE "X" GYPSUM BOARD ON OTHER SIDE OF 3 ⅝" METAL STUDS @ 16" O.C. WITH 3 ½" SOUND ATTENUATION INSULATION. EXTEND STUDS & GYPSUM BOARD UP TO UNDERSIDE OF SLAB & SEAL TIGHT TO UNDERSIDE OF SLAB AND/OR ROOF DECK W/ CONT. FIRESTOP SEALANT& FIRESAFING INSULATION (GA FILE #WP-1052) (STC 50-54)

W2 EXTERIOR PARTITION - ⅝" TYPE "X" GYPSUM BOARD, INSIDE) ½" EXP.EXTERIOR GYPSUM BOARD SHEATHING (OUTSIDE) OVER 3⅝" METAL STUDS @ 16" O.C. WITH 3½" BATT INSULATION (UNFACED) (R-15) (UL #U419)

W3 TENANT SEPARATION CHASE WALL - (2) ROWS OF (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½" METAL STUDS @ 16" O.C. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF SLAB OR ROOF SLAB. SEAL TIGHT TO SLAB WITH cONT. FIRESTOP SEALANT. SEAL ALL PENETRATIONS THRU CHASE WALL WITH FIRESAFING INSULATION AND CONT. FIRESTOP SEALANT AS REQ. PROVIDE HORIZONTAL 2½"MTL STUD BRACING @ 48" O.C. MAX. (UL#V442) PROVIDE INSULATION AS REQUIRED TO ACHIEVE A MIN. STC RATING OF 50)

2 HOUR RATED

W1 INTERIOR PARTITION - (2) LAYERS 5/8" TYPE "X" GYPSUM BOARD ON EACH SIDE 3 ⅝" METAL STUDS @ 16" O.C. WITH 3½" SOUND ATTENUATION INSULATION. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF FLOOR DECK OR ROOF DECK. SEAL TIGHT TO DECK W/ CONT. FIRESTOP SEALANT & FIRESAFING. (GA FILE #WP-1522 STC 55-59).

W2 CMU WALL - CMU WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE BLOCK COURSES. SEAL TOP OF CONCRETE/METAL BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE DECK OR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESAFING INSULATION WHERE GAP EXIST. BETWEEN TOP OF WALL AND BOTTOM OF DECK (UL #U806)

W3 MECHANICAL SHAFT WALL - (2) LAYERS OF ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½" METAL C-H STUDS @ 24" O.C. WITH (1) LAYER OF 1" TYPE "X" GYPSUM LINER PANEL ON SHAFT SIDE. W/ 1" MINERAL FIBER INSULATION IN CAVITY SEAL TOP OF WALL TIGHT TO UNDERSIDE OF CONCRETE DECK W/ CONT. FIRESTOP SEALANT. GA FILE #7095 (STC-45-49)

W4 PLUMBING CHASE WALL - (2) ROWS OF (2) LAYERS ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½"METAL STUDS @ 16" O.C. EXTEND GYPSUM BOARD & STUD UP TO UNDERSIDE OF CONCRETE SLAB. SEAL TIGHT TO SLAB WITH CONTINUOUS FIRESTOP SEALANT. SEAL ALL PENETRATIONS THRU CHASE WALL WITH FIRESAFING INSULATION AND CONTINUOUS FIRESTOP SEALANT AS REQUIRED PROVIDE HORIZONTAL 2½" MTL. STUD BRACING @ 48" O.C. MAX (UL #V442) (PROVIDED INSULATION AS REQUIRED TO ACHIEVE A MIN. STC RATING OF 50)

3 HOUR RATED

W1 (1) LAYER ⅝" TYPE "X" GYPSUM BOARD OVER 7/8" METAL HAT CHANNELS @ 24" O.C. OVER 2 HR RATED CONCRETE BLOCK WALL WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF SLAB ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESAFING INSULATION WHERE A GAP EXISTS BETWEEN TOP OF WALL AND BOTTOM OF CONCRETE DECK (UL #U914) (PROVIDE STC RATING OF 50-54 AT COMPACTOR CHUTE ENCLOSURE ADJACENT TO DWELLING UNITS)

GENERAL NOTES:

1. ALL ENLARGED PLAN DIMENSIONS ARE TAKEN FINISH TO FINISH (U.O.N.).
2. G.C. SHALL SUBMIT SHOP DRAWINGS TO ARCHITECT FOR REVIEW INDICATING SIZE, GAUGE AND SPACING OF ALL METAL STUDS AND REQUIRED METAL BOXED HEADERS SIGNED AND SEALED BY A NYS LICENSED ENGINEER.
3. AS PER NYCBC 1107.2.8, AT THE OPTION OF THE OWNER, LAUNDRY EQUIPMENT CONFORMING TO THIS SECTION WITHIN THE DWELLING UNIT OR SLEEPING UNIT MAY BE PROVIDED AT THE TIME A PERSON WITH PHYSICAL DISABILITIES TAKES OCCUPANCY OF THE UNIT, OR WITHIN 10 DAYS OF THE DATE THE REQUEST IS MADE BY A PERSON WITH PHYSICAL DISABILITIES, WHICHEVER IS LATER, AT THE OWNER'S EXPENSE.
4. WATER CURTAIN TYPE SPRINKLER HEADS PROVIDED ON ALL FLOORS
5. ALL FURNITURE IS FOR REFERENCE ONLY. PLEASE SEE ID DRAWINGS FOR MORE INFORMATION.
6. 6'-6" MIN. CLEAR OPENING UNDER SMOKESTOP

LEGEND:

- CONCRETE FOUNDATION WALL
- CONCRETE BLOCK WALL - 2HR FIRE RATED
- GYPSUM BOARD PARTITION - SEE PLAN FOR SIZE.
- MASONRY VENEER

- REMOVABLE KITCHEN BASE CABINET - 2'-6" WIDE x 2'-0" DEEP
- HANDICAP ADAPTABLE APARTMENT UNIT
- PARTITION - SEE WALL TYPE LEGEND
- 5'-0" DIAMETER CLEAR HANDICAP FLOOR TURNING SPACE.
- "T" FLOOR TURNING SPACE
- 30" x 48" CLEAR FLOOR SPACE
- FIRE RATED SHAFT WALL.
- W WINDOW - SEE WINDOW SCHEDULE ON DWG. A-601
- X DOOR & FRAME - SEE DOOR SCHEDULE DRAWING A-600
- SCN HARDWIRED CARBON MONOXIDE DETECTOR (BC 907) NO MORE THAN 15FT AWAY FROM BEDROOM DOORS
- EXIT LIGHT AND SIGN - WALL MOUNTED
- EXIT LIGHT AND SIGN - CEILING MOUNTED
- ELECTRICAL PANEL UNIT
- NETWORK INTERFACE DEVICE PANEL
- SUSPENDED GYPSUM BOARD
- COLUMN & COLUMN NUMBER
- BATHROOM DOORS & FRAMES SHALL BE PROVIDED W/ MORTISED HINGE & LATCH BLANKS TO PERMIT FUTURE REVERSAL OF DOOR ON THE SAME FRAME
- # OF PARKING SPACES
- X PARKING STACKER UNIT

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:
AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:
SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:
McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:
A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:
ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
05.03.19	PAA TO D.O.B.
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
01.26.18	REISSUED TO D.O.B.
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS

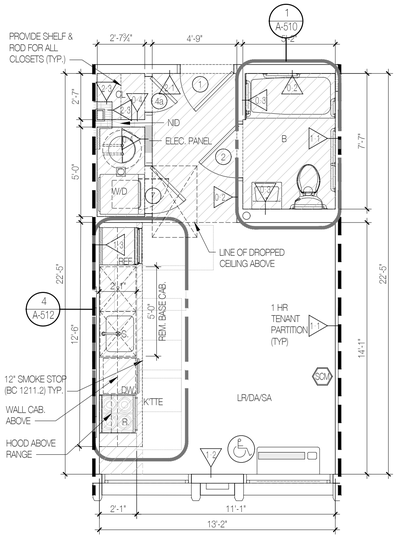
SHEET TITLE:

ENLARGED 0BR APARTMENT LAYOUTS

SEAL & SIGNATURE

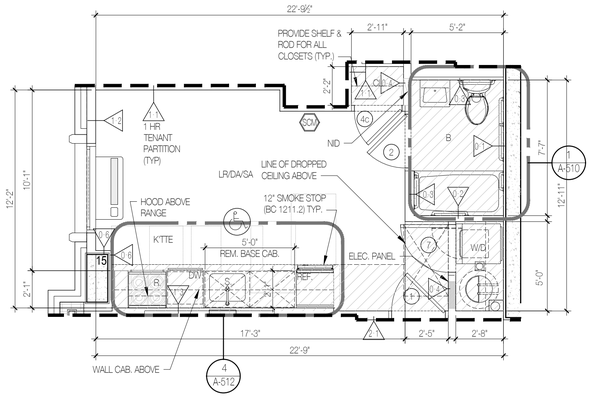
REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

ISSUE DATE: 10-19-15
PROJECT NO: #1520
DRAWN BY: M.B.
CHECKED BY: A.F.M. / T.L.
SCALE: 1/4"=1'-0"
SHEET NO:
DRAWING NO: A-500.01
NYC DOB NUMBER: 321191802



APARTMENT TYPE A4
GROSS AREA: 331.59 SQ. FT.
NET AREA: 296.75 SQ. FT.

SCALE : ¼" = 1'-0"

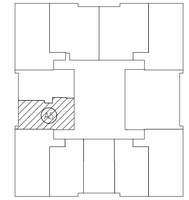


APARTMENT TYPE A5
GROSS AREA: 332.03 SQ. FT.
NET AREA: 290.52 SQ. FT.

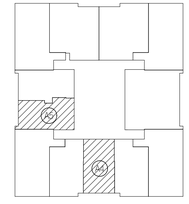
SCALE : ¼" = 1'-0"

LIGHT AND VENTILATION SCHEDULE					
ROOM NAME	FLOOR AREA (sq.ft.)	LIGHT		VENT	
		10% REQ.	PROV.	5% REQ.	PROV.
GROSS AREA: 331.59 SQ. FT.					
LR./DA./SA.	191.91 SQ. FT.	19.19 SQ. FT.	47.66 SQ. FT.	9.60 SQ. FT.	54.44 SQ. FT.

LIGHT AND VENTILATION SCHEDULE					
ROOM NAME	FLOOR AREA (sq.ft.)	LIGHT		VENT	
		10% REQ.	PROV.	5% REQ.	PROV.
GROSS AREA: 332.03 SQ. FT.					
LR./DA./SA.	181.66 SQ. FT.	18.17 SQ. FT.	23.83 SQ. FT.	9.08 SQ. FT.	27.22 SQ. FT.



NOT TO SCALE



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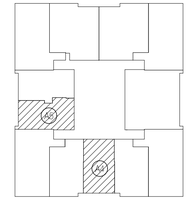


NOT TO SCALE

WALL TYPE LEGEND:

NON RATED

A1 FURRING AT INTERIOR CMU WALL - (1) LAYER 5/8" TYPE "X" GYPSUM BOARD OVER 1½" METAL GALVANIZED STUDS @ 16" O.C.

A2 TYPICAL PARTITION - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON EACH SIDE OF 2 ½" METAL STUDS @ 16" O.C.

A3 BATHROOM CHASE WALL PARTITION - (1) LAYER ⅝" TYPE "X" WATER RESISTANT GYPSUM BOARD ONE SIDE OF 3⅝" METAL STUDS @ 16" O.C. *SEE INTERIOR DESIGN DRAWINGS FOR WALL THICKNESSES.

A4 PARTITION - (1) LAYER OF ⅝" TYPE "X" GYPSUM BOARD, ON EACH SIDE OF 3 ⅝" METAL STUDS @ 16" O.C. (@ APARTMENT ELECTRICAL PANEL/ NETWORK INTERFACE DEVICE PANEL)

A5 FURRING AT INTERIOR CMU WALL (PUBLIC CORRIDOR SIDE) - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD OVER ½" GALV. METAL STUDS @ 16 O.C.

A6 FURRING AT EXTERIOR CMU WALL - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON 1½" GALV. METAL Z FURRING @ 16 O.C. W/ 1 ½" SEMI-RIGID INSULATION (R7.5) UNFACED

1 HOUR RATED

1A TENANT SEPARATION PARTITION - (1) LAYER OF ⅝" TYPE "X" GYPSUM BOARD ON (1) SIDE, (2) LAYERS OF ⅝" TYPE "X" GYPSUM BOARD ON OTHER SIDE OF 3 ⅝" METAL STUDS @ 16" O.C. WITH 3 ½" SOUND ATTENUATION INSULATION. EXTEND STUDS & GYPSUM BOARD UP TO UNDERSIDE OF SLAB & SEAL TIGHT TO UNDERSIDE OF SLAB AND/OR ROOF DECK W/ CONT. FIRESTOP SEALANT& FIRESAFING INSULATION (GA FILE #WP-1052) (STC 50-54)

1B EXTERIOR PARTITION - ⅝" TYPE "X" GYPSUM BOARD, (INSIDE) ⅝" EXP EXTERIOR GYPSUM BOARD SHEATHING (OUTSIDE) OVER 3⅝" METAL STUDS @ 16" O.C. WITH 3½" BATT INSULATION (UNFACED) (R-15) (UL #U419)

1C TENANT SEPARATION CHASE WALL - (2) ROWS OF (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½" METAL STUDS @ 16" O.C. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF SLAB OR ROOF SLAB. SEAL TIGHT TO SLAB WITH cONT. FIRESTOP SEALANT. SEAL ALL PENETRATIONS THRU CHASE WALL WITH FIRESAFING INSULATION AND CONT. FIRESTOP SEALANT AS REQ. PROVIDE HORIZONTAL 2½"MTL. STUD BRACING @ 48" O.C. MAX. (UL#V442) PROVIDE INSULATION AS REQUIRED TO ACHIEVE A MIN. STC RATING OF 50)

2 HOUR RATED

2A INTERIOR PARTITION - (2) LAYERS 5/8" TYPE "X" GYPSUM BOARD ON EACH SIDE 3 ⅝" METAL STUDS @ 16" O.C. WITH 3½" SOUND ATTENUATION INSULATION. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF FLOOR DECK OR ROOF DECK. SEAL TIGHT TO DECK W/ CONT. FIRESTOP SEALANT & FIRESAFING. (GA FILE #WP-1522 STC 55-59).

2B CMU WALL - CMU WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE BLOCK COURSES. SEAL TOP OF CONCRETE/METAL BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE DECK OR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESAFING INSULATION WHERE GAP EXIST. BETWEEN TOP OF WALL AND BOTTOM OF DECK (UL #U306)

2C MECHANICAL SHAFT WALL - (2) LAYERS OF ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2 ½" METAL C-H STUDS @ 24" O.C. WITH (1) LAYER OF 1" TYPE "X" GYPSUM LINER PANEL ON SHAFT SIDE. W/ 1" MINERAL FIBER INSULATION IN CAVITY SEAL TOP OF WALL TIGHT TO UNDERSIDE OF CONCRETE DECK W/ CONT. FIRESTOP SEALANT. GA FILE #7095 (STC-65-69)

2D PLUMBING CHASE WALL - (2) ROWS OF (2) LAYERS ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½"METAL STUDS @ 16" O.C. EXTEND GYPSUM BOARD & STUD UP TO UNDERSIDE OF CONCRETE SLAB. SEAL TIGHT TO SLAB WITH CONTINUOUS FIRESTOP SEALANT. SEAL ALL PENETRATIONS THRU CHASE WALL WITH FIRESAFING INSULATION AND CONTINUOUS FIRESTOP SEALANT AS REQUIRED PROVIDE HORIZONTAL 2½" MTL. STUD BRACING @ 48" O.C. MAX (UL #V442) (PROVIDED INSULATION AS REQUIRED TO ACHIEVE A MIN. STC RATING OF 50)

3 HOUR RATED

3A (1) LAYER 5/" TYPE "X" GYPSUM BOARD OVER ⅝" METAL HAT CHANNELS @ 24" O.C. OVER 2 HR RATED CONCRETE BLOCK WALL WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF SLAB ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESAFING INSULATION WHERE A GAP EXISTS BETWEEN TOP OF WALL AND BOTTOM OF CONCRETE DECK (UL #U914) (PROVIDE STC RATING OF 50-54 AT COMPACTOR CHUTE ENCLOSURE ADJACENT TO DWELLING UNITS)

GENERAL NOTES:

1. ALL ENLARGED PLAN DIMENSIONS ARE TAKEN FINISH TO FINISH (U.O.N.).
2. G.C. SHALL SUBMIT SHOP DRAWINGS TO ARCHITECT FOR REVIEW INDICATING SIZE, GAUGE AND SPACING OF ALL METAL STUDS AND REQUIRED METAL BOXED HEADERS SIGNED AND SEALED BY A NYS LICENSED ENGINEER
3. AS PER NYCBC 1107.2.8, AT THE OPTION OF THE OWNER, LAUNDRY EQUIPMENT CONFORMING TO THIS SECTION WITHIN THE DWELLING UNIT OR SLEEPING UNIT MAY BE PROVIDED AT THE TIME A PERSON WITH PHYSICAL DISABILITIES TAKES OCCUPANCY OF THE UNIT, OR WITHIN 10 DAYS OF THE DATE THE REQUEST IS MADE BY A PERSON WITH PHYSICAL DISABILITIES, WHICHEVER IS LATER, AT THE OWNER'S EXPENSE.
4. WATER CURTAIN TYPE SPRINKLER HEADS PROVIDED ON ALL FLOORS
5. ALL FURNITURE IS FOR REFERENCE ONLY. PLEASE SEE ID DRAWINGS FOR MORE INFORMATION.
6. 6'-6" MIN. CLEAR OPENING UNDER SMOKESTOP

LEGEND:

- CONCRETE FOUNDATION WALL
- CONCRETE BLOCK WALL - 2HR FIRE RATED
- GYPSUM BOARD PARTITION - SEE PLAN FOR SIZE.
- MASONRY VENEER

REMOVABLE KITCHEN BASE CABINET - 2'-6" WIDE x 2'-0" DEEP

HANDICAP ADAPTABLE APARTMENT UNIT

PARTITION - SEE WALL TYPE LEGEND

5'-0" DIAMETER CLEAR HANDICAP FLOOR TURNING SPACE.

"T" FLOOR TURNING SPACE

30" x 48" CLEAR FLOOR SPACE

FIRE RATED SHAFT WALL.

W WINDOW - SEE WINDOW SCHEDULE ON DWG. A-601

X DOOR & FRAME - SEE DOOR SCHEDULE DRAWING A-600

CM HARDWIRED CARBON MONOXIDE DETECTOR (BC 907) NO MORE THAN 15FT AWAY FROM BEDROOM DOORS

EXIT LIGHT AND SIGN - WALL MOUNTED

EXIT LIGHT AND SIGN - CEILING MOUNTED

ELECTRICAL PANEL UNIT

NETWORK INTERFACE DEVICE PANEL

SUSPENDED GYPSUM BOARD

COLUMN & COLUMN NUMBER

BATHROOM DOORS & FRAMES SHALL BE PROVIDED W/ MORTISED HINGE & LATCH BLANKS TO PERMIT FUTURE REVERSAL OF DOOR ON THE SAME FRAME

OF PARKING SPACES

PARKING STACKER UNIT

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:

AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:

SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:

McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:

A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:

ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
05.03.19	PAA TO D.O.B.
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
01.26.18	REISSUED TO D.O.B.
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS
DATE	SUBMISSIONS / REVISIONS

SHEET TITLE:

ENLARGED 0BR APARTMENT LAYOUTS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

ISSUE DATE: 10-19-15
PROJECT NO: #1520

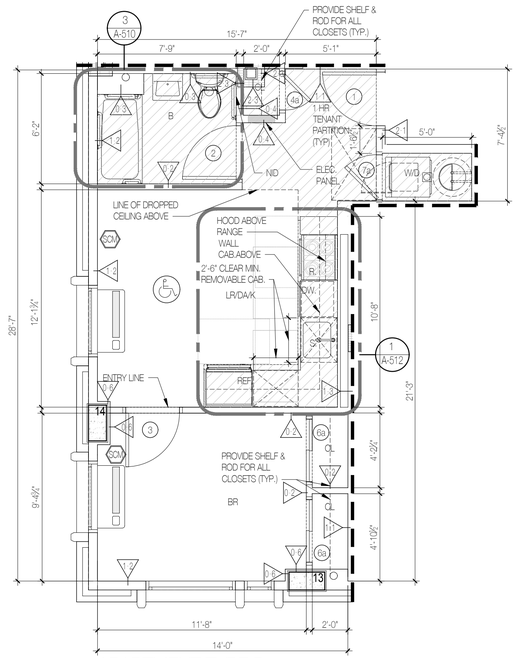
DRAWN BY: M.B.
CHECKED BY: A.F.M. / T.L.

SCALE: 1/4"=1'-0"
SHEET NO:

DRAWING NO:

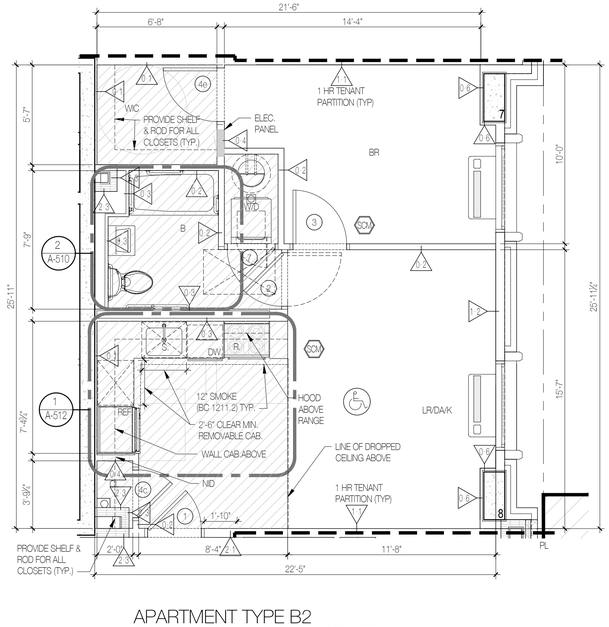
A-501.01

NYC DOB NUMBER: 321191802



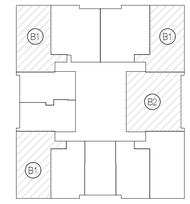
APARTMENT TYPE B1
GROSS AREA: 494.27 SQ. FT.
NET AREA: 418.42 SQ. FT.

SCALE : ¼" = 1'-0"



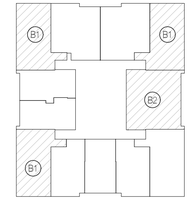
APARTMENT TYPE B2
GROSS AREA: 653.67 SQ. FT.
NET AREA: 568.19 SQ. FT.

SCALE : ¼" = 1'-0"



KEY AT 4TH -11TH

NOT TO SCALE



KEY AT 2ND - 3RD

NOT TO SCALE

LIGHT AND VENTILATION SCHEDULE					
ROOM NAME	FLOOR AREA (sq.ft.)	LIGHT		VENT	
		10% REQ.	PROV.	5% REQ.	PROV.
GROSS AREA: 494.27 SQ. FT.					
LR./DA./K.	162.86 SQ. FT.	16.29 SQ. FT.	18.33 SQ. FT.	8.14 SQ. FT.	21.39 SQ. FT.
BR. 1	107.52 SQ. FT.	10.75 SQ. FT.	18.33 SQ. FT.	5.38 SQ. FT.	21.39 SQ. FT.

LIGHT AND VENTILATION SCHEDULE					
ROOM NAME	FLOOR AREA (sq.ft.)	LIGHT		VENT	
		10% REQ.	PROV.	5% REQ.	PROV.
GROSS AREA: 653.67 SQ. FT.					
LR./DA.	178.36 SQ. FT.	17.84 SQ. FT.	23.83 SQ. FT.	8.92 SQ. FT.	27.22 SQ. FT.
BR. 1	130.94 SQ. FT.	13.09 SQ. FT.	23.83 SQ. FT.	6.55 SQ. FT.	27.22 SQ. FT.

WALL TYPE LEGEND:

NON RATED

△1 FURRING AT INTERIOR CMU WALL - (1) LAYER 5/8" TYPE "X" GYPSUM BOARD OVER 1½" METAL GALVANIZED STUDS @ 16" O.C.

△2 TYPICAL PARTITION - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON EACH SIDE OF 2½" METAL STUDS @ 16" O.C.

△3 BATHROOM CHASE WALL PARTITION - (1) LAYER ⅝" TYPE "X" WATER RESISTANT GYPSUM BOARD ONE SIDE OF 3⅝" METAL STUDS @ 16" O.C. *SEE INTERIOR DESIGN DRAWINGS FOR WALL THICKNESSES.

△4 PARTITION - (1) LAYER OF ⅝" TYPE "X" GYPSUM BOARD, ON EACH SIDE OF 3⅝" METAL STUDS @ 16" O.C. (@ APARTMENT ELECTRICAL PANEL/ NETWORK INTERFACE DEVICE PANEL)

△5 FURRING AT INTERIOR CMU WALL (PUBLIC CORRIDOR SIDE) - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD OVER ⅞" GALV. METAL STUDS @ 16 O.C.

△6 FURRING AT EXTERIOR CMU WALL - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON 1½" GALV. METAL Z FURRING @ 16 O.C. W/ 1½" SEMI-RIGID INSULATION (R7.5) UNFACED

1 HOUR RATED

△1.1 TENANT SEPARATION PARTITION - (1) LAYER OF ⅝" TYPE "X" GYPSUM BOARD ON (1) SIDE, (2) LAYERS OF ⅝" TYPE "X" GYPSUM BOARD ON OTHER SIDE OF 3⅝" METAL STUDS @ 16" O.C. WITH 3½" SOUND ATTENUATION INSULATION. EXTEND STUDS & GYPSUM BOARD UP TO UNDERSIDE OF SLAB & SEAL TIGHT TO UNDERSIDE OF SLAB AND/OR ROOF DECK W/ CONT. FIRESTOP SEALANT& FIRESAFING INSULATION (GA FILE #WP-1052) (STC 50-54)

△1.2 EXTERIOR PARTITION - ⅝" TYPE "X" GYPSUM BOARD, (INSIDE) ⅝" EXP.EXTERIOR GYPSUM BOARD SHEATHING (OUTSIDE) OVER 3⅝" METAL STUDS @ 16" O.C. WITH 3½" BATT INSULATION (UNFACED) (R-15) (UL #U419)

△1.3 TENANT SEPARATION CHASE WALL - (2) ROWS OF (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½" METAL STUDS @ 16" O.C. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF SLAB OR ROOF SLAB. SEAL TIGHT TO SLAB WITH CONT. FIRESTOP SEALANT. SEAL ALL PENETRATIONS THRU CHASE WALL WITH FIRESAFING INSULATION AND CONT. FIRESTOP SEALANT AS REQ. PROVIDE HORIZONTAL 2½"MTL. STUD BRACING @ 48" O.C. MAX. (UL#V442) PROVIDE INSULATION AS REQUIRED TO ACHIEVE A MIN. STC RATING OF 50)

2 HOUR RATED

△2.1 INTERIOR PARTITION - (2) LAYERS 5/8" TYPE "X" GYPSUM BOARD ON EACH SIDE 3⅝" METAL STUDS @ 16" O.C. WITH 3½" SOUND ATTENUATION INSULATION, EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF FLOOR DECK OR ROOF DECK. SEAL TIGHT TO DECK W/ CONT. FIRESTOP SEALANT & FIRESAFING. (GA FILE #WP-1522 STC 55-59).

△2.2 CMU WALL - CMU WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE BLOCK COURSES. SEAL TOP OF CONCRETE/METAL BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE DECK OR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESAFING INSULATION WHERE GAP EXIST. BETWEEN TOP OF WALL AND BOTTOM OF DECK (UL #U906)

△2.3 MECHANICAL SHAFT WALL - (2) LAYERS OF ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½" METAL C-H STUDS @ 24" O.C. WITH (1) LAYER OF 1" TYPE "X" GYPSUM LINER PANEL ON SHAFT SIDE. W/ 1" MINERAL FIBER INSULATION IN CAVITY SEAL TOP OF WALL TIGHT TO UNDERSIDE OF CONCRETE DECK W/ CONT. FIRESTOP SEALANT. GA FILE #7096 (STC-45-49)

△2.4 PLUMBING CHASE WALL - (2) ROWS OF (2) LAYERS ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½"METAL STUDS @ 16" O.C. EXTEND GYPSUM BOARD & STUD UP TO UNDERSIDE OF CONCRETE SLAB. SEAL TIGHT TO SLAB WITH CONTINUOUS FIRESTOP SEALANT. SEAL ALL PENETRATIONS THRU CHASE WALL WITH FIRESAFING INSULATION AND CONTINUOUS FIRESTOP SEALANT AS REQUIRED PROVIDE HORIZONTAL 2½" MTL. STUD BRACING @ 48" O.C. MAX (UL #V442) (PROVIDED INSULATION AS REQUIRED TO ACHIEVE A MIN. STC RATING OF 50)

3 HOUR RATED

△3.1 (1) LAYER ⅝" TYPE "X" GYPSUM BOARD OVER ⅞" METAL HAT CHANNELS @ 24" O.C. OVER 2 HR RATED CONCRETE BLOCK WALL WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF SLAB ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESAFING INSULATION WHERE A GAP EXISTS BETWEEN TOP OF WALL AND BOTTOM OF CONCRETE DECK (UL #U914) (PROVIDE STC RATING OF 50-54 AT COMPACTOR CHUTE ENCLOSURE ADJACENT TO DWELLING UNITS)

GENERAL NOTES:

1. ALL ENLARGED PLAN DIMENSIONS ARE TAKEN FINISH TO FINISH (U.O.N.).
2. G.C. SHALL SUBMIT SHOP DRAWINGS TO ARCHITECT FOR REVIEW INDICATING SIZE, GAUGE AND SPACING OF ALL METAL STUDS AND REQUIRED METAL BOXED HEADERS SIGNED AND SEALED BY A NYS LICENSED ENGINEER
3. AS PER NYCBC 1107.2.8, AT THE OPTION OF THE OWNER, LAUNDRY EQUIPMENT CONFORMING TO THIS SECTION WITHIN THE DWELLING UNIT OR SLEEPING UNIT MAY BE PROVIDED AT THE TIME A PERSON WITH PHYSICAL DISABILITIES TAKES OCCUPANCY OF THE UNIT, OR WITHIN 10 DAYS OF THE DATE THE REQUEST IS MADE BY A PERSON WITH PHYSICAL DISABILITIES, WHICHEVER IS LATER, AT THE OWNER'S EXPENSE.
4. WATER CURTAIN TYPE SPRINKLER HEADS PROVIDED ON ALL FLOORS
5. ALL FURNITURE IS FOR REFERENCE ONLY. PLEASE SEE ID DRAWINGS FOR MORE INFORMATION.
6. 6'-6" MIN. CLEAR OPENING UNDER SMOKESTOP

LEGEND:

- CONCRETE FOUNDATION WALL
- CONCRETE BLOCK WALL - 2HR FIRE RATED
- GYPSUM BOARD PARTITION - SEE PLAN FOR SIZE.
- MASONRY VENEER

- REMOVABLE KITCHEN BASE CABINET - 2'-6" WIDE x 2'-0" DEEP
- HANDICAP ADAPTABLE APARTMENT UNIT
- PARTITION - SEE WALL TYPE LEGEND
- 5'-0" DIAMETER CLEAR HANDICAP FLOOR TURNING SPACE.
- "T" FLOOR TURNING SPACE
- 30" x 48" CLEAR FLOOR SPACE
- FIRE RATED SHAFT WALL.
- W WINDOW - SEE WINDOW SCHEDULE ON DWG. A-601
- X DOOR & FRAME - SEE DOOR SCHEDULE DRAWING A-600
- CM HARDWIRED CARBON MONOXIDE DETECTOR (BC 907) NO MORE THAN 15FT AWAY FROM BEDROOM DOORS
- EXIT LIGHT AND SIGN - WALL MOUNTED
- EXIT LIGHT AND SIGN - CEILING MOUNTED
- ELECTRICAL PANEL UNIT
- NETWORK INTERFACE DEVICE PANEL
- SUSPENDED GYPSUM BOARD
- COLUMN & COLUMN NUMBER
- BATHROOM DOORS & FRAMES SHALL BE PROVIDED W/ MORTISED HINGE & LATCH BLANKS TO PERMIT FUTURE REVERSAL OF DOOR ON THE SAME FRAME
- # OF PARKING SPACES
- X PARKING STACKER UNIT

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:

AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:

SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:

McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:

A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:

ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
05.03.19	PAA TO D.O.B.
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
01.26.18	REISSUED TO D.O.B.
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS

SHEET TITLE:

ENLARGED 1BR APARTMENT LAYOUTS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

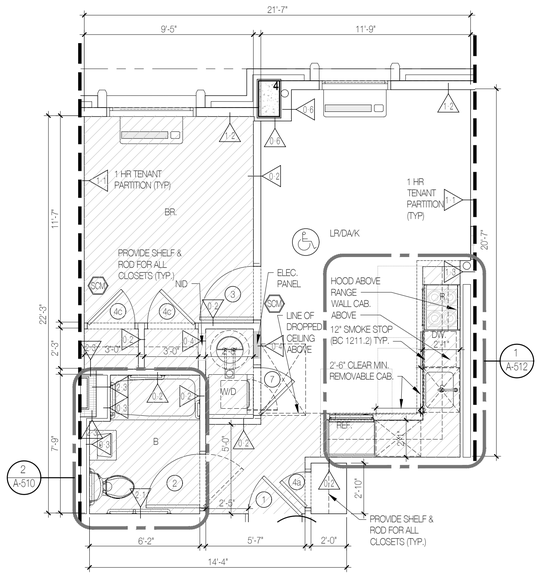
ISSUE DATE: 10-19-15 PROJECT NO: #1520

DRAWN BY: M.B. CHECKED BY: A.F.M. / T.L.

SCALE: 1/4"=1'-0" SHEET NO:

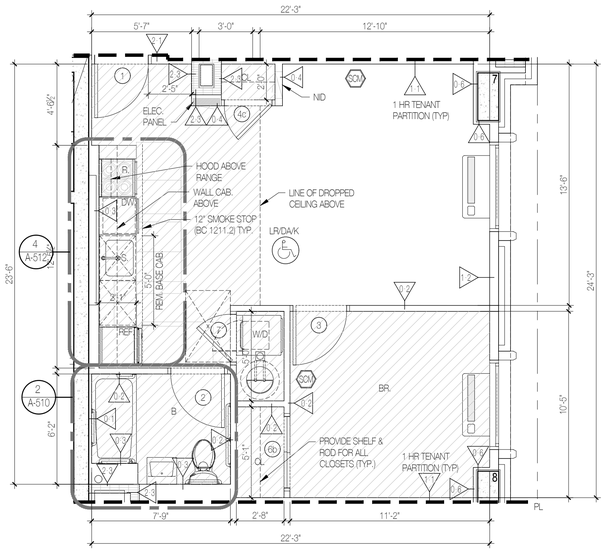
DRAWING NO: A-502.01

NYC DOB NUMBER: 321191802



APARTMENT TYPE B3
GROSS AREA: 522.75 SQ. FT.
NET AREA: 464.96 SQ. FT.

SCALE : ¼" = 1'-0"

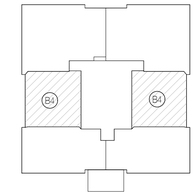


APARTMENT TYPE B4
GROSS AREA: 604.90 SQ. FT.
NET AREA: 527.62 SQ. FT.

SCALE : ¼" = 1'-0"

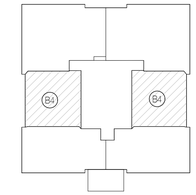
LIGHT AND VENTILATION SCHEDULE					
ROOM NAME	FLOOR AREA (sq.ft.)	LIGHT		VENT	
		10% REQ.	PROV.	5% REQ.	PROV.
GROSS AREA: 522.75 SQ. FT.					
LR./DA.	187.02 SQ. FT.	18.70 SQ. FT.	18.33 SQ. FT.	9.35 SQ. FT.	21.39 SQ. FT.
BR. 1	109.14 SQ. FT.	10.91 SQ. FT.	23.83 SQ. FT.	5.46 SQ. FT.	27.22 SQ. FT.

LIGHT AND VENTILATION SCHEDULE					
ROOM NAME	FLOOR AREA (sq.ft.)	LIGHT		VENT	
		10% REQ.	PROV.	5% REQ.	PROV.
GROSS AREA: 604.90 SQ. FT.					
LR./DA./K	170.12 SQ. FT.	17.01 SQ. FT.	23.83 SQ. FT.	8.51 SQ. FT.	27.22 SQ. FT.
BR. 1	114.72 SQ. FT.	11.47 SQ. FT.	23.83 SQ. FT.	5.74 SQ. FT.	27.22 SQ. FT.



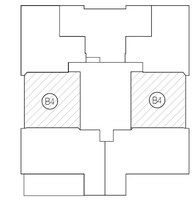
KEY AT 14TH - 15TH

NOT TO SCALE



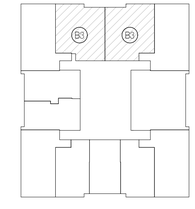
KEY AT 13TH

NOT TO SCALE



KEY AT 12TH

NOT TO SCALE



KEY AT 4TH -11TH

NOT TO SCALE

N

WALL TYPE LEGEND:

NON RATED

A1 FURRING AT INTERIOR CMU WALL - (1) LAYER 5/8" TYPE "X" GYPSUM BOARD OVER 1½" METAL GALVANIZED STUDS @ 16" O.C.

A2 TYPICAL PARTITION - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON EACH SIDE OF 2 ½" METAL STUDS @ 16" O.C. 50-54)

A3 BATHROOM CHASE WALL PARTITION - (1) LAYER ⅝" TYPE "X" WATER RESISTANT GYPSUM BOARD ONE SIDE OF 3⅝" METAL STUDS @ 16" O.C. *SEE INTERIOR DESIGN DRAWINGS FOR WALL THICKNESSES.

A4 PARTITION - (1) LAYER OF ⅝" TYPE "X" GYPSUM BOARD, ON EACH SIDE OF 3 ⅝" METAL STUDS @ 16" O.C. (@ APARTMENT ELECTRICAL PANEL/ NETWORK INTERFACE DEVICE PANEL)

A5 FURRING AT INTERIOR CMU WALL (PUBLIC CORRIDOR SIDE) - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD OVER ⅞" GALV. METAL STUDS @ 16 O.C.

A6 FURRING AT EXTERIOR CMU WALL - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON 1½" GALV. METAL Z FURRING @ 16 O.C. W/ 1 ½" SEMI-RIGID INSULATION (R7.5) UNFACED

1 HOUR RATED

A1 TENANT SEPARATION PARTITION - (1) LAYER OF ⅝" TYPE "X" GYPSUM BOARD ON (1) SIDE, (2) LAYERS OF ⅝" TYPE "X" GYPSUM BOARD ON OTHER SIDE OF 3 ⅝" METAL STUDS @ 16" O.C. WITH 3 ½" SOUND ATTENUATION INSULATION. EXTEND STUDS & GYPSUM BOARD UP TO UNDERSIDE OF SLAB & SEAL TIGHT TO UNDERSIDE OF SLAB AND/OR ROOF DECK W/ CONT. FIRESTOP SEALANT& FIRESAFING INSULATION (GA FILE #WP-1052) (STC 50-54)

A2 EXTERIOR PARTITION - ⅝" TYPE "X" GYPSUM BOARD, (INSIDE) ⅝" EXP EXTERIOR GYPSUM BOARD SHEATHING (OUTSIDE) OVER 3⅝" METAL STUDS @ 16" O.C. WITH 3½" BATT INSULATION (UNFACED) (R-15) (UL #U419)

A3 TENANT SEPARATION CHASE WALL - (2) ROWS OF (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½" METAL STUDS @ 16" O.C. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF SLAB OR ROOF SLAB. SEAL TIGHT TO SLAB WITH cONT. FIRESTOP SEALANT. SEAL ALL PENETRATIONS THRU CHASE WALL WITH FIRESAFING INSULATION AND CONT. FIRESTOP SEALANT AS REQ. PROVIDE HORIZONTAL 2½"MTL STUD BRACING @ 48" O.C. MAX. (UL#V442) PROVIDE INSULATION AS REQUIRED TO ACHIEVE A MIN. STC RATING OF 50)

2 HOUR RATED

A1 INTERIOR PARTITION - (2) LAYERS 5/8" TYPE "X" GYPSUM BOARD ON EACH SIDE 3 ⅝" METAL STUDS @ 16" O.C. WITH 3½" SOUND ATTENUATION INSULATION. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF FLOOR DECK OR ROOF DECK. SEAL TIGHT TO DECK W/ CONT. FIRESTOP SEALANT & FIRESAFING. (GA FILE #WP-1522 STC 55-59).

A2 CMU WALL - CMU WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE BLOCK COURSES. SEAL TOP OF CONCRETE/METAL BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE DECK OR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESAFING INSULATION WHERE GAP EXIST. BETWEEN TOP OF WALL AND BOTTOM OF DECK (UL #U906)

A3 MECHANICAL SHAFT WALL - (2) LAYERS OF ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2 ½" METAL C-H STUDS @ 24" O.C. WITH (1) LAYER OF 1" TYPE "X" GYPSUM LINER PANEL ON SHAFT SIDE. W/ 1" MINERAL FIBER INSULATION IN CAVITY SEAL TOP OF WALL TIGHT TO UNDERSIDE OF CONCRETE DECK W/ CONT. FIRESTOP SEALANT. GA FILE #7095 (STC-45-49)

A4 PLUMBING CHASE WALL - (2) ROWS OF (2) LAYERS ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½"METAL STUDS @ 16" O.C. EXTEND GYPSUM BOARD & STUD UP TO UNDERSIDE OF CONCRETE SLAB. SEAL TIGHT TO SLAB WITH CONTINUOUS FIRESTOP SEALANT. SEAL ALL PENETRATIONS THRU CHASE WALL WITH FIRESAFING INSULATION AND CONTINUOUS FIRESTOP SEALANT AS REQUIRED PROVIDE HORIZONTAL 2½" MTL. STUD BRACING @ 48" O.C. MAX (UL #V442) (PROVIDED INSULATION AS REQUIRED TO ACHIEVE A MIN. STC RATING OF 50)

3 HOUR RATED

A1 (1) LAYER ⅝" TYPE "X" GYPSUM BOARD OVER ⅞" METAL HAT CHANNELS @ 24" O.C. OVER 2 HR RATED CONCRETE BLOCK WALL WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF SLAB ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESAFING INSULATION WHERE A GAP EXISTS BETWEEN TOP OF WALL AND BOTTOM OF CONCRETE DECK (UL #U914) (PROVIDE STC RATING OF 50-54 AT COMPACTOR CHUTE ENCLOSURE ADJACENT TO DWELLING UNITS)

GENERAL NOTES:

1. ALL ENLARGED PLAN DIMENSIONS ARE TAKEN FINISH TO FINISH (U.O.N.).
2. G.C. SHALL SUBMIT SHOP DRAWINGS TO ARCHITECT FOR REVIEW INDICATING SIZE, GAUGE AND SPACING OF ALL METAL STUDS AND REQUIRED METAL BOXED HEADERS SIGNED AND SEALED BY A NYS LICENSED ENGINEER
3. AS PER NYCBC 1107.2.8, AT THE OPTION OF THE OWNER, LAUNDRY EQUIPMENT CONFORMING TO THIS SECTION WITHIN THE DWELLING UNIT OR SLEEPING UNIT MAY BE PROVIDED AT THE TIME A PERSON WITH PHYSICAL DISABILITIES TAKES OCCUPANCY OF THE UNIT, OR WITHIN 10 DAYS OF THE DATE THE REQUEST IS MADE BY A PERSON WITH PHYSICAL DISABILITIES, WHICHEVER IS LATER, AT THE OWNER'S EXPENSE.
4. WATER CURTAIN TYPE SPRINKLER HEADS PROVIDED ON ALL FLOORS
5. ALL FURNITURE IS FOR REFERENCE ONLY. PLEASE SEE ID DRAWINGS FOR MORE INFORMATION.
6. 6'-6" MIN. CLEAR OPENING UNDER SMOKESTOP

LEGEND:

- CONCRETE FOUNDATION WALL
- CONCRETE BLOCK WALL - 2HR FIRE RATED
- GYPSUM BOARD PARTITION - SEE PLAN FOR SIZE.
- MASONRY VENEER

- REMOVABLE KITCHEN BASE CABINET - 2'-6" WIDE x 2'-0" DEEP
- HANDICAP ADAPTABLE APARTMENT UNIT
- PARTITION - SEE WALL TYPE LEGEND
- 5'-0" DIAMETER CLEAR HANDICAP FLOOR TURNING SPACE.
- "T" FLOOR TURNING SPACE
- 30" x 48" CLEAR FLOOR SPACE
- FIRE RATED SHAFT WALL.
- W WINDOW - SEE WINDOW SCHEDULE ON DWG. A-601
- X DOOR & FRAME - SEE DOOR SCHEDULE DRAWING A-600
- CM HARDWIRED CARBON MONOXIDE DETECTOR (BC 907) NO MORE THAN 15FT AWAY FROM BEDROOM DOORS
- EXIT LIGHT AND SIGN - WALL MOUNTED
- EXIT LIGHT AND SIGN - CEILING MOUNTED
- ELECTRICAL PANEL UNIT
- NETWORK INTERFACE DEVICE PANEL
- SUSPENDED GYPSUM BOARD
- COLUMN & COLUMN NUMBER
- BATHROOM DOORS & FRAMES SHALL BE PROVIDED W/ MORTISED HINGE & LATCH BLANKS TO PERMIT FUTURE REVERSAL OF DOOR ON THE SAME FRAME
- # OF PARKING SPACES
- PARKING STACKER UNIT

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:
AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:
SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:
McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:
A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:
ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
05.03.19	PAA TO D.O.B.
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
01.26.18	REISSUED TO D.O.B.
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS

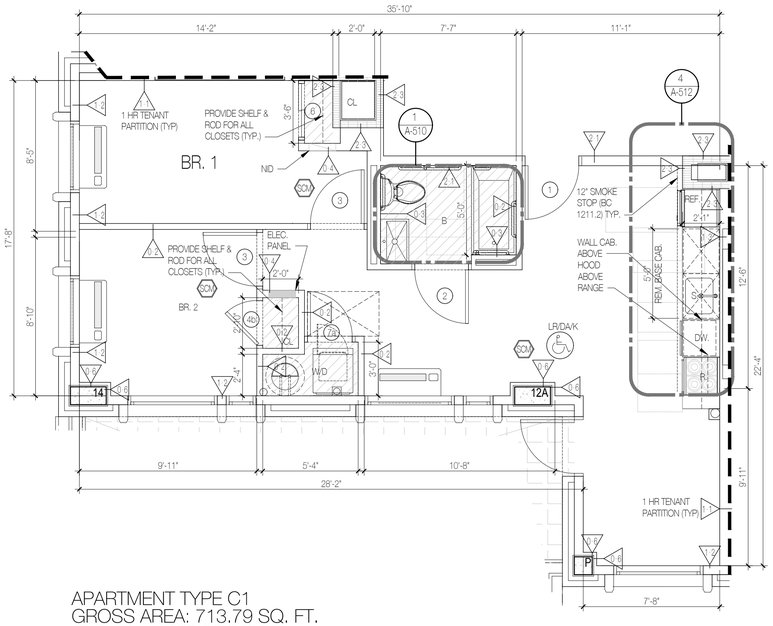
SHEET TITLE:

ENLARGED 1BR APARTMENT LAYOUTS

SEAL & SIGNATURE

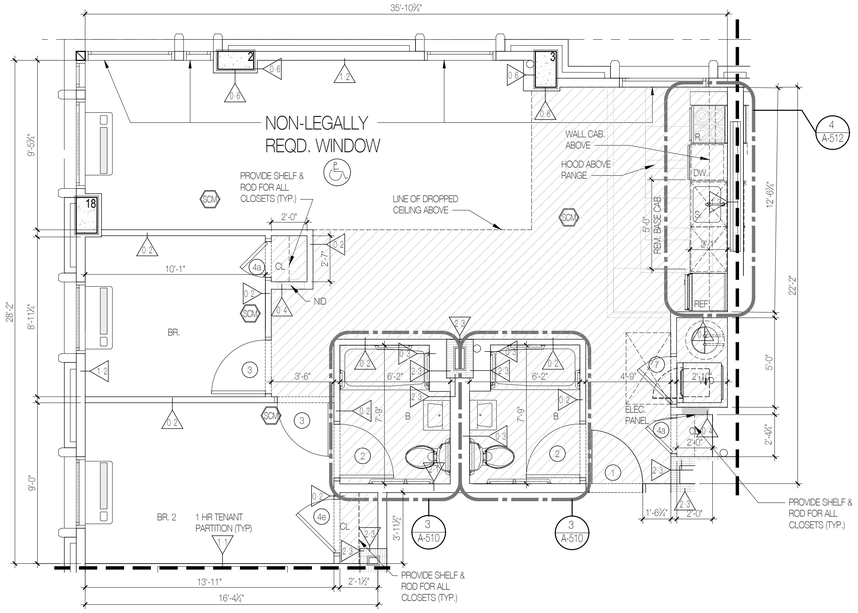
REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

ISSUE DATE: 10-19-15
PROJECT NO: #1520
DRAWN BY: M.B.
CHECKED BY: A.F.M. / T.L.
SCALE: 1/4"=1'-0"
SHEET NO:
DRAWING NO: A-503.01
NYC DOB NUMBER: 321191802



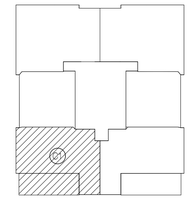
APARTMENT TYPE C1
GROSS AREA: 713.79 SQ. FT.
NET AREA: 485.22 SQ. FT.

SCALE : ¼" = 1'-0"



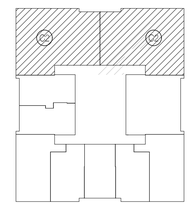
APARTMENT TYPE C2
GROSS AREA: 1004.77 SQ. FT.
NET AREA: 884.08 SQ. FT.

SCALE : ¼" = 1'-0"



KEY AT 12TH

NOT TO SCALE



KEY AT 2ND - 3RD

NOT TO SCALE

LIGHT AND VENTILATION SCHEDULE					
ROOM NAME	FLOOR AREA (sq.ft.)	LIGHT		VENT	
		10% REQ.	PROV.	5% REQ.	PROV.
GROSS AREA: 713.79 SQ. FT.					
LR./DA./K	302.56 SQ. FT.	30.26 SQ. FT.	54.28 SQ. FT.	15.13 SQ. FT.	54.44 SQ. FT.
BR. 1	114.12 SQ. FT.	11.41 SQ. FT.	18.33 SQ. FT.	5.71 SQ. FT.	21.39 SQ. FT.
BR. 2	90.94 SQ. FT.	9.09 SQ. FT.	48.78 SQ. FT.	4.55 SQ. FT.	48.61 SQ. FT.

LIGHT AND VENTILATION SCHEDULE					
ROOM NAME	FLOOR AREA (sq.ft.)	LIGHT		VENT	
		10% REQ.	PROV.	5% REQ.	PROV.
GROSS AREA: 1004.77 SQ. FT.					
LR./DA./K.	384.40 SQ. FT.	38.44 SQ. FT.	103.06 SQ. FT.	19.22 SQ. FT.	75.83 SQ. FT.
BR. 1	90.76 SQ. FT.	9.08 SQ. FT.	18.33 SQ. FT.	4.54 SQ. FT.	21.39 SQ. FT.
BR. 2	125.15 SQ. FT.	12.51 SQ. FT.	18.33 SQ. FT.	6.26 SQ. FT.	21.39 SQ. FT.

WALL TYPE LEGEND:

NON RATED

A1 FURRING AT INTERIOR CMU WALL - (1) LAYER 5/8" TYPE "X" GYPSUM BOARD OVER 1½" METAL GALVANIZED STUDS @ 16" O.C.

A2 TYPICAL PARTITION - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON EACH SIDE OF 2 ½" METAL STUDS @ 16" O.C.

A3 BATHROOM CHASE WALL PARTITION - (1) LAYER ⅝" TYPE "X" WATER RESISTANT GYPSUM BOARD ONE SIDE OF 3½" METAL STUDS @ 16" O.C. *SEE INTERIOR DESIGN DRAWINGS FOR WALL THICKNESSES.

A4 PARTITION - (1) LAYER OF ⅝" TYPE "X" GYPSUM BOARD, ON EACH SIDE OF 3 ⅝" METAL STUDS @ 16" O.C. (@ APARTMENT ELECTRICAL PANEL/ NETWORK INTERFACE DEVICE PANEL)

A5 FURRING AT INTERIOR CMU WALL (PUBLIC CORRIDOR SIDE) - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD OVER ½" GALV. METAL STUDS @ 16 O.C.

A6 FURRING AT EXTERIOR CMU WALL - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON 1½" GALV. METAL Z FURRING @ 16 O.C. W/ 1 ½" SEMI-RIGID INSULATION (R7.5) UNFACED

1 HOUR RATED

A1 TENANT SEPARATION PARTITION - (1) LAYER OF ⅝" TYPE "X" GYPSUM BOARD ON (1) SIDE, (2) LAYERS OF ⅝" TYPE "X" GYPSUM BOARD ON OTHER SIDE OF 3 ⅝" METAL STUDS @ 16" O.C. WITH 3½" SOUND ATTENUATION INSULATION. EXTEND STUDS & GYPSUM BOARD UP TO UNDERSIDE OF SLAB & SEAL TIGHT TO UNDERSIDE OF SLAB AND/OR ROOF DECK W/ CONT. FIRESTOP SEALANT& FIRESAFING INSULATION (GA FILE #WP-1052) (STC 50-54)

A1 EXTERIOR PARTITION - ⅝" TYPE "X" GYPSUM BOARD, (INSIDE) ½" EXP.EXTERIOR GYPSUM BOARD SHEATHING (OUTSIDE) OVER 3½" METAL STUDS @ 16" O.C. WITH 3½" BATT INSULATION (UNFACED) (R-15) (UL #U419)

A3 TENANT SEPARATION CHASE WALL - (2) ROWS OF (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½" METAL STUDS @ 16" O.C. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF SLAB OR ROOF SLAB. SEAL TIGHT TO SLAB WITH cONT. FIRESTOP SEALANT. SEAL ALL PENETRATIONS THRU CHASE WALL WITH FIRESAFING INSULATION AND CONT. FIRESTOP SEALANT AS REQ. PROVIDE HORIZONTAL 2½"MTL STUD BRACING @ 48" O.C. MAX. (UL#V442) PROVIDE INSULATION AS REQUIRED TO ACHIEVE A MIN. STC RATING OF 50)

2 HOUR RATED

A1 INTERIOR PARTITION - (2) LAYERS 5/8" TYPE "X" GYPSUM BOARD ON EACH SIDE 3 ⅝" METAL STUDS @ 16" O.C. WITH 3½" SOUND ATTENUATION INSULATION. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF FLOOR DECK OR ROOF DECK. SEAL TIGHT TO DECK W/ CONT. FIRESTOP SEALANT & FIRESAFING. (GA FILE #WP-1522 STC 55-59).

A3 CMU WALL - CMU WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE BLOCK COURSES. SEAL TOP OF CONCRETE/METAL BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE DECK OR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESAFING INSULATION WHERE GAP EXIST. BETWEEN TOP OF WALL AND BOTTOM OF DECK (UL #U906)

A3 MECHANICAL SHAFT WALL - (2) LAYERS OF ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2 ½" METAL C-H STUDS @ 24" O.C. WITH (1) LAYER OF 1" TYPE "X" GYPSUM LINER PANEL ON SHAFT SIDE. W/ 1" MINERAL FIBER INSULATION IN CAVITY SEAL TOP OF WALL TIGHT TO UNDERSIDE OF CONCRETE DECK W/ CONT. FIRESTOP SEALANT. GA FILE #7095 (STC-65-69)

A3 PLUMBING CHASE WALL - (2) ROWS OF (2) LAYERS ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½"METAL STUDS @ 16" O.C. EXTEND GYPSUM BOARD & STUD UP TO UNDERSIDE OF CONCRETE SLAB. SEAL TIGHT TO SLAB WITH CONTINUOUS FIRESTOP SEALANT. SEAL ALL PENETRATIONS THRU CHASE WALL WITH FIRESAFING INSULATION AND CONTINUOUS FIRESTOP SEALANT AS REQUIRED PROVIDE HORIZONTAL 2½" MTL. STUD BRACING @ 48" O.C. MAX (UL #V442) (PROVIDED INSULATION AS REQUIRED TO ACHIEVE A MIN. STC RATING OF 50)

3 HOUR RATED

A1 (1) LAYER 7/8" TYPE "X" GYPSUM BOARD OVER ⅞" METAL HAT CHANNELS @ 24" O.C. OVER 2 HR RATED CONCRETE BLOCK WALL WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF SLAB ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESAFING INSULATION WHERE A GAP EXISTS BETWEEN TOP OF WALL AND BOTTOM OF CONCRETE DECK (UL #U914) (PROVIDE STC RATING OF 50-54 AT COMPACTOR CHUTE ENCLOSURE ADJACENT TO DWELLING UNITS)

GENERAL NOTES:

1. ALL ENLARGED PLAN DIMENSIONS ARE TAKEN FINISH TO FINISH (U.O.N.).
2. G.C. SHALL SUBMIT SHOP DRAWINGS TO ARCHITECT FOR REVIEW INDICATING SIZE, GAUGE AND SPACING OF ALL METAL STUDS AND REQUIRED METAL BOXED HEADERS SIGNED AND SEALED BY A NYS LICENSED ENGINEER
3. AS PER NYCBC 1107.2.8, AT THE OPTION OF THE OWNER, LAUNDRY EQUIPMENT CONFORMING TO THIS SECTION WITHIN THE DWELLING UNIT OR SLEEPING UNIT MAY BE PROVIDED AT THE TIME A PERSON WITH PHYSICAL DISABILITIES TAKES OCCUPANCY OF THE UNIT, OR WITHIN 10 DAYS OF THE DATE THE REQUEST IS MADE BY A PERSON WITH PHYSICAL DISABILITIES, WHICHEVER IS LATER, AT THE OWNER'S EXPENSE.
4. WATER CURTAIN TYPE SPRINKLER HEADS PROVIDED ON ALL FLOORS
5. ALL FURNITURE IS FOR REFERENCE ONLY. PLEASE SEE ID DRAWINGS FOR MORE INFORMATION.
6. 6'-6" MIN. CLEAR OPENING UNDER SMOKESTOP

LEGEND:

- CONCRETE FOUNDATION WALL
- CONCRETE BLOCK WALL - 2HR FIRE RATED
- GYPSUM BOARD PARTITION - SEE PLAN FOR SIZE.
- MASONRY VENEER

- REMOVABLE KITCHEN BASE CABINET - 2'-6" WIDE x 2'-0" DEEP
- HANDICAP ADAPTABLE APARTMENT UNIT
- PARTITION - SEE WALL TYPE LEGEND
- 5'-0" DIAMETER CLEAR HANDICAP FLOOR TURNING SPACE.
- "T" FLOOR TURNING SPACE
- 30" x 48" CLEAR FLOOR SPACE
- FIRE RATED SHAFT WALL.
- WINDOW - SEE WINDOW SCHEDULE ON DWG. A-601
- DOOR & FRAME - SEE DOOR SCHEDULE DRAWING A-600
- HARDWIRED CARBON MONOXIDE DETECTOR (BC 907) NO MORE THAN 15FT AWAY FROM BEDROOM DOORS

- EXIT LIGHT AND SIGN - WALL MOUNTED
- EXIT LIGHT AND SIGN - CEILING MOUNTED
- ELECTRICAL PANEL UNIT
- NETWORK INTERFACE DEVICE PANEL
- SUSPENDED GYPSUM BOARD
- COLUMN & COLUMN NUMBER
- BATHROOM DOORS & FRAMES SHALL BE PROVIDED W/ MORTISED HINGE & LATCH BLANKS TO PERMIT FUTURE REVERSAL OF DOOR ON THE SAME FRAME
- # OF PARKING SPACES
- PARKING STACKER UNIT

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:
AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:
SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:
McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:
A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:
ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS
01.26.18	REISSUED TO D.O.B.
06.04.18	RE-ISSUED TO D.O.B.
07.27.18	90% PROGRESS SET
05.03.19	PAA TO D.O.B.
05.31.19	BID SET
08.02.19	99% CONSTRUCTION SET
1 08.15.19	PAA TO D.O.B.

SHEET TITLE:

ENLARGED 2BR APARTMENT LAYOUTS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

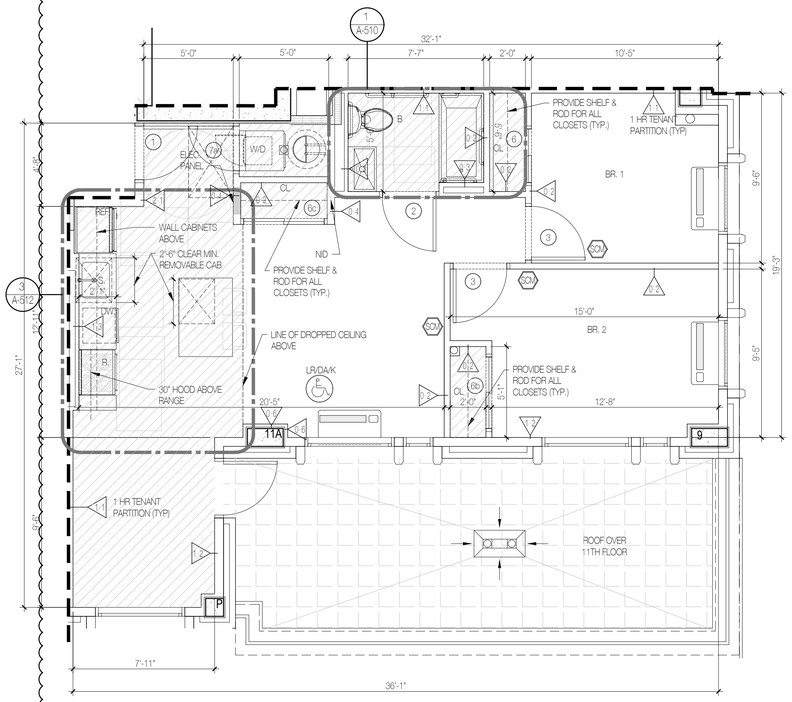
ISSUE DATE: 10-19-15 PROJECT NO: #1520

DRAWN BY: M.B. CHECKED BY: A.F.M. / T.L.

SCALE: 1/4"=1'-0" SHEET NO:

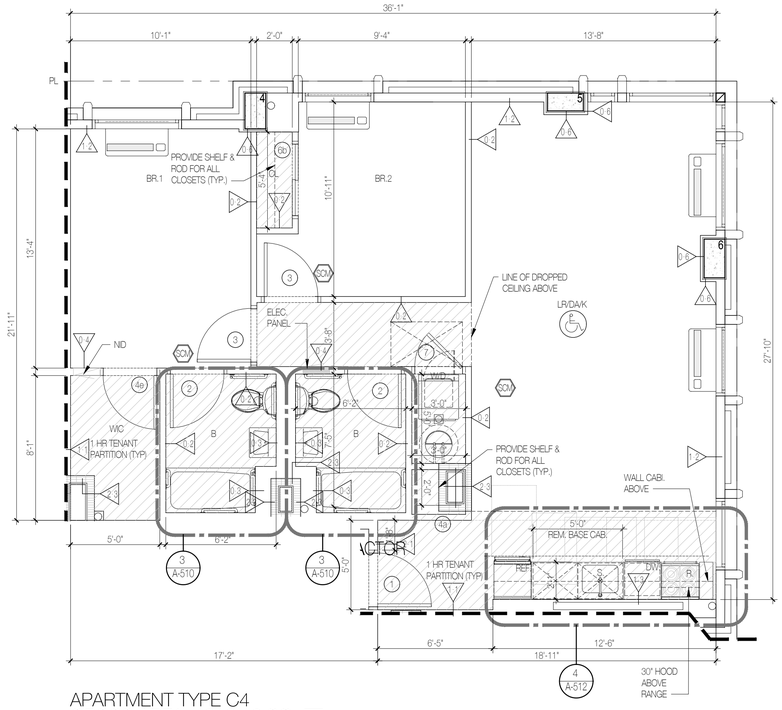
DRAWING NO: A-504.01

NYC DOB NUMBER: 321191802



APARTMENT TYPE C3
GROSS AREA: 1148.03 SQ. FT.
NET AREA: 723.20 SQ. FT.

SCALE : ¼" = 1'-0"

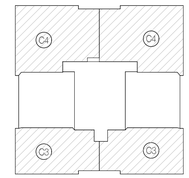


APARTMENT TYPE C4
GROSS AREA: 1018.19 SQ. FT.
NET AREA: 905.55 SQ. FT.

SCALE : ¼" = 1'-0"

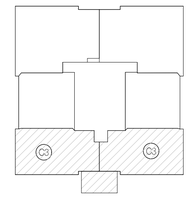
LIGHT AND VENTILATION SCHEDULE					
ROOM NAME	FLOOR AREA (sq.ft.)	LIGHT		VENT	
		10% REQ.	PROV.	5% REQ.	PROV.
GROSS AREA: 1148.03 SQ. FT.					
LR/DA/K	250.33 SQ. FT.	25.03 SQ. FT.	69.80 SQ. FT.	12.52 SQ. FT.	74.90 SQ. FT.
BR. 1	139.93 SQ. FT.	13.99 SQ. FT.	18.33 SQ. FT.	7.00 SQ. FT.	21.39 SQ. FT.
BR. 2	95.04 SQ. FT.	9.50 SQ. FT.	48.78 SQ. FT.	4.75 SQ. FT.	48.61 SQ. FT.

LIGHT AND VENTILATION SCHEDULE					
ROOM NAME	FLOOR AREA (sq.ft.)	LIGHT		VENT	
		10% REQ.	PROV.	5% REQ.	PROV.
GROSS AREA: 1018.19 SQ. FT.					
LR./DA./K	308.62 SQ. FT.	30.86 SQ. FT.	104.33 SQ. FT.	15.43 SQ. FT.	97.22 SQ. FT.
BR. 1	134.79 SQ. FT.	13.48 SQ. FT.	23.83 SQ. FT.	6.74 SQ. FT.	27.22 SQ. FT.
BR. 2	109.68 SQ. FT.	10.97 SQ. FT.	18.33 SQ. FT.	5.48 SQ. FT.	21.39 SQ. FT.



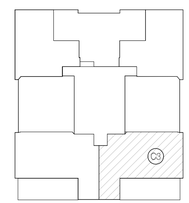
KEY AT 14TH - 15TH

NOT TO SCALE



KEY AT 13TH

NOT TO SCALE



KEY AT 12TH

NOT TO SCALE

WALL TYPE LEGEND:

NON RATED

A.1 FURRING AT INTERIOR CMU WALL - (1) LAYER 5/8" TYPE "X" GYPSUM BOARD OVER 1½" METAL GALVANIZED STUDS @ 16" O.C.

A.2 TYPICAL PARTITION - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON EACH SIDE OF 2½" METAL STUDS @ 16" O.C.

A.3 BATHROOM CHASE WALL PARTITION - (1) LAYER ⅝" TYPE "X" WATER RESISTANT GYPSUM BOARD ONE SIDE OF 3⅝" METAL STUDS @ 16" O.C. *SEE INTERIOR DESIGN DRAWINGS FOR WALL THICKNESSES.

A.4 PARTITION - (1) LAYER OF ⅝" TYPE "X" GYPSUM BOARD, ON EACH SIDE OF 3 5/8" METAL STUDS @ 16" O.C. (@ APARTMENT ELECTRICAL PANEL/ NETWORK INTERFACE DEVICE PANEL)

A.5 FURRING AT INTERIOR CMU WALL (PUBLIC CORRIDOR SIDE) - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD OVER ⅞" GALV. METAL STUDS @ 16 O.C.

A.6 FURRING AT EXTERIOR CMU WALL - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON 1½" GALV. METAL Z FURRING @ 16 O.C. W/ 1 ½" SEMI-RIGID INSULATION (R7.5) UNFACED

1 HOUR RATED

A.11 TENANT SEPARATION PARTITION - (1) LAYER OF ⅝" TYPE "X" GYPSUM BOARD ON (1) SIDE, (2) LAYERS OF ⅝" TYPE "X" GYPSUM BOARD ON OTHER SIDE OF 3 ⅝" METAL STUDS @ 16" O.C. WITH 3 ½" SOUND ATTENUATION INSULATION. EXTEND STUDS & GYPSUM BOARD UP TO UNDERSIDE OF SLAB & SEAL TIGHT TO UNDERSIDE OF SLAB AND/OR ROOF DECK W/ CONT. FIRESTOP SEALANT& FIRESAPING INSULATION (GA FILE #WP-1052) (STC 50-54)

A.12 EXTERIOR PARTITION - ⅝" TYPE "X" GYPSUM BOARD, (INSIDE) ⅝" EXP EXTERIOR GYPSUM BOARD SHEATHING (OUTSIDE) OVER 3⅝" METAL STUDS @ 16" O.C. WITH 3½" BATT INSULATION (UNFACED) (R-15) (UL #U419)

A.13 TENANT SEPARATION CHASE WALL - (2) ROWS OF (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½" METAL STUDS @ 16" O.C. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF SLAB OR ROOF SLAB. SEAL TIGHT TO SLAB WITH cONT. FIRESTOP SEALANT. SEAL ALL PENETRATIONS THRU CHASE WALL WITH FIRESAPING INSULATION AND CONT. FIRESTOP SEALANT AS REQ. PROVIDE HORIZONTAL 2½"MTL. STUD BRACING @ 48" O.C. MAX. (UL#V442) PROVIDE INSULATION AS REQUIRED TO ACHIEVE A MIN. STC RATING OF 50)

2 HOUR RATED

A.21 INTERIOR PARTITION - (2) LAYERS 5/8" TYPE "X" GYPSUM BOARD ON EACH SIDE 3 5/8" METAL STUDS @ 16" O.C. WITH 3½" SOUND ATTENUATION INSULATION. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF FLOOR DECK OR ROOF DECK. SEAL TIGHT TO DECK W/ CONT. FIRESTOP SEALANT & FIRESAPING. (GA FILE #WP-1522 STC 55-59).

A.22 CMU WALL - CMU WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE BLOCK COURSES. SEAL TOP OF CONCRETE/METAL BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE DECK OR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESAPING INSULATION WHERE GAP EXIST. BETWEEN TOP OF WALL AND BOTTOM OF DECK (UL #U506)

A.23 MECHANICAL SHAFT WALL - (2) LAYERS OF ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½" METAL C-H STUDS @ 24" O.C. WITH (1) LAYER OF 1" TYPE "X" GYPSUM LINER PANEL ON SHAFT SIDE. W/ 1" MINERAL FIBER INSULATION IN CAVITY SEAL TOP OF WALL TIGHT TO UNDERSIDE OF CONCRETE DECK W/ CONT. FIRESTOP SEALANT. GA FILE #7095 (STC-45-49)

A.24 PLUMBING CHASE WALL - (2) ROWS OF (2) LAYERS ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½"METAL STUDS @ 16" O.C. EXTEND GYPSUM BOARD & STUD UP TO UNDERSIDE OF CONCRETE SLAB. SEAL TIGHT TO SLAB WITH CONTINUOUS FIRESTOP SEALANT. SEAL ALL PENETRATIONS THRU CHASE WALL WITH FIRESAPING INSULATION AND CONTINUOUS FIRESTOP SEALANT AS REQUIRED PROVIDE HORIZONTAL 2½" MTL. STUD BRACING @ 48" O.C. MAX (UL #V442) (PROVIDED INSULATION AS REQUIRED TO ACHIEVE A MIN. STC RATING OF 50)

3 HOUR RATED

A.31 (1) LAYER ⅝" TYPE "X" GYPSUM BOARD OVER ⅞" METAL HAT CHANNELS @ 24" O.C. OVER 2 HR RATED CONCRETE BLOCK WALL WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF SLAB ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESAPING INSULATION WHERE A GAP EXISTS BETWEEN TOP OF WALL AND BOTTOM OF CONCRETE DECK (UL #U914) (PROVIDE STC RATING OF 50-54 AT COMPACTOR CHUTE ENCLOSURE ADJACENT TO DWELLING UNITS)

GENERAL NOTES:

1. ALL ENLARGED PLAN DIMENSIONS ARE TAKEN FINISH TO FINISH (U.O.N.).
2. G.C. SHALL SUBMIT SHOP DRAWINGS TO ARCHITECT FOR REVIEW INDICATING SIZE, GAUGE AND SPACING OF ALL METAL STUDS AND REQUIRED METAL BOXED HEADERS SIGNED AND SEALED BY A NYS LICENSED ENGINEER
3. AS PER NYCBC 1107.2.8, AT THE OPTION OF THE OWNER, LAUNDRY EQUIPMENT CONFORMING TO THIS SECTION WITHIN THE DWELLING UNIT OR SLEEPING UNIT MAY BE PROVIDED AT THE TIME A PERSON WITH PHYSICAL DISABILITIES TAKES OCCUPANCY OF THE UNIT, OR WITHIN 10 DAYS OF THE DATE THE REQUEST IS MADE BY A PERSON WITH PHYSICAL DISABILITIES, WHICHEVER IS LATER, AT THE OWNER'S EXPENSE.
4. WATER CURTAIN TYPE SPRINKLER HEADS PROVIDED ON ALL FLOORS
5. ALL FURNITURE IS FOR REFERENCE ONLY. PLEASE SEE ID DRAWINGS FOR MORE INFORMATION.
6. 6'-6" MIN. CLEAR OPENING UNDER SMOKESTOP

LEGEND:

- CONCRETE FOUNDATION WALL
- CONCRETE BLOCK WALL - 2HR FIRE RATED
- GYPSUM BOARD PARTITION - SEE PLAN FOR SIZE.
- MASONRY VENEER

- REMOVABLE KITCHEN BASE CABINET - 2'-6" WIDE x 2'-0" DEEP
- HANDICAP ADAPTABLE APARTMENT UNIT
- PARTITION - SEE WALL TYPE LEGEND
- 5'-0" DIAMETER CLEAR HANDICAP FLOOR TURNING SPACE.
- "T" FLOOR TURNING SPACE
- 30" x 48" CLEAR FLOOR SPACE
- FIRE RATED SHAFT WALL.
- W WINDOW - SEE WINDOW SCHEDULE ON DWG. A-601
- X DOOR & FRAME - SEE DOOR SCHEDULE DRAWING A-600
- SCM HARDWIRED CARBON MONOXIDE DETECTOR (BC 907) NO MORE THAN 15FT AWAY FROM BEDROOM DOORS
- EXIT LIGHT AND SIGN - WALL MOUNTED
- EXIT LIGHT AND SIGN - CEILING MOUNTED
- ELECTRICAL PANEL UNIT
- NETWORK INTERFACE DEVICE PANEL
- SUSPENDED GYPSUM BOARD
- COLUMN & COLUMN NUMBER
- BATHROOM DOORS & FRAMES SHALL BE PROVIDED W/ MORTISED HINGE & LATCH BLANKS TO PERMIT FUTURE REVERSAL OF DOOR ON THE SAME FRAME
- # OF PARKING SPACES
- PARKING STACKER UNIT

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:

AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:

SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:

McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:

A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:

ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
05.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
05.03.19	PAA TO D.O.B.
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
01.26.18	REISSUED TO D.O.B.
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS

SHEET TITLE:

ENLARGED 2BR APARTMENT LAYOUTS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

ISSUE DATE: 10-19-15

PROJECT NO: #1520

DRAWN BY: M.B.

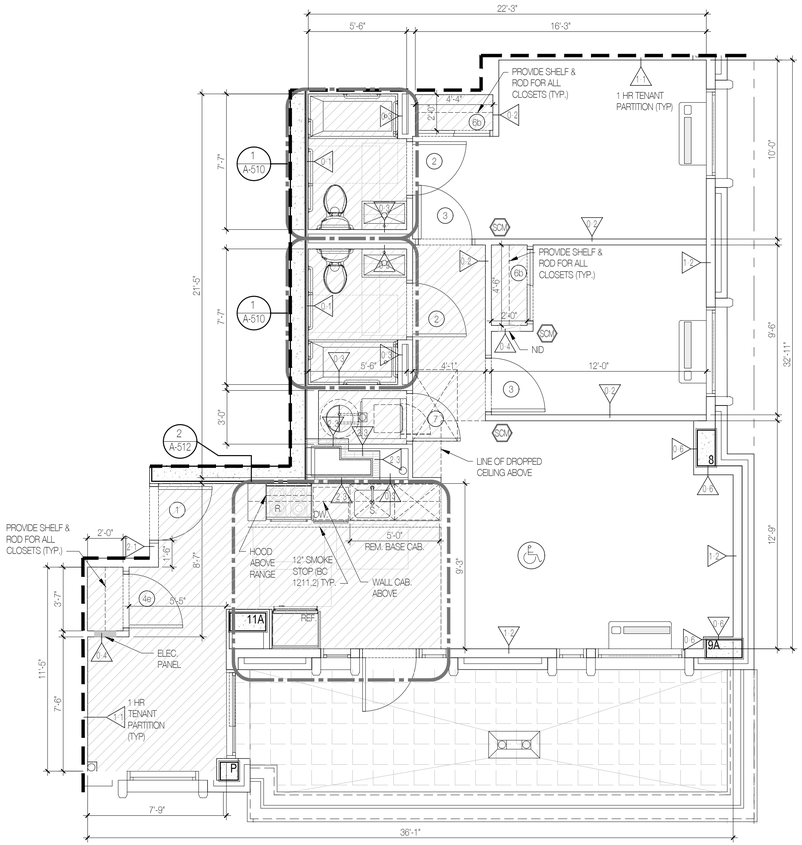
CHECKED BY: A.F.M. / T.L.

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

SHEET NO:

DRAWING NO: A-505.01

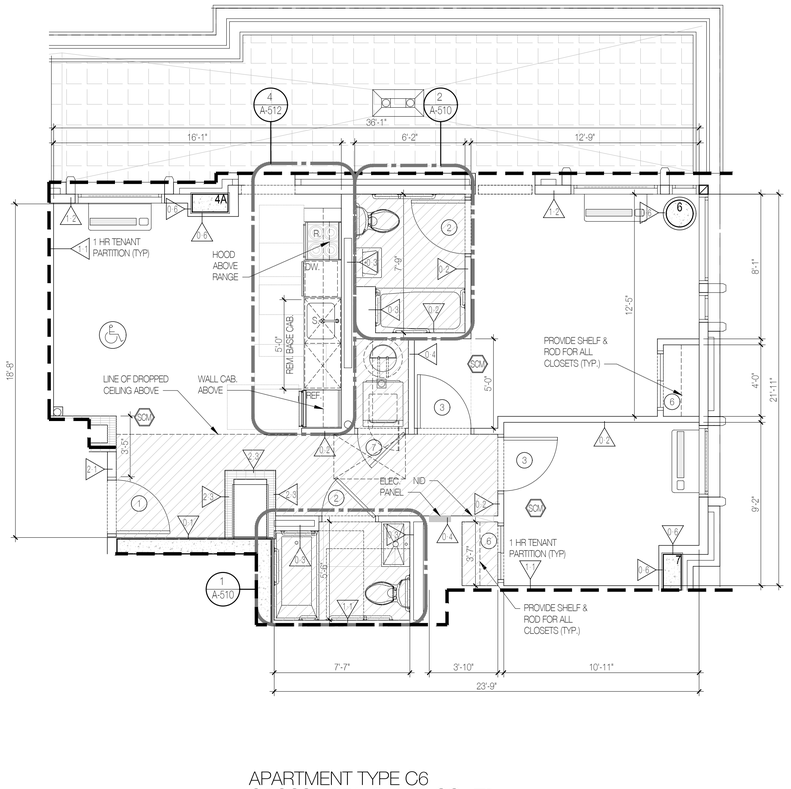
NYC DOB NUMBER: 321191802



APARTMENT TYPE C5
GROSS AREA: 1018.97 SQ. FT.
NET AREA: 873.54 SQ. FT.

SCALE : ¼" = 1'-0"

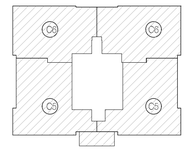
LIGHT AND VENTILATION SCHEDULE						
ROOM NAME	FLOOR AREA (sq.ft.)	LIGHT		VENT		
		10% REQ.	PROV.	5% REQ.	PROV.	
GROSS AREA: 1018.97 SQ. FT.						
LR./DA./K.	245.24 SQ. FT.	24.52 SQ. FT.	83.02 SQ. FT.	12.26 SQ. FT.	74.90 SQ. FT.	
BR. 1	154.82 SQ. FT.	15.48 SQ. FT.	23.83 SQ. FT.	7.74 SQ. FT.	27.22 SQ. FT.	
BR. 2	113.95 SQ. FT.	11.40 SQ. FT.	23.83 SQ. FT.	5.70 SQ. FT.	27.22 SQ. FT.	



APARTMENT TYPE C6
GROSS AREA: 841.04 SQ. FT.
NET AREA: 740.69 SQ. FT.

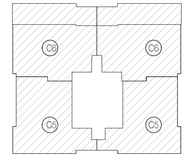
SCALE : ¼" = 1'-0"

LIGHT AND VENTILATION SCHEDULE						
ROOM NAME	FLOOR AREA (sq.ft.)	LIGHT		VENT		
		10% REQ.	PROV.	5% REQ.	PROV.	
GROSS AREA: 1148.03 SQ. FT.						
LR./DA./K.	205.06 SQ. FT.	20.51 SQ. FT.	23.83 SQ. FT.	10.25 SQ. FT.	27.22 SQ. FT.	
BR. 1	233.86 SQ. FT.	23.39 SQ. FT.	18.33 SQ. FT.	11.69 SQ. FT.	21.39 SQ. FT.	
M. BR	94.60 SQ. FT.	9.46 SQ. FT.	60.89 SQ. FT.	4.73 SQ. FT.	54.44 SQ. FT.	



KEY AT 17TH - 19TH

NOT TO SCALE



KEY AT 16TH

NOT TO SCALE

WALL TYPE LEGEND:
NON RATED

A1 FURRING AT INTERIOR CMU WALL - (1) LAYER 5/8" TYPE "X" GYPSUM BOARD OVER 1½" METAL GALVANIZED STUDS @ 16" O.C.

A2 TYPICAL PARTITION - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON EACH SIDE OF 2 ½" METAL STUDS @ 16" O.C.

A3 BATHROOM CHASE WALL PARTITION - (1) LAYER ⅝" TYPE "X" WATER RESISTANT GYPSUM BOARD ONE SIDE OF 3⅝" METAL STUDS @ 16" O.C. *SEE INTERIOR DESIGN DRAWINGS FOR WALL THICKNESSES.

A4 PARTITION - (1) LAYER OF ⅝" TYPE "X" GYPSUM BOARD, ON EACH SIDE OF 3 ⅝" METAL STUDS @ 16" O.C. (@ APARTMENT ELECTRICAL PANEL/ NETWORK INTERFACE DEVICE PANEL)

A5 FURRING AT INTERIOR CMU WALL (PUBLIC CORRIDOR SIDE) - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD OVER ⅞" GALV. METAL STUDS @ 16 O.C.

A6 FURRING AT EXTERIOR CMU WALL - (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON 1½" GALV. METAL Z FURRING @ 16 O.C. W/ 1 ½" SEMI-RIGID INSULATION (R7.5) UNFACED

1 HOUR RATED

A1 TENANT SEPARATION PARTITION - (1) LAYER OF ⅝" TYPE "X" GYPSUM BOARD ON (1) SIDE, (2) LAYERS OF ½" TYPE "X" GYPSUM BOARD ON OTHER SIDE OF 3 ½" METAL STUDS @ 16" O.C. WITH 3½" SOUND ATTENUATION INSULATION. EXTEND STUDS & GYPSUM BOARD UP TO UNDERSIDE OF SLAB & SEAL TIGHT TO UNDERSIDE OF SLAB AND/OR ROOF DECK W/ CONT. FIRESTOP SEALANT& FIRESAFING INSULATION (GA FILE #WP-1052) (STC 50-54)

A2 EXTERIOR PARTITION - ⅝" TYPE "X" GYPSUM BOARD, (INSIDE) ⅝" EXP EXTERIOR GYPSUM BOARD SHEATHING (OUTSIDE) OVER 3⅝" METAL STUDS @ 16" O.C. WITH 3½" BATT INSULATION (UNFACED) (R-15) (UL #U419)

A3 TENANT SEPARATION CHASE WALL - (2) ROWS OF (1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½" METAL STUDS @ 16" O.C. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF SLAB OR ROOF SLAB. SEAL TIGHT TO SLAB WITH cONT. FIRESTOP SEALANT. SEAL ALL PENETRATIONS THRU CHASE WALL WITH FIRESAFING INSULATION AND CONT. FIRESTOP SEALANT AS REQ. PROVIDE HORIZONTAL 2½" MTL STUD BRACING @ 48" O.C. MAX. (UL#V442) PROVIDE INSULATION AS REQUIRED TO ACHIEVE A MIN. STC RATING OF 50)

2 HOUR RATED

A1 INTERIOR PARTITION - (2) LAYERS 5/8" TYPE "X" GYPSUM BOARD ON EACH SIDE 3 ⅝" METAL STUDS @ 16" O.C. WITH 3½" SOUND ATTENUATION INSULATION. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF FLOOR DECK OR ROOF DECK. SEAL TIGHT TO DECK W/ CONT. FIRESTOP SEALANT & FIRESAFING. (GA FILE #WP-1522 STC 55-59).

A2 CMU WALL - CMU WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE BLOCK COURSES. SEAL TOP OF CONCRETE/METAL BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE DECK OR DECK ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESAFING INSULATION WHERE GAP EXIST. BETWEEN TOP OF WALL AND BOTTOM OF DECK (UL #U906)

A3 MECHANICAL SHAFT WALL - (2) LAYERS OF ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2 ½" METAL C-H STUDS @ 24" O.C. WITH (1) LAYER OF 1" TYPE "X" GYPSUM LINER PANEL ON SHAFT SIDE. W/ 1" MINERAL FIBER INSULATION IN CAVITY SEAL TOP OF WALL TIGHT TO UNDERSIDE OF CONCRETE DECK W/ CONT. FIRESTOP SEALANT. GA FILE #7095 (STC-45-49)

A4 PLUMBING CHASE WALL - (2) ROWS OF (2) LAYERS ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½"METAL STUDS @ 16" O.C. EXTEND GYPSUM BOARD & STUD UP TO UNDERSIDE OF CONCRETE SLAB. SEAL TIGHT TO SLAB WITH CONTINUOUS FIRESTOP SEALANT. SEAL ALL PENETRATIONS THRU CHASE WALL WITH FIRESAFING INSULATION AND CONTINUOUS FIRESTOP SEALANT AS REQUIRED PROVIDE HORIZONTAL 2½" MTL. STUD BRACING @ 48" O.C. MAX (UL #V442) (PROVIDED INSULATION AS REQUIRED TO ACHIEVE A MIN. STC RATING OF 50)

3 HOUR RATED

A1 (1) LAYER 5/8" TYPE "X" GYPSUM BOARD OVER 7/8" METAL HAT CHANNELS @ 24" O.C. OVER 2 HR RATED CONCRETE BLOCK WALL WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF SLAB ABOVE WITH CONT. FIRESTOP SEALANT AND FIRESAFING INSULATION WHERE A GAP EXISTS BETWEEN TOP OF WALL AND BOTTOM OF CONCRETE DECK (UL #U914) (PROVIDE STC RATING OF 50-54 AT COMPACTOR CHUTE ENCLOSURE ADJACENT TO DWELLING UNITS)

GENERAL NOTES:

1. ALL ENLARGED PLAN DIMENSIONS ARE TAKEN FINISH TO FINISH (U.O.N.).
2. G.C. SHALL SUBMIT SHOP DRAWINGS TO ARCHITECT FOR REVIEW INDICATING SIZE, GAUGE AND SPACING OF ALL METAL STUDS AND REQUIRED METAL BOXED HEADERS SIGNED AND SEALED BY A NYS LICENSED ENGINEER
3. AS PER NYCBC 1107.2.8, AT THE OPTION OF THE OWNER, LAUNDRY EQUIPMENT CONFORMING TO THIS SECTION WITHIN THE DWELLING UNIT OR SLEEPING UNIT MAY BE PROVIDED AT THE TIME A PERSON WITH PHYSICAL DISABILITIES TAKES OCCUPANCY OF THE UNIT, OR WITHIN 10 DAYS OF THE DATE THE REQUEST IS MADE BY A PERSON WITH PHYSICAL DISABILITIES, WHICHEVER IS LATER, AT THE OWNER'S EXPENSE.
4. WATER CURTAIN TYPE SPRINKLER HEADS PROVIDED ON ALL FLOORS
5. ALL FURNITURE IS FOR REFERENCE ONLY. PLEASE SEE ID DRAWINGS FOR MORE INFORMATION.
6. 6'-6" MIN. CLEAR OPENING UNDER SMOKESTOP

LEGEND:

- CONCRETE FOUNDATION WALL
- CONCRETE BLOCK WALL - 2HR FIRE RATED
- GYPSUM BOARD PARTITION - SEE PLAN FOR SIZE.
- MASONRY VENEER

- REMOVABLE KITCHEN BASE CABINET - 2'-6" WIDE x 2'-0" DEEP
- HANDICAP ADAPTABLE APARTMENT UNIT
- PARTITION - SEE WALL TYPE LEGEND
- 5'-0" DIAMETER CLEAR HANDICAP FLOOR TURNING SPACE.
- "T" FLOOR TURNING SPACE
- 30" x 48" CLEAR FLOOR SPACE
- FIRE RATED SHAFT WALL.
- W WINDOW - SEE WINDOW SCHEDULE ON DWG. A-601
- X DOOR & FRAME - SEE DOOR SCHEDULE DRAWING A-600
- SCN HARDWIRED CARBON MONOXIDE DETECTOR (BC 907) NO MORE THAN 15FT AWAY FROM BEDROOM DOORS
- EXIT LIGHT AND SIGN - WALL MOUNTED
- EXIT LIGHT AND SIGN - CEILING MOUNTED
- ELECTRICAL PANEL UNIT
- NETWORK INTERFACE DEVICE PANEL
- SUSPENDED GYPSUM BOARD
- COLUMN & COLUMN NUMBER
- BATHROOM DOORS & FRAMES SHALL BE PROVIDED W/ MORTISED HINGE & LATCH BLANKS TO PERMIT FUTURE REVERSAL OF DOOR ON THE SAME FRAME
- # OF PARKING SPACES
- PARKING STACKER UNIT

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:
AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:
SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:
McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:
A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:
ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
05.03.19	PAA TO D.O.B.
07.27.18	90% PROGRESS SET

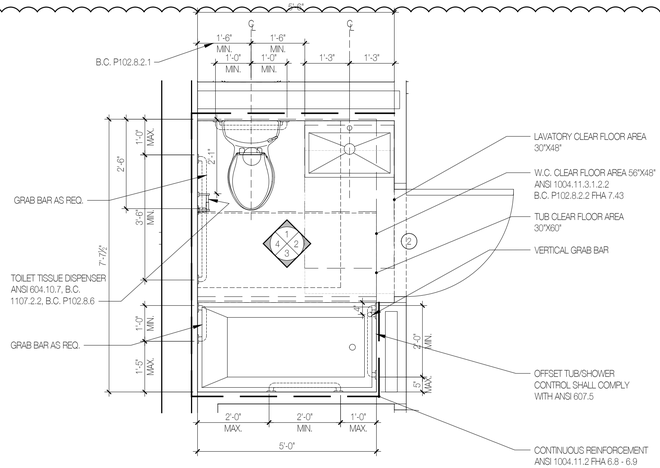
SHEET TITLE:

ENLARGED 2BR APARTMENT LAYOUTS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

ISSUE DATE: 10-19-15
PROJECT NO: #1520
DRAWN BY: M.B.
CHECKED BY: A.F.M. / T.L.
SCALE: 1/4"=1'-0"
SHEET NO:
DRAWING NO: A-506.00
NYC DOB NUMBER: 321191802

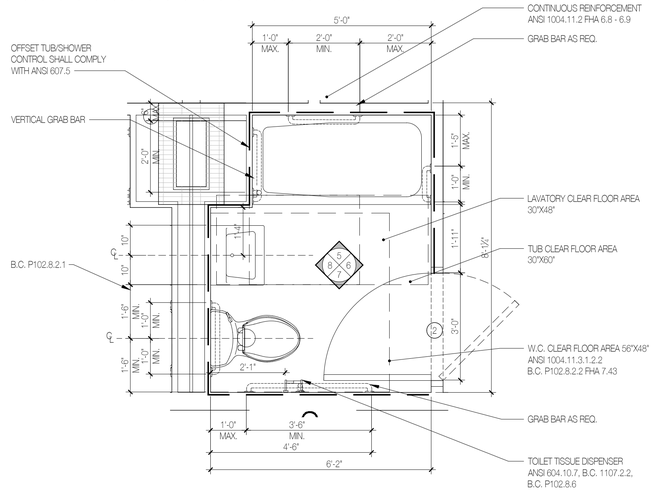


1 ENLARGED BATHROOM PLAN

SCALE : ½" = 1'-0"

A-500, A-501, A-502, A-503, A-504, A-505

APT. TYPE	AS SHOWN	OPP. HAND
A4		X
A5		X
C1		X
C3		X
C5	X	
C5		X
C6		X

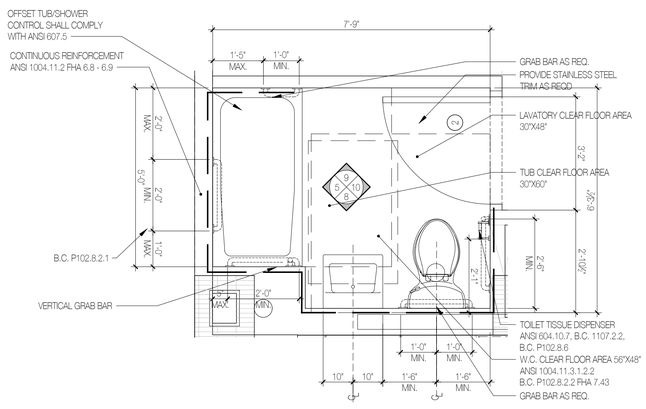


2 ENLARGED BATHROOM PLAN

SCALE : ½" = 1'-0"

A-500, A-501, A-502, A-503, A-504, A-505

APT. TYPE	AS SHOWN	OPP. HAND
A3	X	
B2	X	
B3	X	
B4	X	
C2		X
C2	X	
C6		X

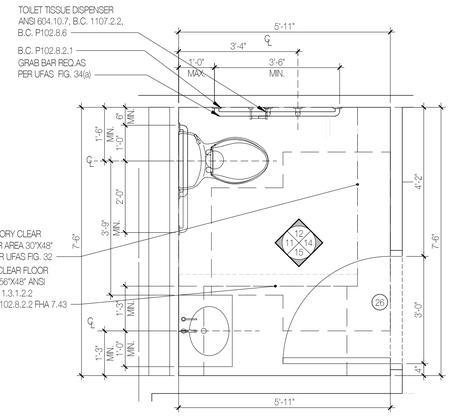


3 ENLARGED BATHROOM PLAN

SCALE : ½" = 1'-0"

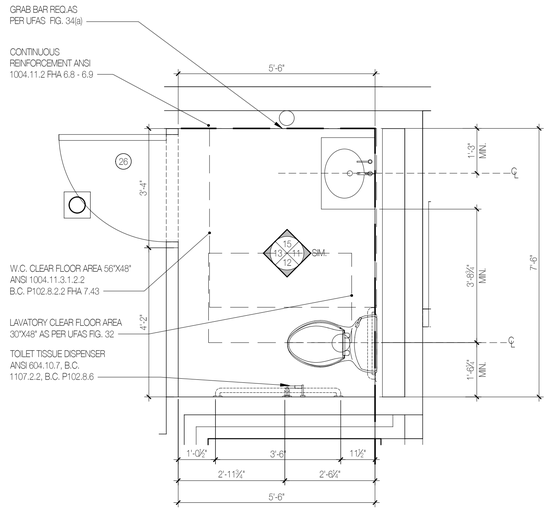
A-500, A-504, A-505

APT. TYPE	AS SHOWN	OPP. HAND
A1		X
A2	X	
B1		X
C4	X	
C4		X



5 A-100 ENLARGED PUBLIC BATHROOM PLAN

SCALE : ½" = 1'-0"



6 A-100 ENLARGED PARKING ATTENDANT BATHROOM PLAN

SCALE : ½" = 1'-0"

GENERAL NOTES:
1. ALL FINISHES AS PER INTERIOR DESIGN DWGS.
2. ALL APARTMENT BATHROOM LAYOUTS ARE APPENDIX 'P'
3. REFER TO BATHROOM ELEVATIONS SEE DWG A-511
4. ALL ACCESSORIES AND ELECTRICAL CONTROLS SHALL BE LOCATED WITHIN ACCESSIBLE REACH RANGE IN ACCORDANCE WITH ANSI 308.
5. ACCESSORIES AND CONTROLS SHALL NOT INTERRUPT GRAB BAR REINFORCEMENT.
6. REFER TO LATEST ELECTRICAL CODE FOR ELECTRICAL REQUIREMENTS, INCLUDING HEIGHT AND SPACING OF OUTLETS. COORDINATE WITH ELECTRICAL DRAWINGS.
7. GC SHALL VERIFY AND COORDINATE ANCHORING REQUIREMENTS FOR WALL MOUNTED LAVATORY, TOILET PAPER DISPENSER, FUTURE ADJUSTABLE HAND SHOWER, MEDICINE CABINET, AND ALL ACCESSORIES.

BATHROOM PLANS

SCALE : ½" = 1'-0"

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:

AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

AUFGANG ARCHITECTS

DEVELOPER:

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850 THIRD AVE, SUITE 16-B
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STRUCTURAL ENGINEER:

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BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:

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NEW YORK, NY 10013
T: 307.760.6454

DATE	SUBMISSIONS / REVISIONS
08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
05.03.19	PAA TO D.O.B.
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
01.26.18	REISSUED TO D.O.B.
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS

SHEET TITLE:

ENLARGED APARTMENT & PUBLIC BATHROOM LAYOUTS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

ISSUE DATE: 10-19-15

PROJECT NO: #1520

DRAWN BY: UZ

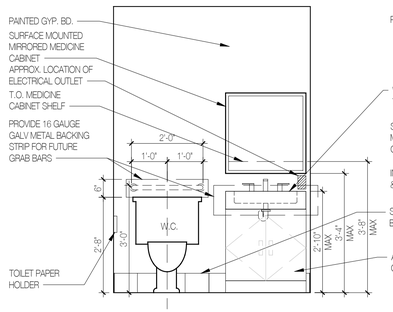
CHECKED BY: TL

SCALE: AS NOTED

SHEET NO:

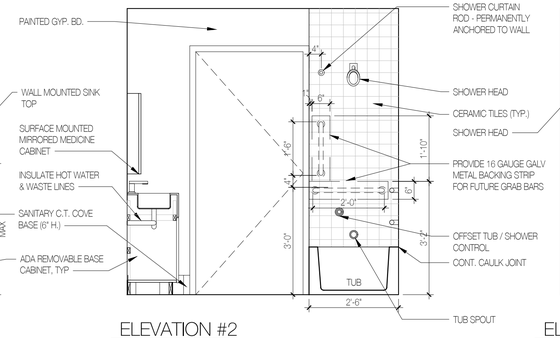
DRAWING NO: A-510.01

NYC DOB NUMBER: 321191802



ELEVATION #1

SCALE : ½" = 1'-0"



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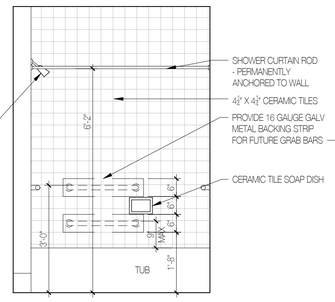

ELEVATION #3

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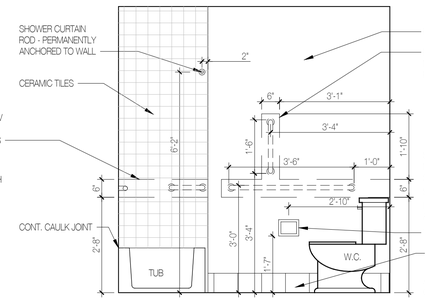

ELEVATION #4

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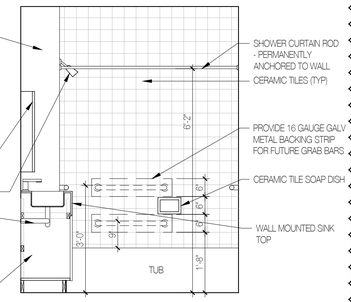
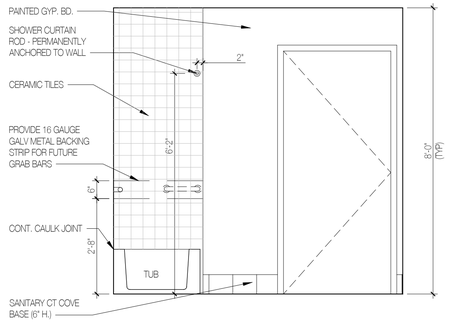


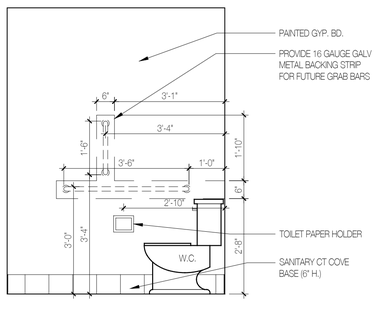
ELEVATION #5

SCALE : ½" = 1'-0"



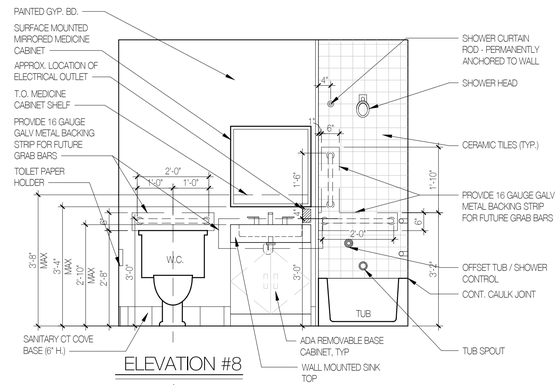
ELEVATION #6

SCALE : ½" = 1'-0"



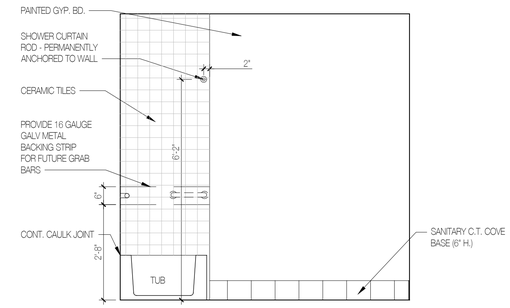
ELEVATION #7

SCALE : ½" = 1'-0"



ELEVATION #8

SCALE : ½" = 1'-0"



ELEVATION #9

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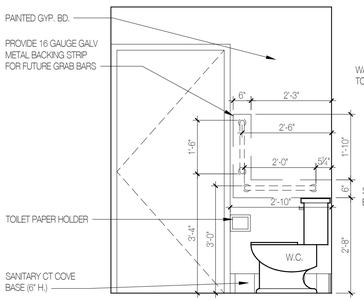
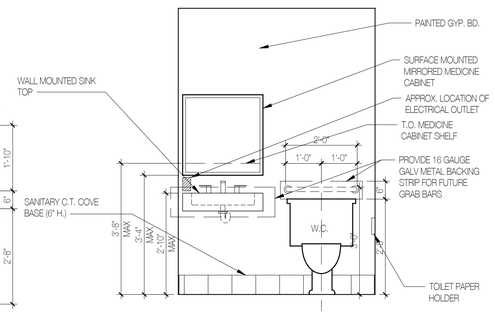


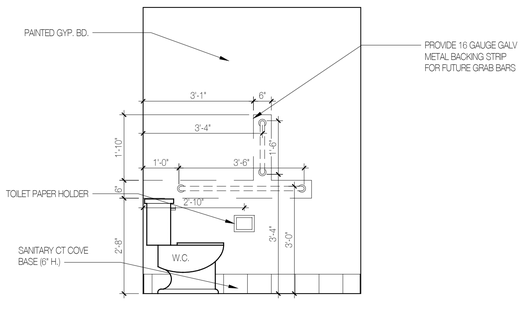
ELEVATION #10

SCALE : ½" = 1'-0"



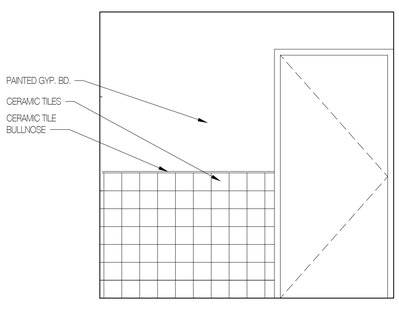
ELEVATION #11

SCALE : ½" = 1'-0"



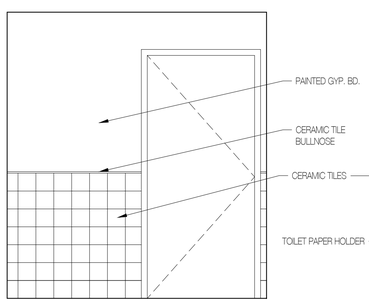
ELEVATION #12

SCALE : ½" = 1'-0"



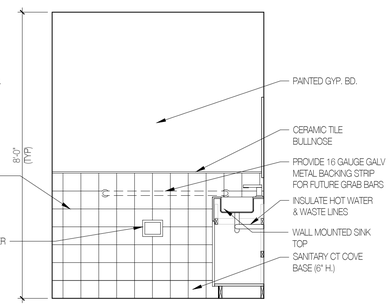
ELEVATION #13

SCALE : ½" = 1'-0"



ELEVATION #14

SCALE : ½" = 1'-0"



ELEVATION #15

SCALE : ½" = 1'-0"

NOTES:
1. FOR BATHROOM LAYOUTS SEE DWG. A-510
2. REFER TO LATEST ELECTRICAL CODE FOR ALL ELECTRICAL OUTLET REQUIREMENTS INCLUDING HEIGHT, SPACING, ETC. COORDINATE W/ ELECTRICAL DWGS.
3. SEE SPECIFICATIONS / INTERIOR DESIGN DWGS FOR BATHROOM ACCESSORIES

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:
AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:
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NEW YORK, NY 10022
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STRUCTURAL ENGINEER:
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62 WEST 45TH STREET, 11TH FLOOR
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MEP ENGINEER:
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T: 718.872.6112

INTERIOR DESIGNER:
ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS
01.28.18	RE-ISSUED TO D.O.B. FOR REVIEW AND COMMENTS
06.04.18	RE-ISSUED TO D.O.B.
07.27.18	90% PROGRESS SET
05.03.19	PAA TO D.O.B.
05.31.19	BID SET
08.02.19	99% CONSTRUCTION SET
1 08.15.19	PAA TO D.O.B.

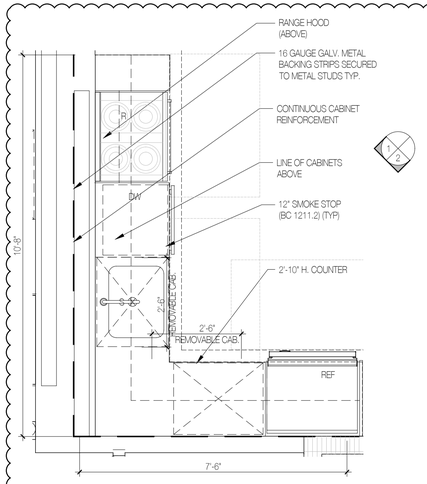
SHEET TITLE:

BATHROOM ELEVATIONS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

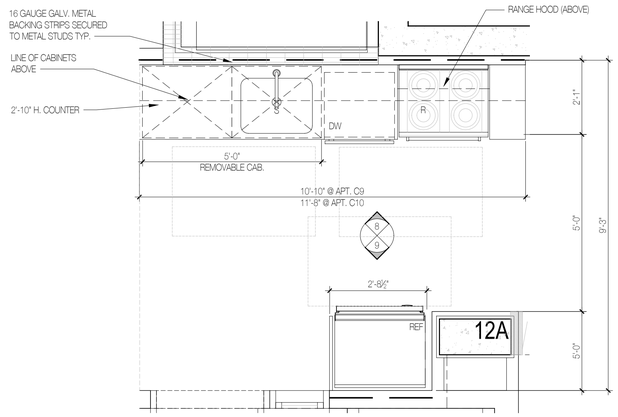
ISSUE DATE: 10-19-15
PROJECT NO: #1520
DRAWN BY: UZ
CHECKED BY: TL
SCALE: AS NOTED
SHEET NO:
DRAWING NO: A-511.01
NYC DOB NUMBER: 321191802



1 KIT. A ADAPTABLE ENLARGED KITCHEN PLAN

SCALE : ½" = 1'-0"

APT. TYPE	AS SHOWN	OPP. HAND
B1		X
B2	X	

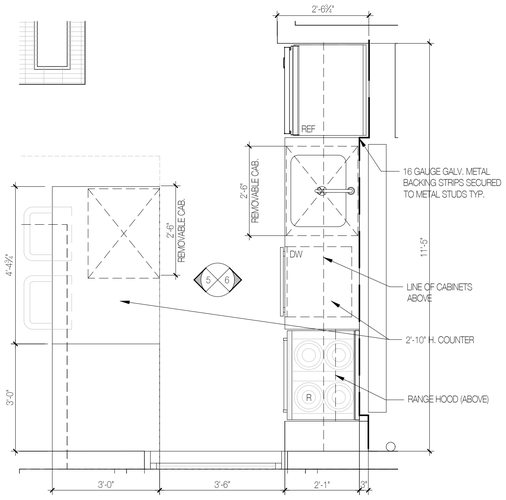


2 ADAPTABLE ENLARGED KITCHEN PLAN

A-502

SCALE : ½" = 1'-0"

APT. TYPE	AS SHOWN	OPP. HAND
C5		X

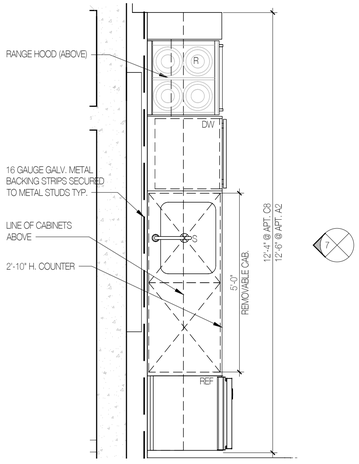


3 KIT. B ADAPTABLE ENLARGED KITCHEN PLAN

A-502

SCALE : ½" = 1'-0"

APT. TYPE	AS SHOWN	OPP. HAND
C3		X



4 KIT. C ADAPTABLE ENLARGED KITCHEN PLAN

SCALE : ½" = 1'-0"

A-500, A-502

APT. TYPE	AS SHOWN	OPP. HAND	APT. TYPE	AS SHOWN	OPP. HAND
A1		X	B4	X	
A2		X	C1	X	
A3		X	C2		X
A4		X	C4		X
A5	X		C6		X

ADAPTABILITY NOTES:
1. SINK AND COUNTER, AND COUNTER ABOVE WORK SURFACE SHALL BE RELOCATED WITHIN 28 AND 36 INCHES ABOVE THE FLOOR WITHOUT CUTTING THE COUNTER OR DAMAGING ADJACENT CABINETS, WALLS, OR DOORS AND STRUCTURAL ELEMENTS. PLUMBING ROUGH-IN SHALL PERMIT CONNECTIONS OF SUPPLY AND DRAIN PIPES FOR SINKS MOUNTED AT THE HEIGHT OF 28 INCHES. (ANSI 1003.12.4.2, UFAS 4.34.6.5)
2. WHERE APPLIANCES' CONTROLS ARE NOT IN COMPLIANCE WITH REACH RANGE OF 309.3 AND 308 OF ANSI, THE OWNER SHALL REPLACE SUCH APPLIANCES IN CONFORMANCE WITH SECTION 309.3 AT THE TIME A PERSON WITH PHYSICAL DISABILITIES TAKES OCCUPANCY OF THE UNIT, OR WITHIN 10 DAYS OF THE DATE THE REQUEST IS MADE BY A PERSON WITH PHYSICAL DISABILITIES, AT THE OWNER'S EXPENSE. (BC 1107.2.3.2)
3. COMBINATION REFRIGERATORS AND FREEZERS SHALL HAVE AT LEAST 50 PERCENT OF THE FREEZER COMPARTMENT SHELVES, INCLUDING THE BOTTOM OF THE FREEZER 54 INCHES MAX ABOVE THE FLOOR WHEN THE SHELVES ARE INSTALLED AT THE MAX HEIGHTS POSSIBLE IN THE COMPARTMENT. WHERE REFRIGERATORS AND FREEZERS ARE NOT IN COMPLIANCE WITH THE ABOVE, THE OWNER SHALL REPLACE SUCH APPLIANCES WITH COMPLYING APPLIANCES AT THE TIME A PERSON WITH PHYSICAL DISABILITIES TAKES OCCUPANCY OF THE UNIT, OR WITHIN 10 DAYS OF THE DATE THE REQUEST IS MADE BY A PERSON WITH PHYSICAL DISABILITIES, A THE OWNER'S EXPENSE. (BC 1107.2.3.3).
4. WHERE ONE STORAGE SHELF OR CABINET IS NOT MOUNTED ABOVE WORK COUNTERS AT 48 INCHES MAX ABOVE THE FLOOR, THE OWNER SHALL INSTALL SUCH STORAGE SHELF OR CABINET A THE TIME A PERSON WITH PHYSICAL DISABILITIES TAKES OCCUPANCY OF THE UNIT, OR WITHIN 10 DAYS OF THE DATE THE REQUEST IS MADE BY A PERSON WITH PHYSICAL DISABILITIES, AT THE OWNER'S EXPENSE.

GENERAL NOTES:
1. ALL FINISHES AS PER INTERIOR DESIGN DWGS.
2. COORDINATE UPPER CABINET DEPTH WITH INTERIOR DESIGNER.
3. REFER TO LATEST ELECTRICAL CODE FOR ELECTRICAL REQUIREMENTS, INCLUDING HEIGHT AND SPACING OF OUTLETS. COORDINATE WITH ELECTRICAL DRAWINGS.
4. GC SHALL VERIFY AND COORDINATE ANCHORING REQUIREMENTS FOR WALL MOUNTED ACCESSORIES.
5. EXTEND FLOOR AND WALL FINISHES UNDER AND BEHIND CABINETRY.
6. WATER SUPPLY AND DRAIN PIPES UNDER SINKS SHALL BE INSULATED OR OTHERWISE CONFIGURED TO PROTECT AGAINST CONTACT.
7. THERE SHALL BE NO SHARP OR ABRASIVE SURFACES UNDER SINKS OR REMOVABLE CABINETS.

KITCHEN PLANS

SCALE: ¼" = 1'-0"

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:
AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:
SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:
McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:
A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:
ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
05.03.19	PAA TO D.O.B.
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
01.28.18	RE-ISSUED TO D.O.B. FOR REVIEW AND COMMENTS
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS

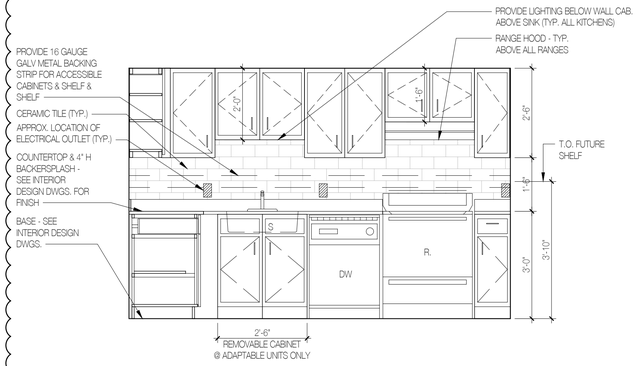
SHEET TITLE:

ENLARGED APARTMENT ADAPTABLE KITCHEN LAYOUTS

SEAL & SIGNATURE

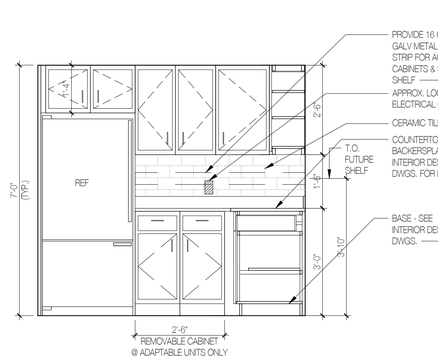
REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

ISSUE DATE: 10-19-15
PROJECT NO: #1520
DRAWN BY: UZ
CHECKED BY: TL
SCALE: AS NOTED
SHEET NO:
DRAWING NO: A-512.01
NYC DOB NUMBER: 321191802



ELEVATION #1

SCALE : ½" = 1'-0"



ELEVATION #2

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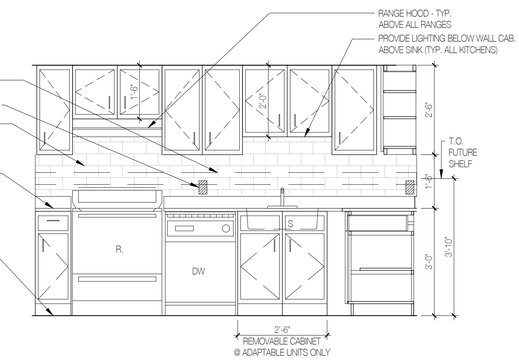
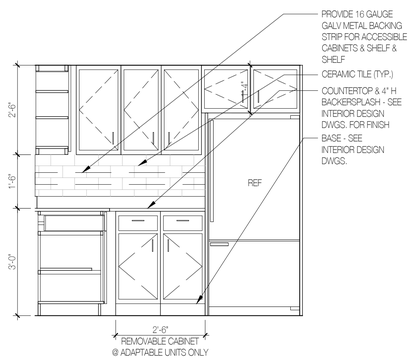


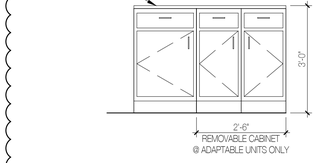
ELEVATION #3

SCALE : ½" = 1'-0"



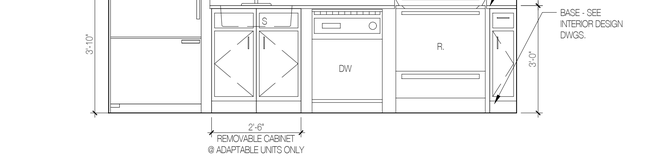
ELEVATION #4

SCALE : ½" = 1'-0"



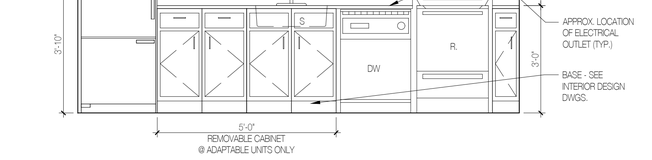
ELEVATION #5

SCALE : ½" = 1'-0"



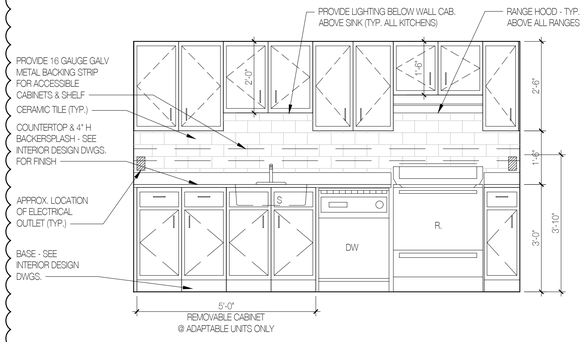
ELEVATION #6

SCALE : ½" = 1'-0"



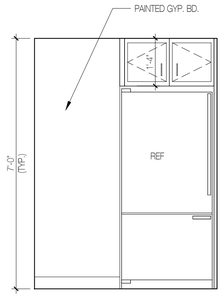
ELEVATION #7

SCALE : ½" = 1'-0"



ELEVATION #8

SCALE : ½" = 1'-0"



ELEVATION #9

SCALE : ½" = 1'-0"

NOTES:
1. FOR KITCHEN LAYOUTS SEE DWG. A-512 & A-513
2. REFER TO LATEST ELECTRICAL CODE FOR ALL ELECTRICAL OUTLET LOCATIONSREQUIREMENTS INCLUDING HEIGHT, SPACING, ETC. COORDINATE W/ ELECTRICAL DWGS.

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:

AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:

SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:

McNAMARA - SALVIA
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2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:

ALCHEMY STUDIO NYC
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NEW YORK, NY 10013
T: 307.760.6454

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SHEET TITLE:

KITCHEN ELEVATIONS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 022789 STATE OF NEW YORK

ISSUE DATE: 10-19-15

PROJECT NO: #1520

DRAWN BY: UZ

CHECKED BY: TL

SCALE: AS NOTED

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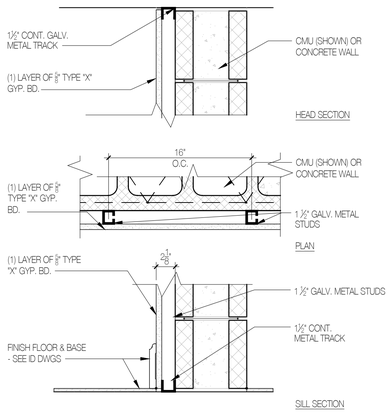
NYC DOB NUMBER: 321191802

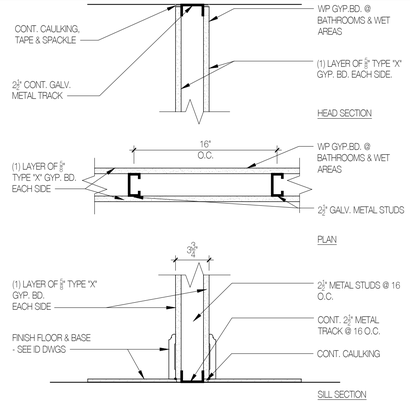


FURRING AT INTERIOR CMU / CONC. WALLS

0-1

SCALE : 1 ½ " = 1' - 0"

FURRING @INTERIOR CMU - PUBLIC CORRIDORS- (2"NOM.)
(1) LAYER ⅝" TYPE "X" GYPSUM BOARD OVER 1½" GALV. METAL FURRING CHANNELS @ 16" O.C.

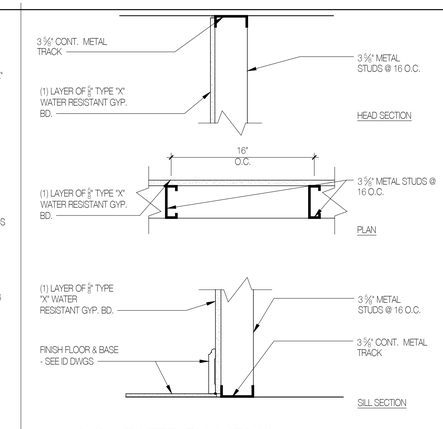


TYPICAL NON RATED PARTITION

0-2

SCALE : 1 ½ " = 1' - 0"

TYPICAL NON RATED PARTITION - (4" NOM.)
(1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON EACH SIDE OF 2 ½" METAL STUDS 16" O.C.

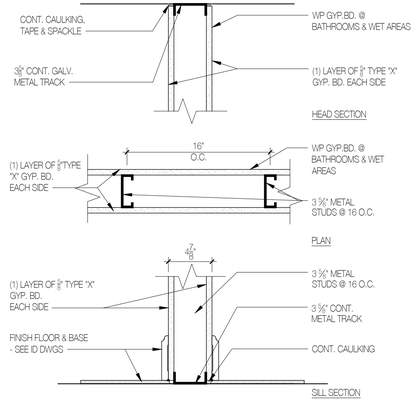


NON RATED PLUMBING CHASE WALL PARTITION

0-3

SCALE : 1 ½ " = 1' - 0"

CHASEWALL - (SEE INTERIOR DESIGN DRAWINGS FOR WALL THICKNESS)
(1) LAYER ⅝" TYPE "X" WATER RESISTANT GYPSUM BOARD ON ONE SIDE OF 3⅝" METAL STUDS @16"O.C.

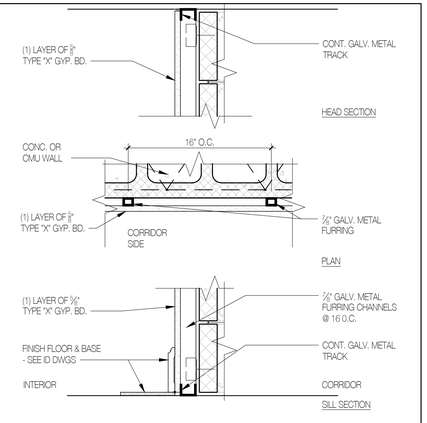


TYPICAL NON RATED PARTITION

0-4

SCALE : 1 ½ " = 1' - 0"

TYPICAL NON RATED PARTITION - (4" NOM.)
(1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON EACH SIDE OF 3⅝" METAL STUDS 16" O.C

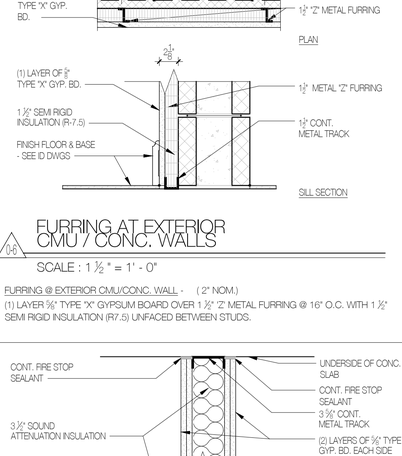


FURRING AT INTERIOR CMU WALLS (PUBLIC CORRIDOR SIDE)

0-5

SCALE : 1 ½ " = 1' - 0"

FURRING AT INTERIOR CMU/CONC. WALL - (1 1/2" NOM.)
(1) LAYER ⅝" TYPE "X" GYPSUM BOARD ON 7/8" GALV. METAL FURRING @ 16 O.C.

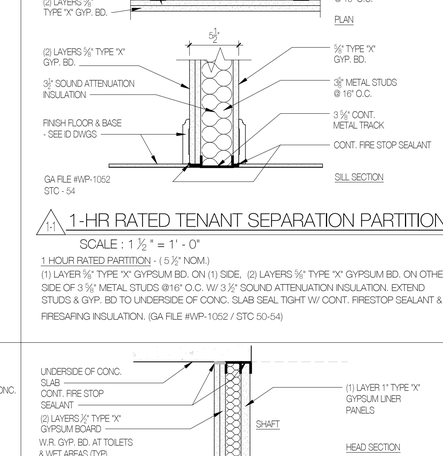


FURRING AT EXTERIOR CMU / CONC. WALLS

0-6

SCALE : 1 ½ " = 1' - 0"

FURRING @ EXTERIOR CMU/CONC. WALL - (2" NOM.)
(1) LAYER ⅝" TYPE "X" GYPSUM BOARD OVER 1 ½" 'Z' METAL FURRING @ 16" O.C. WITH 1 ½" SEMI RIGID INSULATION (R7.5) UNFACED BETWEEN STUDS.

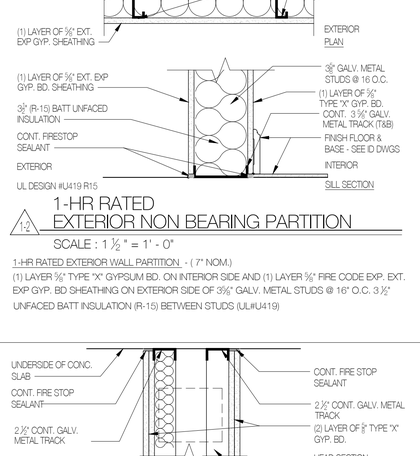


1-HR RATED TENANT SEPARATION PARTITION

1-1

SCALE : 1 ½ " = 1' - 0"

1 HOUR RATED PARTITION - (5 ½" NOM.)
(1) LAYER ⅝" TYPE "X" GYPSUM BD. ON (1) SIDE, (2) LAYERS ⅝" TYPE "X" GYPSUM BD. ON OTHER SIDE OF 3 ⅝" METAL STUDS @16" O.C. W/ 3 ½" SOUND ATTENUATION INSULATION. EXTEND STUDS & GYP. BD TO UNDERSIDE OF CONC. SLAB SEAL TIGHT W/ CONT. FIRESTOP SEALANT & FIRESAFING INSULATION. (GA FILE #WP-1052 / STC 50-54)

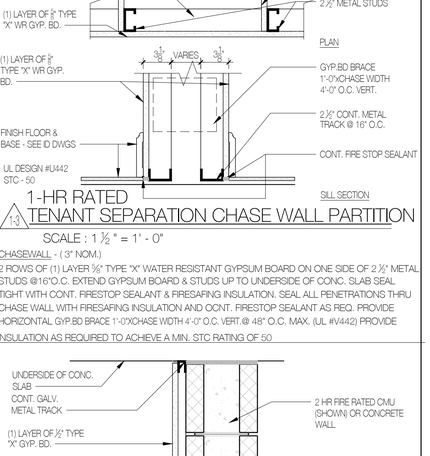


1-HR RATED EXTERIOR NON BEARING PARTITION

1-2

SCALE : 1 ½ " = 1' - 0"

1-HR RATED EXTERIOR WALL PARTITION - (7" NOM.)
(1) LAYER ⅝" TYPE "X" GYPSUM BD. ON INTERIOR SIDE AND (1) LAYER ⅝" FIRE CODE EXP. EXT. EXP GYP. BD SHEATHING ON EXTERIOR SIDE OF 3⅝" GALV. METAL STUDS @ 16" O.C. 3 ½" UNFACED BATT INSULATION (R-15) BETWEEN STUDS (UL#U419)

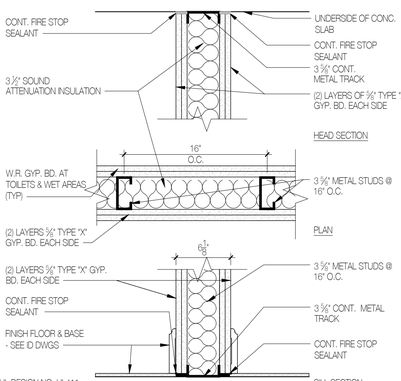


1-HR RATED TENANT SEPARATION CHASE WALL PARTITION

1-3

SCALE : 1 ½ " = 1' - 0"

CHASEWALL - (3" NOM.)
2 ROWS OF (1) LAYER ⅝" TYPE "X" WATER RESISTANT GYPSUM BOARD ON ONE SIDE OF 2 ½" METAL STUDS @16"O.C. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF CONC. SLAB SEAL TIGHT WITH CONT. FIRESTOP SEALANT & FIRESAFING INSULATION. SEAL ALL PENETRATIONS THRU CHASE WALL WITH FIRESAFING INSULATION AND OCNT. FIRESTOP SEALANT AS REQ. PROVIDE HORIZONTAL GYP.BD BRACE 1'-0"XCHASE WIDTH 4'-0" O.C. VERT.@ 48" O.C. MAX. (UL #V442) PROVIDE INSULATION AS REQUIRED TO ACHIEVE A MIN. STC RATING OF 50

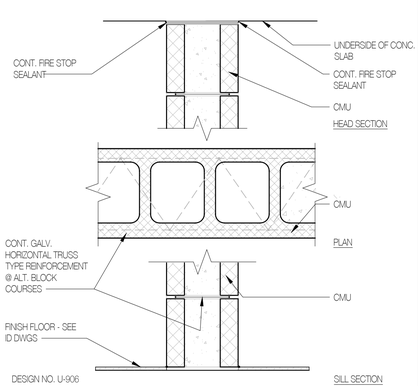


2-HR RATED PARTITION

2-1

SCALE : 1 ½ " = 1' - 0"

2 HOUR RATED PARTITION - (6" NOM.)
(2) LAYERS 5/8" TYPE "X" GYPSUM BOARD ON EACH SIDE OF 3 ⅝" METAL STUDS @16" O.C. WITH 3 ½" SOUND ATTENUATION INSULATION. EXTEND GYPSUM BOARD & STUDS TO UNDERSIDE OF CONC. SLAB SEAL TIGHT WITH CONT. FIRESTOP SEALANT & FIRESAFING.
(GA FILE #WP-1522 / STC 55-59 / UL U411).

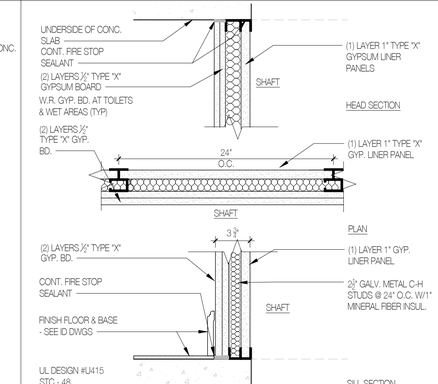


2-HR RATED CMU WALL

2-2

SCALE : 1 ½ " = 1' - 0"

2 HOUR RATED CMU WALL - (6", 8", 10" NOM. AS NOTED)
CMU WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE BLOCK COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF CONC. SLAB WITH CONT. FIRESTOP SEALANT AND/OR FIRESAFING INSULATION WHERE GAP EXISTS BETWEEN TOP OF WALL AND BOTTOM OF PLANK. (UL #U906)

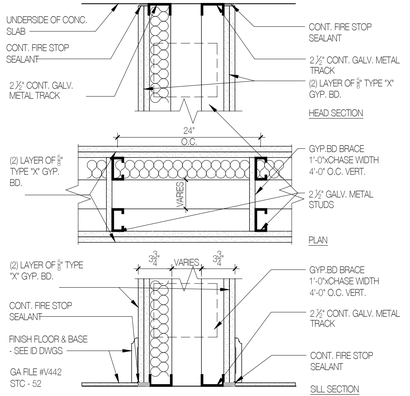


2-HR RATED SHAFT WALL

2-3

SCALE : 1 ½ " = 1' - 0"

2 HOUR, RATED MECHANICAL SHAFT WALL - (4" NOM.)
(2) LAYERS OF ½" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2 ½" METAL C-H STUDS @ 24" O.C. WITH (1) LAYER OF 1" TYPE "X" GYPSUM LINER PANEL ON SHAFT SIDE AND 1" MINERAL FIBER INSULATION IN CAVITY - SEAL TOP OF WALL TO CONC. SLAB WITH CONT. FIRESTOP SEALANT. (GA FILE #7095/ STC 45-49).

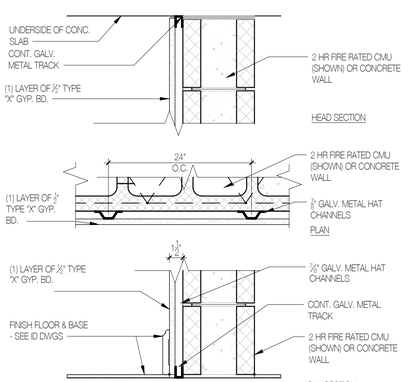


2-HR RATED CHASE WALL

2-4

SCALE : 1 ½ " = 1' - 0"

2 HOUR, RATED MECHANICAL CHASE WALL -
(2) ROWS (2) LAYERS ⅝" TYPE "X" GYPSUM BOARD ON ONE SIDE OF 2½" METAL STUDS @ 16 O.C. EXTEND GYPSUM BOARD & STUDS UP TO UNDERSIDE OF FLOOR SLAB AND/OR ROOF SLAB SEAL TIGHT TO DECK W/ CONT. FIRESTOP SEALANT SEAL ALL PENETRATIONS THRU CHASE WALL W/ FIRESAFING INSULATION AND CONT. FIRESTOP SEALANT AS REQ'D PROVIDE HORIZONTAL 2 ½" METAL STUD BRACING @ 48" O.C. MAX (UL #V442) (PROVIDED INSULATION AS REQUIRED TO ACHIEVE A MIN. STC RATING OF 50)



3-HR RATED WALL

3-1

SCALE : 1 ½ " = 1' - 0"

3 HOUR RATED CMU WALL - (1) LAYER ½" TYPE "X" GYP.BD. OVER ⅞" METAL HAT CHANNELS @ 24" O.C. OVER 2 HR RATED CONC. BLOCK WALL WITH CONT. GALVANIZED HORIZONTAL TRUSS TYPE REINFORCING AT ALTERNATE COURSES. SEAL TOP OF CONCRETE BLOCK WALL TIGHT TO UNDERSIDE OF CONCRETE FLOOR SLAB WITH CONT. FIRESTOP SEALANT AND/OR FIRESAFING INSULATION WHERE A GAP EXISTS BETWEEN TOP OF WALL AND BOTTOM OF PLANK. (UL#U914) (PROVIDE STC RATING OF 50-54 AT COMPACTOR CHUTE ENCLOSURE ADJACENT TO DWELLING UNITS)

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:
AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:
SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:
McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:
A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:
ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
07.27.18	90% PROGRESS SET
05.03.19	PAA TO D.O.B.
05.31.19	BID SET
08.02.19	99% CONSTRUCTION SET
08.15.19	PAA TO D.O.B.

SHEET TITLE:

PARTITION TYPE DETAILS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

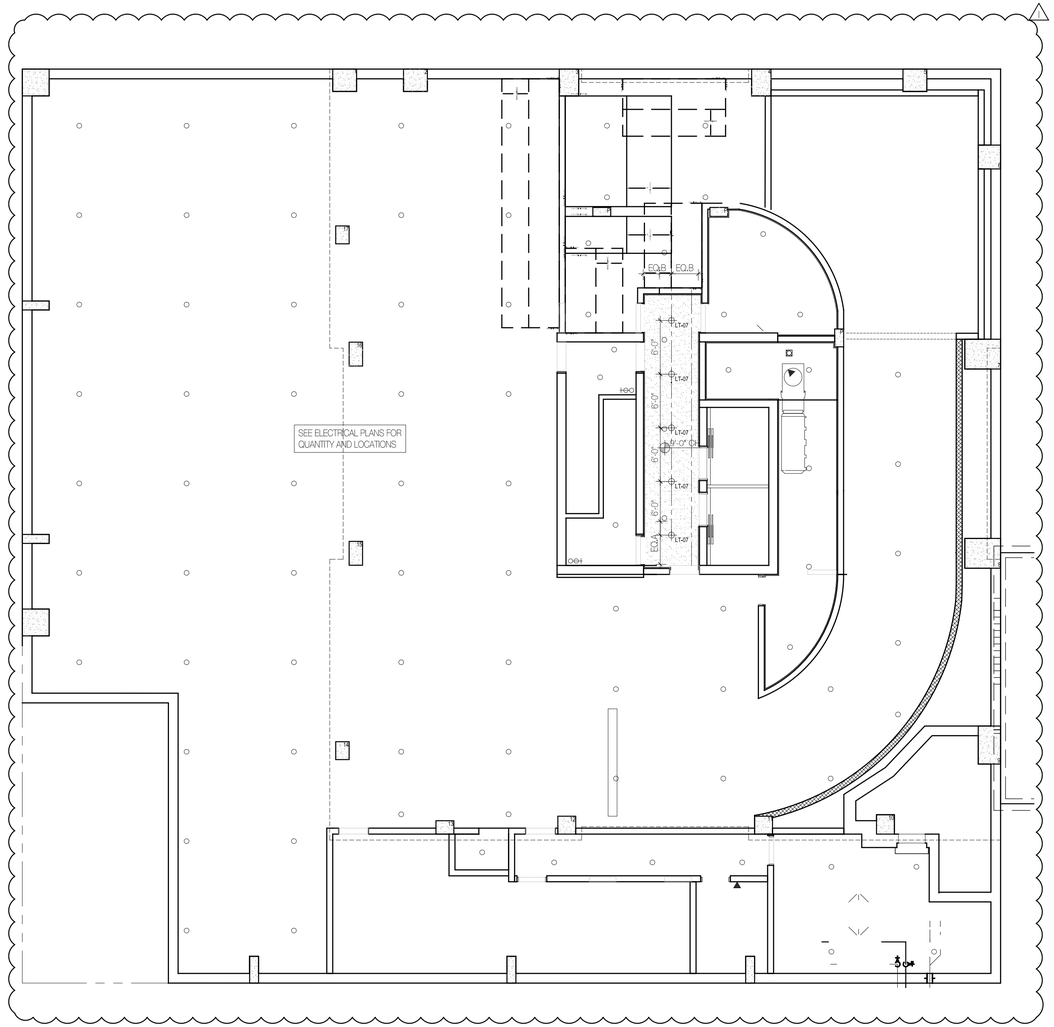
ISSUE DATE: 10-19-15 PROJECT NO: #1520

DRAWN BY: UZ CHECKED BY: TL

SCALE: AS NOTED SHEET NO:

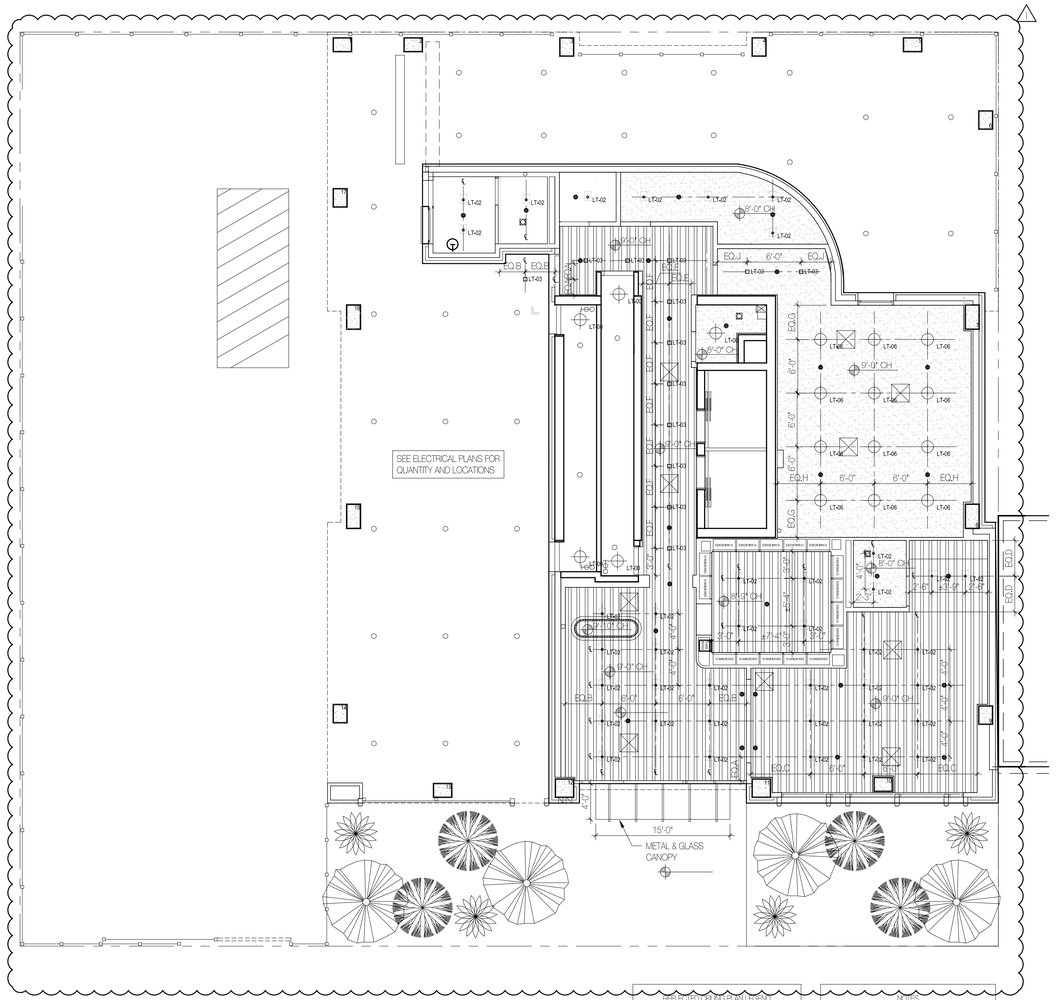
DRAWING NO: A-515.00

NYC DOB NUMBER: 321191802



CELLAR PLAN

SCALE : ⅛" = 1'-0"



1ST FLOOR PLAN

SCALE : ⅛" = 1'-0"

NOTE:
1. SEE LIGHTING PLANS PROVIDED BY MEP FOR ALL BACK OF HOUSE LIGHTING
2. PENDING LOCATIONS OF SPRINKLERS, DUCTS AND PLUMBING

LIGHTING

Spec #	Name	Item #	Finish	Manufacturer	Notes / Dims	Location
LT-01	CUSTOM PENDANT		MT-01/MT-02	TBD		LOBBY
LT-02	3" LED RECESSED DOWNLIGHT	EN3R-LO930AAJ/EN34LB-DW	WHITE	ELEMENT		BUILDING THROUGHOUT
LT-03	EXO 6" FLUSH MOUNT	700FMEXO640BW-LED930	MATTE BLACK/WHITE	TECH LIGHTING		GROUND FLOOR CORRIDOR; BIKE ROOM; PACKAGE ROOM
LT-04	AMELIE CORD PENDANT		WHITE METAL/BLACK CORD	CEDAR AND MOSS		APARTMENT KITCHENS
LT-05	SPHERE BATH SCONCE		MATTE BLACK/WHITE	CUSTOM	4.75" DIA X 5.25" D	APARTMENT BATHROOMS
LT-06	MEADOWLARK 16" ROD PENDANT		WHITE	CEDAR AND MOSS	18" LENGTH	FITNESS CENTER
LT-07	TERRA SURFACE		BLACK GLAZE	CEDAR AND MOSS	7.5"L X 8"W; 5.5"W CANOPY	TYPICAL RESIDENTIAL CORRIDOR

REFLECTED CEILING PLAN LEGEND

	GYPSUM BOARD CEILING - PAINT FINISH - BENJAMIN MOORE, OXFORD WHITE FLAT FINISH
	EXPOSED FINISH
	PAINTED BEADBOARD
	A/C CEILING DIFFUSER
	WALL MOUNTED SPRINKLER
	CEILING MOUNTED SPRINKLER
	CEILING REGISTER
	TOILET EXHAUST FAN
LT-XX	WALL MOUNTED FIXTURE
LT-XX	RECESSED FIXTURE
LT-XX	SURFACE MOUNTED FIXTURE
SCM	SMOKE & CARBON MONOXIDE DETECTOR

NOTES

1.)	CLOSET SPACES TO BE AT 8'-0" C.H. U.O.N.
2.)	ALL LIV/DR AREAS TO BE AT 8'-0" C.H. MIN. CLR.
3.)	ALL KITCHEN AND BATHROOM AREAS TO BE AT 7'-6" C.H. MIN. CLR.
4.)	ALL SOFFITS SHALL BE 12" FROM FINISHED CEILING TO BOTTOM OF FINISHED SOFFIT
5.)	SOFFIT HEIGHTS SPECIFIED AS PER PLANS. SOFFIT 6'-6" MIN. CLR. FROM FINISHED FLOOR TO BOTTOM OF FINISHED SOFFIT.
6.)	ALL PAINT FINISHES TO BE APPROVED BY OWNER/SHP

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:

AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:

SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:

McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
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MEP ENGINEER:

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2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:

ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
07.27.18	90% PROGRESS SET

SHEET TITLE:

CELLAR & 1ST FLOOR RCP

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

ISSUE DATE: 10-19-15

PROJECT NO: #1520

DRAWN BY: MB

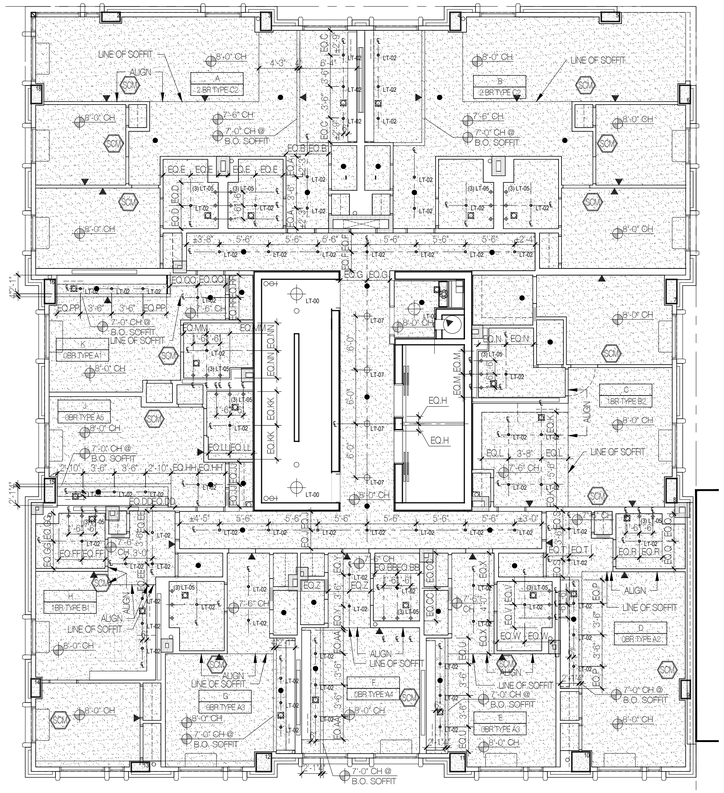
CHECKED BY: AM

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

SHEET NO:

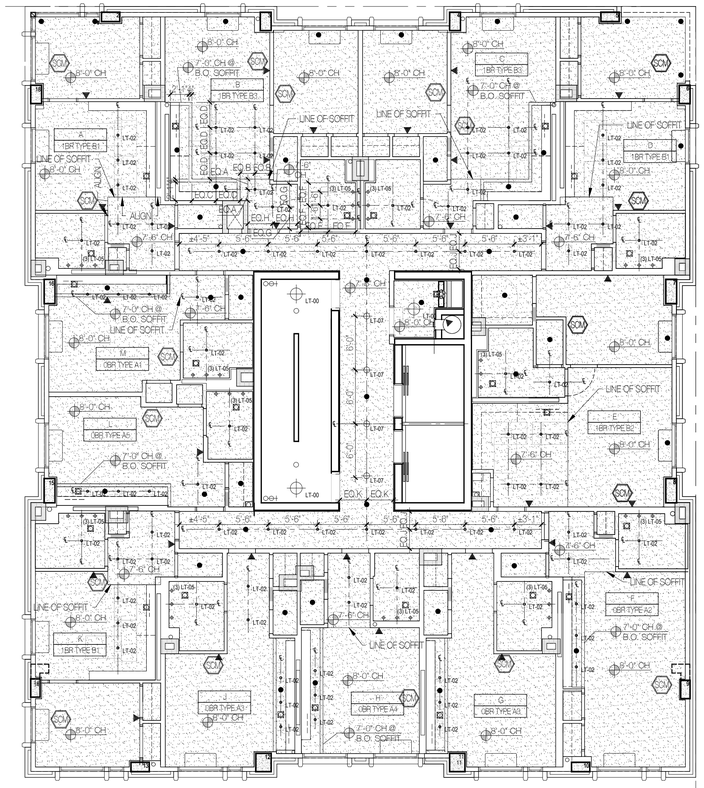
DRAWING NO: A-520.00

NYC DOB NUMBER: 321191802



3 A-101 **2ND FLOOR PARTIAL PLAN**

SCALE : ⅛" = 1'-0"



1 A-101 **11TH FL. COLUMN**

SCALE : ⅛" = 1'-0"

2 A-101 **11TH FL. COLUMN**

SCALE : ⅛" = 1'-0"

2ND - 3RD FLOOR PLAN

SCALE : ⅛" = 1'-0"

4TH - 11TH FLOOR PLAN

SCALE : ⅛" = 1'-0"

NOTE:
1. SEE LIGHTING PLANS PROVIDED BY MEP FOR ALL BACK OF HOUSE LIGHTING
2. PENDING LOCATIONS OF SPRINKLERS, DUCTS AND PLUMBING

REFLECTED CEILING PLAN LEGEND	
	GYPSUM BOARD CEILING - PAINT FINISH - BENJAMIN MOORE, OXFORD WHITE FLAT FINISH
	EXPOSED FINISH
	PAINTED BEADBOARD
	A/C CEILING DIFFUSER
	WALL MOUNTED SPRINKLER
	CEILING MOUNTED SPRINKLER
	CEILING REGISTER
	TOILET EXHAUST FAN
LT-XX	WALL MOUNTED FIXTURE
LT-XX	RECESSED FIXTURE
LT-XX	SURFACE MOUNTED FIXTURE
SCM	SMOKE & CARBON MONOXIDE DETECTOR

NOTES	
1.)	CLOSET SPACES TO BE AT 8'-0" C.H. U.O.N.
2.)	ALL LR/DR AREAS TO BE AT 8'-0" C.H. MIN. CLR.
3.)	ALL KITCHEN AND BATHROOM AREAS TO BE AT 7'-6" C.H. MIN. CLR.
4.)	ALL SOFFITS SHALL BE 12" FROM FINISHED CEILING TO BOTTOM OF FINISHED SOFFIT
5.)	SOFFIT HEIGHTS SPECIFIED AS PER PLANS. SOFFIT 6'-0" MIN. CLR. FROM FINISHED FLOOR TO BOTTOM OF FINISHED SOFFIT.
6.)	ALL PAINT FINISHES TO BE APPROVED BY OWNERSHIP

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:

AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:

SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:

McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:

A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:

ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
07.27.18	90% PROGRESS SET

SHEET TITLE:

2ND - 11TH FLOOR RCP

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

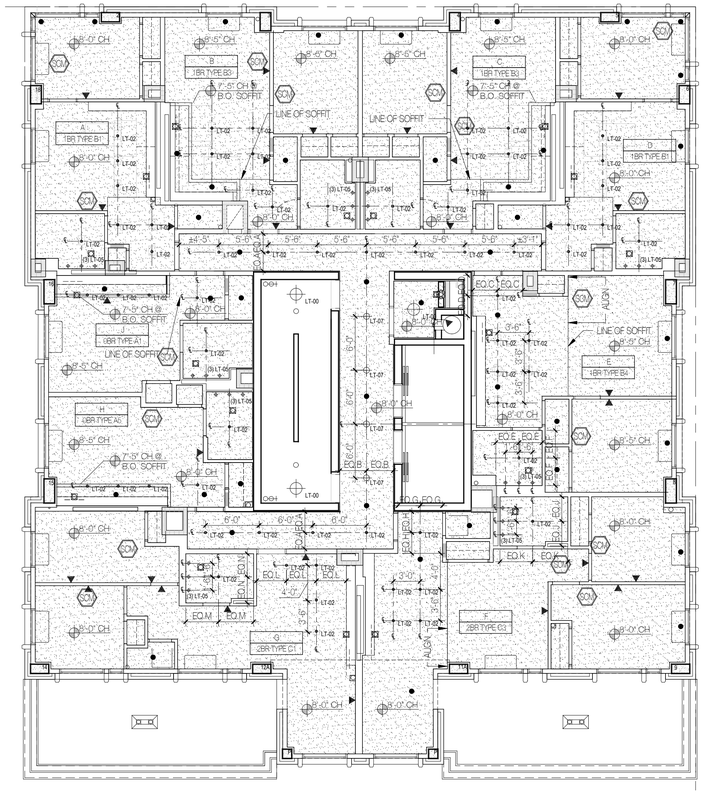
ISSUE DATE: 10-19-15 PROJECT NO: #1520

DRAWN BY: MB CHECKED BY: AM

SCALE: 1/8"=1'-0" SHEET NO:

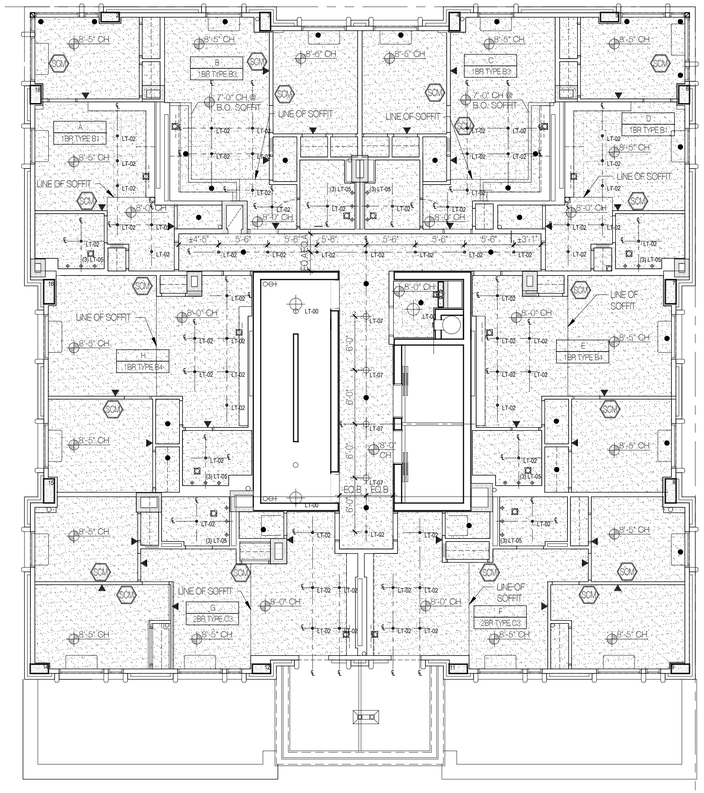
DRAWING NO: A-521.00

NYC DOB NUMBER: 321191802



12TH FLOOR PLAN

SCALE : ⅛" = 1'-0"



13TH FLOOR PLAN

SCALE : ⅛" = 1'-0"

REFLECTED CEILING PLAN LEGEND	
	GYPSUM BOARD CEILING - PAINT FINISH - BENJAMIN MOORE, OXFORD WHITE FLAT FINISH
	EXPOSED FINISH
	PAINTED BEADBOARD
	A/C CEILING DIFFUSER
	WALL MOUNTED SPRINKLER
	CEILING MOUNTED SPRINKLER
	CEILING REGISTER
	TOILET EXHAUST FAN
LT-XX	WALL MOUNTED FIXTURE
LT-XX	RECESSED FIXTURE
LT-XX	SURFACE MOUNTED FIXTURE
SCA	SMOKE & CARBON MONOXIDE DETECTOR

NOTES	
1.)	CLOSET SPACES TO BE AT 8'-0" C.H. U.O.N.
2.)	ALL LR/DR AREAS TO BE AT 8'-0" C.H. MIN. CLR.
3.)	ALL KITCHEN AND BATHROOM AREAS TO BE AT 7'-6" C.H. MIN. CLR.
4.)	ALL SOFFITS SHALL BE 12" FROM FINISHED CEILING TO BOTTOM OF FINISHED SOFFIT
5.)	SOFFIT HEIGHTS SPECIFIED AS PER PLANS. SOFFIT 6'-0" MIN. CLR. FROM FINISHED FLOOR TO BOTTOM OF FINISHED SOFFIT.
6.)	ALL PAINT FINISHES TO BE APPROVED BY OWNERSHIP

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:

AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

AUFGANG ARCHITECTS

DEVELOPER:

SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:

McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
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MEP ENGINEER:

A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:

ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

DATE	SUBMISSIONS / REVISIONS
08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
07.27.18	90% PROGRESS SET

SHEET TITLE:

12TH - 13TH FLOOR RCP

SEAL & SIGNATURE

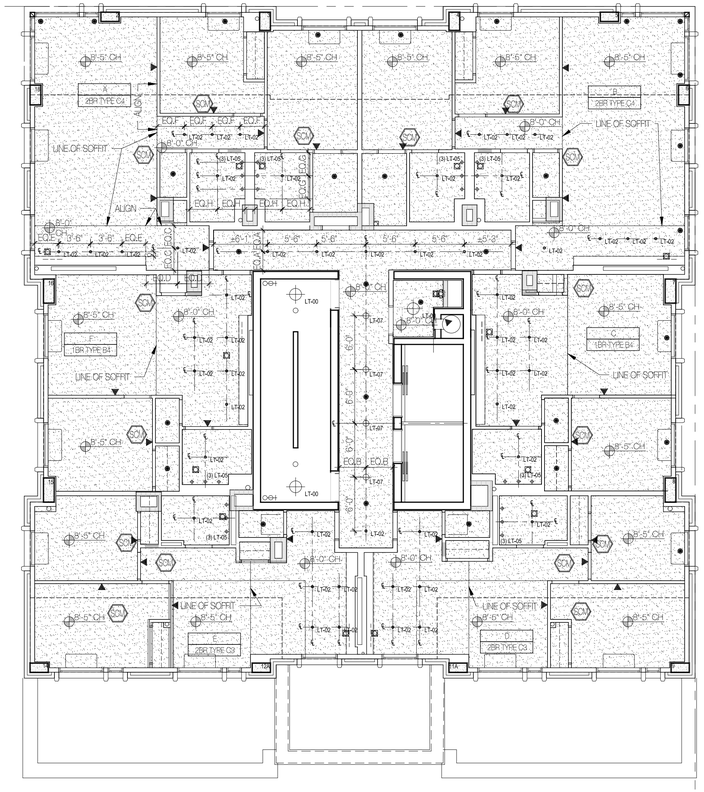
REGISTERED ARCHITECT ARIEL AUFGANG 022789 STATE OF NEW YORK

ISSUE DATE:	PROJECT NO:
10-19-15	#1520
DRAWN BY:	CHECKED BY:
MB	AM
SCALE:	SHEET NO:
1/8"=1'-0"	

DRAWING NO:

A-522.00

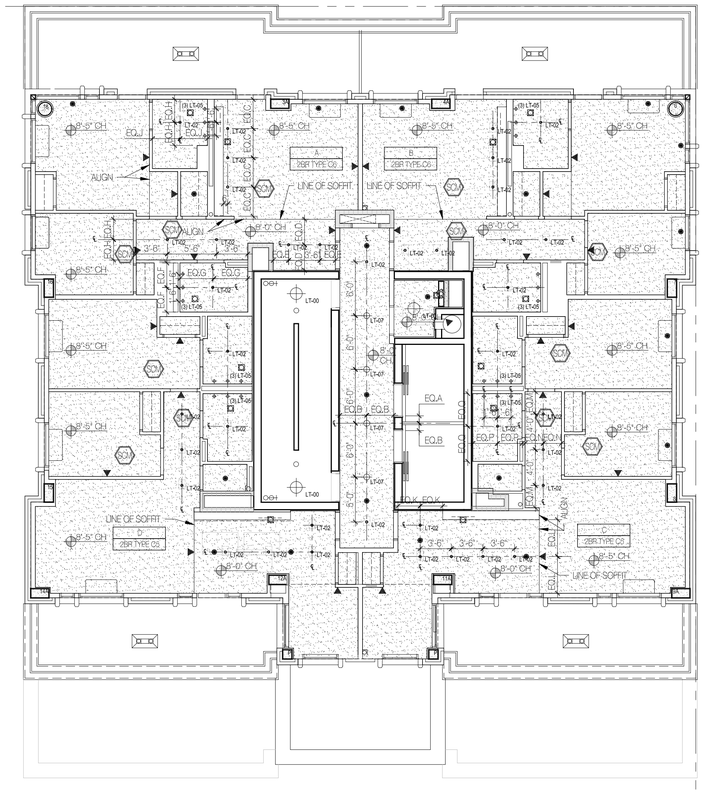
NYC DOB NUMBER: 321191802



14TH - 15TH FLOOR PLAN

SCALE : ⅛" = 1'-0"

NOTE:
1. SEE LIGHTING PLANS PROVIDED BY MEP FOR ALL BACK OF HOUSE LIGHTING
2. PENDING LOCATIONS OF SPRINKLERS, DUCTS AND PLUMBING



16TH FLOOR PLAN

SCALE : ⅛" = 1'-0"

RCP LEGEND	
	GYPSUM BOARD CEILING - PAINT FINISH - BENJAMIN MOORE, OXFORD WHITE FLAT FINISH
	EXPOSED FINISH
	PAINTED BEADBOARD
	A/C CEILING DIFFUSER
	WALL MOUNTED SPRINKLER
	CEILING MOUNTED SPRINKLER
	CEILING REGISTER
	TOILET EXHAUST FAN
LT-XX	WALL MOUNTED FIXTURE
LT-XX	RECESSED FIXTURE
LT-XX	SURFACE MOUNTED FIXTURE
SCV	SMOKE & CARBON MONOXIDE DETECTOR

NOTES	
1.)	CLOSET SPACES TO BE AT 6'-0" C.H. U.O.N.
2.)	ALL LIVING AREAS TO BE AT 8'-0" C.H. MIN. CLR.
3.)	ALL KITCHEN AND BATHROOM AREAS TO BE AT 7'-6" C.H. MIN. CLR.
4.)	ALL SOFFITS SHALL BE 12" FROM FINISHED CEILING TO BOTTOM OF FINISHED SOFFIT
5.)	SOFFIT HEIGHTS SPECIFIED AS PER PLANS. SOFFIT 6'-6" MIN. CLR. FROM FINISHED FLOOR TO BOTTOM OF FINISHED SOFFIT.
6.)	ALL PAINT FINISHES TO BE APPROVED BY OWNERSHIP

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:

AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:

SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:

McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:

A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:

ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
07.27.18	90% PROGRESS SET

SHEET TITLE:

14TH - 16TH FLOOR RCP

SEAL & SIGNATURE

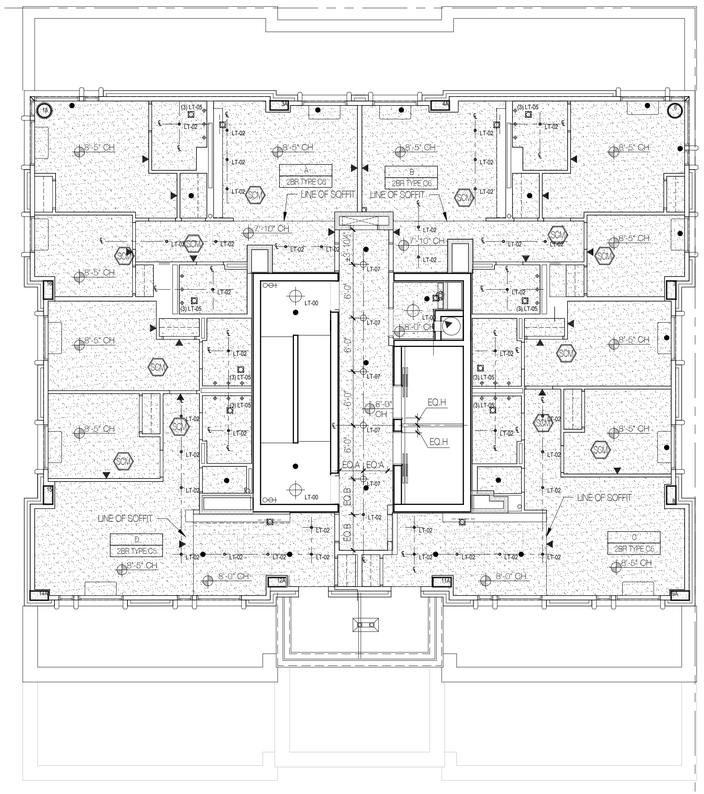
REGISTERED ARCHITECT ARIEL AUFGANG 022789 STATE OF NEW YORK

ISSUE DATE:	PROJECT NO:
10-19-15	#1520
DRAWN BY:	CHECKED BY:
S.Z.	T.L.
SCALE:	SHEET NO:
1/8"=1'-0"	

DRAWING NO:

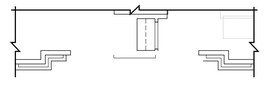
A-523.00

NYC DOB NUMBER: 321191802



17TH - 19TH FLOOR PLAN

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



1 / A-104 PARTIAL PLAN @ 18TH-19TH FLOOR

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

REFLECTED CEILING PLAN LEGEND	
	GYPSUM BOARD CEILING - PAINT FINISH - BENJAMIN MOORE, OXFORD WHITE FLAT FINISH
	EXPOSED FINISH
	PAINTED BEADBOARD
	A/C CEILING DIFFUSER
	WALL MOUNTED SPRINKLER
	CEILING MOUNTED SPRINKLER
	CEILING REGISTER
	TOILET EXHAUST FAN
LT-XX	WALL MOUNTED FIXTURE
LT-XX	RECESSED FIXTURE
LT-XX	SURFACE MOUNTED FIXTURE
SCM	SMOKE & CARBON MONOXIDE DETECTOR

NOTES	
1.)	CLOSET SPACES TO BE AT 6'-0" C.H. U.O.N.
2.)	ALL LR/DR AREAS TO BE AT 8'-0" C.H. MIN. CLR.
3.)	ALL KITCHEN AND BATHROOM AREAS TO BE AT 7'-6" C.H. MIN. CLR.
4.)	ALL SOFFITS SHALL BE 12" FROM FINISHED CEILING TO BOTTOM OF FINISHED SOFFIT
5.)	SOFFIT HEIGHTS SPECIFIED AS PER PLANS. SOFFIT 6'-0" MIN. CLR. FROM FINISHED FLOOR TO BOTTOM OF FINISHED SOFFIT.
6.)	ALL PAINT FINISHES TO BE APPROVED BY OWNERSHIP

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:

AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

AUFGANG ARCHITECTS

DEVELOPER:

SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:

McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:

A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:

ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

DATE	SUBMISSIONS / REVISIONS
1 08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
07.27.18	90% PROGRESS SET

SHEET TITLE:

17TH - 19TH FLOOR RCP

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

ISSUE DATE: 10-19-15

PROJECT NO: #1520

DRAWN BY: S.Z.

CHECKED BY: T.L.

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

SHEET NO:

DRAWING NO: A-524.00

NYC DOB NUMBER: 321191802

DOOR SCHEDULE

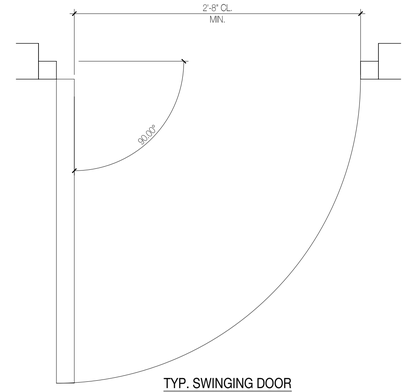
LIST OF ABBREVIATIONS

ALUM. - ALUMINUM
FL. - FLUSH PANEL
GL. - GLASS
H.C. - HOLLOW CORE
H.M. - HOLLOW METAL
K.D. - KNOCK DOWN FRAME
MAR. - MARBLE SADDLE
PTD. - PAINTED
S.C. - SOLID CORE
STL. - STEEL
TEMP. - TEMPERED
W.G. - WIRE GLASS
WD. - WOOD

	ROOM DESIGNATION	DOOR: DESIGNATION	ELEVATION	WIDTH	HEIGHT	THICKNESS	TYPE	MATERIAL	FINISH	FIRE RATING	STC RATING	FRAME: MATERIAL	FINISH	FIRE RATING	SADDLE	HARDWARE SET	ENERGY REQ. U-FACTOR	ENERGY REQ. S.H.G.C.	NOTE : FOR ADITIONAL INFO SEE INTERIOR DESIGN DWG REMARKS
APARTMENTS	APARTMENT ENTRY	1	A	3'-0"	7'-0"	1 3/4"	FL.	STL.	PTD.	1½ HR.	35	STL.	PTD.	1½ HR.	ALUM.				NOTE 10
	BATHROOM	2	B	3'-0"	7'-0"	1 3/8"	FL./H.C.	WD.	PTD.	-	-	H.M.	PTD.	-	MAR				NOTE 12 & 13
	BEDROOM	3	B	3'-0"	7'-0"	1 3/8"	FL./H.C.	WD.	PTD.	-	-	H.M.	PTD.	-					
	CLOSET	4	B	1'-6"	7'-0"	1 3/8"	FL./H.C.	WD.	PTD.	-	-	H.M.	PTD.	-	-				
	CLOSET	4a	B	2'-0"	7'-0"	1 3/8"	FL./H.C.	WD.	PTD.	-	-	H.M.	PTD.	-	-				
	CLOSET	4b	B	2'-6"	7'-0"	1 3/8"	FL./H.C.	WD.	PTD.	-	-	H.M.	PTD.	-	-				
	CLOSET	4c	B	2'-8"	7'-0"	1 3/8"	FL./H.C.	WD.	PTD.	-	-	H.M.	PTD.	-	-				
	CLOSET	4d	B	2'-10"	7'-0"	1 3/8"	FL./H.C.	WD.	PTD.	-	-	H.M.	PTD.	-	-				
	CLOSET	4e	B	3'-0"	7'-0"	1 3/8"	FL./H.C.	WD.	PTD.	-	-	H.M.	PTD.	-	-				
	CLOSET	6	D	(2) 1'-6"	7'-0"	1 3/8"	FL./H.C.	WD.	PTD.	-	-	H.M.	PTD.	-	-				SLIDING DOORS
	CLOSET	6a	D	(2) 1'-9"	7'-0"	1 3/8"	FL./H.C.	WD.	PTD.	-	-	H.M.	PTD.	-	-				SLIDING DOORS
	CLOSET	6b	D	(2) 2'-0"	7'-0"	1 3/8"	FL./H.C.	WD.	PTD.	-	-	H.M.	PTD.	-	-				SLIDING DOORS
	CLOSET	6c	D	(2) 2'-3"	7'-0"	1 3/8"	FL./H.C.	WD.	PTD.	-	-	H.M.	PTD.	-	-				SLIDING DOORS
	CLOSET	6d	D	(2) 2'-6"	7'-0"	1 3/8"	FL./H.C.	WD.	PTD.	-	-	H.M.	PTD.	-	-				SLIDING DOORS
	CLOSET	6e	D	(2) 3'-0"	7'-0"	1 3/8"	FL./H.C.	WD.	PTD.	-	-	H.M.	PTD.	-	-				SLIDING DOOR
	LAUNDRY CLOSET	7	B	2'-8"	7'-0"	1 3/8"	FL./H.C.	WD.	PTD.	-	-	H.M.	PTD.	-	-				
	LAUNDRY CLOSET	7a	B	2'-6"	7'-0"	1 3/8"	FL./H.C.	WD.	PTD.	-	-	H.M.	PTD.	-	-				OPENING TO ACCOMMODATE 24" WIDE COMPACT W/D
PUBLIC SPACES	BUILDING ENTRY & VESTIBULE	10	I	3'-0"	7'-0"	1 3/4"	GLASS	ALUM	PTD.	1½ HR.	-	ALUM	PTD.	1½ HR.	ALUM.		0.50		SEE NOTE #8
	BUILDING ENTRY & VESTIBULE	11	H	3'-0"	7'-0"	1 3/4"	GLASS	ALUM	PTD.	1½ HR.	-	ALUM	PTD.	1½ HR.	ALUM.		0.50		SEE NOTE #8
	AMENITY SPACE	12	G	3'-0"	7'-0"	1 3/4"	GLASS	ALUM	PTD.	1½ HR.	-	ALUM	PTD.	1½ HR.	ALUM.				SEE NOTE #8
	APARTMENT TERRACE	13	K	3'-0"	8'-0"	1 3/4"	GLASS	ALUM	PTD.	-	-	ALUM	PTD.	-	ALUM.		0.50		
	VESTIBULE AT ROOF	14	L	3'-0"	7'-0"	1 3/4"	GLASS	ALUM	PTD.	1½ HR.	-	ALUM	PTD.	1½ HR.	ALUM.		0.50		SEE NOTE #8
	PUBLIC RESTROOM	26	B	3'-0"	7'-0"	1 3/4"	FL./H.C.	HM	PTD.	-	-	H.M.	PTD.	-	MAR.				**SEE NOTE #8** - S.S. KICKPLATE
	AMENITY SPACE	27	N	(2) 3'-0"	9'-4"	1 3/8"	GLASS	ALUM	PTD.	1½ HR.	-	ALUM	PTD.	1½ HR.	ALUM.				SEE NOTE #8 - FIRE RATED ASSEMBLY AS NOTED OR SPRINKLER CURTAIN PROVIDED BY ENGINEER
SERVICE AREAS	STAIR A, B	20	J	3'-0"	7'-0"	1 3/4"	FL.	STL	PTD.	1½ HR.	-	STL	PTD.	1½ HR.	ALUM.				SEE NOTE #8
	PARKING AREA	20	J	3'-0"	7'-0"	1 3/4"	FL.	STL	PTD.	1½ HR.	-	STL	PTD.	1½ HR.	ALUM.				SEE NOTE #8
	REFUSE ROOM / PCKG ROOM	21	F	**3'-0"**	7'-0"	**1 3/4"**	**FL.**	**STL**	**PTD.**	**1½ HR.**	-	**STL**	**PTD.**	**1½ HR.**	**ALUM.**				SEE NOTE #8
	BICYCLE STORAGE	22	F	3'-0"	7'-0"	1 3/4"	FL.	STL	PTD.	1½ HR.	-	STL	PTD.	1½ HR.	ALUM.				SEE NOTE #8
	MECH. AREAS / COMPACTOR ROOM/MECH. ROOF	23	F	3'-0"	7'-0"	1 3/4"	FL.	STL	PTD.	1½ HR.	-	STL	PTD.	1½ HR.	ALUM.				SEE NOTE #8 , #11 - PROVIDE PANIC HARDWARE @ ELECTRICAL ROOM
	STAIR @ ROOF	24	F	3'-0"	7'-0"	1 3/4"	FL.	STL	PTD.	1½ HR.	-	STL	PTD.	1½ HR.	ALUM.				SEE NOTE #8
	PARKING BOOTH	25	B	3'-0"	7'-0"	1 3/4"	FL.	STL	PTD.	1½ HR.	-	STL	PTD.	1½ HR.	ALUM.				SEE NOTE #8 , INSULATED DOOR
	ELECTRICAL CLOSET	28	C	2'-10"	7'-0"	1 3/4"	FL.	STL	PTD.	1½ HR.	-	STL	PTD.	1½ HR.	ALUM.				SEE NOTE #8 - DOOR MUST OPEN 180 DEGREES

DOOR NOTES:

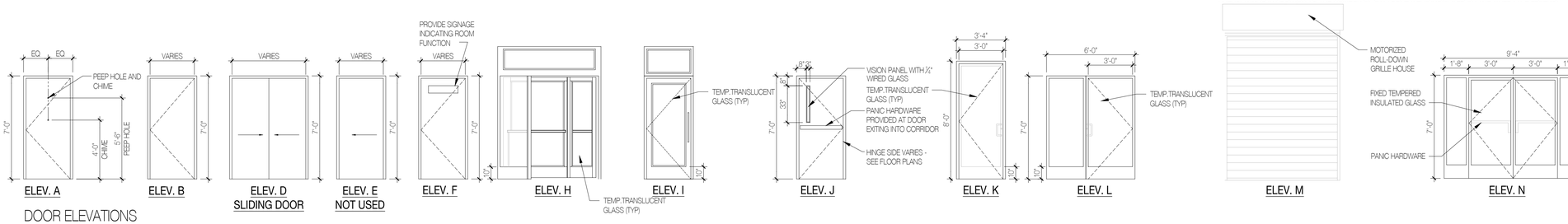
1. FOR DOOR HARDWARE SCHEDULE SEE SPECIFICATIONS & INTERIOR DESIGN DWGS.
2. ALL HARDWARE SHALL BE LEVER HANDLE AS PER A.D.A. REQUIREMENTS (U.O.N.).
3. FOR DOOR HEAD, JAMB AND SILL DETAILS SEE DWG. A-600
4. PROVIDE MARBLE ADA SADDLES AT ALL FLOOR TO TILE TRANSITIONS (U.O.N.)
5. ALL EXTERIOR DOORS SHALL BE INSULATED AND PROVIDED WITH WEATHER STRIPPING AT ALL SIDES & BOTTOM OF DOOR.
6. ALL EXIT ACCESS DOORS SHALL BE PROVIDED WITH SELF CLOSER AND ADA SMOKE PROOF SADDLE.
7. ALL EXIT AND EXIT DISCHARGE DOORS SHALL BE PROVIDED WITH PANIC HARDWARE, SELF CLOSER, AND ADA SMOKE PROOF SADDLE.
8. ALL FIRE RESISTANT RATED DOORS SHALL SELF CLOSING.
9. ALL DOORS IN WINDOW WALL SHALL BE COORDINATED WITH MANUFACTURER.
10. APARTMENT ENTRY DOORS: PROVIDE HEAVY DUTY LATCH SET & HEAVY DUTY DEAD BOLT OPERABLE BY KEY FROM THE OUTSIDE AND A THUMB-TURN FROM THE INSIDE AS WELL AS CHAIN GUARD AND VIEWING DEVICE AS PER BC 1008.4.1
11. DOORS THAT LEAD TO AREAS THAT MIGHT PROVE HAZARDOUS TO A PERSON WHO IS BLIND, INCLUDING, BUT NOT LIMITED TO, DOORS TO LEADING PLATFORMS, BOILER ROOMS, AND STAGES, SHALL BE MADE IDENTIFIABLE TO THE TOUCH BY A TEXTURED SURFACE ON THE DOOR HANDLE, KNOB, PULL OR OTHER OPERATING HARDWARE. BC1109.9.5
12. BATHROOM DOORS TO BE A WIDTH OF 3'-0". G.C. TO PROVIDE MOCK UP TO VERIFY DOOR CLEARANCE (MIN. CLEARANCE IS 32") SEE DOOR SWING DETAIL
13. G.C. TO COORDINATE APT. LAUNDRY ROOM SIZE WITH WASHER AND DRYER SIZE PROVIDED BY INTERIOR DESIGNER
14. BATHROOM DOORS AND FRAMES SHALL BE PROVIDED WITH MORTISED HINGE AND LATCH TO PERMIT FUTURE REVERSAL OF DOOR - SEE PLANS FOR LOCATION
15. THE MAXIMUM FORCE TO OPEN AN EXTERIOR DOOR IS 8.5 LB
16. THE MAXIMUM FORCE TO OPEN AN INTERIOR DOOR IS 5 LB



TYP. SWINGING DOOR
ADA DETAIL

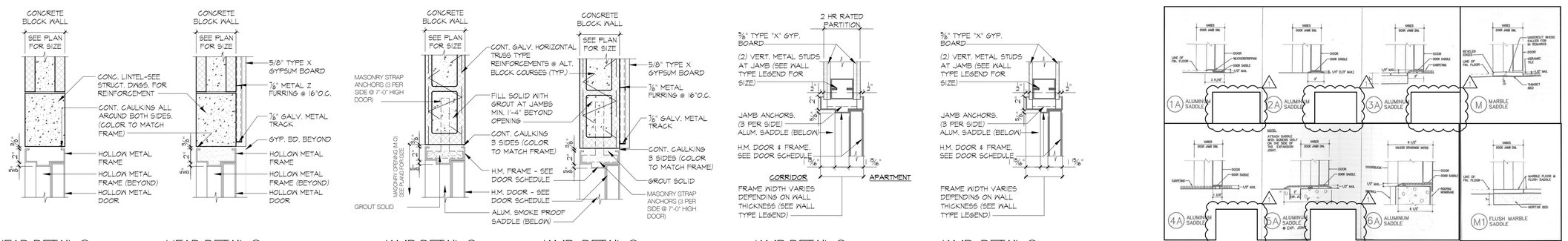
NOTES:

1. USE WOOD SLEEPERS TO LEVEL WOOD FLOORING (NON-FLOATING WOOD FLOOR SYSTEMS).
2. USE CONC. TOPPING OVER CONCRETE SLABS IN ORDER TO PROVIDE LEVEL SUBSTRATE TO RECEIVE FLOATING WOOD FLOOR SYSTEM.
3. PROVIDE ½" CEMENTITIOUS BOARD AS A SUBSTRATE FOR SURFACES TO RECEIVE A TILE FINISH IN SHOWER AREAS. THIS IS IN ADDITION TO THE NUMBER OF GYP. BD. LAYERS INDICATED ON THE WALL TYPE LEGEND.



ELEV. A | ELEV. B | ELEV. D SLIDING DOOR | ELEV. E NOT USED | ELEV. F | ELEV. H | ELEV. I | ELEV. J | ELEV. K | ELEV. L | ELEV. M | ELEV. N

DOOR ELEVATIONS



HEAD DETAIL @ MASONRY WALL — SCALE : 1 ½" = 1'-0"

HEAD DETAIL @ GYP. BD./C.M.U. WALL — SCALE : 1 ½" = 1'-0"

JAMB DETAIL @ MASONRY WALL — SCALE : 1 ½" = 1'-0"

JAMB DETAIL @ GYP. BD./C.M.U. WALL — SCALE : 1 ½" = 1'-0"

JAMB DETAIL @ CORRIDOR/APT. ENTRY — SCALE : 1 ½" = 1'-0"

JAMB DETAIL @ GYP. BD. WALL — SCALE : 1 ½" = 1'-0"

DOOR SADDLE DETAILS
NOT TO SCALE

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:
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DEVELOPER:
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STRUCTURAL ENGINEER:
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62 WEST 45TH STREET, 11TH FLOOR
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MEP ENGINEER:
A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
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INTERIOR DESIGNER:
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AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS
01.26.18	REISSUED TO D.O.B.
06.04.18	RE-ISSUED TO D.O.B.
07.27.18	90% PROGRESS SET
05.03.19	PAA TO D.O.B.
05.31.19	BID SET
08.02.19	99% CONSTRUCTION SET
1 8.15.19	PAA TO D.O.B.

SHEET TITLE:

DOOR SCHEDULE & MISCELLANEOUS DETAILS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

ISSUE DATE: 10-19-15
PROJECT NO: #1520
DRAWN BY: M.B.
CHECKED BY: T.L./A.F.M.
SCALE: AS NOTED
SHEET NO:

DRAWING NO: A-600.01

NYC DOB NUMBER: 321191802

WINDOW SCHEDULE

LIST OF ABBREVIATIONS

ALUM. - ALUMINUM
FL. - FLUSH PANEL
GL. - GLASS
H.C. - HOLLOW CORE
H.M. - HOLLOW METAL
K.D. - KNOCK DOWN FRAME
MAR. - MARBLE SADDLE
PTD. - PAINTED
S.C. - SOLID CORE
STL. - STEEL
TEMP. - TEMPERED
W.G. - WIRE GLASS
WD. - WOOD
FG. - MTL FRAME & GLASS
AN - ANODIZED ALUMINUM

WINDOW TYPE	WINDOW / FRAME: DESIGNATION	UNIT WIDTH	UNIT HEIGHT	FRAME MATERIAL	FINISH	FIRE RATING (HOUR)	STC RATING	ROUGH OPENING: WIDTH	ROUGH OPENING: HEIGHT	INSECT SCREEN	ENERGY REQ.: U-FACTOR	ENERGY REQ.: S.H.G.C.	REMARKS
CASEMENT / FIXED WINDOW ASSEMBLY WITH LOUVERS	W1a	7'-2"	8'-0"	ALUM.	AN	-	35	7'-3"	8'-1"	YES	0.42	0.38	SEE NOTE #1 TO 10
CASEMENT / FIXED WINDOW ASSEMBLY WITH LOUVERS	W1b	7'-2"	8'-0"	ALUM.	AN	-	35	7'-3"	8'-1"	YES	0.42	0.38	SEE NOTE #1 TO 10
CASEMENT WITH LOUVER	W2	5'-0"	8'-0"	ALUM.	AN		35	5'-1"	8'-1"	YES	0.42	0.38	SEE NOTE #1 TO 10
CASEMENT WITH LOUVER	W3	4'-0"	8'-0"	ALUM.	AN	-	35	4'-1"	8'-1"	YES	0.42	0.38	SEE NOTE #1 TO 10
CASEMENT WITH LOUVER	W4	4'-0"	7'-6"	ALUM.	AN	-	35	4'-1"	7'-7"	YES	0.42	0.38	SEE NOTE #1 TO 10
FIXED WITH LOUVER	W5	1'-8"	8'-0"	ALUM.	AN	-	35	1'-9"	8'-1"	YES	0.42	0.38	SEE NOTE #1 TO 10
SLIDING WINDOW (PARKING BOOTH)	W6	4'-2"	3'-6"	ALUM.	AN	-	35	4'-3"	3'-7"	NO	0.42	0.38	SEE NOTE #1 TO 10
FIXED WINDOW @ STAIR BULKHEAD	W7	4'-1"	4'-4"	ALUM.	AN	1 ½	35	4'-2"	4'-5"	NO	0.42	0.38	SEE NOTE #1 TO 10

*NOTE: W#(a/b) DIRECTION OF DESIGNATED WINDOW OPERATION.

WINDOW ENERGY PERFORMANCE NOTES ASHRAE 90.1 (2013):

FENESTRATION AND DOORS : Air leakage for fenestration and doors shall be determined in accordance with AAMA/WDMA/CSA 101/I.S.2/A440, NFRC 400 OR ASTM E283 as specified below. Air leakage shall not exceed:

a. 1.0 cfm/ft² for glazed swinging entrance doors and revolving doors, tested at a pressure of at least 1.57 psf.

b. 0.06 cfm/ft² for storefront glazing, tested at a pressure of at least 1.57 psf or higher in accordance with NRFC 400 or ASTM E283.

VESTIBULES: Building entrances that separate conditioned space from the exterior shall be protected with an enclosed vestibule, with all doors opening into and out of the vestibule equipped with self-closing devices. Vestibules shall be designed so that in passing through the vestibule it is not necessary for the interior and exterior doors to open at the same time. Interior and exterior doors shall have a minimum distance between them of not less than 7ft when in the closed position. The floor area of each vestibule shall not exceed the greater of 50ft² or 2% of the gross conditioned floor area for that level of the building. The exterior envelope of conditioned vestibules shall comply with the requirements for a conditioned space. The interior and exterior envelope of unconditioned vestibules shall comply with the requirements for a semi-heated space.

LOUVER SCHEDULE

LIST OF ABBREVIATIONS

ALUM. - ALUMINUM
FL. - FLUSH PANEL
GL. - GLASS
H.C. - HOLLOW CORE
H.M. - HOLLOW METAL
K.D. - KNOCK DOWN FRAME
MAR. - MARBLE SADDLE
PTD. - PAINTED
S.C. - SOLID CORE
STL. - STEEL
TEMP. - TEMPERED
W.G. - WIRE GLASS
WD. - WOOD
FG. - MTL FRAME & GLASS
AN - ANODIZED ALUMINUM

LOUVER LOCATION	LOUVER DESIGNATION	MATERIAL	FINISH	LOUVER SIZE: WIDTH	LOUVER SIZE: HEIGHT	LOUVER SIZE: THICKNESS	MASONRY OPENING DIM.: WIDTH	MASONRY OPENING DIM.: HEIGHT	HEAD HT. (A.F.F.)	INSECT SCREEN	REMARKS
COMPACTOR CHUTE	L-1	ALUM.	AN.	2'-0"	2'-0"	V.I.F.	2'-1"	2'-1"	V.I.F.	YES	
STAIRS	L-2	ALUM.	AN.	4'-1"	0'-9"	V.I.F.	4'-2"	0'-10"	8'-10 1/2"	YES	
ELEVATOR SHAFT	L-3	ALUM.	AN.	3'-0"	2'-6"	V.I.F.	3'-1	2'-7"	6'-0"	YES	

LOUVER NOTES:

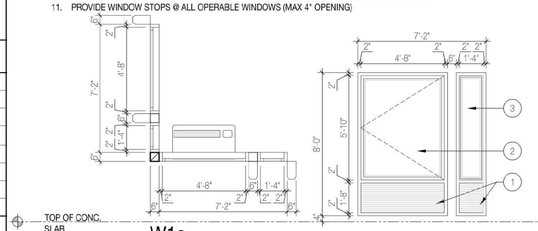
1. ALL LOUVERS SHOULD BE PROVIDED WITH INSECT SCREENS U.O.N.
2. G.C. TO VERIFY ALL DIMENSIONS WITH THE FREE AREA REQUIRED ON MECHANICAL DWGS. AND NOTIFY THE ARCHITECT OF ANY CHANGES.

WINDOW NOTES:

1. ALL WINDOW UNITS SHALL HAVE 1" INSULATED GLASS (U.C.N.).
2. ALL WINDOWS SHALL BE DOUBLE GLAZED
3. ALL WINDOW UNITS SHALL HAVE AN EXTRUDED ALUMINUM FRAME (CW50 MIN) (U.O.N.).
4. CONTRACTOR SHALL PROVIDE FULL ALUMINUM MESH INSECT SCREENS AT ALL OPERABLE WINDOW UNITS.
5. CONTRACTOR SHALL PROVIDE SUPPORT MULLION TRIM BETWEEN WINDOW UNITS AS PER MANUFACTURER SPECIFICATION.
6. PROVIDE OPERATING HARDWARE FOR WINDOWS WITHIN ACCESSIBLE REACH HEIGHT IN ALL ADAPTABLE LIMITS.
7. WINDOWS REQUIRING PUSHING, PULLING, OR LIFTING TO OPEN (FOR EXAMPLE, DOUBLE HUNG, SLIDING, OR CASEMENT AND CASEMENT UNITS WITHOUT CRANKS) SHOULD REQUIRE NO MORE THAN 5 lbf. (22.2. N) TO OPEN OR CLOSE.
8. ALL WINDOW UNITS SHALL HAVE AN OITC RATING OF 35 db MIN.
9. ALL OPERABLE WINDOWS SHALL BE EQUIPPED WITH SASH LOCKS DESIGNED TO BE OPERABLE FROM THE INSIDE AS PER BC 1008.4.3
10. WINDOWS THAT EXCEED 6'-0" W. PROVIDE 6' WIDE RECEPTORS @ HEAD OF SILL OF WINDOW.
11. PROVIDE WINDOW STOPS @ ALL OPERABLE WINDOWS (MAX 4" OPENING)

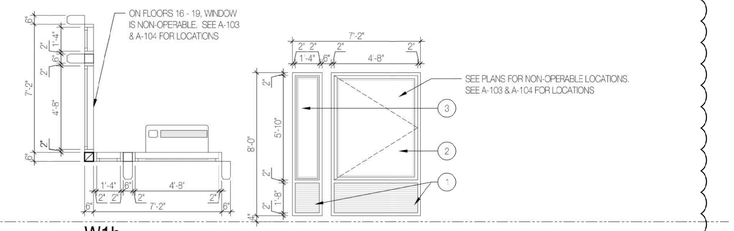
1 LOUVER
2 CASEMENT WINDOW
3 FIXED PANE

NOTE:
- G.C. SHALL COORDINATE ALL PTAC LOUVERS WITH WINDOW MANUFACTURER.
- ALL ELEVATIONS ARE FROM THE OUTSIDE.
- ALL WINDOWS SILLS AT TERRACE LEVEL TO BE 8" ABOVE CONC. SLAB.
- ALL GLASS USED TO BE TEMPERED AND INSULATED. (U.O.N.)



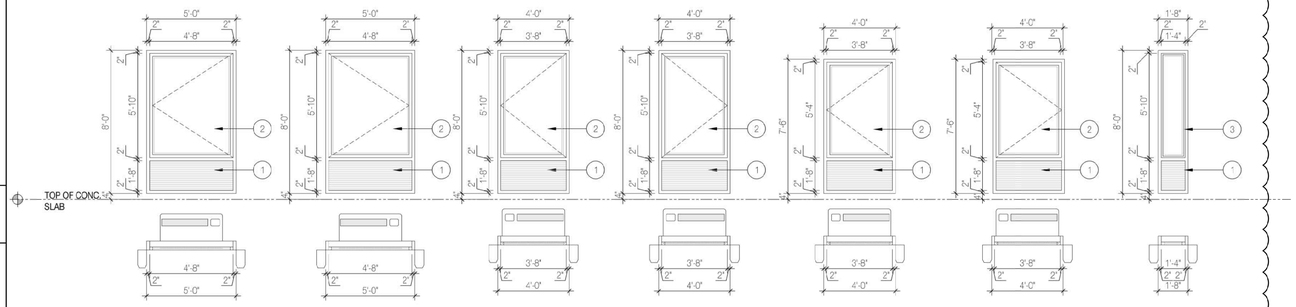
W1a

LIGHT: 30.44 SQ. FT.
VENT: 27.22 SQ. FT.



W1b

LIGHT: 30.44 SQ. FT.
VENT: 27.22 SQ. FT.



W2a

LIGHT: 23.83 SQ. FT.
VENT: 27.22 SQ. FT.

W2b

LIGHT: 23.83 SQ. FT.
VENT: 27.22 SQ. FT.

W3a

LIGHT: 18.32 SQ. FT.
VENT: 21.37 SQ. FT.

W3b

LIGHT: 18.32 SQ. FT.
VENT: 21.37 SQ. FT.

W4a

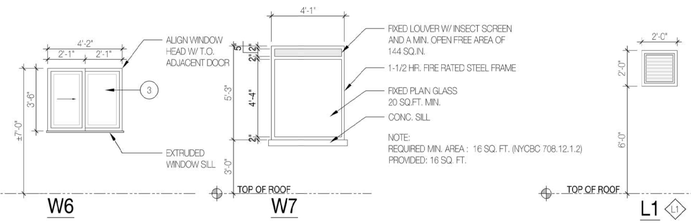
LIGHT: 16.67 SQ. FT.
VENT: 19.56 SQ. FT.

W4b

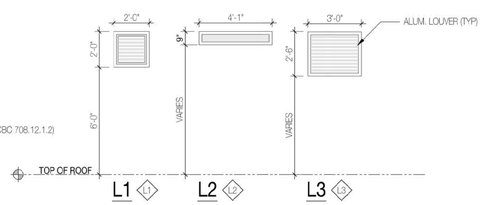
LIGHT: 16.67 SQ. FT.
VENT: 19.56 SQ. FT.

W5

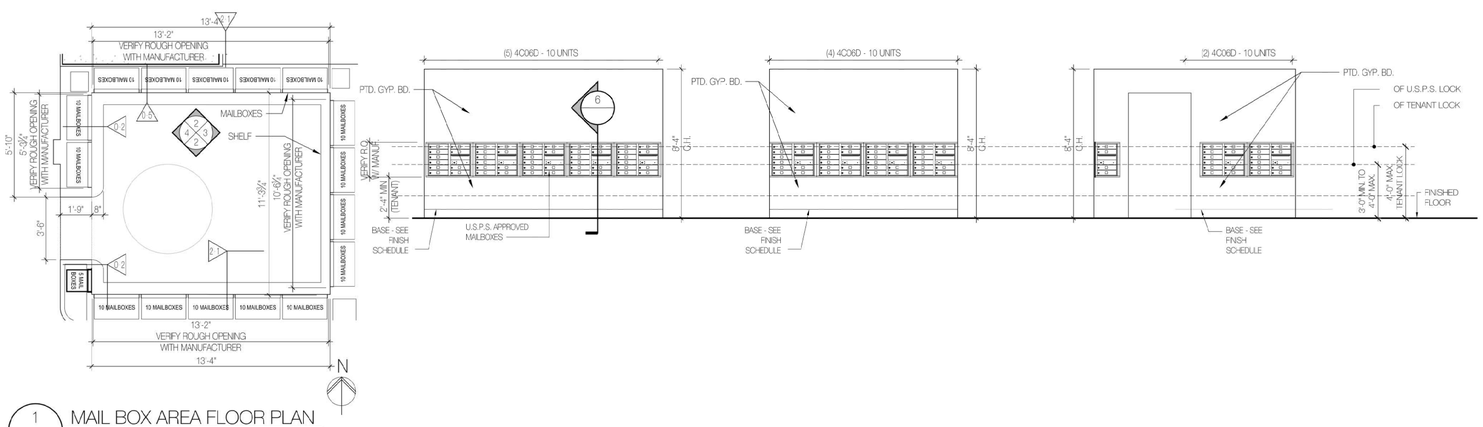
LIGHT: 6.61 SQ. FT.
VENT: 0 SQ. FT.



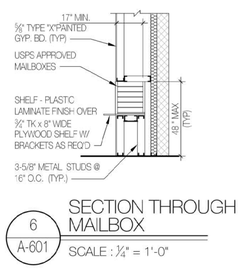
W6 W7



L1 L2 L3



1 A-100 MAIL BOX AREA FLOOR PLAN
SCALE : ¼" = 1'-0"



6 A-601 SECTION THROUGH MAILBOX
SCALE : ¼" = 1'-0"

USE AUTH-FLORENCE 4C HORIZONTAL MAILBOX SUITE A

MAILBOX CONFIGURATION @ ELEVATION 2:
(12) 4C06D-10 (120 MAILBOXES)

120 TENANT MAILBOXES
PARCEL ROOM PROVIDED

GENERAL NOTES:
1. PARCEL LOCKERS NOT REQUIRED AS PACKAGE ROOM PROVIDED.
2. ALL MAILBOXES SHALL BE "VERSATILE" STD-4C SUITE A (ALUM-NUM), FRONT LOADING HORIZONTAL MAILBOX AS MANUFACTURED BY AUTH-FLORENCE.
3. CONTRACTOR SHALL VERIFY ALL ROUGH OPENINGS WITH MANUFACTURER.

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:
AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

DEVELOPER:
SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:
McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:
A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:
ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

AUFGANG ARCHITECTS

DATE	SUBMISSIONS / REVISIONS
08.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
05.03.19	PAA TO D.O.B.
04.29.19	PAA TO D.O.B.
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
05.02.18	REVISED AS PER ENERGY COMMENTS
01.26.18	REISSUED TO D.O.B.
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS

SHEET TITLE:

WINDOW & LOUVER SCHEDULES & MAILBOX DETAILS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032769 STATE OF NEW YORK

ISSUE DATE: 10-19-15
PROJECT NO: #1520
DRAWN BY: M.B.
CHECKED BY: T.L./A.F.M.
SCALE: AS NOTED
SHEET NO:
DRAWING NO: A-601.01
NYC DOB NUMBER: 321191802

STOREFRONT SCHEDULE

LIST OF ABBREVIATIONS

ALUM.	-	ALUMINUM	S.C.	-	SOLID CORE
FL.	-	FLUSH PANEL	STL.	-	STEEL
GL.	-	GLASS	TEMP.	-	TEMPERED
H.C.	-	HOLLOW CORE	W.G.	-	WIRE GLASS
H.M.	-	HOLLOW METAL	WD.	-	WOOD
K.D.	-	KNOCK DOWN FRAME	FG.	-	MTL FRAME & GLASS
MAR.	-	MARBLE SADDLE	AN	-	ANODIZED ALUMINUM
PTD.	-	PAINTED			

STOREFRONT TYPE	WINDOW / FRAME								ROUGH OPENING		INSECT SCREEN	ENERGY REQ.		REMARKS
	DESIGNATION	ELEVATION	UNIT WIDTH	UNIT HEIGHT	FRAME MATERIAL	FINISH	FIRE RATING (HOUR)	STC RATING	WIDTH	HEIGHT		U-FACTOR	S.H.G.C.	
STOREFRONT 1	SF1	A	11'-3"	9'-0"	ALUM.	AN	-	35	9'-11"	9'-1"	NO	0.36	0.31	
STOREFRONT 2	SF2	B	3'-4"	9'-0"	ALUM.	AN	-	35	5'-11"	8'-4"	NO	0.36	0.31	
STOREFRONT 3	SF3	C	21'-4"	8'-3"	ALUM.	AN	-	35	20'-7"	8'-4"	NO	0.36	0.31	
STOREFRONT 4	SF4	D	21'-4"	8'-3"	ALUM.	AN	-	35	20'-7"	8'-4"	NO	0.36	0.31	

WINDOW ENERGY PERFORMANCE NOTES ASHRAE 90.1 (2013):

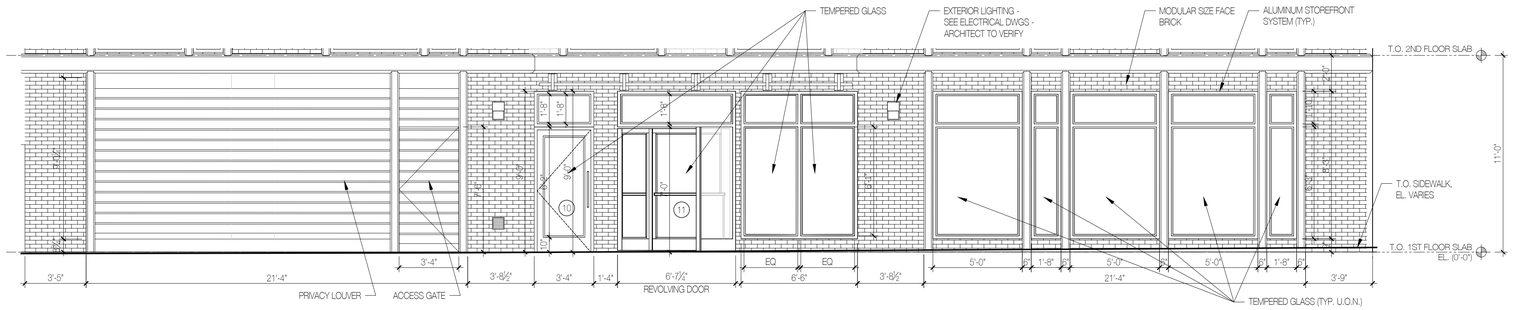
FENESTRATION AND DOORS : Air leakage for fenestration and doors shall be determined in accordance with AAMA/WDMA/CSA 101/I.S.2/A440, NFRC 400 OR ASTM E283 as specified below. Air leakage shall not exceed:

a. 1.0 cfm/ft² for glazed swinging entrance doors and revolving doors, tested at a pressure of at least 1.57 psf.

b. 0.06 cfm/ft² for curtain wall and storefront glazing, tested at a pressure of at least 1.57 psf or higher in accordance with NRFC 400 or ASTM E283.

VESTIBULES: Building entrances that separate conditioned space from the exterior shall be protected with an enclosed vestibule, with all doors opening into and out of the vestibule equipped with self-closing devices. Vestibules shall be designed so that in passing through the vestibule it is not necessary for the interior and exterior doors to open at the same time. Interior and exterior doors shall have a minimum distance between them of not less than 7ft when in the closed position. The floor area of each vestibule shall not exceed the greater of 50ft² or 2% of the gross conditioned floor area for that level of the building. The exterior envelope of conditioned vestibules shall comply with the requirements for a conditioned space. The interior and exterior envelope of unconditioned vestibules shall comply with the requirements for a semi-heated space.

STOREFRONT NOTES:
1. ALL FIXED PANES U.O.N.
2. ALL INSULATED GLASS U.O.N.
3. ALL FRAMES ALUM. COLOR TO MATCH TYP. WINDOW FRAMES
4. S.H.G.C. = 0.31
5. U FACTOR = 0.36
6. CONTRACTOR TO PROVIDE SHOP DWGS. FOR ARCHITECT'S REVIEW



1 / A-200 STOREFRONT ELEVATION BOERUM STREET

SCALE : ¼" = 1'-0"

PROPOSED NEW DEVELOPMENT

159 BOERUM ST

BROOKLYN, NY

BLOCK: 3071 LOT: 10/40

ARCHITECT:
AUFGANG ARCHITECTS LLC
74 LAFAYETTE AVENUE, SUITE 301
SUFFERN, NY
INFO@AUFGANG.COM 845.368.0004

AUFGANG ARCHITECTS

DEVELOPER:
SLATE PROPERTY GROUP
850 THIRD AVE, SUITE 16-B
NEW YORK, NY 10022
T: 646.439.4000

STRUCTURAL ENGINEER:
McNAMARA - SALVIA
62 WEST 45TH STREET, 11TH FLOOR
NEW YORK, NY 10036
T: 212.246.9800

MEP ENGINEER:
A & D ENGINEERING, PLLC
2606 E. 15TH STREET, SUITE #304
BROOKLYN, NY 11235
T: 718.872.6112

INTERIOR DESIGNER:
ALCHEMY STUDIO NYC
154 GRAND STREET
NEW YORK, NY 10013
T: 307.760.6454

DATE	SUBMISSIONS / REVISIONS
1 9.15.19	PAA TO D.O.B.
08.02.19	99% CONSTRUCTION SET
05.31.19	BID SET
05.03.19	PAA TO D.O.B.
04.29.19	PAA TO D.O.B.
07.27.18	90% PROGRESS SET
06.04.18	RE-ISSUED TO D.O.B.
05.02.18	REVISED AS PER ENERGY COMMENTS
01.26.18	REISSUED TO D.O.B.
11.03.17	ISSUED TO D.O.B. FOR REVIEW AND COMMENTS

SHEET TITLE:

STOREFRONT SCHEDULE & ELEVATIONS

SEAL & SIGNATURE

REGISTERED ARCHITECT ARIEL AUFGANG 032789 STATE OF NEW YORK

ISSUE DATE: 10-19-15
PROJECT NO: #1520
DRAWN BY: M.B.
CHECKED BY: T.L./A.F.M.
SCALE: AS NOTED
SHEET NO:
DRAWING NO: A-602.01
NYC DOB NUMBER: 321191802

APPENDIX C

PREVIOUS ENVIRONMENTAL REPORTS

SEPARATE ATTACHMENT

APPENDIX D

CONSTRUCTION HEALTH AND SAFETY PLAN

CONSTRUCTION HEALTH AND SAFETY PLAN

FOR

159 BOERUM STREET
BROOKLYN, NEW YORK
Brooklyn Borough Tax Map
Block 3071, Lot 40

Prepared For

SPG Boerum LLC
c/o Slate Property Group
38 East 29th Street, 9th Floor
New York, New York

Prepared By:

Langan Engineering, Environmental, Surveying
Landscape Architecture and Geology D.P.C.
21 Penn Plaza
360 West 31st Street, 8th Floor
New York, New York 10001

October 2019
Langan Project No. 170552901

LANGAN

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***** Items to be posted prominently on site, or made readily available to personnel.

1.0 INTRODUCTION

1.1 General

This HEALTH AND SAFETY PLAN (HASP) was developed to address disturbance of known and reasonably anticipated subsurface contaminants and comply with Occupational Safety and Health Administration (OSHA) Standard 29 CFR 1910.120(b) (4), *Hazardous Waste Operations and Emergency Response* during anticipated site work at 159 Boerum Street, in the borough of Brooklyn, New York (Brooklyn Borough Tax Map Block 3071, Lot 40) ("the site"). This HASP provides the minimum requirements for implementing site operations during environmental investigation activities. All contractors performing work on this site shall implement their own Health and Safety Plans that, at a minimum, adhere to this HASP. The contractor is solely responsible for their own health and safety and that of their subcontractors. Langan personnel will implement this HASP while on-site.

The management of the day-to-day site activities and implementation of this HASP in the field is the responsibility of the site Langan Field Team Leader (FTL). Assistance in the implementation of this HASP can also be obtained from the site Langan Health and Safety Officer (HSO) and the Langan Health and Safety Manager (HSM). Contractors operating on the Site shall designate their own FTL, HSO and HSM. The content of this HASP may change or undergo revision based upon additional information made available to health and safety personnel, monitoring results, or changes in the work plan.

1.2 Site Location and Background

The Site is located at 159 Boerum Street and is identified on New York City Kings County tax maps as Block 3071, Lot 40. The about 11,180-square-foot site is situated on the south-central part of the tax block and is occupied by an open air asphalt parking lot surrounded by landscaped areas to the north and south within the property. The tax block is bound to the north by Johnson Avenue, to the east by Humboldt Street, to the south by Boerum Street, and to the west by Avenue of Puerto Rico (Graham Avenue). A site location map is included as Figure 1.

Environmental investigations detected the presence of semi-volatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), and metals, consistent with historic fill. Investigations also note the presence of a New York State Department of Environmental Conservation Superfund (chlorinated solvents) site at 152 Graham Avenue approximately 200 feet north of the site.

1.3 Summary of Work Tasks

1.3.1 Excavation and Soil Screening

Langan personnel will screen excavated material for visual, olfactory, and instrumental indicators suggestive of a potential chemical or petroleum release. Instrument screening for the presence of volatile organic compounds (VOCs) may be performed with a duly calibrated Photoionization detector (PID). Contractors will excavate for utilities, foundation components and potential grading using heavy equipment and hand tools. Contractors will notify Langan personnel if they identify indications suggestive of a potential chemical or petroleum release. Contaminated material shall be handled and property disposed in accordance with federal, state and city regulations, criteria and guidelines.

1.3.2 Soil Screening

As part of future excavation activities, the Langan personnel will report when they have observed visual and olfactory indications of possible soil impact. Langan personnel will also report concentrations of VOCs above background when using a properly calibrated hand held PID, or equivalent.

1.3.3 Soil Sampling

Soil samples (waste characterization, excavation endpoint, delineation, or quality assurance/quality control [QA/QC]) may be collected during construction, as required. Langan personnel will coordinate with the contractor in sampling soil (in accordance with the SMP, where applicable). If stockpile soil sampling is required from above ground level, suitable excavation equipment (i.e., excavator, front end loader) should be used to collect the sample.

Soil samples excavation endpoint or delineation sampling (along with QA/QC samples) may be collected and subsequently submitted to a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP)-certified laboratory and analyzed in accordance with work plan specifications.

1.3.4 Stockpiling

As part of future excavation activities, potentially impacted soil may be stockpiled pending laboratory analysis and determining proper off-site disposal. Visibly contaminated soil, if encountered, shall be segregated and stockpiled on at least 10 millimeters of plastic sheeting; reusable soil and fill shall be segregated and stockpiled separately from unusable fill, concrete and other debris; the stockpiles shall be kept covered with 6 millimeters thick plastic sheeting; the plastic sheeting covering the stockpiles shall be anchored firmly in place by weights, stakes,

or both; the Contractor shall maintain the plastic sheeting.

1.3.5 Characterization of Excavated Material

When required by the work plan, Langan personnel will characterize excavated soil or clean backfill in accordance with Langan standards.

1.3.6 Excavation Backfill

Areas of the site that were over-excavated may be backfilled to development grade (i.e., the grade required to complete construction of the foundation and sidewalk extension). Imported material will consist of clean fill that meets the 6 New York Codes, Rules and Regulations (NYCRR) Part 375-6.8(a) Unrestricted Use Soil Cleanup Objectives (UU SCOs) or other acceptable fill material such as virgin stone from a permitted mine or quarry or recycled concrete aggregate (RCA), from a New York State Department of Environmental Conservation (NYSDEC)-registered facility in compliance with 6 NYCRR Part 360 registration and permitting requirements for the period of RCA acquisition. Imported RCA must be derived from recognizable and uncontaminated concrete. RCA is not acceptable for, and will not be used as, site cover or drainage material.

1.3.7 Decommissioning and Removal of Underground Storage Tank

If an underground storage tank (UST) is encountered, a UST decommissioning and removal contractor shall furnish all labor and materials, equipment and incidentals required for the proper decontamination, removal and closure of any UST in accordance with federal, state and local regulations. Langan personnel will monitor VOCs with a calibrated PID downwind from the UST excavation and record the PID readings.

1.3.8 Construction Dewatering

Construction dewatering may be required, the dewatering contractor shall be responsible for handling contaminated dewatering fluids in accordance with federal, state and local regulations. Dewatering fluids are likely to be discharged to the local sanitary sewer system after treatment and under approved regulatory permit. Alternatively, the contractor may provide containerized storage to allow for testing of groundwater prior to, and after, treatment and before disposal. If required, Langan field personnel may sample dewatering treatment system liquids from either a discharge standpipe or a storage tank. Dewatering samples will be submitted to an ELAP-certified laboratory for analysis.

1.3.9 Construction Activity Inspections and Observations

Langan will observe construction activities including the composite cover performed by the contractor in accordance with the construction documents, RAWP, and special inspection requirements administered by the New York City Department of Buildings. Materials used for construction will be inspected by Langan for conformance to the design documents.

1.3.10 Equipment Decontamination

Before the start of the day's sampling and after sampling each run, sampling equipment will be decontaminated by the decontamination process outlined Attachment B - Decontamination Procedures. Decontamination wastes and purge water will be temporarily stored on site pending analytical results.

1.3.11 Management of Investigative-Derived Waste

The investigative-derived waste (IDW) generated during this investigation may stockpiled as defined under section **1.3.4** or contained in DOT-approved 55-gallon drums. The drums will be temporarily stored on the site or as directed by the client representative. All drums will be filled between to two-thirds full to allow easy maneuvering during drum pickup and disposal. Drum labels are to be provided by Langan (Environmental Closet). All drums will be labeled as "IDW Pending Analysis" until sample data are reported from the laboratory. Drum labels will include date filled and locations where waste was generated along with the standard information required by the labels in accordance with the Langan SOP09, Drum Labeling..

Closed top drums are to be used to store liquids. Debris, including plastic sheeting, polyethylene tubing, personal protection equipment (PPE), decontamination debris, etc. will be segregated from and disposed in large heavy duty garbage bags and disposed of at the site. Excess unused glassware should be returned to the lab along with the last day of collection samples.

1.3.12 Drum Sampling

Excess or impacted soil and water that is drummed during the remedial action activities must be labeled in accordance with the Langan Drum Labeling Standard Operating Procedure (SOP-#9). Langan personnel will collect drum samples, as required, prior to off-site drum disposal. Samples will be placed into laboratory-supplied batch-certified clean glassware and submitted to a NYSDOH ELAP-certified laboratory.

2.0 IDENTIFICATION OF KEY PERSONNEL/HEALTH AND SAFETY PERSONNEL

The following briefly describes the health and safety (H&S) designations and general

responsibilities that may be employed for this site. The titles have been established to accommodate the project needs and requirements and ensure the safe conduct of site activities. The H&S personnel requirements for a given work location are based upon the proposed site activities.

2.1 Langan Project Manager

The Langan Environmental Project Manager (PM) is Emily Snead, her responsibilities include:

- Ensuring that this CHASP is developed, current, and approved prior to on-site activities.
- Ensuring that all the tasks in the project are performed in a manner consistent with Langan's comprehensive *Health and Safety Program for Hazardous Waste Operations* and this CHASP.

2.2 Langan Corporate Health and Safety Manager

The Langan Corporate Health and Safety Manager (HSM) is Tony Moffa. His responsibilities include:

- Updating the *Health and Safety Program for Hazardous Waste Operations*.
- Assisting the site Health and Safety Officer (HSO) with development of the HASP, updating HASP as dictated by changing conditions, jobsite inspection results, etc. and approving changes to this HASP.
- Assisting the HSO in the implementation of this HASP and conducting Jobsite Safety Inspections and assisting with communication of results and correction of shortcomings found.
- Maintaining records on personnel (medical evaluation results, training and certifications, accident investigation results, etc.).

2.3 Langan Site Health & Safety Officer

The Langan site HSO is William Bohrer. His responsibilities include:

- Participating in the development and implementation of this CHASP.
- When on-site, assisting the Langan Field Team Leader in conducting Tailgate Safety Meetings and Jobsite Safety Inspections and correcting any shortcomings in a timely manner.
- Ensuring that proper PPE is available, worn by employees, and properly stored and maintained.
- Controlling entry into and exit from the site contaminated areas or zones.
- Monitoring employees for signs of stress, such as heat stress, fatigue, and cold exposure.

- Monitoring site hazards and conditions.
- Knowing (and ensuring that all site personnel also know) emergency procedures, evacuation routes, and the telephone numbers of the ambulance, local hospital, poison control center, fire department, and police department.
- Resolving conflicts that may arise concerning safety requirements and working conditions.
- Reporting all incidents, injuries and near misses to the Langan Incident/Injury Hotline immediately and the client representative.

2.4 Langan Field Team Leader Responsibilities

The Langan Field Team Leader (FTL) is to be determined prior to the start of the start of field activities. The Field Team Leader's responsibilities include:

- The management of the day-to-day site activities and implementation of this CHASP in the field.
- Participating in and/or conducting Tailgate Safety Meetings and Jobsite Safety Inspections and correcting any shortcomings in a timely manner.
- When a Community Air Monitoring Operating Program (CAMP) is part of the scope, the FTL will set up and maintaining community air monitoring activities and instructing the responsible contractor to implement organic vapor or dust mitigation when necessary.
- Overseeing the implementation of activities specified in the work plan.

2.5 Contractor Responsibilities

The contractor shall develop and implement their own CHASP for their employees, lower-tier subcontractors, and consultants. The contractor is responsible for their own health and safety and that of their subcontractors. Contractors operating on the site shall designate their own FTL, HSO and HSM. The contractor's CHASP will be at least as stringent as this Langan CHASP. The contractor must be familiar with and abide by the requirements outlined in their own CHASP. A contractor may elect to adopt Langan's CHASP as its own provided that it has given written notification to Langan, but where Langan's CHASP excludes provisions pertinent to the contractor's work (i.e., confined space entry); the contractor must provide written addendums to this CHASP. Additionally, the contractor must:

- Ensure their employees are trained in the use of all appropriate personal protection equipment (PPE) for the tasks involved;
- Notify Langan of any hazardous material brought onto the job site or site related area, the hazards associated with the material, and must provide a material safety data sheet (MSDS) or safety data sheet (SDS) for the material;

- Have knowledge of, understand, and abide by all current federal, state, and local health and safety regulations pertinent to the work;
- Ensure their employees handling hazardous materials, if identified at the Site, have received current training in the appropriate levels of 29 CFR 1910.120, *Hazardous Waste Operations and Emergency Response* (HAZWOPER) if hazardous waste is identified at the Site;
- Ensure their employees handling hazardous materials, if identified at the Site, have been fit-tested within the year on the type respirator they will wear; and
- Ensure all air monitoring is in place pertaining to the health and safety of their employees as required by OSHA 1910.120; and
- All contractors must adherer to all federal, state, and local regulatory requirements.

3.0 TASK/OPERATION SAFETY AND HEALTH RISK ANALYSES

A Task-Hazard Analysis (Table 1) was completed for general construction hazards that may be encountered at the Site. The potential contaminants that might be encountered during the field activities and the exposure limits are listed in Table 2 complete inventory of MSDS/SDS for chemical products used on site is included as Attachment E.

3.1 Specific Task Safety Analysis

3.1.1 Soil Screening and Sampling

Sampling the soil requires the donning of chemical resistant gloves in addition to the standard PPE. Langan personnel are not to operate drilling or excavation equipment nor open sampling devices (acetate liners, sonic sample bags, etc.). These tasks are to be completed by the driller or excavation contractor.

3.1.2 Soil Screening and Sampling

Sampling the soil requires the donning of chemical resistant gloves in addition to the standard PPE. Langan personnel are not to operate drilling or excavation equipment nor open sampling devices (acetate liners, sonic sample bags, etc.). These tasks are to be completed by the driller or excavation contractor.

3.1.3 Stockpile Sampling

The Langan personnel are not to scale or otherwise climb stockpiles. If the soil sampling plan requires sampling from the stockpile above ground level, samples are to be obtained using suitable excavation equipment operated by the contractor (i.e. front end loader).

3.1.4 Indoor Drilling and Excavation

The work scope may require indoor work or work in locations where there may not be adequate ventilation sufficient to safely operate any rig or excavation equipment powered by an internal combustion engine. Where possible, all such work should be done by equipment powered by electricity. If such equipment is used and must be directly wired to the buildings electrical system or to an independent system, this work must be completed by a licensed electrician in accordance with all electrical codes applicable to the work.

Indoor work which is to be completed with equipment powered by an internal combustion engine must incorporate air monitoring of carbon monoxide (CO) using calibrated air monitoring equipment (MultiRAE or equivalent). In addition, the work plan should incorporate mitigation for venting engine exhaust fumes directly to the outdoors and for circulating fresh air into the work area.

The OSHA Time Weighted Average (TWA) Permissible Exposure Limit (PEL) for CO from 50 to 35 parts per million (ppm). Langan will monitor CO with a suitable monitoring device. If CO levels exceed 5 ppm, Langan will instruct contractors to begin mitigation measures. These measures are at a minimum:

- Increase air circulation using industrial size fans to bring additional fresh air into the building or vent exhaust to the outside;
- Modify the passive exhaust method being used to increase venting circulation by using wider diameter tubing or sealing tubing connections; or
- Modify the work schedule where the rig is turned off to allow time for CO levels to fall back to background

All work must cease if CO levels reach 35 ppm. The Langan engineer is to report to the PM and H&S officer when an action level is reached.

3.1.5 Stockpile Sampling

The Langan personnel are not to scale or otherwise climb stockpiles. If the soil sampling plan requires sampling from the stockpile above ground level, samples are to be obtained using suitable excavation equipment operated by the contractor (i.e. front end loader).

3.1.6 Construction Dewatering

If required, Langan may sample dewatering treatment system liquids from either the direct discharge standpipe or from a sample port or valve built into the storage tank, Langan will don the necessary PPE including nitrile gloves and if necessary, facial splash guard. Sample ports

and valves may only be sampled if they are accessible at ground level. Sampling from heights over 6 feet is prohibited unless Langan field personnel are fully accredited in fall protection and is wearing approved fall protection safety apparatus. The discharge samples will be submitted to an ELAP-certified laboratory for analysis in accordance with the work plan.

3.1.7 Removal of Underground Storage Tank

If UST excavation and removal activity is initiated, Langan personnel will conduct air monitoring for lower explosion limit (LEL) conditions within the UST excavation itself. This task is to be performed using calibrated air monitoring equipment designed to sound an audio alarm when atmospheric concentrations of VOC are within 10% of the LEL. In normal atmospheric oxygen concentrations, the LEL monitoring may be done with a Wheatstone bridge/catalytic bead type sensor (i.e. MultiRAE). However in oxygen depleted atmospheres (confined space), only an LEL designed to work in low oxygen environments may be used. Best practices require that the LEL monitoring unit be equipped with a long sniffer tube to allow the LEL unit to remain outside the UST excavation. Langan personnel are not to enter the UST excavation nor enter an excavated UST.

In addition to monitoring LEL, Langan personnel will monitor atmospheric VOC concentrations directly downwind of the UST excavation in accordance with standard CAMP procedures using calibrated air monitoring equipment.

3.1.8 Backfilling of Excavated Areas to Development Grade

The backfilling contractor will provide their employees with equivalent PPE to protect them from the specific hazards likely to be encountered on-site. Selection of the appropriate PPE must take into consideration: (1) identification of the hazards or suspected hazards; (2) potential exposure routes; and, (3) the performance of the PPE construction (materials and seams) in providing a barrier to these hazards. Langan personnel may survey backfilling material with a calibrated PID; however, as they are not permitted to climb the material delivery truck, the contractor must provide samples from each truck as required.

3.1.9 Construction Activity Inspection

Langan personnel will conduct inspections and observe repairs to the Engineering Controls installed as the site at part of the remedy. Inspect work will be conducted in accordance with specification in the SMP. Repairs will be conducted in accordance with work plans drawn to address the repairs. Langan may record the data the work plan requires. All future repair work to the engineering controls will be done exclusively by the contractor following their own health and safety specifications outlined in their HASPs. Other activities assigned to Langan as part of

work activities are limited to inspection and observations as specified in the SMP or future work pans. Langan personnel are not to operate or assist in the operation of equipment used in construction activities unless defined as part of an inspection or observation in the work plan.

3.1.10 Support of Excavation

Langan engineers may complete additional tasks following the work plan specifications for support of excavation (SOE) actives. These tasks are to be completed donning standard PPE. Langan engineers should compile a job safety analysis for specific tasks as necessary.

3.1.11 Drum Sampling

Drilling fluid, rinse water, grossly-contaminated soils samples and cuttings may be containerized in 55-gallon drums for transport and disposal off site. Each drum must be labeled in accordance with the Langan Drum Labeling Standard Operating Procedure (SOP-#9). Langan may collect drum samples, as required, prior to off-site drum disposal. Samples will be placed into laboratory-supplied batch-certified clean glassware and submitted to a NYSDOH ELAP-certified laboratory.

Langan employees and contractors are not to move or open any orphaned (unlabeled) drum found on the site without approval of the project manager.

3.2 Radiation Hazards

No radiation hazards are known or expected at the site.

3.3 Physical Hazards

Physical hazards, which may be encountered during site operations for this project, are detailed in Table 1.

3.3.1 Explosion

No explosion hazards are expected for the scope of work at this site.

3.3.2 Heat Stress

The use of Level C protective equipment, or greater, may create heat stress. Monitoring of personnel wearing personal protective clothing should commence when the ambient temperature is 72^{O}F or above. Table 6 presents the suggested frequency for such monitoring. Monitoring frequency should increase as ambient temperature increases or as slow recovery rates are observed. Refer to the Table 7 to assist in assessing when the risk for heat related

illness is likely. To use this table, the ambient temperature and relative humidity must be obtained (a regional weather report should suffice). Heat stress monitoring should be performed by the HSO or the FTL, who shall be able to recognize symptoms related to heat stress.

To monitor the workers, be familiar with the following heat-related disorders and their symptoms:

- **Heat Cramps:** Painful spasm of arm, leg or abdominal muscles, during or after work
- **Heat Exhaustion:** Headache, nausea, dizziness; cool, clammy, moist skin; heavy sweating; weak, fast pulse; shallow respiration, normal temperature
- **Heat Stroke**: Headache, nausea, weakness, hot dry skin, fever, rapid strong pulse, rapid deep respirations, loss of consciousness, convulsions, coma. *This is a life threatening condition***.**

Do not permit a worker to wear a semi-permeable or impermeable garment when they are showing signs or symptoms of heat-related illness.

To monitor the worker, measure:

- **Heart rate:** Count the radial pulse during a 30-second period as early as possible in the rest period. If the heart rate exceeds 100 beats per minute at the beginning of the rest period, shorten the next work cycle by one-third and keep the rest period the same. If the heart rate still exceeds 100 beats per minute at the next rest period, shorten the following work cycle by one-third. A worker cannot return to work after a rest period until their heart rate is below 100 beats per minute.
- **Oral temperature:** Use a clinical thermometer (3 minutes under the tongue) or similar device to measure the oral temperature at the end of the work period (before drinking). If oral temperature exceeds 99.6^{O}F (37.6^{O}C), shorten the next work cycle by one-third without changing the rest period. A worker cannot return to work after a rest period until their oral temperature is below 99.6^{O}F. If oral temperature still exceeds 99.6^{O}F (37.6^{O}C) at the beginning of the next rest period, shorten the following cycle by one-third. Do not permit a worker to wear a semi-permeable or impermeable garment when oral temperature exceeds 100.6^{O}F (38.1^{O}C).

Prevention of Heat Stress - Proper training and preventative measures will aid in averting loss of worker productivity and serious illness. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat related illness. To avoid heat stress the following steps should be taken:

- Adjust work schedules.
- Mandate work slowdowns as needed.

- Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided.
- Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods.
- Maintain worker's body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water lost in sweat, id., eight fluid ounces (0.23 liters) of water must be ingested for approximately every eight ounces (0.23 kg) of weight lost. The normal thirst mechanism is not sensitive enough to ensure that enough water will be drunk to replace lost sweat. When heavy sweating occurs, encourage the worker to drink more. The following strategies may be useful:
    - Maintain water temperature 50^{O} to 60^{O}F (10^{O} to 16.6^{O}C).
    - Provide small disposal cups that hold about four ounces (0.1 liter).
    - Have workers drink 16 ounces (0.5 liters) of fluid (preferably water or dilute drinks) before beginning work.
    - Urge workers to drink a cup or two every 15 to 20 minutes, or at each monitoring break. A total of 1 to 1.6 gallons (4 to 6 liters) of fluid per day are recommended, but more may be necessary to maintain body weight.
    - Train workers to recognize the symptoms of heat related illness.

3.3.3 Cold-Related Illness

If work on this project begins in the winter months, thermal injury due to cold exposure can become a problem for field personnel. Systemic cold exposure is referred to as hypothermia. Local cold exposure is generally called frostbite.

- **Hypothermia -** Hypothermia is defined as a decrease in the patient core temperature below 96^{O}F. The body temperature is normally maintained by a combination of central (brain and spinal cord) and peripheral (skin and muscle) activity. Interference with any of these mechanisms can result in hypothermia, even in the absence of what normally is considered a "cold" ambient temperature. Symptoms of hypothermia include: shivering, apathy, listlessness, sleepiness, and unconsciousness.
- **Frostbite -** Frostbite is both a general and medical term given to areas of local cold injury. Unlike systemic hypothermia, frostbite rarely occurs unless the ambient temperatures are less than freezing and usually less than 20^{O}F. Symptoms of frostbite are: a sudden blanching or whitening of the skin; the skin has a waxy or white appearance and is firm to the touch; tissues are cold, pale, and solid.

Prevention of Cold-Related Illness - To prevent cold-related illness:

- Educate workers to recognize the symptoms of frostbite and hypothermia

- Identify and limit known risk factors:
- Assure the availability of enclosed, heated environment on or adjacent to the site.
- Assure the availability of dry changes of clothing.
- Assure the availability of warm drinks.
- Start (oral) temperature recording at the job site:
- At the FSO or Field Team Leader's discretion when suspicion is based on changes in a worker's performance or mental status.
- At a worker's request.
- As a screening measure, two times per shift, under unusually hazardous conditions (e.g., wind-chill less than 20^{O}F, or wind-chill less than 30^{O}F with precipitation).
- As a screening measure whenever anyone worker on the site develops hypothermia.

Any person developing moderate hypothermia (a core temperature of 92^{O}F) cannot return to work for 48 hours.

3.3.4 Noise

Work activities during the proposed activities may be conducted at locations with high noise levels from the operation of equipment. Hearing protection will be used as necessary.

3.3.5 Hand and Power Tools

The use of hand and power tools can present a variety of hazards, including physical harm from being struck by flying objects, being cut or struck by the tool, fire, and electrocution. All hand and power tools should be inspected for health and safety hazards prior to use. If deemed unserviceable/un-operable, notify supervisor and tag equipment out of service. Ground Fault Circuit Interrupters (GFCIs) are required for all power tools requiring direct electrical service.

3.3.6 Slips, Trips and Fall Hazards

Care should be exercised when walking at the site, especially when carrying equipment. The presence of surface debris, uneven surfaces, pits, facility equipment, and soil piles contribute to tripping hazards and fall hazards. To the extent possible, all hazards should be identified and marked on the site, with hazards communicated to all workers in the area.

3.3.7 Utilities (Electrocution and Fire Hazards)

3.3.7.1 Utility Clearance

The possibility of encountering underground utilities poses fire, explosion, and electrocution

hazards. All excavation work will be preceded by review of available utility drawings and by notification of the subsurface work to the N.Y. One –Call--Center.

3.3.7.2 Lockout-Tagout

The potential adverse effects of electrical hazards include burns and electrocution, which could result in death. Therefore, there is a procedure that establishes the requirements for the lockout/tagout (LOTO) of energy isolating devices in accordance with the OSHA electrical lockout and tagging requirements as specified in 29 CFR 1926.417. This procedure will be used to ensure that all machines and equipment are isolated from potentially hazardous energy. If possible, equipment that could cause injury due to unexpected energizing, start-up, or release of stored energy will be locked/tagged, before field personnel perform work activities.

Depending upon the specific work task involved, Langan's SSC or FTL will serve as the authorized lockout/tagout coordinator, implement the lockout/tagout procedure and will be responsible to locate, lock and tag valves, switches, etc.

SPECIAL NOTE: Project personnel will assume that all electrical equipment at surface, subsurface and overhead locations is energized, until equipment has been designated and confirmed as de-energized by a utility company representative. Langan will notify the designated utility representative prior to working adjacent to this equipment and will verify that the equipment is energized or de-energized in the vicinity of the work location.

No project work shall be performed by Langan personnel or subcontractors on or near energized electrical lines or equipment unless hazard assessments are completed in writing, reviewed by Langan's SSHO, and clearly communicated to the field personnel.

The FTL shall conduct a survey to locate and identify all energy isolating devices. They shall be certain which switches, valves or other isolating devices apply to the equipment. The lockout/tagout procedure involves, but is not limited to, electricity, motors, steam, natural gas, compressed air, hydraulic systems, digesters, sewers, etc.

3.3.8 Physical Hazard Considerations for Material Handling

There are moderate to severe risks associated with moving heavy objects at the Site. The following physical hazards should be considered when handling materials at the Site:

- Heavy objects will be lifted and moved by mechanical devices rather than manual effort whenever possible.
- The mechanical devices will be appropriate for the lifting of moving task and will be operated only by trained and authorized personnel.

- Objects that require special handling or rigging will only be moved under the guidance of a person who has been specifically trained to move such objects.
- Lifting devices will be inspected, certified, and labeled to confirm their weight capacities. Defective equipment will be taken out of service immediately and repaired or destroyed.
- The wheels of any trucks being loaded or unloaded will be chocked to prevent movement. Outriggers will be fully extended on a flat, firm surface during operation.
- Personnel will not pass under a raised load, nor will a suspended load be left unattended.
- Personnel will not be carried on lifting equipment, unless it is specifically designed to carry passengers.
- All reciprocating, rotating, or other moving parts will be guarded at all times.
- Accessible fire extinguishers, currently (monthly) inspected, will be available in all mechanical lifting devices.
- Verify all loads/materials are secure before transportation.

Material handling tasks that are unusual or require specific guidance will need a written addendum to this CHASP. The addendum must identify the lifting protocols before the tasks are performed. Upon approval, the plan must be reviewed with all affected employees and documented. Any deviation from a written plan will require approval by the Langan HSM.

3.3.9 Hearing Conservation

Under the construction industry standard, the maximum permissible occupational noise exposure is 90 dbA (8-hour TWA), and noise levels in excess of 90 dbA must be reduced through feasible administrative and engineering controls. (20 CFR 1926.52). Hearing protection is required when working within 15 feet of vacuum extraction equipment and drill rigs.

3.3.9 Open Water

Employees working over or near water, where the danger of drowning exists, shall be provided with U.S. Coast Guard-approved life jackets or buoyant work vests. Prior to and after each use, the buoyant work vests or life preservers shall be inspected for defects which would alter their strength or buoyancy. Defective units shall not be used.

And should a worker fall into the water, OSHA requires (29 CFR 1926.106(c)) that ring buoys with at least 90 feet of line shall be provided and readily available for emergency rescue operations. The distance between ring buoys shall not exceed 200 feet. Another remedial action required by OSHA (29 CFR 1926.106(d)) is the use of lifesaving skiffs.

OSHA requires that at least one lifesaving skiff shall be immediately available at locations where employees are working over or adjacent to water and must include the following provisions.

- The skiff must be in the water or capable of being quickly launched by one person.
- At least one person must be present and specifically designated to respond to water emergencies and operate the skiff at all times when there are employees above water.
- When the operator is on break another operator must be designated to provide requisite coverage when there are employees above water.
- The designated operator must either have the skiff staffed at all times or have someone remain in the immediate area such that the operator can quickly reach the skiff and perform rescue services.
- The skiff operator maybe assigned other tasks provided the tasks do not interfere with the operator's ability to quickly reach the skiff.
- A communication system, such as a walkie-talkie, must be used to inform the skiff operator of an emergency and to inform the skiff operator where the skiff is needed.
- The skiff must be equipped with both a motor and oars.

With regard to the number of skiffs required and the appropriate maximum response time, the following factors must be evaluated:

- The number of work locations where there is a danger of falling into water;
- The distance to each of those locations;
- Water temperature and currents;
- Other hazards such as, but not limited to, rapids, dams, and water intakes;

Other regulations that present S&H practices and PPE for work on or near water include: 29 CFR 1910, Subpart T (401 – 440)

3.4 Biological Hazards

3.4.1 Animals

There is a possibility of encountering wildlife including reptiles, rodents and other small and medium size mammals. The Langan personnel is to avoid interacting with any wildlife.

3.4.2 Insects

Ticks and other biting or stinging insects may to be encountered during site operations. Langan personnel should take necessary precautions including donning long sleeve shirts and insecticide to prevent bites and stings. After field work, Langan personnel should perform a complete visual inspection of their clothing to insure they are not inadvertently harboring ticks. If they do observe a tick bite, they are to contact the HSM or HSO and report the event.

3.4.3 Plants

Poisonous plants may to be encountered during site operations. Langan personnel should take necessary precautions including donning long sleeve shirts and applying preventative poison Ivy/Sumac lotion to prevent or limit effects of exposure. If after field work, Langan employees do observe a reaction to poisonous plant exposure, they are to contact the HSM or HSO and report the event.

3.5 Additional Safety Analysis

3.5.1 Presence of Non-Aqueous Phase Liquids (NAPL)

There is potential for exposure to NAPL at this site. Special care and PPE should be considered when NAPL is observed as NAPL is a typically flammable fluid and releases VOCs known to be toxic and/or carcinogenic. If NAPL is present in a monitoring well, vapors from the well casing may contaminate the work area breathing zone with concentrations of VOCs potentially exceeding health and safety action levels. In addition, all equipment used to monitor or sample NAPL (or ground water from wells containing NAPL) must be intrinsically safe. Equipment that directly contacts NAPL must also be resistant to organic solvents.

At a minimum, a PID should be used to monitor for VOCs when NAPL is observed. If NAPL is expected to be observed in an excavation or enclosed area, air monitoring must be started using calibrated air monitoring equipment designed to sound an audio alarm when atmospheric concentrations of VOC are within 10% of the LEL. In normal atmospheric oxygen concentrations, the LEL monitoring may be done with a Wheatstone bridge/catalytic bead type sensor (i.e. MultiRAE). However in oxygen depleted atmospheres (confined space), only an LEL designed to work in low oxygen environments may be used. Best practices require that the LEL monitoring unit be equipped with a long sniffer tube to allow the LEL unit to remain outside the UST excavation.

When NAPL is present, Langan personnel are required to use disposable nitrile gloves at all times to prevent skin contact with contaminated materials. They should also consider having available a respirator and protective clothing (Tyvek® overalls), especially if NAPL is in abundance and there are high concentrations of VOCs.

All contaminated disposables including PPE and sampling equipment must be properly disposed of in labeled 55-gallong drums

3.6 Job Safety Analysis

A Job Safety Analysis (JSA) is a process to identify existing and potential hazards associated with each job or task so these hazards can be eliminated, controlled or minimized. A JSA will be performed at the beginning of each work day, and additionally whenever an employee begins a new task or moves to a new location. All JSAs must be developed and reviewed by all parties involved. A blank JSA form and documentation of completed JSAs are in Attachment G.

4.0 PERSONNEL TRAINING

4.1 Basic Training

Completion of an initial 40-hour HAZWOPER training program as detailed in OSHA's 29 CFR 1910.120(e) is required for all employees working on a site engaged in hazardous substance removal or other activities which expose or potentially expose workers to hazardous substances, health hazards, or safety hazards as defined by 29 CFR 1910.120(a). Annual 8-hour refresher training is also required to maintain competencies to ensure a safe work environment. In addition to these training requirements, all employees must complete the OSHA 10 hour Construction Safety and Health training and supervisory personnel must also receive eight additional hours of specialized management training. Training records are maintained by the HSM.

4.2 Initial Site-Specific Training

Training will be provided to specifically address the activities, procedures, monitoring, and equipment for site operations at the beginning of each field mobilization and the beginning of each discrete phase of work. The training will include the site and facility layout, hazards, and emergency services at the site, and will detail all the provisions contained within this CHASP. For a HAZWOPER operation, training on the site must be for a minimum of 3 days. Specific issues that will be addressed include the hazards described in Section 3.0.

4.3 Tailgate Safety Briefings

Before starting work each day or as needed, the Langan HSO will conduct a brief tailgate safety meeting to assist site personnel in conducting their activities safely. Tailgate meetings will be documented in Attachment H. Briefings will include the following:

- Work plan for the day;
- Review of safety information relevant to planned tasks and environmental conditions;
- New activities/task being conducted;
- Results of Jobsite Safety Inspection Checklist;
- Changes in work practices;
- Safe work practices; and

- Discussion and remedies for noted or observed deficiencies.

5.0 MEDICAL SURVEILLANCE

All personnel who will be performing field work involving potential exposure to toxic and hazardous substances (defined by 29 CFR 1910.120(a)) will be required to have passed an initial baseline medical examination, with follow-up medical exams thereafter, consistent with 29 CFR 1910.120(f). Medical evaluations will be performed by, or under the direction of, a physician board-certified in occupational medicine.

Additionally, personnel who may be required to perform work while wearing a respirator must receive medical clearance as required under CFR 1910.134(e), *Respiratory Protection*. Medical evaluations will be performed by, or under the direction of, a physician board-certified in occupational medicine. Results of medical evaluations are maintained by the HSM.

5.1 Mercury Monitoring

Langan includes medical monitoring for mercury during the initial baseline and annual physical.

6.0 PERSONAL PROTECTIVE EQUIPMENT

6.1 Levels of Protection

Langan will provide PPE to Langan employees to protect them from the specific hazards they are likely to encounter on-site. Direct hired contractors will provide their employees with equivalent PPE to protect them from the specific hazards likely to be encountered on-site. Selection of the appropriate PPE must take into consideration: (1) identification of the hazards or suspected hazards; (2) potential exposure routes; and, (3) the performance of the PPE construction (materials and seams) in providing a barrier to these hazards.

Based on anticipated site conditions and the proposed work activities to be performed at the site, Level D protection will be used. The upgrading/downgrading of the level of protection will be based on continuous air monitoring results as described in Section 6.0 (when applicable). The decision to modify standard PPE will be made by the site HSO or FTL after conferring with the PM. The levels of protection are described below.

Level D Protection (as needed)

- Safety glasses with side shields or chemical splash goggles
- Safety boots/shoes
- Coveralls (Tyvek® or equivalent)

- Hard hat
- Long sleeve work shirt and work pants
- Nitrile gloves
- Hearing protection
- Reflective safety vest

Level D Protection (Modified, as needed)

- Safety glasses with sideshields or chemical splash goggles
- Safety boots/shoes (toe-protected)
- Disposable chemical-resistant boot covers
- Coveralls (polycoated Tyvek or equivalent to be worn when contact with wet contaminated soil, groundwater, or non-aqueous phase liquids is anticipated)
- Hard hat
- Long sleeve work shirt and work pants
- Nitrile gloves
- Hearing protection (as needed)
- Personal floatation device (for work within 5 ft of the water)
- Reflective traffic vest

Level C Protection (as needed)

- Full or Half face, air-purifying respirator, with NIOSH approved HEPA filter
- Inner (latex) and outer (nitrile) chemical-resistant gloves
- Safety glasses with side shields or chemical splash goggles
- Chemical-resistant safety boots/shoes
- Hard hat
- Long sleeve work shirt and work pants
- Coveralls (Tyvek® or equivalent)
- Hearing protection (as needed)
- Reflective safety vest

The action levels used in determining the necessary levels of respiratory protection and upgrading to Level C are summarized in Table 4. The written Respiratory Protection Program is maintained by the HSM and is available if needed. The monitoring procedures and equipment are outlined in Section 6.0 (when applicable).

6.2 Respirator Fit-Test

All Langan employees who may be exposed to hazardous substances at the work site are in

possession of a full or half face-piece, air-purifying respirator and have been successfully fit-tested within the past year. Fit-test records are maintained by the HSM.

6.3 Respirator Cartridge Change-Out Schedule

Respiratory protection is required to be worn when certain action levels (table 2) are reached. A respirator cartridge change-out schedule has been developed in order to comply with 29 CFR 1910.134. The respirator cartridge change-out schedule for this project is as follows:

- Cartridges shall be removed and disposed of at the end of each shift, when cartridges become wet or wearer experiences breakthrough, whichever occurs first.
- If the humidity exceeds 85%, then cartridges shall be removed and disposed of after 4 hours of use.

Respirators shall not be stored at the end of the shift with contaminated cartridges left on. Cartridges shall not be worn on the second day, no matter how short the time period was the previous day they were used.

7.0 AIR QUALITY MONITORING AND ACTIONS LEVELS

7.1 Monitoring During Site Operations

Atmospheric air monitoring results may be collected and used to provide data to determine when exclusion zones need to be established and when certain levels of personal protective equipment are required. For all instruments there are Site-specific action level criteria which are used in making field health and safety determinations. Other data, such as the visible presence of contamination or the steady state nature of air contaminant concentration, are also used in making field health and safety decisions. Therefore, the HSO may establish an exclusion zone or require a person to wear a respirator even though atmospheric air contaminant concentrations are below established CHASP action levels.

During site work involving disturbance of petroleum-impacted or fill material, real time air monitoring may be conducted for volatile organic compounds (VOCs). A photoionization detector (PID) and/or flame ionization detector (FID) will be used to monitor concentrations of VOCs at personnel breathing-zone height. Air monitoring will be the responsibility of the HSO or designee. Air monitoring may be conducted during intrusive activities associated with the completion of excavation, debris removal, and soil grading. All manufacturers' instructions for instrumentation and calibration will be available onsite.

Subcontractors' air monitoring plans must be equal or more stringent as the Langan plan.

An air monitoring calibration log is provided in Attachment D of this CHASP.

7.1.1 Volatile Organic Compounds

Monitoring with a PID, such as a MiniRAE 2000 (10.6v) or equivalent may occur during intrusive work in the AOCs. Colormetric Indicator Tubes for benzene may be used as backup for the PID, if measurements remain above background monitor every 2 hours. The HSO will monitor the employee breathing zone at least every 30 minutes, or whenever there is any indication that concentrations may have changed (odors, visible gases, etc.) since the last measurement. If VOC levels are observed above 5 ppm for longer than 5 minutes or if the site PPE is upgraded to Level C, the HSO will begin monitoring the site perimeter at a location downwind of the AOC every 30 minutes in addition to the employee breathing zone. Instrument action levels for monitored gases are provided in Table 4.

7.1.2 Metals

Based upon the site historical fill, there is a potential for the soils to contain PAHs and metals. During invasive procedures which have the potential for creating airborne dust, such as excavation of dry soils, a real time airborne dust monitor such as a Mini-Ram may be used to monitor for air particulates. The HSO will monitor the employee breathing zone at least every 30 minutes, or whenever there is any indication that concentrations may have changed (appearance of visible dust) since the last measurement. If dust levels are observed to be greater than 0.100 mg/m^3 or visible dust is observed for longer than 15 minutes or if the site PPE is upgraded to Level C, the HSO will begin monitoring the site perimeter at a location downwind of the AOC every 30 minutes in addition to the employee breathing zone. Instrument action levels for dust monitoring are provided in Table 4.

7.2 Monitoring Equipment Calibration and Maintenance

Instrument calibration shall be documented and included in a dedicated safety and health logbook or on separate calibration pages of the field book. All instruments shall be calibrated before and after each shift. Calibration checks may be used during the day to confirm instrument accuracy. Duplicate readings may be taken to confirm individual instrument response.

All instruments shall be operated in accordance with the manufacturers' specifications. Manufacturers' literature, including an operations manual for each piece of monitoring equipment will be maintained on site by the HSO for reference.

7.3 Determination of Background Levels

Background (BKD) levels for VOCs and dust will be established prior to intrusive activities within the AOC at an upwind location. A notation of BKD levels will be referenced in the daily monitoring log. BKD levels are a function of prevailing conditions. BKD levels will be taken in an appropriate upwind location as determined by the HSO.

Table 4 lists the instrument action levels.

8.0 COMMUNITY AIR MONITORING PROGRAM

Community air monitoring may be conducted in compliance with the NYSDOH Generic CAMP outlined below:

Monitoring for dust and odors will be conducted during all ground intrusive activities by the FTL. Continuous monitoring on the perimeter of the work zones for odor, VOCs, and dust may be required for all ground intrusive activities such as soil excavation and handling activities. The work zone is defined as the general area in which machinery is operating in support of remediation activities. A portable PID will be used to monitor the work zone and for periodic monitoring for VOCs during activities such as soil and groundwater sampling and .soil excavation. The site perimeter will be monitored for fugitive dust emissions by visual observations as well as instrumentation measurements (if required). When required, particulate or dust will be monitored continuously with real-time field instrumentation that will meet, at a minimum, the performance standards from DER-10 Appendix 1B.

If VOC monitoring is required, the following actions will be taken based on VOC levels measured:

- If total VOC levels exceed 5 ppm above background for the 15-minute average at the perimeter, work activities will be temporarily halted and monitoring continued. If levels readily decrease (per instantaneous readings) below 5 ppm above background, work activities will resume with continued monitoring.
- If total VOC levels at the downwind perimeter of the hot zone persist at levels in excess of 5 ppm above 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 hot 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 above background for the 15-minute average.
- If the total VOC level is above 25 ppm at the perimeter of the hot zone, activities will be shut down.

If dust monitoring with field instrumentation is required, the following actions will be taken based on instrumentation measurements:

- If the downwind particulate level is 100 micrograms per cubic meter (µg/m³) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression must be employed. Work may continue with dust suppression techniques provided that downwind PM10 levels do not exceed 150 µg/m³ above the background level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM10 levels are greater than 150 µg/m³ above the background level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM10 concentration to within 150 µg/m³ of the upwind level and in preventing visible dust migration.

8.1 Vapor Emission Response Plan

This section applies if VOC monitoring is required. If the ambient air concentration of organic vapors exceeds 5 ppm above background at the perimeter of the hot zone, boring and well installation, and excavation activities will be halted or odor controls will be employed, and monitoring continued. When work shut-down occurs, downwind air monitoring as directed by the HSO or FTL will be implemented to ensure that vapor emission does not impact the nearest residential or commercial structure at levels exceeding those specified in the Major Vapor Emission section.

If the organic vapor level decreases below 5 ppm above background, sampling and boring and well installation can resume, provided:

- The organic vapor level 200 feet downwind of the hot zone or half the distance to the nearest residential or commercial structure, whichever is less, is below 1 ppm over background, and
- More frequent intervals of monitoring, as directed by the HSO or FTL, are conducted.

8.2 Major Vapor Emission

This section applies if VOC monitoring is required. If any organic levels greater than 5 ppm over background are identified 200 feet downwind from the work site, or half the distance to the nearest residential or commercial property, whichever is less, all work activities must be halted or odor controls must be implemented.

If, following the cessation of the work activities, or as the result of an emergency, organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest residential or commercial property from the hot zone, then the air quality must be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20 Foot Zone).

If either of the following criteria is exceeded in the 20 Foot Zone, then the Major Vapor Emission Response Plan shall automatically be implemented.

- Sustained organic vapor levels approaching 5 ppm above background for a period of more than 30 minutes, or
- Organic vapor levels greater than 5 ppm above background for any time period.

8.3 Major Vapor Emission Response Plan

Upon activation, the following activities will be undertaken:

- The local police authorities will immediately be contacted by the HSO or FTL and advised of the situation;
- Frequent air monitoring will be conducted at 30-minute intervals within the 20 Foot Zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the HSO or FTL; and
- All Emergency contacts will go into effect as appropriate.

8.4 Dust Suppression Techniques

Preventative measures for dust generation may include wetting site fill and soil, construction of an engineered construction entrance with gravel pad, a truck wash area, covering soils with tarps, and limiting vehicle speeds to five miles per hour.

Work practices to minimize odors and vapors include limiting the time that the excavations remain open, minimizing stockpiling of contaminated-source soil, and minimizing the handling of contaminated material. Offending odor and organic vapor controls may include the application of foam suppressants or tarps over the odor or VOC source areas. Foam suppressants may include biodegradable foams applied over the source material for short-term control of the odor and VOCs.

If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: direct load-out of soils to trucks for off-site disposal; use of chemical odorants in spray or misting systems; and, use of staff to monitor odors in surrounding neighborhoods.

Where odor nuisances have developed during remedial work and cannot be corrected, or where the release of nuisance odors cannot otherwise be avoided due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering excavation and handling areas under tented containment structures equipped with appropriate air venting/filtering systems.

9.0 WORK ZONES AND DECONTAMINATION

9.1 Site Control

Work zones are intended to control the potential spread of contamination throughout the site and to assure that only authorized individuals are permitted into potentially hazardous areas.

Any person working in an area where the potential for exposure to site contaminants exists will only be allowed access after providing the HSO with proper training and medical documentation.

Exclusion Zone (EZ) - All activities which may involve exposure to site contaminants, hazardous materials and/or conditions should be considered an EZ. Decontamination of field equipment will also be conducted in the Contaminant Reduction Zone (CRZ) which will be located on the perimeter of the EZ. The EZ and the CRZ will be clearly delineated by cones, tapes or other means. The HSO may establish more than one EZ where different levels of protection may be employed or different hazards exist. The size of the EZ shall be determined by the HSO allowing adequate space for the activity to be completed, field members and emergency equipment.

9.2 Contamination Zone

9.2.1 Personnel Decontamination Station

Personal hygiene, coupled with diligent decontamination, will significantly reduce the potential for exposure.

9.2.2 Minimization of Contact with Contaminants

During completion of all site activities, personnel should attempt to minimize the chance of contact with contaminated materials. This involves a conscientious effort to keep "clean" during site activities. All personnel should minimize kneeling, splash generation, and other physical contact with contamination as PPE is intended to minimize accidental contact. This may ultimately minimize the degree of decontamination required and the generation of waste materials from site operations.

Field procedures will be developed to control over spray and runoff and to ensure that

unprotected personnel working nearby are not affected.

9.2.3 Personnel Decontamination Sequence

Decontamination may be performed by removing all PPE used in EZ and placing it in drums/trash cans at the CRZ. Baby wipes should be available for wiping hands and face. Drums/trash cans will be labeled by the field crews in accordance with all local, state, and federal requirements. Management plans for contaminated PPE, and tools are provided below.

9.2.4 Emergency Decontamination

If circumstances dictate that contaminated clothing cannot be readily removed, then remove gross contamination and wrap injured personnel with clean garments/blankets to avoid contaminating other personnel or transporting equipment. If the injured person can be moved, he/she will be decontaminated by site personnel as described above before emergency responders handle the victim. If the person cannot be moved because of the extent of the injury (a back or neck injury), provisions shall be made to ensure that emergency response personnel will be able to respond to the victim without being exposed to potentially hazardous atmospheric conditions. If the potential for inhalation hazards exist, such as with open excavation, this area will be covered with polyethylene sheeting to eliminate any potential inhalation hazards. All emergency personnel are to be immediately informed of the injured person's condition, potential contaminants, and provided with all pertinent data.

9.2.5 Hand-Held Equipment Decontamination

Hand-held equipment includes all monitoring instruments as stated earlier, samples, hand tools, and notebooks. The hand-held equipment is dropped at the first decontamination station to be decontaminated by one of the decontamination team members. These items must be decontaminated or discarded as waste prior to removal from the CRZ.

To aid in decontamination, monitoring instruments can be sealed in plastic bags or wrapped in polyethylene. This will also protect the instruments against contaminants. The instruments will be wiped clean using wipes or paper towels if contamination is visually evident. Sampling equipment, hand tools, etc. will be cleaned with non-phosphorous soap to remove any potentially contaminated soil, and rinsed with deionized water. All decontamination fluids will be containerized and stored on-site pending waste characterization sampling and appropriate off-site disposal.

9.2.6 Heavy Equipment Decontamination

All heavy equipment and vehicles arriving at the work site will be free from contamination from offsite sources. Any vehicles arriving to work that are suspected of being impacted will not be permitted on the work site. Potentially contaminated heavy equipment will not be permitted to leave the EZ unless it has been thoroughly decontaminated and visually inspected by the HSO or his designee.

9.3 Support Zone

The support zone or cold zone will include the remaining areas of the job site. Break areas and support facilities (include equipment storage and maintenance areas) will be located in this zone. No equipment or personnel will be permitted to enter the cold zone from the hot zone without passing through the decontamination station in the warm zone (if necessitated). Eating, smoking, and drinking will be allowed only in this area.

9.4 Communications

The following communications equipment will be utilized as appropriate.

- Telephones - A cellular telephone will be located with the HSO for communication with the HSM and emergency support services/facilities.
- Hand Signals - Hand signals shall be used by field teams, along with the buddy system. The entire field team shall know them before operations commence and their use covered during site-specific training. Typical hand signals are the following:

Hand Signal	Meaning
Hand gripping throat	Out of air; cannot breathe
Grip partners wrists or place both hands around waist	Leave immediately without debate
Hands on top of head	Need assistance
Thumbs up	OK; I'm alright; I understand
Thumbs down	No; negative
Simulated "stick" break with fists	Take a break; stop work

9.5 The Buddy System

When working in teams of two or more, workers will use the "buddy system" for all work activities to ensure that rapid assistance can be provided in the event of an emergency. This requires work groups to be organized such that workers can remain close together and maintain visual contact with one another. Workers using the "buddy system" have the following responsibilities:

- Provide his/her partner with assistance.
- Observe his/her partner for signs of chemical or heat exposure.
- Periodically check the integrity of his/her partner's PPE.
- Notify the HSO or other site personnel if emergency service is needed.

10.0 NEAREST MEDICAL ASSISTANCE

The address and telephone number of the nearest hospital:

NYC Health and Hospitals - Woodhull
760 Broadway
Brooklyn, New York
718-963-8000

Map with directions to the hospital are shown in Figure 2. This information will either be posted prominently at the site or will be available to all personnel all of the time. Further, all field personnel, including the HSO & FTL, will know the directions to the hospital.

11.0 STANDING ORDERS/SAFE WORK PRACTICES

The standing orders, which consist of a description of safe work practices that must always be followed while on-site by Langan employees and contractors, are shown in Attachment A. The site HSO and FTL each have the responsibility for enforcing these practices. The standing orders will be posted prominently at the site, or are made available to all personnel at all times. Those who do not abide by these safe work practices will be removed from the site.

12.0 SITE SECURITY

No unauthorized personnel shall be permitted access to the work areas.

13.0 UNDERGROUND UTILITIES

As provided in Langan's Underground Utility Clearance Guidelines, the following safe work practices should be followed by Langan personnel and the contractor before and during subsurface work in accordance with federal, state and local regulations:

- Obtain available utility drawings from the property owner/client or operator.
- Provide utility drawings to the project team.
- In the field, mark the proposed area of subsurface disturbance (when possible).
- Ensure that the utility clearance system has been notified.
- Ensure that utilities are marked before beginning subsurface work.

- Discuss subsurface work locations with the owner/client and contractors.
- Obtain approval from the owner/client and operators for proposed subsurface work locations.
- Use safe digging procedures when applicable.
- Stay at least 10 feet from all equipment performing subsurface work.

14.0 SITE SAFETY INSPECTION

The Langan HSO or alternate will check the work area daily, at the beginning and end of each work shift or more frequently to ensure safe work conditions. The HSO or alternate must complete the Jobsite Safety Inspection Checklist, found in Attachment F. Any deficiencies shall be shared with the FTL, HSM and PM and will be discussed at the daily tailgate meeting.

15.0 HAND AND POWER TOOLS

All hand- and electric-power tools and similar equipment shall be maintained in a safe operating condition. All electric-power tools must be inspected before initial use. Damaged tools shall be removed immediately from service or repaired. Tools shall be used only for the purpose for which they were designed. All users must be properly trained in their safe operation.

16.0 EMERGENCY RESPONSE

16.1 General

This section establishes procedures and provides information for use during a project emergency. Emergencies happen unexpectedly and quickly, and require an immediate response; therefore, contingency planning and advanced training of staff is essential. Specific elements of emergency support procedures that are addressed in the following subsections include communications, local emergency support units, and preparation for medical emergencies, first aid for injuries incurred on site, record keeping, and emergency site evacuation procedures. In case of emergency, in addition to 911, call *Incident Intervention®* at 1-888-479-7787 to report their injuries. For all other communications, contact the Langan Incident Hotline at **(800) 9-LANGAN** (800-952-6426) extension 4699 as soon as possible.

Should outside assistance be needed for accidents, fire, or release of hazardous substances, the emergency numbers will be available and posted at the site (Table 5) where a readily accessible telephone is made available for emergency use.

Also, in the event of an incident where a team member becomes exposed or suffers from an acute symptom from contact with site materials and has to be taken to a hospital, a short medical data sheet (Attachment T) for that individual will be made available to the attending physician.

The medical data sheet will include the following:

- Name, address, home phone
- Age, height, weight
- Name of person to be notified in case of an accident
- Allergies
- Particular sensitivities
- Does he/she wear contact lenses
- Short checklist of previous illness
- Name of personal physician and phone
- Name of company physician and phone
- Prescription and non-prescription medications currently used.

A sample medical data sheet is included in Attachment T.

16.2 Responsibilities

16.2.1 Health and Safety Officer (HSO)

The HSO is responsible for ensuring that all personnel are evacuated safely and that machinery and processes are shut down or stabilized in the event of a stop work order or evacuation. The HSO is responsible for ensuring the HSM are notified of all incidents, all injuries, near misses, fires, spills, releases or equipment damage. The HSO is required to immediately notify the HSM of any fatalities or catastrophes (three or more workers injured and hospitalized) so that the HSM can notify OSHA within the required time frame.

16.2.2 Emergency Coordinator

The HSO or their designated alternate will serve as the Emergency Coordinator. The Emergency Coordinator is responsible for ensuring that all personnel are evacuated safely and that machinery and processes are shut down or stabilized in the event of a stop work order or evacuation. They are also responsible for ensuring the HSM are notified of all incidents, all injuries, near misses, fires, spills, releases or equipment damage. The Emergency Coordinator is required to immediately notify the HSM of any fatalities or catastrophes (three or more workers injured and hospitalized.

The Emergency Coordinator shall locate emergency phone numbers and identify hospital routes prior to beginning work on the sites. The Emergency Coordinator shall make necessary arrangements to be prepared for any emergencies that could occur.

The Emergency Coordinator is responsible for implementing the Emergency Response Plan.

16.2.3 Site Personnel

Project site personnel are responsible for knowing the Emergency Response Plan and the procedures contained herein. Personnel are expected to notify the Emergency Coordinator of situations that could constitute a site emergency. Project site personnel, including all subcontractors will be trained in the Emergency Response Plan.

16.3 Communications

Once an emergency situation has been stabilized, or as soon as practically, the injured Langan personnel should contact *Incident Intervention®* at 1-888-479-7787 to report their injuries. For all other communications, contact the Langan Incident Hotline at **(800) 9-LANGAN** (800-952-6426) extension 4699 as soon as possible.

16.4 Local Emergency Support Units

In order to be able to deal with any emergency that might occur during investigative activities at the site, the Emergency Notification Numbers (Table 5) will be posted and provided to all personnel conducting work within the EZ.

Figure 2 shows the hospital route map. Outside emergency number 911 and local ambulance should be relied on for response to medical emergencies and transport to emergency rooms. Always contact first responders when there are serious or life threatening emergencies on the site. Project personnel are instructed not to drive injured personnel to the Hospital. In the event of an injury, provide first aid and keep the injured party calm and protected from the elements and treat for shock when necessary.

16.5 Pre-Emergency Planning

Langan will communicate directly with administrative personnel from the emergency room at the hospital in order to determine whether the hospital has the facilities and personnel needed to treat cases of trauma resulting from any of the contaminants expected to be found on the site. Instructions for finding the hospital will be posted conspicuously in the site office and in each site vehicle.

16.6 Emergency Medical Treatment

The procedures and rules in this CHASP are designed to prevent employee injury. However, should an injury occur, no matter how slight, it will be reported to the HSO immediately. First-aid equipment will be available on site at the following locations:

- First Aid Kit: Contractor Vehicles
- Emergency Eye Wash: Contractor Vehicles

During the site safety briefing, project personnel will be informed of the location of the first aid station(s) that has been set up. Some injuries, such as severe cuts and lacerations or burns, may require immediate treatment. Any first aid instructions that can be obtained from doctors or paramedics, before an emergency-response squad arrives at the site or before the injured person can be transported to the hospital, will be followed closely.

16.7 Personnel with current first aid and CPR certification will be identified.

Only in non-emergency situations may an injured person be transported to an urgent care facility. Due to hazards that may be present at the site and the conditions under which operations are conducted, it is possible that an emergency situation may develop. Emergency situations can be characterized as injury or acute chemical exposure to personnel, fire or explosion, environmental release, or hazardous weather conditions.

16.8 Emergency Site Evacuation Routes and Procedures

All project personnel will be instructed on proper emergency response procedures and locations of emergency telephone numbers during the initial site safety meeting. If an emergency occurs as a result of the site investigation activities, including but not limited to fire, explosion or significant release of toxic gas into the atmosphere, the Langan Project Manager will be verbally notified immediately. All heavy equipment will be shut down and all personnel will evacuate the work areas and assemble at the nearest intersection to be accounted for and to receive further instructions.

In the event that an emergency situation arises, the FTL will implement an immediate evacuation of all project personnel due to immediate or impending danger. The FTL will also immediately communicate with the contractor to coordinate any needed evacuation of the property.

The FTL or Site Supervisor will give necessary instructions until the Designated Incident Commander (IC) assumes control. After the emergency has been resolved, the FTL or Site Supervisor will coordinate with the IC and indicate when staff should resume their normal duties. If dangers are present for those at the designated assembly point, another designated location of assembly will be established.

It will be the responsibility of the FTL or Site Supervisor to report a fire or emergency, assess the seriousness of the situation, and initiate emergency measures until the arrival of the local fire fighters or other first responders, should they be necessary. The FTL, working with emergency responders, may also order the closure of the Site for an indefinite period as long as it is deemed necessary.

Under no circumstances will incoming visitors be allowed to proceed to the area of concern, once

an emergency evacuation has been implemented. Visitors or other persons present in the area of the emergency shall be instructed to evacuate the area. The FTL will ensure that access roads are not obstructed and will remain on-site to provide stand-by assistance upon arrival of emergency personnel.

If it is necessary to temporarily control traffic in the event of an emergency, those persons controlling traffic will wear proper reflection warning vests until the arrival of police or fire personnel.

16.8.1 Designated Assembly Locations

All personnel will evacuate the site and assemble at a designated assembly location. The assembly location will be designated by Langan personnel and discussed during each shift's pre-job safety briefing.

16.8.2 Accounting for Personnel

All contractor and subcontractor supervisors are responsible for the accounting of all personnel assembled at the designed assembly area. The Designated Incident Commander shall be notified if personnel are not found.

16.9 Fire Prevention and Protection

In the event of a fire or explosion, procedures will include immediately evacuating the site and notification of the Langan Project Manager of the investigation activities. Portable fire extinguishers will be provided at the work zone. The extinguishers located in the various locations should also be identified prior to the start of work. No personnel will fight a fire beyond the stage where it can be put out with a portable extinguisher (incipient stage).

16.9.1 Fire Prevention

Fires will be prevented by adhering to the following precautions:

- Good housekeeping and storage of materials.
- Storage of flammable liquids and gases away from oxidizers.
- Shutting off engines to refuel.
- Grounding and bonding metal containers during transfer of flammable liquids.
- Use of UL approved flammable storage cans.
- Fire extinguishers rated at least 10 pounds ABC located on all heavy equipment, in all trailers and near all hot work activities.

The person responsible for the control of fuel source hazards and the maintenance of fire prevention and/or control equipment is the HSO.

16.10 Significant Vapor Release

Based on the proposed tasks, the potential for a significant vapor release is low. However, if a release occurs, the following steps will be taken:

- Move all personnel to an upwind location. All non-essential personnel shall evacuate.
- Upgrade to Level C Respiratory Protection.
- Downwind perimeter locations shall be monitored for volatile organics.
- If the release poses a potential threat to human health or the environment in the community, the Emergency Coordinator shall notify the Langan Project Manager.
- Local emergency response coordinators will be notified.

16.11 Overt Chemical Exposure

The following are standard procedures to treat chemical exposures. Other, specific procedures detailed on the Material Safety Data Sheet (MSDS) will be followed, when necessary.

SKIN AND EYE: Use copious amounts of soap and water from eye-wash kits and portable hand wash stations.

CONTACT: Wash/rinse affected areas thoroughly, then provide appropriate medical attention. Skin shall also be rinsed for 15 minutes if contact with caustics, acids or hydrogen peroxide occurs. Affected items of clothing shall also be removed from contact with skin.

Providing wash water and soap will be the responsibility of each individual contractor or subcontractor on-site.

16.12 Decontamination during Medical Emergencies

If emergency life-saving first aid and/or medical treatment is required, normal decontamination procedures may need to be abbreviated or omitted. The HSO or designee will accompany contaminated victims to the medical facility to advice on matters involving decontamination when necessary. The outer garments can be removed if they do not cause delays, interfere with treatment or aggravate the problem. Respiratory equipment must always be removed. Protective clothing can be cut away. If the outer contaminated garments cannot be safely removed on site, a plastic barrier placed between the injured individual and clean surfaces should be used to help prevent contamination of the inside of ambulances and/or medical personnel. Outer garments may then be removed at the medical facility. No attempt will be made to wash or rinse the victim if his/her injuries are life threatening, unless it is known that the individual has been contaminated with an extremely toxic or corrosive material which could also cause severe injury or loss of life

to emergency response personnel. For minor medical problems or injuries, the normal decontamination procedures will be followed.

16.13 Adverse Weather Conditions

In the event of adverse weather conditions, the HSO will determine if work will continue without potentially risking the safety of all field workers. Some of the items to be considered prior to determining if work should continue are:

- Potential for heat stress and heat-related injuries.
- Potential for cold stress and cold-related injuries.
- Treacherous weather-related working conditions (hail, rain, snow, ice, high winds).
- Limited visibility (fog).
- Potential for electrical storms.
- Earthquakes.
- Other major incidents.

Site activities will be limited to daylight hours, or when suitable artificial light is provided, and acceptable weather conditions prevail. The HSO will determine the need to cease field operations or observe daily weather reports and evacuate, if necessary, in case of severe inclement weather conditions.

16.14 Spill Control and Response

All small spills/environmental releases shall be contained as close to the source as possible. Whenever possible, the MSDS will be consulted to assist in determining proper waste characterization and the best means of containment and cleanup. For small spills, sorbent materials such as sand, sawdust or commercial sorbents should be placed directly on the substance to contain the spill and aid recovery. Any acid spills should be diluted or neutralized carefully prior to attempting recovery. Berms of earthen or sorbent materials can be used to contain the leading edge of the spills. All spill containment materials will be properly disposed. An exclusion zone of 50 to 100 feet around the spill area should be established depending on the size of the spill.

All contractor vehicles shall have spill kits on them with enough material to contain and absorb the worst-case spill from that vehicle. All vehicles and equipment shall be inspected prior to be admitted on site. Any vehicle or piece of equipment that develops a leak will be taken out of service and removed from the job site.

The following seven steps shall be taken by the Emergency Coordinator:

1. Determine the nature, identity and amounts of major spills.
2. Make sure all unnecessary persons are removed from the spill area.

3. Notify the HSO immediately.
4. Use proper PPE in consultation with the HSO.
5. If a flammable liquid, gas or vapor is involved, remove all ignition sources and use non-sparking and/or explosion-proof equipment to contain or clean up the spill (diesel-only vehicles, air-operated pumps, etc.)
6. If possible, try to stop the leak with appropriate material.
7. Remove all surrounding materials that can react or compound with the spill.

In addition to the spill control and response procedures described in this CHASP, Langan personnel will coordinate with the designated project manager relative to spill response and control actions. Notification to the Project Manager must be immediate and, to the extent possible, include the following information:

- Time and location of the spill.
- Type and nature of the material spilled.
- Amount spilled.
- Whether the spill has affected or has a potential to affect a waterway or sewer.
- A brief description of affected areas/equipment.
- Whether the spill has been contained.
- Expected time of cleanup completion. If spill cleanup cannot be handled by Langan's on-site personnel alone, such fact must be conveyed to the Project Manager immediately.

Langan shall not make any notification of spills to outside agencies. The client will notify regulatory agencies as per their reporting procedures.

16.15 Emergency Equipment

The following minimum emergency equipment shall be kept and maintained on site:

- Industrial first aid kit.
- Fire extinguishers (one per site).

16.16 Restoration and Salvage

After an emergency, prompt restoration of utilities, fire protection equipment, medical supplies and other equipment will reduce the possibility of further losses. Some of the items that may need to be addressed are:

- Refilling fire extinguishers.
- Refilling medical supplies.
- Recharging eyewashes and/or showers.
- Replenishing spill control supplies.

16.17 Documentation

Immediately following an incident or near miss, unless emergency medical treatment is required, either the employee or a coworker must contact the Langan Incident/Injury Hotline at 1-(800)-9-LANGAN (ext. #4699) and the client representative to report the incident or near miss. For emergencies involving personnel injury and/or exposure, the HSO and affected employee will complete and submit an Employee Exposure/Injury Incident Report (Attachment C) to the Langan Corporate Health and Safety Manager as soon as possible following the incident.

17.0 SPECIAL CONDITIONS

This guideline contains information and requirements for special conditions that may not be routinely encountered.

17.1 Scope

The guideline applies to the specific projects identified within this document. Additional provisions will be addressed in each Site-Specific Construction Health and Safety Plan (CHASP), as needed.

17.2 Responsibilities

Site Personnel - All site personnel must be alert to safety hazards on work sites and take action to minimize such hazards. Personnel must utilize the buddy system, watch for inappropriate behavior, and be alert to changes in site conditions.

Health and Safety Officer (HSO) - The HSO is responsible for considering these procedures in the development of site specific CHASPs. The HSO shall schedule frequent "tail gate" safety briefings to enhance safety awareness and discuss potential problems.

17.3 Procedures

The procedures outlined below shall be followed when such conditions are encountered.

17.3.1 Ladders

Langan safety procedures shall be used to ensure employee safety when using ladders in the office or work sites. All ladders shall be coated or repaired to prevent injury to the employee from punctures or lacerations and to prevent snagging or clothing. Any wood ladders used must have an opaque covering except for identification or warning labels, which may be placed on one face only of a side rail.

17.3.1.1 Ladder Use

Employees shall only use ladders for the purposes, which they were designed and shall not be used as scaffolding. Ladders will be maintained and inspected prior to use for slip hazards including oil and grease. Employees shall use ladders only on stable and level surfaces unless the ladder is secured to prevent possible displacement. Ladders should not be used on slippery surfaces unless secured or provided with slip resistant feet to prevent accidental displacement. Ladders should not be used in locations where they could be displaced by workplace activities or traffic. Ladder rungs, cleats and steps shall be parallel, level and uniformly spaced when the ladder is in the use position.

Employees should not be carrying anything including equipment that could cause injury if there was a fall while utilizing the ladder. The top and bottom of the ladder area must remain clear while in use. When ascending and descending the ladder, employees must face the ladder.

Ladders shall not be loaded beyond the maximum intended load for which they were built or the manufacturer's rated capacity.

17.3.1.2 Portable Ladders

Rungs, cleats and steps for portable ladders and fixed ladders shall be spaced not less than 10 inches apart, nor more than 14 inches apart, as measured between center lines of the rungs, cleats and steps. When used to access an upper landing surface, the ladder side rails must extend at least three feet above the upper landing surface to which the ladder is used to gain access. If this is not possible, due to the ladders length, then the top of the ladder shall be secured at its top to a rigid support.

17.3.1.3 Step Stools

Rungs, cleats and steps of step stools shall not be less than 8 inches apart, nor more than 12 inches apart, as measured between center lines of the rungs, cleats and steps.

17.3.1.4 Extension Ladders

Rungs, cleats and steps of the base section of extension trestle ladders shall be spaced not less than 8 inches apart, nor more than 18 inches apart, as measured between center lines of the rungs, cleats and steps. The rung spacing on the extension section of the extension trestle ladder shall not be less than 6 inches nor more than 12 inches, as measured between center lines of the rungs, cleats and steps. Ladders shall be used at an angle such that the horizontal distance from the top support to the foot of the ladder is approximately one-quarter of the working length

of the ladder (the distance along the ladder between the foot and the top support).

17.3.1.5 Inspection

Ladders will be inspected for visible detects periodically, prior to utilization or after any occurrence that could have negatively affected the ladder. Portable ladders with defects including broken or missing rungs, cleats, or steps, broken or split rails, corroded components or other faulty or defective components shall not be used. The ladder will be immediately marked as defective, tagged as "Do Not Use" or blocked from being used and removed from service until repaired.

17.3.2 First Aid/Cardiopulmonary Resuscitation (CPR)

Langan field and office personnel will be encouraged to be trained in First Aid and Cardiopulmonary Resuscitation (CPR). Training will be provided free of charge by Langan to all employees. Employees will receive a training certificate that will be kept on file with the Health & Safety Coordinator (HSC). Training and certification will be provided by a credited provider such as American Red Cross or equivalent.

17.3.2.1 Emergency Procedures

Prior to work at sites the Langan employees certified in first aid and CPR will be identified in the site specific CHASP. Langan will endear to have at least one employee at a job site trained and able to render first aid and CPR. The site specific CHASP will contain first aid information on both potential chemical and physical hazards. Emergency procedures to be followed are in case of injury or illnesses are provided in the CHASP. The CHASP will include emergency contact information including local police and fire departments, hospital emergency rooms, ambulance services, on-site medical personnel and physicians. The CHASP will also include directions and contact information to the nearest emergency facility in case immediate medical attention is required. The emergency contact information will be conspicuously posted at the worksite. Employees that are injured and require immediate medical attention shall call either 911 or the local posted emergency contacts. Employees should use ambulatory services to transport injured workers to the nearest facility for emergency medical care. In areas where 911 is not available, the telephone numbers of the physicians, hospitals, or ambulances shall be conspicuously posted.

17.3.2.2 First Aid Supplies

First aid supplies are readily available to all Langan employees when required. First aid kits are located in each Langan office. Portable first aid kits are available for employees to use at work sites. First aid kits should consist of items needed to treat employees for potential chemical and

physical injuries. At a minimum, first aid kits should contain items to allow basic first aid to be rendered. Where the eyes or body of an employee may be exposed to corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use including eye wash.

First aid kits will be weatherproof with individual sealed packages of each item. All portable first aid kits shall be inspected by Langan employees before and after use to ensure all used items are replaced. When out in the field, employees shall check first aid kits weekly to ensure used items are replaced.

17.3.3 Hydrogen Sulfide

Langan employees with the potential to be exposed to hydrogen sulfide while at work sites shall have training in hydrogen sulfide awareness. The training will include identification of areas where employees could be exposed to hydrogen sulfide, health effects, permissible exposure limits, first aid procedures and personnel protective equipment. Langan employees could be exposed to hydrogen sulfide while at job sites including petroleum refineries, hazardous waste treatment, storage and disposal facilities, uncontrolled hazardous waste sites and remediation projects.

17.3.3.1 Characteristics

Hydrogen sulfide is a colorless gas with a strong odor of rotten eggs that is soluble in water. Hydrogen sulfide is used to test and make other chemicals. It is also found as a by-product of chemical reactions, such as in sewer treatment. It is a highly flammable gas and a dangerous fire hazard. Poisonous gases are produced in fires including sulfur oxides. Hydrogen sulfide is not listed as a carcinogen.

17.3.3.2 Health Effects

Hydrogen Sulfide can affect employees if inhaled or through contact with skin or eyes. Acute (or short term) health effects of hydrogen sulfide exposure include irritation of the nose and throat, dizziness, confusion, headache and trouble sleeping. Inhalation of hydrogen sulfide can irritate the lungs causing coughing and/or shortness of breath. Higher levels of exposure can cause build-up of fluid in the lungs (pulmonary edema), a medical emergency, with severe shortness of breath.

Chronic (or long term) health effects of low levels of exposure to hydrogen sulfide can cause pain and redness of the eyes with blurred vision. Repeated exposure may cause bronchitis with cough, phlegm and shortness of breath.

17.3.3.3 Protective Clothing and Equipment

Respirators are required for those operations in which employees will be exposed to hydrogen sulfide above OSHA permissible exposure level. The maximum OSHA permissible exposure limit (PEL) for hydrogen sulfide is 20 parts of hydrogen sulfide vapor per million parts of air (20 ppm) for an 8-hour workday and the maximum short-term exposure limit (STEL) is 10 ppm for any 10-minute period.

Where employees are exposed to levels up to 100 parts of hydrogen sulfide vapor per million parts of air (100 ppm), the following types of respiratory protection are allowed:

- Any powered, air purifying respirator with cartridge(s);
- Any air purifying, full-facepiece respirator (gas mask) with a chin style, front- or back-mounted canister;
- Any supplied air system with escape self-contained breathing apparatus, if applicable; and,
- Any self-contained breathing apparatus with a full facepiece.

Respirators used by employees must have joint Mine Safety and Health Administration and the National Institute for Occupational Safety and Health (NIOSH) seal of approval. Cartridges or canisters must be replaced before the end of their service life, or the end of the shift, whichever occurs first. Langan employees that have the potential to be exposed to hydrogen sulfide will be trained in the proper use of respirators. Respirator training is discussed under– Langan's Respiratory Protection Program.

Employees with potential exposure to hydrogen sulfide, or when required by the client, will wear a portable hydrogen sulfide gas detector. The detector should have an audible, visual and vibrating alarm. The detector may also provide detection for carbon monoxide, sulfur dioxide and oxygen deficient atmospheres. The hydrogen sulfide monitor will, at a minimum, be calibrated to detect hydrogen sulfide at a level of 20 parts of hydrogen sulfide vapor per million parts of air (20 ppm). Many portable gas detectors will have factory defaults with a low level alarm at 10 ppm and a high level alarm at 15 ppm. Langan employees shall consult clients to determine if any site specific threshold levels exist.

If the hydrogen sulfide gas detector sounds and employees are not wearing appropriate respiratory protection, employees must immediately vacate the area and meet at the assigned emergency location. Langan employees may not re- enter the site without proper respiratory protection and approval from the client or property owner, if needed.

Employees shall wear PPE to prevent eye and skin contact with hydrogen sulfide. Employees

must wear appropriate protective clothing including boots, gloves, sleeves and aprons, over any parts of their body that could be exposed to hydrogen sulfide. Non-vented, impact resistant goggles should be worn when working with or exposed to hydrogen sulfide.

17.3.3.4 Emergency and First Aid Procedures

Eye and Face Exposure

If hydrogen sulfide comes in contact with eyes, it should be washed out immediately with large amounts of water for 30 minutes, occasionally lifting the lower and upper eye lids. Seek medical attention immediately.

Skin Exposure

If hydrogen sulfide contaminates clothing or skin, remove the contaminated clothing immediately and wash the exposed skin with large amounts of water and soap. Seek medical attention immediately. Contaminated clothing should either be disposed of or washed before wearing again.

Breathing

If a Langan employee or other personnel breathe in hydrogen sulfide, immediately get the exposed person to fresh air. If breathing has stopped, artificial respiration should be started. Call for medical assistance or a doctor as soon as possible.

Safety Precautions

Hydrogen sulfide is a highly flammable gas and a dangerous fire hazard. Containers of hydrogen sulfide may explode in a fire situation. Poisonous gases are produced during fires.

Langan employees should contact property owners and operators prior to conducting work onsite to be aware of any site specific contingency plans, identify where hydrogen sulfide is used at the facility and be informed about additional safety rules or procedures.

19.3.4 Fire Protection/Extinguishers

Langan field personnel that have been provided with portable fire extinguishers for use at worksites will be trained to familiarize employees with general principles of fire extinguisher use and hazards associated with the incipient stage of firefighting. Training will be provided prior to initial assignment for field work and annually thereafter.

Portable fire extinguishers shall be visually inspected monthly and subjected to an annual maintenance check. Langan shall retain records of the annual maintenance date.

17.3.5 Overhead lines

When field work is performed near overhead lines, the lines shall be deenergized and grounded, or other protective measures shall be provided before the work shall commence. If overhead lines are to be deenergized, arrangements shall be made with the client, property owner or organization that operates or controls the electric circuits involved to deenergize and ground them. If protective measures, such as guarding, isolating, or insulating, are provided, these precautions shall prevent employees from contacting such lines directly with any part of their body or indirectly through conductive materials, tools, or equipment.

When unqualified Langan personnel are working in an elevated position near overhead lines, the location shall be such that the person and the longest conductive object they may contact cannot come closer to any unguarded, energized overhead line than the following distances:

1. For voltages to ground 50kV or below - 10 feet; and
2. For voltages to ground over 50kV - 10 feet, plus 4 inches for every 10kV over 50kV.

As previously indicated, Langan does not retain qualified employees to perform work on energized equipment.

17.3.5.1 Vehicle and Equipment Clearance

Any vehicle or mechanical equipment capable of having parts of its structure elevated near energized overhead lines shall be operated so that a clearance of 10 feet is maintained. If the voltage of the overhead lines is higher than 50kV, the clearance shall be increased 4 inches for every 10kV over that voltage.

If any of the following discussed conditions occur, the clearance may be reduced.

- If the vehicle is in transit with its structure lowered, the clearance may be reduced to 4 ft. If the voltage is higher than 50kV, the clearance shall be increased 4 in. for every 10 kV over that voltage.
- If insulating barriers are installed to prevent contact with the lines, and if the barriers are rated for the voltage of the line being guarded and are not a part of or an attachment to the vehicle or its raised structure, the clearance may be reduced to a distance within the designed working dimensions of the insulating barrier.

Employees standing on the ground may not contact the vehicle or mechanical equipment or any

of its attachments, unless the employee is using protective equipment rated for the voltage; or the equipment is located so that no uninsulated part of its structure (that portion of the structure that provides a conductive path to employees on the ground) can come closer to the overhead line than permitted.

If any vehicle or mechanical equipment capable of having parts of its structure elevated near energized overhead lines is intentionally grounded, employees working on the ground near the point of grounding may not stand at the grounding location whenever there is a possibility of overhead line contact. Additional precautions, such as the use of barricades or insulation, shall be taken to protect employees from hazardous ground potentials, depending on earth resistivity and fault currents, which can develop within the first few feet or more outward from the grounding point.

17.3.6 Trade Secret

Langan employees could potentially be provided trade secret information by the client or property owner when site specific information is provided about highly hazardous chemicals. Trade secret means any confidential formula, pattern, process, device, information or compilation of information that is used in an employer's business, and that gives the employer an opportunity to obtain an advantage over competitors who do not know or use it. Langan employees understand that this information should be kept confident and if required, may enter into a confidentially agreement with the client.

17.3.7 Bloodborne Pathogens

Langan employees that can reasonably anticipate exposure to blood or other potentially infectious material while at work sites shall have training in bloodborne pathogens. Applicable employees would include those trained in first aid and serving a designated role as an emergency medical care provider. Bloodborne pathogens are pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus and human immunodeficiency virus.

17.3.7.1 Training

Langan employees with potential occupational exposure to blood or other potentially infectious material must participate in a training program. Training must be conducted prior to initial assignment where there would be potential for exposure and annually thereafter within one year of previous training. The training program will be provided to Langan employees at no cost to them and during working hours.

Langan will ensure the training program shall consist of the following:

- An accessible copy of the regulatory text of 29 CFR 1910.1030 and an explanation of its contents;
- A general explanation of the epidemiology and symptoms of bloodborne diseases;
- An explanation of the modes of transmission of bloodborne pathogens;
- An explanation of Langan's exposure control plan and the means by which the employee can obtain a copy of the written plan;
- An explanation of the appropriate methods for recognizing tasks and other activities that may involve exposure to blood and other potentially infectious materials;
- An explanation of the use and limitations of personal protective
    - equipment (PPE) to prevent and reduce exposure;
    - Information on the types, proper use, location, removal, handling and disposal of PPE;
    - An explanation of the basis for selection of PPE;
    - Information on the hepatitis B vaccine, including information on its efficacy, safety, method of administration, the benefits of being vaccinated, and that the vaccine and vaccination will be offered free of charge;
    - Information on the appropriate actions to take and persons to contact in an emergency involving blood or other potentially infectious materials;
    - An explanation of the procedure to follow if an exposure incident occurs, including the method of reporting the incident and the medical follow-up that will be made available;
    - Information on the post-exposure evaluation and follow-up that the
    - employer is required to provide for the employee following an exposure incident;
    - An explanation of the signs and labels and/or color coding required by paragraph 29 CFR 1910.1030(g)(1); and
    - An opportunity for interactive questions and answers with the person conducting the training session.

Langan will develop and implement a written Exposure Control Plan, which will be designed to eliminate or minimize employee exposure to bloodborne pathogens. The Exposure Control Plan will contain the following elements:

- An exposure determination for employees;
- The schedule and method of implementation for Methods of Compliance (29 CFR 191.1030(d)), Hepatitis B Vaccination and Post-Exposure Evaluation and Follow-up (29 CFR 1910.1030(f)), Communication of Hazards to Employees (29 CFR 1910.1030(g)) and (h) Recordkeeping (29 CFR 1910.1030(h));
- The procedure for the evaluation of circumstances surrounding exposure incidents;
- Ensure a copy of the Exposure Control Plan will be accessible to employees; and,
- The Exposure Control Plan shall be reviewed and updated at least annually.

Langan employees with occupational exposure to bloodborne pathogens include any employees trained in first aid that would be expected to provide emergency medical care. This determination is made without regards to the use of PPE, which could eliminate or minimize exposure.

Universal precautions shall be observed to prevent contact with blood or other potentially infectious materials. According to the concept of Universal Precautions, all human blood and certain human body fluids are treated as if known to be infectious for bloodborne pathogens. Under circumstances in which differentiation between body fluid types is difficult or impossible, all body fluids shall be considered potentially infectious materials.

Work practice controls shall be used to eliminate or minimize employee exposure, if applicable. Since Langan employees will have occupational exposure only during rendering of first aid, personnel protective equipment will be utilized to reduce or minimize exposure. PPE that could be available to Langan personnel when administering first aid includes safety glasses, gloves, and Tyvek suits or sleeves. PPE and first aid kits will be provided to employees at no cost to them.

Langan employees that render first aid in office areas will have access to hand washing facilities or restrooms. For first aid rendered at field locations, first aid kits will contain an appropriate antiseptic hand cleanser and clean cloth/paper towels or antiseptic towelettes. After using antiseptic hand cleansers or towelettes, employees shall wash their hands with soap and running water as soon as feasible.

After administering first aid, potentially infectious materials, including towels, personnel protective equipment, clothes and bandages, shall be placed in a container, which prevents leakage during collection, handling, processing, storage, transport, or shipping. All PPE will be dispose of after use. Any equipment or working surfaces which was been exposed to blood or potentially infectious materials due to an injury, will be decontaminated prior to reuse.

Langan will make available the hepatitis B vaccine and vaccination series to all employees who have occupational exposure, and post-exposure evaluation and follow-up to all employees who have had an exposure incident. These services will be available to the employee at no cost to them through a medical provider.

17.3.7.2 Recordkeeping

Langan will maintain training and medical records for each employee with occupational exposure to blood or potentially infectious materials. Medical and training records will be maintained by Langan's H&S Department.

Training records will include the following:

- Dates of the training sessions;
- Contents or a summary of the training sessions;
- Names and qualifications of persons conducting the training; and
- Names and job titles of all persons attending the training sessions.

Training records shall be maintained for 3 years from the date on which the training occurred. Medical records will be will be preserved and maintained for the duration of employment plus 30 years.

All records will be made available upon request to employees, the Assistant Secretary of Labor for Occupational Safety and Health, and Director of National Institute for Occupational Safety and Health Director of OSHA for examination and copying. Medical records must have written consent from employee before releasing.

If Langan ceases to do business, all records shall be transferred to the successor employer. The successor employer shall receive and maintain these records.

If there will not be a successor, Langan will notify current employees of their rights to access records at least three months prior to the cessation of business.

18.0 RECORDKEEPING

The following is a summary of required health and safety logs, reports and recordkeeping.

18.1 Field Change Authorization Request

Any changes to the work to be performed that is not included in the CHASP will require an addendum that is approved by the Langan project manager and Langan HSM to be prepared. Approved changes will be reviewed with all field personnel at a safety briefing.

18.2 Medical and Training Records

Copies or verification of training (40-hour, 8-hour, supervisor, site-specific training, documentation of three-day OJT, and respirator fit-test records) and medical clearance for site work and respirator use will be maintained in the office and available upon request. Records for all subcontractor employees must also be available upon request. All employee medical records will be maintained by the HSM.

18.3 Onsite Log

A log of personnel on site each day will be kept by the HSO or designee.

18.4 Daily Safety Meetings ("Tailgate Talks")

Completed safety briefing forms will be maintained by the HSO.

18.5 Exposure Records

All personal monitoring results, laboratory reports, calculations and air sampling data sheets are part of an employee exposure record. These records will be maintained by the HSO during site work. At the end of the project they will be maintained according to 29 CFR 1910.1020.

18.6 Hazard Communication Program/MSDS-SDS

Material safety data sheets (MSDS) of Safety Data Sheets (SDS) have been obtained for applicable substances and are included in this CHASP (Attachment D). Langan's written hazard communication program, in compliance with 29 CFR 1910.1200, is maintained by the HSM.

18.7 Documentation

Immediately following an incident or near miss, unless emergency medical treatment is required, either the employee or a coworker must contact the Langan incident/injury hotline at 1-800-952-6426, extension 4699 and the Project Manager to report the incident or near miss. The Project Manager will contact the client or client representative. A written report must be completed and submitted HSM within 24 hours of the incident. For emergencies involving personnel injury and/or exposure, employee will complete and submit the Langan incident/injury report to the Langan corporate health and safety manager as soon as possible following the incident. Accidents will be investigated in-depth to identify all causes and to recommend hazard control measures.

18.7.1 Accident and Injury Report Forms

18.7.1.1 Accident/Incident Report

All injuries, no matter how slight, shall be reported to the FTL and the PM immediately. The accident/incident report forms, attached in Attachment U and Attachment V will be filled out on all accidents by the applicable contractor supervision personnel, the FTL, or the HSO. Copies of all accident/incident reports shall be kept on-site and available for review. Project personnel will be instructed on the location of the first aid station, hospital, and doctor and ambulance service near the job. The emergency telephone numbers will be conspicuously posted in site vehicles near the work zone. First aid supplies will be centrally located and conspicuously posted between restricted and non-restricted areas to be readily accessible to all on the site.

18.7.1.2 First Aid Treatment Record

The forms in will be used for recording all non-lost time injuries treated by the project first-aid attendant, the local physician or hospital will be entered in detail on this record. "Minor" treatment of scratches, cuts, etc. will receive the same recording attention as treatment of more severe injuries.

18.7.1.3 OSHA Form 300

An OSHA Form 300 will be kept at the Langan Corporate Office in Parsippany, New Jersey. All recordable injuries or illnesses will be recorded on this form. Subcontractor employers must also meet the requirements of maintaining an OSHA 300 form. The Incident Report form used to capture the details of work-related injuries/illnesses meets the requirements of the OSHA Form 301 (supplemental record) and must be maintained with the OSHA Form 300 for all recordable injuries or illnesses. Forms for recording OSHA work-related injuries and illnesses are included in Attachment U and Attachment V.

19.0 CONFINED SPACE ENTRY

Confined spaces are not anticipated at the Site during planned construction activities. If confined spaces are identified, the contractor must implement their own confined space program that all applicable federal, state and local regulations. Confined spaces **will not** be entered by Langan personnel.

20.0 CHASP ACKNOWLEDGEMENT FORM

All Langan personnel and contractors will sign this CHASP Compliance Agreement indicating that they have become familiar with this CHASP and that they understand it and agree to abide by it.

Printed Name	Signature	Company	Date

Printed Name	Signature	Company	Date

Printed Name	Signature	Company	Date

Printed Name	Signature	Company	Date

Printed Name	Signature	Company	Date

Printed Name	Signature	Company	Date

TABLES

TABLE 1
TASK HAZARD ANALYSES

Task	Hazard	Description	Control Measures	First Aid
1.3.1 – 1.3.12	Contaminated Soil or Groundwater-Dermal Contact	Contaminated water spills on skin, splashes in eyes; contact with contaminated soil/fill during construction activities or sampling.	Wear proper PPE; follow safe practices, maintain safe distance from construction activities	See Table 2, seek medical attention as required
1.3.1 – 1.3.12	Lacerations, abrasions, punctures	Cutting bailer twine, pump tubing, acetate liners, etc. with knife; cuts from sharp site objects or previously cut piles, tanks, etc.; Using tools in tight spaces	Wear proper PPE; follow safe practices	Clean wound, apply pressure and/or bandages; seek medical attention as required.
1.3.1 – 1.3.12	Contaminated Media Inhalation	Opening drums, tanks, wells; vapors for non-aqueous phase liquids or other contaminated site media; dust inhalation during excavation; vapor accumulation in excavation	Follow air monitoring plan; have quick access to respirator, do not move or open unlabeled drums found at the site, maintain safe distance from construction activities	See Table 2, seek medical attention as required
1.3.1 – 1.3.12	Lifting	Improper lifting/carrying of equipment and materials causing strains	Follow safe lifting techniques; Langan employees are not to carry contractor equipment or materials	Rest, ice, compression, elevation; seek medical attention as required
1.3.1 – 1.3.12	Slips, trips, and falls	Slips, trips and falls due to uneven surfaces, cords, steep slopes, debris and equipment in work areas	Good housekeeping at site; constant awareness and focus on the task; avoid climbing on stockpiles; maintain safe distance from construction activities and excavations; avoid elevated areas over six feet unless fully accredited in fall protection and wearing an approved fall protection safety apparatus	Rest, ice, compression, elevation; seek medical attention as required
1.3.1 – 1.3.12	Noise	Excavation equipment, hand tools, drilling equipment.	Wear hearing protection; maintain safe distance from construction activities	Seek medical attention as required
1.3.1 – 1.3.12	Falling objects	Soil material, tools, etc. dropping from drill rigs, front-end loaders, etc.	Hard hats to be worn at all times while in work zones; maintain safe distance from construction activities and excavations	Seek medical attention as required
1.3.1 – 1.3.12	Underground/ overhead utilities	Excavation equipment, drill rig auger makes contact with underground object; boom touches overhead utility	"One Call" before dig; follow safe practices; confirm utility locations with contractor; wear proper PPE; maintain safe distance from construction activities and excavations	Seek medical attention as required
1.3.1 – 1.3.12	Insects (bees, wasps, hornet, mosquitoes, and spider)	Sings, bites	Insect Repellent; wear proper protective clothing (work boots, socks and light colored pants);field personnel who may have insect allergies (e.g., bee sting) should provide this information to the HSO or FSO prior to commencing work, and will have allergy medication on site.	Seek medical attention as required
1.3.1 – 1.3.12	Vehicle traffic / Heavy Equipment Operation	Vehicles unable to see workers on site, operation of heavy equipment in tight spaces, equipment failure, malfunctioning alarms	Wear proper PPE, especially visibility vest; use a buddy system to look for traffic; rope off area of work with cones and caution tape or devices at points of hazard, maintain safe distance from construction activities and equipment	Seek medical attention as required

TABLE 2
CONTAMINANT HAZARDS OF CONCERN

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	1,1′-Biphenyl 1,1-Biphenyl Biphenyl Phenyl benzene Diphenyl	92-52-4	None	1 mg/m^3 100 mg/m^3	Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, throat; headache, nausea, lassitude (weakness, exhaustion), numb limbs; liver damage	Eye: Irrigate immediately Skin: Water flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	1,2,4,5-Tetramethylbenzene	95-93-2	NA	None None	Groundwater Soil	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin, nose, throat, respiratory system; bronchitis; hypochromic anemia; headache, drowsiness, lassitude (weakness, exhaustion), dizziness, nausea, incoordination; vomiting, confusion; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	1,2,4-Trimethylbenzene	95-63-6	PID	None None	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin, nose, throat, respiratory system; bronchitis; hypochromic anemia; headache, drowsiness, lassitude (weakness, exhaustion), dizziness, nausea, incoordination; vomiting, confusion; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	1,2-Dichloroethene 1,2-Dichloroethylene 1,2-DCE Total 1,2-Dichloroethene cis-1,2-Dichloroethylene mixture of cis and trans Acetylene dichloride cis-Acetylene dichloride sym-Dichloroethylene cis- 1,2-Dichloroethene cDCE 1,1-dimethyl-;dimethyl1,1-cyclohexane	156-59-2 540-59-0	PID	200 ppm 4000 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	Irritant to eyes, skin, mucous membranes and respiratory system. May be harmful by ingestion, skin absorption and inhalation	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	1,2-Dichlorotetrafluoroethane Dichlorotetrafluorethane 1,2-Dichloro-1,1,2,2-tetrafluoroethane Freon® 114 Genetron® 114 Halon® 242 Refrigerant 114 1,2-Dichloro-1,1,2,2-tetrafluorethane	76-14-2	PID	1000 ppm 15000 ppm	Groundwater Soil Vapor	inhalation, skin and/or eye contact (liquid)	irritation respiratory system; asphyxia; cardiac arrhythmias, cardiac arrest; liquid: frostbite	Eye: Frostbite Skin: Frostbite Breathing: Respiratory support
1.3.1 – 1.3.12	1,3,5-Trimethylbenzene Mesitylene sym-Trimethylbenzene	108-67-8	PID	None None	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin, nose, throat, respiratory system; bronchitis; hypochromic anemia; headache, drowsiness, lassitude (weakness, exhaustion), dizziness, nausea, incoordination; vomiting, confusion; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	1,3-Butadiene Biethylene Bivinyl Butadiene Divinyl Erythrene Vinylethylene	106-99-0	PID	1 ppm 2000 ppm	Vapor	inhalation, skin and/or eye contact (liquid)	irritation to the eyes, nose, throat; drowsiness, dizziness; liquid: frostbite; teratogenic, reproductive effects; [potential occupational carcinogen]	Eye: Frostbite Skin: Frostbite Breathing: Respiratory support
1.3.1 – 1.3.12	1,4-Dioxane 1,4-Dioxacyclohexane [1,4]Dioxane p-Dioxane [6]-crown-2 Diethylene dioxide Diethylene ether Dioxan Dioxane 1,4-Dioxane	123-91-1	PID	100 ppm 500 ppm	Groundwater Soil Vapor	Inhalation, ingestion, skin and/or eye contact	Irritant to eyes, skin, mucous membranes and respiratory system. May be harmful by ingestion, skin absorption and inhalation	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	1H,1H,2H,2H.Perfluorooctanes ulfonic Acid (6:2FTS) Sodium 1H,1H, 2H, 2H-Perfluorooctane Sulfonate (6:2)(6:2FTS) 6:2 Fluorinated Telomer Sulfonates (6:2FTS) Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2)	27619-97-2	NA	NA NA	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	2-Butanone Ethyl methyl ketone MEK Methyl acetone Methyl ethyl ketone	78-93-3	PID	200 ppm 3000 ppm	Soil Groundwater Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin, nose; headache; dizziness; vomiting; dermatitis	Eye: Irrigate immediately Skin: Water wash immediately Breathing: Fresh air Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	2-Hexanone Butyl methyl ketone MBK Methyl butyl ketone Methyl n-butyl ketone	591-78-6	PID	100 ppm 1600 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, nose; peripheral neuropathy: lassitude (weakness, exhaustion), paresthesia; dermatitis; headache, drowsiness	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	2-Methylnaphthalene β-methylnaphthalene	91-57-6	PID	NA NA	Groundwater Soil Vapor	inhalation, ingestion or skin absorption, eye contact	irritation to the skin, eyes, mucous membranes and upper respiratory tract. It may also cause headaches, nausea, vomiting, diarrhea, anemia, jaundice, euphoria, dermatitis, visual disturbances, convulsions and comatose	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	4,4'-DDD Dichlorodiphenyldichloroethane 1,1'-(2,2-Dichloroethylidene)bis (4-chlorobenzene)	72-54-8	None	NA NA	Groundwater Soil	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin; paresthesia tongue, lips, face; tremor; anxiety, dizziness, confusion, malaise (vague feeling of discomfort), headache, lassitude (weakness, exhaustion); convulsions; paresis hands; vomiting; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	4-Isopropyltoulene 1-Methyl-4-(1-methylethyl)benzene 4-Isopropyltoluene; 4-Methylcumene; 1-Methyl-4-isopropylbenzene Dolcymene Camphogen Paracymene Cymene p-Cymene p-Isopropyltoluene	99-87-6	PID	NA NA	Soil Groundwater Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin, mucous membrane; dermatitis; headache, narcosis, coma	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	4-Methyl-2-pentanone Hexone Isobutyl methyl ketone Methyl isobutyl ketone MIBK	108-10-1	PID	100 ppm 500 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin, mucous membrane; headache, narcosis, coma; dermatitis; in animals: liver, kidney damage	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Acenaphthene 1,2-Dihydroacenaphthylene 1,8-Ethylenenaphthalene peri-Ethylenenaphthalene Naphthyleneethylene Tricyclododecapentaene	83-32-9	PID	NA NA	Soil	inhalation, ingestion, skin and/or eye contact,	irritation to the skin, eyes, mucous membranes and upper respiratory tract; If ingested, it can cause vomiting	Eye: Irrigate immediately Skin: Soap wash immediately, if redness or irritation develop, seek medical attention immediately Breathing: Move to fresh air Swallow: do not induce vomiting, seek medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Acenaphthylene Cycopental(de)naphthalene, Acenaphthalene	208-96-8	PID	NA NA	Soil	inhalation, ingestion, skin and/or eye contact	irritation to the skin, eyes, mucous membranes and upper respiratory tract	Eye: Irrigate immediately, seek medical attention immediately, Skin: Soap wash immediately, if redness or irritation develop, seek medical attention immediately Breathing: Move to fresh air Swallow: do not induce vomiting, seek medical attention immediately
1.3.1 – 1.3.12	Acetone Dimethyl ketone Ketone propane 2-Propanone	67-64-1	PID	1000 ppm 2500 ppm	Groundwater Soil	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, nose, throat; headache, dizziness, central nervous system depression; dermatitis	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Acetophenone 1-phenylethanone Methyl phenyl ketone Phenylethanone	98-86-2	None	NA NA	Groundwater Soil	inhalation, ingestion, skin and/or eye contact	irritation to the skin, eyes, mucous membranes and upper respiratory tract	Eye: Irrigate immediately, seek medical attention immediately, Skin: Soap wash immediately, if redness or irritation develop, seek medical attention immediately Breathing: Move to fresh air Swallow: do not induce vomiting, seek medical attention immediately
1.3.1 – 1.3.12	Aluminum	7429-90-5	None	0.5 mg/m3 50 mg/m3	Soil	inhalation, skin and/or eye contact	irritation to the eyes, skin, respiratory system	Eye: Irrigate immediately Breathing: Fresh air
1.3.1 – 1.3.12	Anthracene	120-12-7	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Soil	inhalation, skin or eye contact, ingestion	irritation to the skin, eyes, mucous membranes and upper respiratory tract, abdominal pain if ingested.	Eye: Irrigate immediately, seek medical attention immediately, Skin: Soap wash immediately, Breathing: Move to fresh air, refer to medical attention; Swallow: refer to medical attention

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Antimony	7440-36-0	None	0.5 mg/m^3 50 mg/m^3	Groundwater Soil	inhalation, ingestion, skin and/or eye contact	irritation skin, possible dermatitis; resp distress; diarrhea; muscle tremor, convulsions; possible gastrointestinal tract	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Aroclor 1248	12672-26-6	None	0.5 mg/m^3 5 mg/m^3	Groundwater Soil	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, chloracne	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Aroclor 1254	11097-69-1	None	0.5 mg/m^3 5 mg/m^3	Groundwater Soil	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, chloracne	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Aroclor 1260	11096-82-5	None	0.5 mg/m^3 5 mg/m^3	Groundwater Soil	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, chloracne	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Aroclor 1268	11100-14-4	None	0.5 mg/m^3 5 mg/m^3	Groundwater Soil	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, chloracne	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Arsenic	NA	None	0.5 mg/m^3 NA	Groundwater Soil	inhalation, ingestion, skin and/or eye contact	irritation skin, possible dermatitis; resp distress; diarrhea; muscle tremor, convulsions; possible gastrointestinal tract	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Barium	10022-31-8	None	0.5 mg/m^3 50 mg/m^3	Groundwater Soil	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin, upper respiratory system; skin burns; gastroenteritis; muscle spasm; slow pulse	Eye: Irrigate immediately Skin: Water flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Benzene Benzol Phenyl hydride	71-43-2	PID	3.19 mg/m^3 1,595 mg/mg^3	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; lassitude (weakness, exhaustion) [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Benzo(a)anthracene Benzanthracene Benzanthrene 1,2-Benzanthracene Benzo[b]phenanthrene Tetraphene	56-55-3	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Groundwater Soil	inhalation, skin or eye contact, ingestion	dermatitis, bronchitis, [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Benzo(a)pyrene	50-32-8	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Soil	inhalation, skin or eye contact, ingestion	dermatitis, bronchitis, [potential occupational carcinogen]	Eye: Irrigate immediately, seek medical attention Skin: Soap wash immediately; Breathing: move to fresh air; Swallow: Induce vomiting if conscious, seek medical attention immediately
1.3.1 – 1.3.12	Benzo(b)fluoranthene	205-99-2	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Soil	inhalation, skin or eye contact, ingestion	irritation to eyes and skin, respiratory irritation(dizziness, weakness, fatigue, nausea, headache)	Eye: Irrigate immediately, refer to medical attention Skin: Soap wash immediately Breathing: move to fresh air Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Benzo(g,h,i)perylene Benzo(ghi)perylene	191-24-2	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Soil	inhalation, skin or eye contact, ingestion	NA	Eye: Irrigate immediately, refer to medical attention Skin: Soap wash immediately Breathing: move to fresh air Swallow: Medical attention immediately
1.3.1 – 1.3.12	Benzo(k)fluoranthene	207-08-9	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Soil	inhalation, skin or eye contact, ingestion	irritation to eyes and skin, respiratory irritation (dizziness, weakness, fatigue, nausea, headache)	Eye: Irrigate immediately, refer to medical attention Skin: Soap wash immediately Breathing: move to fresh air Swallow: Medical attention immediately
1.3.1 – 1.3.12	Benzyl butyl phthalate Butyl benzyl phthalate Butylbenzylphthalate	86-66-7	None	NA NA	Groundwater Soil Vapor	inhalation, skin or eye contact, ingestion	irritation to eyes and skin, respiratory irritation (dizziness, weakness, fatigue, nausea, headache	Eye: Irrigate immediately, refer to medical attention Skin: Soap wash immediately Breathing: move to fresh air Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Beryllium	7440-41-7	None	0.002 mg/m^3 4 mg/m^3	Soil	inhalation, skin and/or eye contact	berylliosis (chronic exposure): anorexia, weight loss, lassitude (weakness, exhaustion), chest pain, cough, clubbing of fingers, cyanosis, pulmonary insufficiency; irritation to the eyes; dermatitis; [potential occupational carcinogen]	Eye: Irrigate immediately Breathing: Fresh air
1.3.1 – 1.3.12	Bis(2-ethylhexyl)phthalate Bis(2-Ethylhexyl) Phthalate Di-sec octyl phthalate DEHP Di(2-ethylhexyl)phthalate Octyl phthalate bis(2-ethylexyl)phthalate Bis(2-Ethylhexyl) Phthalate	117-81-7	None	5 mg/m^3 5000 mg/m^3	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, mucous membrane; in animals: liver damage; teratogenic effects; [potential occupational carcinogen	Eye: Irrigate immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Bromodichloromethane dichlorobromomethane	75-27-4	None	NA NA	Groundwater Soil Vapor	inhalation, skin or eye contact, ingestion	irritation of the skin, eyes, mucous membranes and respiratory tract, narcosis, nausea, dizziness and headache	Eye: Irrigate immediately (liquid) Skin: Water flush immediately (liquid) Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Cadmium	7440-43-9	None	0.005 mg/m^3 9 mg/m^3	Soil	inhalation, ingestion	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 occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Calcium	7440-70-2	None	NA	Groundwater Soil	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin, upper resp tract; ulcer, perforation nasal septum; pneumonitis; dermatitis	Eye: Irrigate immediately Skin: Water flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Carbazole 9-azafluorene Dibenzopyrrole Diphenylenimine diphenyleneimide	86-74-8	None	NA NA	Soil	inhalation, skin absorption (liquid), skin and/or eye contact	irritation to eyes and skin, respiratory irritation	Eye: Irrigate immediately, refer to medical attention Skin: Soap wash immediately Breathing: move to fresh air Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Carbon disulfide	75-15-0	PID	20 ppm 500 ppm	Soil Groundwater Vapor	inhalation, skin or eye contact, ingestion	irritation to the eyes, skin, respiratory system	Eye: Irrigate immediately (liquid) Skin: Water flush immediately (liquid) Breathing: Respiratory support
1.3.1 – 1.3.12	Chloroform Methane trichloride Trichloromethane Chloro-3-methyl phenol	67-66-3	None	50 ppm 500 ppm	Groundwater Soil	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin; dizziness, mental dullness, nausea, confusion; headache, lassitude (weakness, exhaustion); anesthesia; enlarged liver; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Chromium Total Chromium Chromium, Total	7440-47-3	None	1.0 mg/m^3 250 mg/m^3	Groundwater Soil	inhalation absorption ingestion	irritation to eye, skin, and respiratory	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Chrysene Benzo[a]phenanthrene 1,2-Benzphenanthrene	218-01-9	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Groundwater Soil	inhalation, absorption, ingestion, consumption	irritation to eye, skin, and respiratory, gastrointestinal irritation nausea, vomit, diarrhea [potential occupational carcinogen]	Eyes: Irrigate immediately Skin: Soap wash promptly. Breath: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Cis-Chlordane Cic-Chlordane a-Chlordane alpha Chlordane alpha-chlordane cis-Chlordan CIS-CHLORDANE Chlordane cis-;Chlordane cis;ALPHA-CHLORDAN Chlordan, cis-ALPHA-CHLORDANE alpha(cis)-chlordane α-chlordane solution	5102-71-9	None	0.5 mg/m^3 100 mg/m^3	Groundwater Soil	inhalation, skin absorption, ingestion, skin and/or eye contact	Blurred vision; confusion; ataxia, delirium; cough; abdominal pain, nausea, vomiting, diarrhea; irritability, tremor, convulsions; anuria	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Cobalt	7440-48-4	None	0.1mg/m^3 20 mg/m^3	Soil	inhalation, ingestion, skin and/or eye contact	Cough, dyspnea (breathing difficulty), wheezing, decreased pulmonary function; weight loss; dermatitis; diffuse nodular fibrosis; resp hypersensitivity, asthma	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Copper	7440-50-8	None	1.0 mg/m^3 100 mg/m^3	Groundwater Soil	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, nose, metallic taste; dermatitis; anemia	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Cumene Cumol Isopropylbenzene 2-Phenyl propane	98-82-8	PID	50 ppm 900 ppm	Groundwater Soil	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin, mucous membrane; dermatitis; headache, narcosis, coma	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Cyanide	57-12-5	None	5 mg/m^3 25 mg/m^3	Groundwater Soil	inhalation, ingestion, skin and/or eye contact	Exposure to cyanide can cause weakness, headaches, confusion, dizziness, fatigue, anxiety, sleepiness, nausea and vomiting. Breathing can speed up then become slow and gasping. Coma and convulsions also occur. If large amounts of cyanide have been absorbed by the body, the person usually collapses and death can occur very quickly. Long-term exposure to lower levels of cyanide can cause skin and nose irritation, itching, rashes and thyroid changes.	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Cyclohexane Benzene hexahydride Hexahydrobenzene Hexamethylene Hexanaphthene	110-82-7	PID	300 ppm 1300 ppm	Soil Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin, respiratory system; drowsiness; dermatitis; narcosis, coma	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	DDE 4,4-DDE 4,4'-DDE 1,1-bis-(4-chlorophenyl)-2,2-dichloroethene Dichlorodiphenyldichloroethylene	72-55-9	None	NA NA	Soil	inhalation, skin absorption, ingestion, skin and/or eye contact	Oral ingestion of food is the primary source of exposure for the general population. Acute and chronic ingestion may cause nausea, vomiting, diarrhea, stomach pain, headache, dizziness, disorientation, tingling sensation, kidney damage, liver damage, convulsions, coma, and death. 4,4' DDE may cross the placenta and can be excreted in breast milk	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	DDT 4,4-DDT 4,4'-DDT p,p'-DDT Dichlorodiphenyltrichloroethane 1,1,1-Trichloro-2,2-bis(p-chlorophenyl)ethane	50-29-3	None	1 mg/m^3 500 mg/m^3	Groundwater Soil	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin; paresthesia tongue, lips, face; tremor; anxiety, dizziness, confusion, malaise (vague feeling of discomfort), headache, lassitude (weakness, exhaustion); convulsions; paresis hands; vomiting; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Dibenz(a,h)anthracene Dibenzo(a,h)anthracene	53-70-3	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Groundwater Soil	inhalation, absorption, ingestion, consumption	irritation to eyes, skin, respiratory, and digestion [potential occupational carcinogen]	Eyes: Irrigate immediately Skin: Soap wash promptly. Breath: Respiratory support PID Swallow: Medical attention immediately
1.3.1 – 1.3.12	Dibenzofuran	132-64-9	None	NA NA	Soil	inhalation, absorption	irritation to eyes, and skin	Eyes: Irrigate immediately Skin: Soap wash promptly.
1.3.1 – 1.3.12	Dibutyl phthalate Di-n-butyl phthalate Butyl phthalate n-Butyl phthalate 1,2-Benzenedicarboxylic acid dibutyl ester o-Benzenedicarboxylic acid dibutyl ester DBP Palatinol C, Elaol Dibutyl-1,2-benzene-dicarboxylate Di-n-butylphthalate	84-74-2	None	5 mg/m^3 4000 mg/m^3	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, upper respiratory system, stomach	Eye: Irrigate immediately Skin: Wash regularly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Dichlorodifluoromethane Difluorodichloromethane, Fluorocarbon 12 Freon 12 Freon® 12 Genetron® 12 Halon® 122 Propellant 12 Refrigerant 12 Dichlorodifluromethane	75-71-8	None	1000 pp, 15,000 ppm	Groundwater Soil Vapor	inhalation, skin and/or eye contact (liquid)	dizziness, tremor, asphyxia, unconsciousness, cardiac arrhythmias, cardiac arrest; liquid: frostbite	Eye: Frostbite Skin: Frostbite Breathing: Respiratory support

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Dieldrin HEOD 1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4-endo exo-5,8-dimethanonaphthalene	60-57-1	PID	0.25 mg/m^3 50 mg/m^3	Groundwater Soil Water	inhalation, skin absorption, ingestion, skin and/or eye contact	headache, dizziness; nausea, vomiting, malaise (vague feeling of discomfort), sweating; myoclonic limb jerks; clonic, tonic convulsions; coma; [potential occupational carcinogen]; in animals: liver, kidney damage	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Diesel Fuel automotive diesel fuel oil No. 2 distillate diesoline diesel oil diesel oil light diesel oil No. 1-D summer diesel	68334-30-5	PID	NA NA	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin, nose, throat; burning sensation in chest; headache, nausea, lassitude (weakness, exhaustion), restlessness, incoordination, confusion, drowsiness; vomiting, diarrhea; dermatitis; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Endosulfan I Alpha Endosulfan	959-98-8	None	NA NA	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation skin; nausea, confusion, agitation, flushing, dry mouth, tremor, convulsions, headache; in animals: kidney, liver injury; decreased testis weight	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Ethanol Absolute alcohol Alcohol cologne spirit drinking alcohol ethane monoxide ethylic alcohol EtOH ethyl alcohol ethyl hydrate ethyl hydroxide ethylol grain alcohol hydroxyethane methylcarbinol	64-17-5	PID	1000 ppm 3300 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin, nose; headache, drowsiness, lassitude (weakness, exhaustion), narcosis; cough; liver damage; anemia; reproductive, teratogenic effects	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Fresh air Swallow: Medical attention immediately
1.3.1 – 1.3.12	Ethyl benzene Ethylbenzene Ethylbenzol Phenylethane	100-40-4	PID	435 mg/m^3 3,472 mg/m^3	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin, mucous membrane; headache; dermatitis; narcosis, coma	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Fluoranthene Benzo(j, k)fluorene	206-44-0	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Groundwater Soil	inhalation, skin or eye contact, ingestion	irritation to eyes and skin, respiratory irritation(dizziness, weakness, fatigue, nausea, headache)	Eye: Irrigate immediately, refer to medical attention Skin: Soap wash immediately Breathing: move to fresh air Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Fluorene	86-73-7	PID	0.2 mg/m³ 80 mg/m³ (Coal Pitch Tar)	Soil	inhalation, skin or eye contact, ingestion	irritation to eyes and skin, respiratory irritation(dizziness, weakness, fatigue, nausea, headache)	Eye: Irrigate immediately, refer to medical attention Skin: Soap wash immediately Breathing: move to fresh air Swallow: Medical attenti
1.3.1 – 1.3.12	Fuel Oil No. 2	68476-30-2	PID	NA NA	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin, nose, throat; burning sensation in chest; headache, nausea, lassitude (weakness, exhaustion), restlessness, incoordination, confusion, drowsiness; vomiting, diarrhea; dermatitis; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	gamma-Chlordane Gamma Chlordane	5566-34-7	None	0.5 mg/m³ 100 mg/m³	Groundwater Soil	inhalation, skin absorption, ingestion, skin and/or eye contact	Blurred vision; confusion; ataxia, delirium; cough; abdominal pain, nausea, vomiting, diarrhea; irritability, tremor, convulsions; anuria	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Gasoline	8006-61-9	PID	NA NA	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin, mucous membrane; dermatitis; headache, lassitude (weakness, exhaustion), blurred vision, dizziness, slurred speech, confusion, convulsions; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Helium	7440-59-7	Helium Detector	NA NA	NA	inhalation	dizziness, headache, and nausea	Breathing: Respiratory support
1.3.1 – 1.3.12	Heptachlor	76-44-8	None	0.5 mg/m^3 35 mg/m^3	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	In animals: tremor, convulsions; liver damage; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Heptachlor epoxide 1,4,5,6,7,8,8-Heptachloro-3a,4,7,7a-tetrahydro-4,7-methano-1H-indene	1024-57-3	None	0.5 mg/m^3 35 mg/m^3	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	In animals: tremor, convulsions; liver damage; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Heptane n-Heptane	142-82-5	PID	500 ppm 750 ppm	Goundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	dizziness, stupor, incoordination; loss of appetite, nausea; dermatitis; chemical pneumonitis (aspiration liquid); unconsciousness	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Hexavalent Chromium Chromium VI Chromium, Hexavalent	18540-29-9	None	1.0 mg/m^3 250 mg/m^3	Groundwater Soil	inhalation absorption ingestion	irritation to eye, skin, and respiratory	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Indeno(1,2,3-cd)pyrene Indeno(1,2,3-c,d)Pyrene Indeno(1,2,3-cd)Pyrene	193-39-5	None	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Groundwater Soil	inhalation, absorption, ingestion, consumption	irritation to eyes, skin, respiratory, and digestion [potential occupational carcinogen]	Eyes: Irrigate immediately Skin: Soap wash promptly. Breath: Respiratory support Swallow: Medical attention immediately, wash mouth with water
1.3.1 – 1.3.12	Iron	7439-89-6	None	10 mg/m^3 NA	Groundwater Soil	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin, mucous membrane; abdominal pain, diarrhea, vomiting	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Isopropyl alcohol Iso-Propyl Alcohol Carbinol IPA Isopropanol 2-Propanol sec-Propyl alcohol Rubbing alcohol Isopropylalcohol	67-63-0	PID	400 ppm 2000 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, nose, throat; drowsiness, dizziness, headache; dry cracking skin; in animals: narcosis	Eye: Irrigate immediately Skin: Water flush Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Lead	7439-92-1	None	0.050 mg/m^3 100 mg/m^3	Groundwater Soil	inhalation, ingestion, skin and/or eye contact	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 to the eyes; hypertension	Eye: Irrigate immediately Skin: Soap flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Magnesium	7439-95-4	None	15 mg/m^3 NA	Soil	inhalation, skin and/or eye contact	irritation to the eyes, skin, respiratory system; cough	Eye: Irrigate immediately Breathing: Fresh air
1.3.1 – 1.3.12	Manganese	7439-96-5	None	5 mg/m^3 500 mg/m^3	Groundwater Soil	inhalation, ingestion	aerosol is irritating to the respiratory tract	Eye: Irrigate immediately Skin: Soap flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	m-Cresol meta-Cresol 3-Cresol m-Cresylic acid 1-Hydroxy-3-methylbenzene 3-Hydroxytoluene 3-Methylphenol	108-39-4	PID	5 ppm 250 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin, mucous membrane; central nervous system effects: confusion, depression, resp failure; dyspnea (breathing difficulty), irreg rapid resp, weak pulse; eye, skin burns; dermatitis; lung, liver, kidney, pancreas damage	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Mercury	7439-97-6	None	0.1 mg/m^3 10 mg/m^3	Groundwater Soil	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin; cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis; tremor, insomnia, irritability, headache, lassitude (weakness, exhaustion); stomatitis, salivation; gastrointestinal disturbance, anorexia, weight loss; proteinuria	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Methyl Acetate	79-20-9	PID	200 ppm 3100 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin, nose, throat; headache, drowsiness; optic nerve atrophy; chest tightness; in animals: narcosis	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Methyl Chloride Chloromethane Monochloromethane Refrigerant-40 R-40	74-87-3	NA	100 ppm 2000 ppm	Groundwater Soil	inhalation, skin and/or eye contact	dizziness, nausea, vomiting; visual disturbance, stagger, slurred speech, convulsions, coma; liver, kidney damage; liquid: frostbite; reproductive, teratogenic effects; [potential occupational carcinogen]	Eye: Frostbite Skin: Frostbite Breathing: Respiratory support
1.3.1 – 1.3.12	Methyl chloroform Chlorothene 1,1,1-Trichloroethane 1,1,1-Trichloroethane-(stabilized) 1,1,1-TCA	71-55-6	PID	350 ppm 700 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin; headache, lassitude (weakness, exhaustion), central nervous system depression, poor equilibrium; dermatitis; cardiac arrhythmias; liver damage	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention
1.3.1 – 1.3.12	Methyl *tert*-butyl ether MTBE Methyl tertiary-butyl ether Methyl t-butyl ether tert-Butyl methyl ether tBME tert-BuOMe Methyl tert butyl ether	1634-04-4	PID	NA NA	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin, nose, throat; burning sensation in chest; headache, nausea, lassitude (weakness, exhaustion), restlessness, incoordination, confusion, drowsiness; vomiting, diarrhea; dermatitis; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	m-Xylenes 1,3-Dimethylbenzene m-Xylol Metaxylene	108-38-3	PID	100 ppm 900 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; nausea, vomiting, abdominal pain; dermatitis	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Naphthalene Naphthalin Tar camphor White tar	91-20-3	PID	50 mg/m^3 250 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes; headache, confusion, excitement, malaise (vague feeling of discomfort); nausea, vomiting, abdominal pain; irritation bladder; profuse sweating; hematuria (blood in the urine); dermatitis, optical neuritis	Eye: Irrigate immediately Skin: Molten flush immediately/solid-liquid soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	n-Butylbenzene Butylbenzene 1-phenylbutane	104-51-8	PID	NA NA	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin; dry nose, throat; headache; low blood pressure, tachycardia, abnormal cardiovascular system stress; central nervous system, hematopoietic depression; metallic taste; liver, kidney injury	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	N-ethyl perfluorooctane-sulfonamidoacetic acid NEtFOSAA	2991-50-6	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	n-Hexane Hexane, Hexyl hydride, normal-Hexane	110-54-3	PID	500 ppm 1100 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, nose; nausea, headache; peripheral neuropathy: numb extremities, muscle weak; dermatitis; dizziness; chemical pneumonitis (aspiration liquid)	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Nickel	7440-02-0	None	NA 10 mg/m^3	Groundwater Soil	ion, ingestion, skin and/or eye contact	sensitization dermatitis, allergic asthma, pneumonitis; [potential occupational carcinogen]	Skin: Water flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Non-Flammable Gas Mixture CALGAS (Equipment Calibration Gas : Oxygen Methane Hydrogen Sulfide Carbon Monoxide Nitrogen	7782-44-7 74-82-8 7783-08-4 830-08-0 7727-37-9	Multi-Gas PID	NA/NA NA/NA 10/100 ppm 50/1200 ppm NA/NA	NA	inhalation	dizziness, headache, and nausea	Breathing: Respiratory support

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Non-Flammable Gas Mixture CALGAS (Equipment Calibration Gas : Oxygen Isobutylene Nitrogen	 7782-44-7 115-11-7 7727-37-9	PID	 NA/NA NA/NA NA/NA	NA	inhalation	dizziness, headache, and nausea	Breathing: Respiratory support
1.3.1 – 1.3.12	n-Propylbenzene Isocumene Propylbenzene 1-Phenylpropane 1-Propylbenzene Phenylpropane	103-65-1	PID	NA NA	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin; dry nose, throat; headache; low blood pressure, tachycardia, abnormal cardiovascular system stress; central nervous system, hematopoietic depression; metallic taste; liver, kidney injury	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	o-Xylenes 1,2-Dimethylbenzene ortho-Xylene o-Xylol	95-47-6	PID	100 ppm 900 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; nausea, vomiting, abdominal pain; dermatitis	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	p-Cresol para-Cresol 4-Cresol p-Cresylic acid 1-Hydroxy-4-methylbenzene 4-Hydroxytoluene 4-Methylphenol	106-44-5	PID	5 ppm 250 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin, mucous membrane; central nervous system effects: confusion, depression, resp failure; dyspnea (breathing difficulty), irreg rapid resp, weak pulse; eye, skin burns; dermatitis; lung, liver, kidney, pancreas damage	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	p-Dichlorobenzene p-DCB 1,4-Dichlorobenzene para-Dichlorobenzene Dichlorocide	106-46-7	PID	75 ppm 150 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, swelling periorbital (situated around the eye); profuse rhinitis; headache, anorexia, nausea, vomiting; weight loss, jaundice, cirrhosis; in animals: liver, kidney injury; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	p-Diethylbenzene 1,4-Diethylbenzene 1,4-Diethyl benzene	105-05-5	PID	None None	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin, respiratory system; skin burns; in animals: central nervous system depression	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Perfluorobutanesulfonic acid FC-98 Nonaflate Nonafluorobutanesulphonic acid Perfluorobutanesulfonic Acid Perfluorobutane sulfonate PFBS	375-73-5	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Perfluorobutanoic Acid Heptafluorobutyric acid Heptafluorobutanoic acid Perfluorobutyric acid PFBA	375-22-4	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Perfluorodecanoic acid PFDA	335-76-2	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Perfluorododecanoic acid Perfluoralauric acid Tricosafluorododecanoic acid PFDoA	307-55-1	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Perfluoroheptanoic acid Perfluoroheptanoic acid Tridecafluoroheptanoic acid PFHpA	375-85-9	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Perfluorohexanesulfonic Acid perfluorohexanesulfonate perfluorohexanesulfonic acid PFHxS	355-46-4	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Perfluorohexanoic Acid PFHxA	307-24-4	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Perfluoronoanoic Acid Perfluorononanoic Acid PFNA perfluoro-n-nonanoic acid perfluorononanoate	375-95-1	NA	None None	Groundwater	Groundwater	inhalation, skin or eye contact, ingestion; strong acid	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Perfluorooctanesulfonamide Erfluoroctylsulfonamide Perfluorooctane sulfonamide Heptadecafluorooctanesulphonamide Perfluorooctanesulfonic acid amide Deethylsulfluramid FC-99 PFOSA FOSA	754-91-6	NA	NA NA	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Perfluorooctanesulfonic Acid PFOS	1763-23-1	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Perfluorooctanoic Acid PFOA pentadecafluorooctanoic acid perfluorooctanoate perfluorocaprylic acid	335-67-1	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Perfluoropentanoic Acid PFPeA	2706-90-3	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Perfluorotetradecanoic Acid PFTA	376-06-7	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Perfluorotridecanoic Acid PFTrDA Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2) (8:2FTS)	72629-94-8	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Perfluoroundecanoic Acid PFUnA PFUnDA Perfluoroundecanoic Acid Henicosafluoroundecanoic Acid	4234-23-5	NA	None None	Groundwater	inhalation, skin or eye contact, ingestion	irritation to eyes with possible eye damage, skin causing rash, redness or burning, irritation to nose, throat and lungs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	p-Ethyltoluene 4-Ethyltoluene 1-ethyl-4-methyl-benzene 1-methyl-4-ethylbenzene	622-96-8	NA	NA NA	Soil	ingestion, skin and/or eye contact	irritation to the eyes, skin, mucous membrane; headache; dermatitis; narcosis, coma	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Phenanthrene	85-01-8	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Groundwater Soil	inhalation, skin or eye contact, ingestion	irritation to eyes and skin, respiratory irritation(dizziness, weakness, fatigue, nausea, headache)	Eye: Irrigate immediately, refer to medical attention Skin: Soap wash immediately Breathing: move to fresh air Swallow: Medical attention immediately
1.3.1 – 1.3.12	Phenol Carbolic acid Hydroxybenzene, Monohydroxybenzene Phenyl alcohol Phenyl hydroxide	108-95-2	PID	5 ppm 250 ppm	Groundwater Soil	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, nose, throat; anorexia, weight loss; lassitude (weakness, exhaustion), muscle ache, pain; dark urine, skin burns; dermatitis; tremor, convulsions, twitching	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Potassium	7440-09-7	None	NA NA	Soil	inhalation, skin absorption, ingestion, skin and/or eye contact inhalation, ingestion, skin and/or eye contact	eye: Causes eye burns. Skin: Causes skin burns. Reacts with moisture in the skin to form potassium hydroxide and hydrogen with much heat. ingestion: Causes gastrointestinal tract burns. inhalation: May cause irritation of the respiratory tract with burning pain in the nose and throat, coughing, wheezing, shortness of breath and pulmonary edema. Causes chemical burns to the respiratory tract. inhalation may be fatal as a result of spasm, inflammation, edema of the larynx and bronchi, chemical pneumonitis and pulmonary edema.	Eyes: Get medical aid immediately Skin: Get medical aid immediately. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Ingestion: If victim is conscious and alert, give 2-4 full cups of milk or water. Get medical aid immediately. inhalation: Get medical aid immediately.
1.3.1 – 1.3.12	p-Xylenes 1,4-Dimethylbenzene para-Xylene p-Xylol	106-42-3	PID	100 ppm 900 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; nausea, vomiting, abdominal pain; dermatitis	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Pyrene benzo[def]phenanthrene	129-00-0	PID	0.2 mg/m^3 80 mg/m^3 (Coal Pitch Tar)	Groundwater Soil	inhalation, skin or eye contact, ingestion	irritation to eyes and skin, respiratory irritation(dizziness, weakness, fatigue, nausea, headache)	Eye: Irrigate immediately, refer to medical attention Skin: Soap wash immediately Breathing: move to fresh air Swallow: Medical attention immediately
1.3.1 – 1.3.12	sec-Butylbenzene	135-98-8	PID	10 ppm 100 ppm	Groundwater Soil	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, nose, throat; inhalation: nausea or vomiting	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Selenium	7782-49-2	None	1 mg/m^3 0.2 mg/m^3	Soil	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin, nose, throat; visual disturbance; headache; chills, fever; dyspnea (breathing difficulty), bronchitis; metallic taste, garlic breath, gastrointestinal disturbance; dermatitis; eye, skin burns; in animals: anemia; liver necrosis, cirrhosis; kidney, spleen damage	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Silver	7440-22-4	None	0.01 mg/m³ 10 mg/m³	Soil	inhalation, ingestion, skin and/or eye contact	blue-gray eyes, nasal septum, throat, skin; irritation, ulceration skin; gastrointestinal disturbance	Eye: Irrigate immediately Skin: Water flush Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Sodium	7440-23-5	None	NA NA	Groundwater Soil	ion, ingestion, skin and/or eye contact	sensitization dermatitis, allergic asthma, pneumonitis; [potential occupational carcinogen]	Skin: Water flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Tert-Butyl Alcohol Tertiary Butyl Alcohol Tert-Butanol Butyl alcohol 2-Methyl-2-propanol Trimethyl carbinol TBA	75-65-0	PID	100 ppm 1600 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	irritation to the eyes, skin, nose, throat; drowsiness, narcosis	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Tetrachloroethylene Perchlorethylene Perchloroethylene PCE Perk Tetrachlorethylene Tetrachloroethene	127-18-4	PID	100 ppm 150 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness); liver damage; [potential occupational carcinogen]	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Thallium	7440-28-0	None	0.1 mg/m³ 15 mg/m³	Groundwater Soil	inhalation, skin absorption, ingestion, skin and/or eye contact	nausea, diarrhea, abdominal pain, vomiting; ptosis, strabismus; peri neuritis, tremor; retrosternal (occurring behind the sternum) tightness, chest pain, pulmonary edema; convulsions, chorea, psychosis; liver, kidney damage; alopecia; paresthesia legs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Toluene Methyl benzene Methyl benzol Phenyl methane Toluol	108-88-3	PID	200 ppm 500 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, nose; lassitude (weakness, exhaustion), confusion, euphoria, dizziness, headache; dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, paresthesia; dermatitis	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Total PCBs Chlorodiphenyl (42% chlorine) Aroclor® 1242 PCB Polychlorinated biphenyl	53469-21-9	None	0.5 mg/m³ 5 mg/m³	Groundwater Soil	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, chloracne	Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Total Xylenes Dimethylbenzene Xylol	1330-20-7	PID	100 ppm 900 ppm	Groundwater Soil Vapor	inhalation, skin absorption, ingestion, skin and/or eye contact	irritation to the eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; nausea, vomiting, abdominal pain; dermatitis	Eye: Irrigate immediately Skin: Soap flush immediately Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Trans-1,2-Dichloroethene trans-1,2-Dichloroethylene tDEC trans-Acetylene dichloride	156-60-5	PID	200 ppm 4000 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	Irritant to eyes, skin, mucous membranes and respiratory system. May be harmful by ingestion, skin absorption and inhalation	Eye: Irrigate immediately Skin: Soap wash promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Trichlorofluoromethane Fluorotrichloromethane Freon® 11 Monofluorotrichloromethane Refrigerant 11 Trichloromonofluoromethane	75-69-4	PID	1000 ppm 2000 ppm	Groundwater Soil Vapor	inhalation, ingestion, skin and/or eye contact	incoordination, tremor; dermatitis; cardiac arrhythmias, cardiac arrest; asphyxia; liquid: frostbite	Eye: Irrigate immediately Skin: Water flush immediately Breathing: Respiratory support Swallow: Medical attention immediately

Task	Contaminant	CAS Number	Monitoring Device	PEL/ IDLH	Source of Concentration on Site	Route of Exposure	Symptoms	First Aid
1.3.1 – 1.3.12	Trivalent Chromium Chromium III Chromium, Trivalent	NA	None	1.0 mg/m^3 250 mg/m^3	Groundwater Soil	inhalation absorption ingestion	irritation to eye, skin, and respiratory	Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Vanadium	7440-62-2	None	0.1 mg/m3 15 mg/m3	Groundwater Soil	inhalation, skin absorption, ingestion, skin and/or eye contact	nausea, diarrhea, abdominal pain, vomiting; ptosis, strabismus; peri neuritis, tremor; retrosternal (occurring behind the sternum) tightness, chest pain, pulmonary edema; convulsions, chorea, psychosis; liver, kidney damage; alopecia; paresthesia legs	Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately
1.3.1 – 1.3.12	Zinc	7440-62-2	None	15 mg/m^3 500 mg/m^3	Groundwater Soil	inhalation	chills, muscle ache, nausea, fever, dry throat, cough; lassitude (weakness, exhaustion); metallic taste; headache; blurred vision; low back pain; vomiting; malaise (vague feeling of discomfort); chest tightness; dyspnea (breathing difficulty), rales, decreased pulmonary function	Breathing: Respiratory support`

EXPLANATION OF ABBREVIATIONS

PID = Photoionization Detector

PEL = Permissible Exposure Limit (8-hour Time Weighted Average)

IDLH = Immediately Dangerous to Life and Health
ppm = part per million
mg/m^3 = milligrams per cubic meter
500 mg/m^3

TABLE 3
Summary of Monitoring Equipment

Instrument	Operation Parameters
Photoionization Detector (PID)	**Hazard Monitored:** Many organic and some inorganic gases and vapors. **Application:** Detects total concentration of many organic and some inorganic gases and vapors. Some identification of compounds is possible if more than one probe is measured. **Detection Method:** Ionizes molecules using UV radiation; produces a current that is proportional to the number of ions. **General Care/Maintenance:** Recharge or replace battery. Regularly clean lamp window. Regularly clean and maintain the instrument and accessories. **Typical Operating Time:** 10 hours. 5 hours with strip chart recorder.
Oxygen Meter	**Hazard Monitored:** Oxygen (O_2). **Application:** Measures the percentage of O_2 in the air. **Detection Method:** Uses an electrochemical sensor to measure the partial pressure of O_2 in the air, and converts the reading to O_2 concentration. **General Care/Maintenance:** Replace detector cell according to manufacturer's recommendations. Recharge or replace batteries prior to explanation of the specified interval. If the ambient air is less than 0.5% C O_2, replace the detector cell frequently. **Typical Operating Time:** 8 – 12 hours.
Additional equipment (if needed, based on site conditions)	
Combustible Gas Indicator (CGI)	**Hazard Monitored:** Combustible gases and vapors. **Application:** Measures the concentration of combustible gas or vapor. **Detection Method:** A filament, usually made of platinum, is heated by burning the combustible gas or vapor. The increase in heat is measured. Gases and vapors are ionized in a flame. A current is produced in proportion to the number of carbon atoms present. **General Care/Maintenance:** Recharge or replace battery. Calibrate immediately before use. **Typical Operating Time:** Can be used for as long as the battery lasts, or for the recommended interval between calibrations, whichever is less.
Flame Ionization Detector (FID) with Gas Chromatography Option *(i.e., Foxboro Organic Vapor Analyzer (OVA))*	**Hazard Monitored:** Many organic gases and vapors (approved areas only). **Application:** In survey mode, detects the concentration of many organic gases and vapors. In gas chromatography (GC) mode, identifies and measures specific compounds. In survey mode, all the organic compounds are ionized and detected at the same time. In GC mode, volatile species are separated. **General Care/Maintenance:** Recharge or replace battery. Monitor fuel and/or combustion air supply gauges. Perform routine maintenance as described in the manual. Check for leaks. **Typical Operating Time:** 8 hours; 3 hours with strip chart recorder.
Potable Infrared (IR) Spectrophotometer	**Hazard Monitored:** Many gases and vapors. **Application:** Measures concentration of many gases and vapors in air. Designed to quantify one or two component mixtures. **Detection Method:** Passes different frequencies of IR through the sample. The frequencies absorbed are specific for each compound. **General Care/Maintenance:** As specified by the manufacturer.

Instrument	Operation Parameters
Direct Reading Colorimetric Indicator Tube	**Hazard Monitored:** Specific gas and vapors. **Application:** Measures concentration of specific gases and vapors. **Detection Method:** The compound reacts with the indicator chemical in the tube, producing a stain whose length or color change is proportional to the compound's concentration. **General Care/Maintenance:** Do not use a previously opened tube even if the indicator chemical is not stained. Check pump for leaks before and after use. Refrigerate before use to maintain a shelf life of about 2 years. Check expiration dates of tubes. Calibrate pump volume at least quarterly. Avoid rough handling which may cause channeling.
Aerosol Monitor	**Hazard Monitored:** Airborne particulate (dust, mist, fume) concentrations **Application:** Measures total concentration of semi-volatile organic compounds, PCBs, and metals. **Detection Method:** Based on light-scattering properties of particulate matter. Using an internal pump, air sample is drawn into the sensing volume where near infrared light scattering is used to detect particles. **General Care/Maintenance:** As specified by the mfr. Also, the instrument must be calibrated with particulates of a size and refractive index similar to those to be measured in the ambient air.
Monitox	**Hazard Monitored:** Gases and vapors. **Application:** Measures specific gases and vapors. **Detection Method:** Electrochemical sensor relatively specific for the chemical species in question. **General Care/Maintenance:** Moisten sponge before use; check the function switch; change the battery when needed.
Gamma Radiation Survey Instrument	**Hazard Monitored:** Gamma Radiation. **Application:** Environmental radiation monitor. **Detection Method:** Scintillation detector. **General Care/Maintenance:** Must be calibrated annually at a specialized facility. **Typical Operating Time:** Can be used for as long as the battery lasts, or for the recommended interval between calibrations, whichever is less.

TABLE 4
INSTRUMENTATION ACTION LEVELS

Photoionization Detector Action Levels	**Action Required**
Background to 5 ppm	No respirator; no further action required
> 1 ppm but < 5 ppm for > 5 minutes	1. Temporarily discontinue all activities and evaluate potential causes of the excessive readings. If these levels persist and cannot be mitigated (i.e., by slowing drilling or excavation activities), contact HSO to review conditions and determine source and appropriate response action. 2. If PID readings remain above 1 ppm, temporarily discontinue work and upgrade to Level C protection. 3. If sustained PID readings fall below 1 ppm, downgrading to Level D protection may be permitted.
> 5 ppm but < 150 ppm for > 5 minutes	1. Discontinue all work; all workers shall move to an area upwind of the jobsite. 2. Evaluate potential causes of the excessive readings and allow work area to vent until VOC concentrations fall below 5 ppm. 3. Level C protection will continue to be used until PID readings fall below 1 ppm.
> 150 ppm	Evacuate the work area

Notes:
1. 1 ppm level based on OSHA Permissible Exposure Limit (PEL) for benzene.
2. 5 ppm level based on OSHA Short Term Exposure Limit (STEL) maximum exposure for benzene for any 15 minute period.
3. 150 ppm level based on NIOSH Immediately Dangerous to Life and Health (IDLH) for tetrachloroethylene.

TABLE 5
EMERGENCY NOTIFICATION LIST

ORGANIZATION	CONTACT	TELEPHONE
Local Police Department	NYPD	911
Local Fire Department	NYFD	911
Ambulance/Rescue Squad	NYFD	911
Hospital	NYC Health and Hospitals - Woodhull	911 or 718-963-8000
Langan Incident Hotline		800-952-6426 ex 4699
Medical Treatment Hotline	Incident Intervention	888-449-7787
Langan Environmental Project Manager	Emily Snead	508-918-8558 (cell)
Langan Health and Safety Manager (HSM)	Tony Moffa	215-756-2523 (cell)
Langan Health & Safety Officer (HSO)	William Bohrer	410-984-3068 (cell)
Langan Field Team Leader (FTL)	To Be Determined	
Client's Representative	David Schwartz	646-762-1429
National Response Center (NRC)		800-424-8802
Chemical Transportation Emergency Center (Chemtrec)		800-424-9300
Center for Disease Control (CDC)		404-639-3534
EPA (RCRA Superfund Hotline)		800-424-9346
TSCA Hotline		202-554-1404
Poison Control Center		800-222-1222

Immediately following an injury, unless immediate emergency medical treatment is required, the injured employee must contact Incident Intervention® at 888-449-7787.

For all other incidents or near misses, unless emergency response is required, either the employee or a coworker must contact the Langan Incident Hotline at 1-(800)-9-LANGAN (ext. #4699).

TABLE 6
SUGGESTED FREQUENCY OF PHYSIOLOGICAL MONITORING FOR FIT AND ACCLIMATED WORKERS[A]

Adjusted Temperature[b]	Normal Work Ensemble[c]	Impermeable Ensemble
90°F or above (32.2°C) or above	After each 45 min. of work	After each 15 min. of work
87.5°F (30.8°-32.2°C)	After each 60 min. of work	After each 30 min. of work
82.5°-87.5°F (28.1°-30.8°C)	After each 90 min. of work	After each 60 min. of work
77.5°-82.5°F (25.3°-28.1°C)	After each 120 min. of work	After each 90 min. of work
72.5°-77.5°F (22.5°-25.3°C)	After each 150 min. of work	After each 120 min. of work

a For work levels of 250 kilocalories/hour.

b Calculate the adjusted air temperature (ta adj) by using this equation: ta adj ^{o}F = ta ^{o}F + (13 x % sunshine). Measure air temperature (ta) with a standard mercury-in-glass thermometer, with the bulb shielded from radiant heat. Estimate percent sunshine by judging what percent time the sun is not covered by clouds that are thick enough to produce a shadow. (100 percent sunshine = no cloud cover and a sharp, distinct shadow; 0 percent sunshine = no shadows.)

c A normal work ensemble consists of cotton coveralls or other cotton clothing with long sleeves and pants.

TABLE 7

HEAT INDEX

	ENVIRONMENTAL TEMPERATURE (Fahrenheit)										
	70	**75**	**80**	**85**	**90**	**95**	**100**	**105**	**110**	**115**	**120**
RELATIVE HUMIDITY	**APPARENT TEMPERATURE***										
0%	64	69	73	78	83	87	91	95	99	103	107
10%	65	70	75	80	85	90	95	100	105	111	116
20%	66	72	77	82	87	93	99	105	112	120	**130**
30%	67	73	78	84	90	96	104	113	123	**135**	**148**
40%	68	74	79	86	93	101	110	123	**137**	**151**	
50%	69	75	81	88	96	107	120	**135**	**150**		
60%	70	76	82	90	100	114	**132**	**149**			
70%	70	77	85	93	106	124	**144**				
80%	71	78	86	97	113	**136**					
90%	71	79	88	102	122						
100%	72	80	91	108							

*Combined Index of Heat and Humidity...what it "feels like" to the body
Source: National Oceanic and Atmospheric Administration

How to use Heat Index:
1. Across top locate Environmental Temperature
2. Down left side locate Relative Humidity
3. Follow across and down to find Apparent Temperature
4. Determine Heat Stress Risk on chart at right

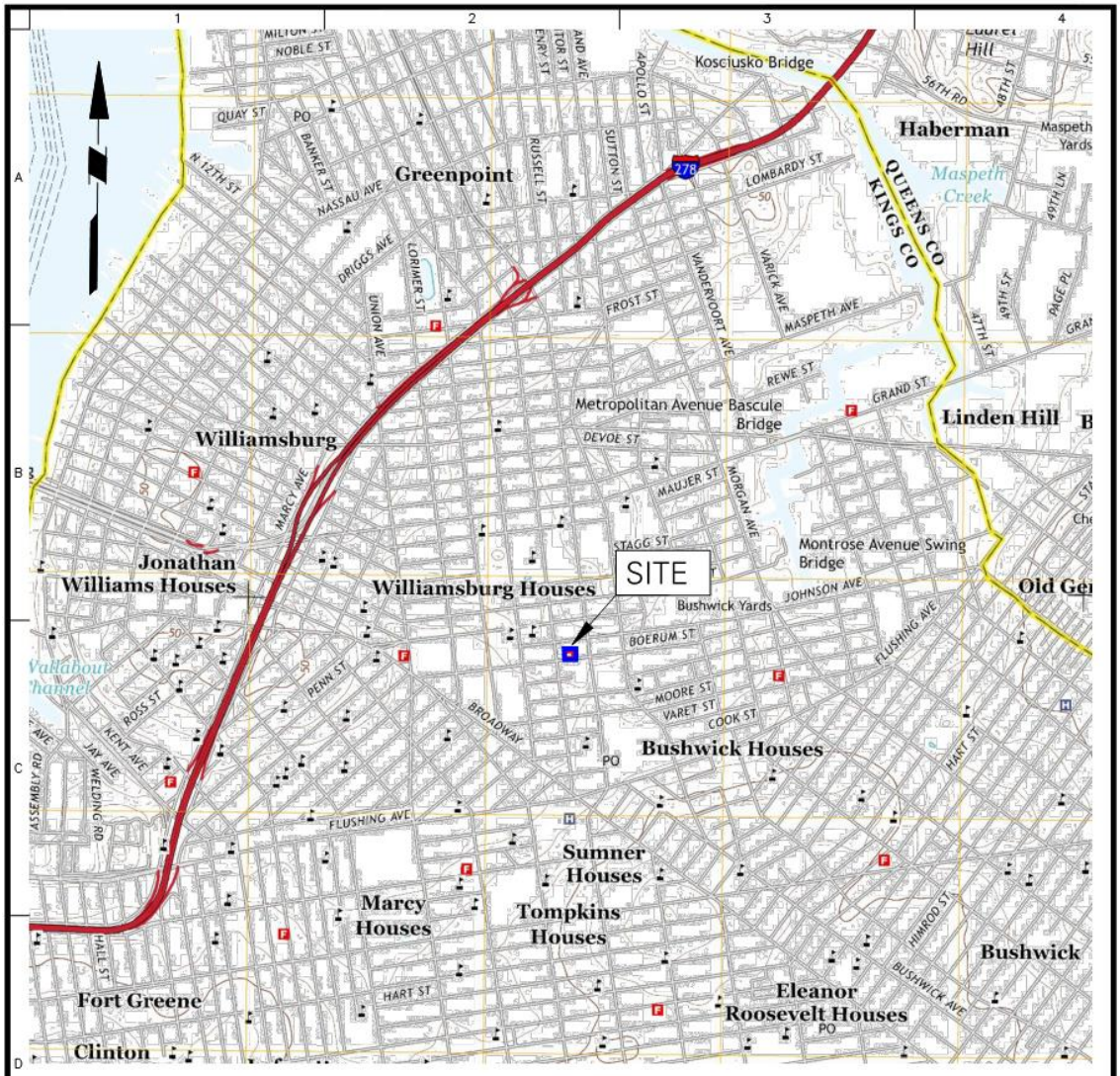
Note: Exposure to full sunshine can increase Heat Index values by up to 15 degrees F.

Apparent Temperature	**Heat Stress Risk with Physical Activity and/or Prolonged Exposure**
90-105	Heat Cramps or Heat Exhaustion Possible
105-130	Heat Cramps or Heat Exhaustion Likely, Heat Stroke Possible
>130	Heatstroke Highly Likely

FIGURES

FIGURE 1

Site Location Map



NOTES:
1. BASE MAP REFERENCED FROM THE 2013 TOPOGRAPHICAL QUADRANGLE MAP FOR BROOKLYN, NY.

LEGEND:

SITE BOUNDARY

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS ITEM IN ANY WAY.

2000 0 1000 2000
SCALE IN FEET

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
21 Penn Plaza, 360 West 31st Street, 8th Floor
New York, NY 10001
T: 212.479.5400 F: 212.479.5444 www.langan.com

Project	159 BOERUM STREET BLOCK No. 3071, LOT No. 40 BROOKLYN NEW YORK
Figure Title	SITE LOCATION MAP
Project No.	170552901
Date	01/30/2019
Drawn By	JG
Checked By	ES
Figure No.	1
Sheet	1 of 4

Filename: \\langan.com\data\NYC\data9\170552901\Project Data\CAD\01\2D-DesignFiles\CAD RIWP\Figure 1 - Site Location Map.dwg Date: 1/30/2019 Time: 10:50 User: jgolding Style Table: Langan.stb Layout: ANSIA-BP

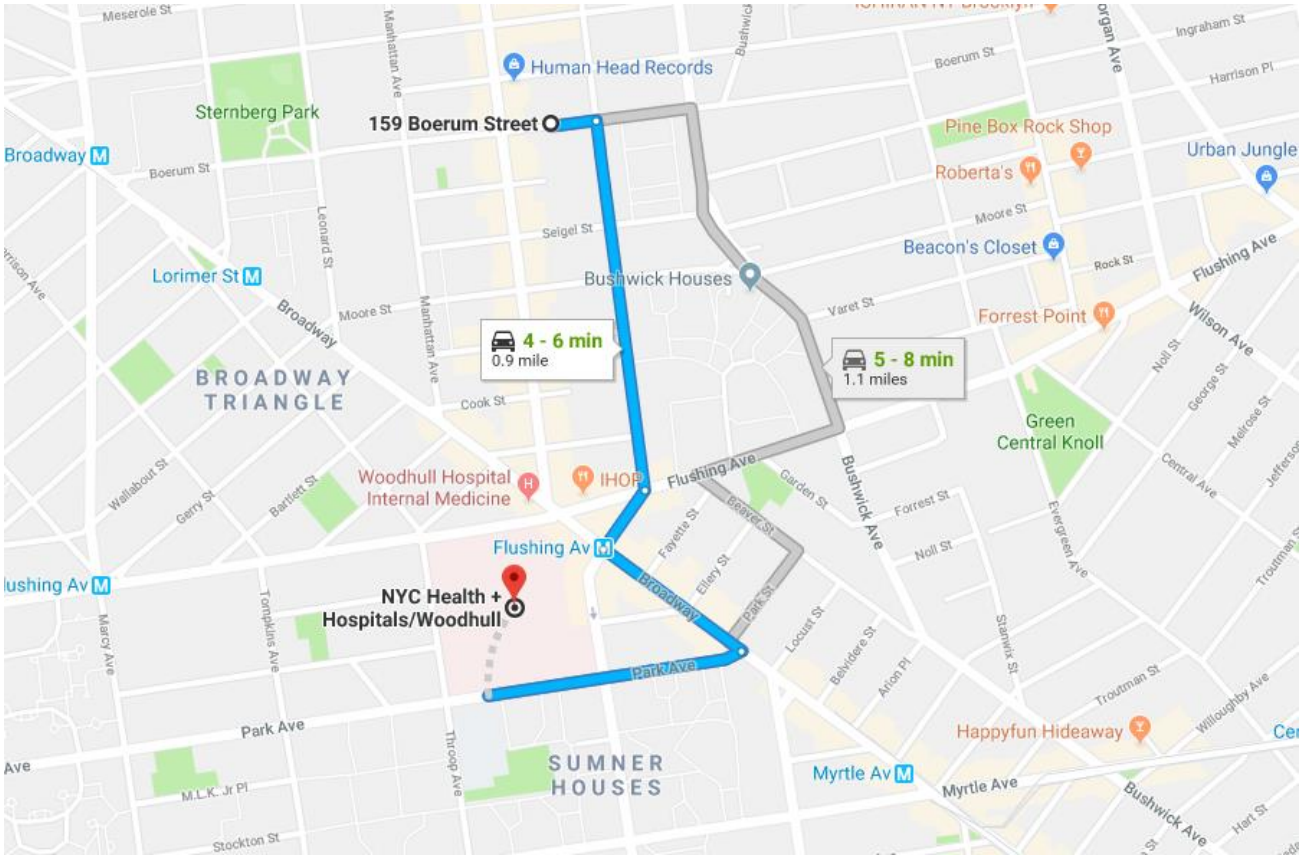
FIGURE 2
HOSPITAL ROUTE PLAN

Hospital Location: **NYC Health and Hospitals - Woodhull**
760 Broadway
Brooklyn, New York
718-963-8000

START: 159 Boerum Street, Brooklyn, NY

1. Head east on Boerum Street toward Humboldt Street
2. Turn right at the 1st cross street onto Humboldt Street
3. Continue straight onto Broadway
4. Turn right onto Park Avenue

END: Health and Hospitals – Woodhull, 760 Broadway, Brooklyn, NY



ATTACHMENT A

STANDING ORDERS

STANDING ORDERS

GENERAL

- No smoking, eating, or drinking in this work zone.
- Upon leaving the work zone, personnel will thoroughly wash their hands and face.
- Minimize contact with contaminated materials through proper planning of work areas and decontamination areas, and by following proper procedures. Do not place equipment on the ground. Do not sit on contaminated materials.
- No open flames in the work zone.
- Only properly trained and equipped personnel are permitted to work in potentially contaminated areas.
- Always use the appropriate level of personal protective equipment (PPE).
- Maintain close contact with your buddy in the work zone
- Contaminated material will be contained in the Exclusion Zone (EZ).
- Report any unusual conditions.
- Work areas will be kept clear and uncluttered. Debris and other slip, trip, and fall hazards will be removed as frequently as possible.
- The number of personnel and equipment in the work zone will be kept to an essential minimum.
- Be alert to the symptoms of fatigue and heat/cold stress, and their effects on the normal caution and judgment of personnel.
- Conflicting situations which may arise concerning safety requirements and working conditions must be addressed and resolved quickly by the site HSO.

TOOLS AND HEAVY EQUIPMENT

- Do not, under any circumstances, enter or ride in or on any backhoe bucket, materials hoist, or any other device not specifically designed to carrying passengers.
- Loose-fitting clothing or loose long hair is prohibited around moving machinery.
- Ensure that heavy equipment operators and all other personnel in the work zone are using the same hand signals to communicate.
- Drilling/excavating within 10 feet in any direction of overhead power lines is prohibited.
- The locations of all underground utilities must be identified and marked out prior to initiating any subsurface activities.
- Check to insure that the equipment operator has lowered all blades and buckets to the ground before shutting off the vehicle.
- If the equipment has an emergency stop device, have the operator show all personnel its location and how to activate it.
- Help the operator ensure adequate clearances when the equipment must negotiate in tight quarters; serve as a signalman to direct backing as necessary.
- Ensure that all heavy equipment that is used in the Exclusion Zone is kept in that zone until the job is done, and that such equipment is completely decontaminated before moving it into the clean area of the work zone.
- Samplers must not reach into or get near rotating equipment such as the drill rig. If personnel must work near any tools that could rotate, the equipment operator must completely shut down the rig prior to initiating such work. It may be necessary to use a remote sampling device.

ATTACHMENT B

DECONTAMINATION PROCEDURES

PERSONNEL DECONTAMINATION

LEVEL C DECONTAMINATION

Station 1:	Equipment Drop	1. Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, cool down stations may be set up within this area.
Station 2:	Outer Garment, Boots, and Gloves Wash and Rinse	2. Scrub outer boots, outer gloves and chemical-resistant splash suit with decon solution or detergent and water. Rinse off using copious amounts of water.
Station 3:	Outer Boot and Glove Removal	3. Remove outer boots and gloves. Deposit in container with plastic liner.
Station 4:	Canister or Mask Change	4. If worker leaves Exclusion Zone to change canister (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer gloves and boot covers donned, joints taped, and worker returns to duty.
Station 5:	Boot, Gloves and Outer Garment Removal	5. Boots, chemical-resistant splash suit, inner gloves removed and deposited in separate containers lined with plastic.
Station 6:	Face piece Removal	6. Face piece is removed (avoid touching face with fingers). Face piece deposited on plastic sheets.
Station 7:	Field Wash	7. Hands and face are thoroughly washed. Shower as soon as possible.

LEVEL D DECONTAMINATION

Station 1:	Equipment Drop	1. Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, cool down stations may be set up within this area.
Station 2:	Outer Garment, Boots, and Gloves Wash and Rinse	2. Scrub outer boots, outer gloves and chemical-resistant splash suit with decon solution or detergent and water. Rinse off using copious amounts of water.
Station 3:	Outer Boot and Glove Removal	3. Remove outer boots and gloves. Deposit in container with plastic liner.
Station 4:	Boot, Gloves and Outer Garment Removal	4. Boots, chemical-resistant splash suit, inner gloves removed and deposited in separate containers lined with plastic.
Station 5:	Field Wash	5. Hands and face are thoroughly washed. Shower as soon as possible.

EQUIPMENT DECONTAMINATION

GENERAL:

Equipment to be decontaminated during the project may include tools, monitoring equipment, respirators, sampling containers, laboratory equipment and drilling equipment.

All decontamination will be done by personnel in protective gear, appropriate for the level of decontamination, as determined by the site HSO. The decontamination work tasks will be split or rotated among support and work crews.

Depending on site conditions, backhoe and pumps may be decontaminated over a portable decontamination pad to contain wash water; or, wash water may be allowed to run off into a storm sewer system. Equipment needed may include a steam generator with high-pressure water, empty drums, screens, screen support structures, and shovels. Drums will be used to hold contaminated wash water pumped from the lined pit. These drums will be labeled as such.

Miscellaneous tools and equipment will be dropped into a plastic pail, tub, or other container. They will be brushed off and rinsed with a detergent solution, and finally rinsed with clean water.

MONITORING EQUIPMENT:

Monitoring equipment will be protected as much as possible from contamination by draping, masking, or otherwise covering as much of the instruments as possible with plastic without hindering the operation of the unit. The PID, HNu or OVA meter, for example, can be placed in a clear plastic bag, which allows reading of the scale and operation of knobs. The probes can be partially wrapped keeping the sensor tip and discharge port clear.

The contaminated equipment will be taken from the drop area and the protective coverings removed and disposed in the appropriate containers. Any dirt or obvious contamination will be brushed or wiped with a disposable paper wipe.

RESPIRATORS:

Respirators will be cleaned and disinfected after every use. Taken from the drop area, the masks (with the cartridges removed and disposed of with other used disposable gear) will be immersed in a cleaning solution and scrubbed gently with a soft brush, followed by a rinse in plain warm water, and then allowed to air dry. In the morning, new cartridges will be installed. Personnel will inspect their own masks for serviceability prior to donning them. And, once the mask is on, the wearer will check the respirator for leakage using the negative and positive pressure fit check techniques.

ATTACHMENT C

EMPLOYEE EXPOSURE/ INJURY INCIDENT REPORT

EMPLOYEE INCIDENT/INJURY REPORT
LANGAN ENGINEERING & ENVIRONMENTAL SERVICES

(Complete and return to Tony Moffa in the Doylestown Office)

Affected Employee Name: _____ Date: _____

Incident type: ☐ Injury ☐ Report Only/No Injury
☐ Near Miss ☐ Other: _____

EMPLOYEE INFORMATION (Person completing Form)

Employee Name: _____ Employee No: _____

Title: _____ Office Location: _____

Length of time employed or date of hire: _____

Mailing address: _____

_____

Sex: M ☐ F ☐ Birth date: _____

Business phone & extension: _____ Residence/cell phone: _____

ACCIDENT INFORMATION

Project: _____ Project #: _____

Date & time of incident: _____ Time work started & ended: _____

Site location: _____

Incident Type: Possible Exposure ☐ Exposure ☐ Physical Injury ☐

Names of person(s) who witnessed the incident:_____

Exact location incident occurred:

Describe work being done:_____

Describe what affected employee was doing prior to the incident occurring:

Describe in detail how the incident occurred:

Nature of the incident (List the parts of the body affected):

Person(s) to whom incident was reported (Time and Date):

List the names of other persons affected during this incident:

Possible causes of the incident (equipment, unsafe work practices, lack of PPE, etc.):

Weather conditions during incident:

MEDICAL CARE INFORMATION

Did affected employee receive medical care? Yes ☐ No ☐

If Yes, when and where was medical care received:

Provide name of facility (hospital, clinic, etc.):

Length of stay at the facility?

Did the employee miss any work time? Yes ☐ No ☐ Undetermined ☐

Date employee last worked: Date employee returned to work:

Has the employee returned to work? Yes ☐ No ☐

Does the employee have any work limitations or restrictions from the injury? : Yes ☐ No ☐

If Yes, please describe:

Did the exposure/injury result in permanent disability? Yes ☐ No ☐ Unknown ☐

If Yes, please describe:

HEALTH & SAFETY INFORMATION

Was the operation being conducted under an established site specific CONSTRUCTION HEALTH AND SAFETY PLAN?
Yes ☐ No ☐ Not Applicable: ☐

Describe protective equipment and clothing used by the employee:

_____

_____

_____

Did any limitations in safety equipment or protective clothing contribute to or affect exposure / injury? If so, explain:

_____

_____

_____

_____

Employee Signature Date

_____

Langan Representative Date

ATTACHMENT D

CALIBRATION LOG

DATE:________________ **PROJECT:____________________**

CALIBRATION LOG

Date & Time	Inst Type	Inst #	Media	Initial Reading	Span #	Calibrat. Reading	Performed By:

DATE:________________ PROJECT:____________________

CALIBRATION LOG

Date & Time	Inst Type	Inst #	Media	Initial Reading	Span #	Calibrat. Reading	Performed By:

DATE:________________　　　　**PROJECT:____________________**

CALIBRATION LOG

Date & Time	Inst Type	Inst #	Media	Initial Reading	Span #	Calibrat. Reading	Performed By:

DATE:________________ **PROJECT:____________________**

CALIBRATION LOG

Date & Time	Inst Type	Inst #	Media	Initial Reading	Span #	Calibrat. Reading	Performed By:

ATTACHMENT E

MATERIAL SAFETY DATA SHEETS

SAFETY DATA SHEETS

All Langan Field Personnel Completing This Work Plan Are To Have Real Time Accessibility To Material Safety Data Sheet (MSDs) or Safety Data Sheet (SDSs) Through Their Smart Phone.

The link is http://www.msds.com/
The login name is "drapehead"
The password is "2angan987"

If You Are Unable To Use the Smart Phone App, You Are To Bring Printed Copies of the MSDs/SDSs to the Site

ATTACHMENT F

JOBSITE SAFETY INSPECTION CHECKLIST

Jobsite Safety Inspection Checklist

Date: _____ **Inspected By:** _____

Location: _____ **Project #:** _____

Check one of the following: **A:** Acceptable **NA**: Not Applicable **D**: Deficiency

	A	NA	D	Remark
1. CHASP available onsite for inspection?				
2. Health & Safety Compliance agreement (in CHASP) appropriately signed by Langan employees and contractors?				
3. Hospital route map with directions posted on site?				
4. Emergency Notification List posted on site?				
5. First Aid kit available and properly stocked?				
6. Personnel trained in CPR/First Aid on site?				
7. MSDSs readily available, and all workers knowledgeable about the specific chemicals and compounds to which they may be exposed?				
8 Appropriate PPE being worn by Langan employees and contractors?				
9. Project site safe practices ("Standing Orders") posted?				
10. Project staff have 40-hr./8-hr./Supervisor HAZWOPER training?				
11. Project staff medically cleared to work in hazardous waste sites and fit-tested to wear respirators, if needed?				
12. Respiratory protection readily available?				
13. Health & Safety Incident Report forms available?				
14. Air monitoring instruments calibrated daily and results recorded on the Daily Instrument Calibration check sheet?				
15. Air monitoring readings recorded on the air monitoring data sheet/field log book?				
16. Subcontract workers have received 40-hr./8-hr./Spvsr. HAZWOPER training, as appropriate?				
17. Subcontract workers medically cleared to work on site, and fit-tested for respirator wear?				
18. Subcontract workers have respirators readily available?				
19. Mark outs of underground utilities done prior to initiating any subsurface activities?				
20. Decontamination procedures being followed as outlined in CHASP?				
21. Are tools in good condition and properly used?				
22. Drilling performed in areas free from underground objects including utilities?				

23. Adequate size/type fire extinguisher supplied?				
24. Equipment at least 20 feet from overhead powerlines?				
25. Evidence that drilling operator is responsible for the safety of his rig.				
26. Trench sides shored, layer back, or boxed?				
27. Underground utilities located and authorities contacted before digging?				
28. Ladders in trench (25-foot spacing)?				
29. Excavated material placed more than 2 feet away from excavation edge?				
30. Public protected from exposure to open excavation?				
31. People entering the excavation regarding it as a permit-required confined space and following appropriate procedures?				
32. Confined space entry permit is completed and posted?				
33. All persons knowledgeable about the conditions and characteristics of the confined space?				
34. All persons engaged in confined space operations have been trained in safe entry and rescue (non-entry)?				
35. Full body harnesses, lifelines, and hoisting apparatus available for rescue needs?				
36. Attendant and/or supervisor certified in basic first aid and CPR?				
37. Confined space atmosphere checked before entry and continuously while the work is going on?				
38. Results of confined space atmosphere testing recorded?				
39. Evidence of coordination with off-site rescue services to perform entry rescue, if needed?				
40. Are extension cords rated for this work being used and are they properly maintained?				
41. Are GFCIs provided and being used?				

Unsafe Acts: _____

_____

_____

_____

Notes: _____

_____

_____

_____

ATTACHMENT G

JOB SAFETY ANALYSIS FORM

LANGAN	**Job Safety Analysis (JSA)** **Health and Safety**
JSA TITLE: **JSA NUMBER:**	**DATE CREATED:** **CREATED BY**: **REVISION DATE:** **REVISED BY:**

Langan employees must review and revise the Job Safety Analysis (JSA) as needed to address the any site specific hazards not identified. Employees must provide their signatures on the last page of the JSA indicating they have review the JSA and are aware the potential hazards associated with this work and will follow the provided preventive or corrective measures.

PERSONAL PROTECTIVE EQUIPMENT REQUIRED: (PPE): ■ Required	☒ As Needed	
☐ Steel-toed boots	☐ Nitrile gloves	☐ Dermal Protection (Specify)
☐ Long-sleeved shirt	☐ Leather/ Cut-resistant gloves	☐ High visibility vest/clothing
☐ Safety glasses	☐Face Shield	☐ Hard hat
ADDITIONAL PERSONAL PROTECTIVE EQUIPMENT NEEDED (Provide specific type(s) or descriptions)		
☐ Air Monitoring:	☐ Respirators:	☐ Other:

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE OR CORRECTIVE ACTION
1.	1. 2.	1a. 1b. 2a. 2b.
2.	1.	1
Additional items identified in the field.		
Additional Items.		

If additional items are identified during daily work activities, please notify all relevant personnel about the change and document on this JSA.

LANGAN

Job Safety Analysis (JSA)
Health and Safety

JSA Title: General Construction Activities

JSA Number: JSA010-01

A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions.

PERSONAL PROTECTIVE EQUIPMENT (Required or to be worn as needed):				
☒ Safety Shoes	☒ Long Sleeves	☒ Safety Vest (Class 2)	☒ Hard Hat	☒ Hearing Protection
☒ Safety Glasses	☐ Safety Goggles	☒ Face Shield	☒ Nitrile Gloves	☐ PVC Gloves
☒ Leather Gloves	☐ Cut Resist. Gloves	☐ Fall Protection	☐ Fire Resistant Clothing	☐ Rubber Boots
☐ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☒ Traffic Cones/Signs	☐ Life Vest/Jacket	
☐ Other:				

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
1. Transport equipment to work area	1. Back Strain 2. Slips/ Trips/ Falls 3. Traffic 4. Cuts/abrasions from equipment 5. Contusions from dropped equipment	1. Use proper lifting techniques / Use wheeled transport 2. Minimize distance to work area / Have unobstructed path to work area / Follow good housekeeping procedures 3. Wear proper PPE (high visibility vest or clothing) 4. Wear proper PPE (leather gloves, long sleeves) 5. Wear proper PPE (safety shoes)
2. Installation of piping from vapor wells to skid connections and from discharge piping to effluent stack	1. Pinch fingers when connecting pipes 2. Slips/ Trips/ Falls 3. Machinery Hazards	1. Wear proper PPE (leather gloves) 2. Be aware of potential trip hazards / Practice good housekeeping procedures / Mark significant below-grade hazards (i.e. holes, trenches) with safety cones or spray paint 3. Wear proper PPE (safety vest) / Maintain safe distance from operating machinery
3. Remediation equipment installation	1. Back strain when lifting heavy equipment 2. Slips/ Trips/ Falls 3. Traffic	1. Use proper lifting techniques / Use wheeled transport / Minimize distance to vehicle 2. Be aware of potential trip hazards / Practice good housekeeping procedures / Mark significant below-grade hazards (i.e. holes, trenches) with safety cones or spray pain 3. Wear proper PPE (safety vest)
4. All activities	1. Slips/ Trips/ Falls 2. Hand injuries, cuts or lacerations during manual handling of materials 3. Foot injuries 4. Back injuries 5. Traffic 6. Wildlife: Stray dogs, Mice/rats, Vectors (i.e. mosquitoes, bees, etc.) 7. High Noise levels	1. Be aware of potential trip hazards / Follow good housekeeping procedures/ Mark significant hazards 2. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery or dirty objects before handling / Wear leather/ cut-resistant gloves 3. Wear Langan approved safety shoes 4. Use proper lifting techniques / Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift / Obtain assistance when possible

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
4. All activities (cont'd)	8. Overhead hazards 9. Heat Stress/ Cold Stress 10. Eye Injuries	5. Wear high visibility clothing & vest / Use cones or signs to designate work area 6. Be aware of surroundings at all times, including the presence of wildlife/ Do not approach stray dogs / Carry/use dog/animal repellant / Use bug spray when needed 7. Wear hearing protection 8. Wear hard hat / Avoid areas were overhead hazards exist. 9. Wear proper attire for weather conditions (sunscreen or protective clothing in sunlight, layers for cold weather) / Drink plenty of fluids to avoid dehydration / Takes breaks as necessary to avoid heat/cold stress 10. Wear safety glasses
Additional items.		
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	Sign Name	Date
Prepared by:		
Reviewed by:		

LANGAN

Job Safety Analysis (JSA)
Health and Safety

JSA Title: **Subsurface Investigation**

JSA Number: **JSA030-01**

A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions.

PERSONAL PROTECTIVE EQUIPMENT (Required or to be worn as needed):

☒ Safety Shoes	☒ Long Sleeves	☒ Safety Vest (Class 2)	☒ Hard Hat	☒ Hearing Protection
☒ Safety Glasses	☒ Safety Goggles	☐ Face Shield	☐ Nitrile Gloves	☐ PVC Gloves
☒ Leather Gloves	☒ Cut Resist. Gloves	☐ Fall Protection	☐ Fire Resistant Clothing	☐ Rubber Boots
☐ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☐ Traffic Cones/Signs	☐ Life Vest/Jacket	
☒ Other: Dielectric Overshoes, Sun Block				

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
5. Transport equipment to work area	1. Back/strain 2. Slip/Trip/Falls 3. Traffic 4. Cuts/abrasions/contusions from equipment 5. Accidents due to vehicle operations	1. Use proper lifting techniques/Use wheeled transport 2. Minimize distance to work area/unobstructed path to work area/follow good housekeeping procedures 3. Wear proper PPE (high visibility vest or clothing) 4. Wear proper PPE (leather gloves, long sleeves, Langan approved safety shoes) 5. Observe posted speed limits/ Wear seat belts at all times
6. Traffic	1. Hit by moving vehicle	1. Use traffic cones and signage/ Use High visibility traffic vests and clothing/ Caution tape when working near active roadways.
7. Field Work (drilling, resistivity testing, and inspection)	1. Biological Hazards: insects, rats, snakes, poisonous plants, and other animals 2. Heat stress/injuries 3. Cold Stress/injuries 4. High Energy Transmission Lines 5. Underground Utilities 6. Electrical (soil resistivity testing)	11. Inspect work area to identify biological hazards. Wear light colored long sleeve shirt and long pants/ Use insect repellant as necessary/ Beware of tall grass, bushes, woods and other areas where ticks may live/ Avoid leaving garbage on site to prevent attracting animals/ Identify and avoid contact with poisonous plants/Beware of rats, snakes, or stray animals. 12. Wear proper clothing (light colored)/ drink plenty of water/ take regular breaks/use sun block 13. Wear proper clothing/ dress in layers/ take regular breaks. 14. Avoid direct contact with high energy transmission lines/ position equipment at least 15 feet or as required by PSE&G from the transmission lines/ wear proper PPE (dielectric overshoes 15 kV minimum rating). 15. Call one-call service before performing intrusive field work/ Review utility mark-outs and available utility drawings (with respect to proposed work locations)/ Follow Underground Utility Guidelines

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
		16. See AGI Sting R1 operating manual for specific concerns during operating instrument
8. All activities	11. Slips/ Trips/ Falls 12. Hand injuries, cuts or lacerations during manual handling of materials 13. Foot injuries 14. Back injuries 15. Traffic 16. Wildlife: Stray dogs, Mice/rats, Vectors (i.e. mosquitoes, bees, etc.) 17. High Noise levels 18. Overhead hazards 19. Heat Stress/ Cold Stress 20. Eye Injuries	17. Be aware of potential trip hazards / Follow good housekeeping procedures/ Mark significant hazards 18. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery or dirty objects before handling / Wear leather/ cut-resistant gloves 19. Wear Langan approved safety shoes 20. Use proper lifting techniques / Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift / Obtain assistance when possible 21. Wear high visibility clothing & vest / Use cones or signs to designate work area 22. Be aware of surroundings at all times, including the presence of wildlife/ Do not approach stray dogs / Carry/use dog/animal repellant / Use bug spray when needed 23. Wear proper hearing protection 24. Wear hard hat / Avoid areas were overhead hazards exist. 25. Wear proper attire for weather conditions (sunscreen or protective clothing in sunlight, layers for cold weather) / Drink plenty of fluids to avoid dehydration / Takes breaks as necessary to avoid heat/cold stress 26. Wear safety glasses
Additional items.		
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	Sign Name	Date
Prepared by:		
Reviewed by:		

LANGAN

Job Safety Analysis (JSA)
Health and Safety

JSA Title: **Excavation Oversight**
JSA Number: **JSA041-01**

A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions. Prior to the start of any work "TAKE 5" and conduct a Last Minute Risk Assessment.

S – *Stop,* what has changed?
T – *Think* about the task
E – *Evaluate* potential hazards
P – *Plan* safe approach
S - *Start* task / *Stop* & regroup

PERSONAL PROTECTIVE EQUIPMENT (Required or to be worn as needed):				
☒ Safety Shoes	☒ Long Sleeves	☒ Safety Vest (Class 2)	☒ Hard Hat	☒ Hearing Protection
☒ Safety Glasses	☐ Safety Goggles	☐ Face Shield	☒ Nitrile Gloves	☐ PVC Gloves
☒ Leather Gloves	☒ Cut Resist. Gloves	☐ Fall Protection	☐ Fire Resistant Clothing	☐ Rubber Boots
☐ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☐ Traffic Cones/Signs	☐ Life Vest/Jacket	
☐ Other:				

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
9. Transport equipment to work area	6. Back Strain 7. Slips/Trips/Falls 8. Traffic 9. Cuts/abrasions/contusions from equipment	6. Use proper lifting techniques / Use wheeled transport 7. Minimize distance to work area / Have unobstructed path to work area / Follow good housekeeping procedures 8. Wear proper PPE (high visibility vest or clothing) 9. Wear proper PPE (leather gloves, long sleeves, safety shoes)
10. Earth Moving Equipment	1. Equipment running over employee	1. Ensure you have direct line of sight with operator of equipment; don't walk behind equipment; maintain a safe distance away from equipment. 2. Wear proper PPE (high vis vest/clothing)
11. Excavation	4. Excavation collapse 5. Confined space 6. Soil	1. Use proper shoring/benching/sloping techniques; Ladder is properly situated in excavation; no water in excavation; competent person has inspected excavation prior to allow employees to enter. 2. Langan employees are not authorized to enter a confined space; 3. Soil and equipment is kept atleast 2 feet from edge of excavation
12. Excavated soil	1. Hazardous substances	1. Use proper equipment to monitor excavated soil for contaminates; ensure levels do not exceed PEL's for contaminates; Wear proper PPE
13. All activities	21. Slips/ Trips/ Falls 22. Hand injuries, cuts or lacerations during manual handling of materials 23. Foot injuries 24. Back injuries 25. Traffic	27. Be aware of potential trip hazards / Follow good housekeeping procedures/ Mark significant hazards 28. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery or dirty objects before handling / Wear leather/ cut-resistant gloves 29. Wear proper PPE (Langan approved safety shoes)

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
	26. Wildlife: Stray dogs, Mice/rats, Vectors (i.e. mosquitoes, bees, etc.) 27. High Noise levels 28. Overhead hazards 29. Heat Stress/ Cold Stress 30. Eye Injuries	30. Use proper lifting techniques / Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift / Obtain assistance when possible 31. Wear high visibility clothing & vest / Use cones or signs to designate work area 32. Be aware of surroundings at all times, including the presence of wildlife/ Do not approach stray dogs / Carry/use dog/animal repellant / Use bug spray when needed 33. Wear hearing protection 34. Wear hard hat / Avoid areas were overhead hazards exist. 35. Wear proper attire for weather conditions (sunscreen or protective clothing in sunlight, layers for cold weather) / Drink plenty of fluids to avoid dehydration / Takes breaks as necessary to avoid heat/cold stress 36. Wear safety glasses
Additional items.		
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	Sign Name	Date
Prepared by:		
Reviewed by:		

LANGAN

Job Safety Analysis (JSA)
Health and Safety

JSA Title: Field Sampling

JSA Number: JSA022-01

A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions.

PERSONAL PROTECTIVE EQUIPMENT (Required or to be worn as needed):

☒ Safety Shoes	☒ Long Sleeves	☐ Safety Vest (Class 2)	☒ Hard Hat	☒ Hearing Protection
☒ Safety Glasses	☐ Safety Goggles	☐ Face Shield	☒ Nitrile Gloves	☐ PVC Gloves
☒ Leather Gloves	☐ Cut Resist. Gloves	☐ Fall Protection	☐ Fire Resistant Clothing	☐ Rubber Boots
☐ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☒ Traffic Cones/Signs	☐ Life Vest/Jacket	
☐ Other:				

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
14. Unpack/Transport equipment to work area.	10. Back Strains 11. Slip/Trips/Falls 12. Cuts/Abrasions from equipment 13. Contusions from dropped equipment	10. Use proper lifting techniques/Use wheeled transport 11. Minimize distance to work area/Unobstructed path to work area/follow good housekeeping procedures. Mark slip/trip/fall hazards with orange safety cones. 12. Wear proper PPE (leather gloves, long sleeves). 13. Wear proper PPE (Langan approved safety shoes).
15. Initial Site Arrival-Site Assessment	2. Traffic	3. Situational awareness (be alert of your surroundings). Secure area from through traffic.
16. Surface Water Sampling	7. Contaminated media. Skin/eye contact with biological agents and/or chemicals.	4. Wear appropriate PPE (Safety glasses, appropriate gloves). Review (M)SDS for all chemicals being.
17. Sampling from bridges	1. Struck by vehicles	1. Wear appropriate PPE (Safety Vest). Use buddy system and orange safety cones.
18. Icing of Samples/ Transporting coolers/equipment from work area.	31. Back Strains 32. Slips/Trips/Falls 33. Cuts/Abrasions from equipment 34. Pinch/Crushing Hazards.	37. Drain coolers of water. Use proper lifting techniques. Use wheeled transport. 38. Have unobstructed path from work area. Aware of surroundings. 39. Wear proper PPE (Leather gloves, long sleeves) 40. Wear proper PPE (Leather gloves, long sleeves)
19. Site Departure	1. Contaminated PPE/Vehicle	1. Contaminated PPE should be disposed of on-site. Remove boots and soiled clothing for secure storage in trunk. Wash hands promptly.
20. All activities	1. Slips/ Trips/ Falls 2. Hand injuries, cuts or lacerations during manual handling of materials	1. Be aware of potential trip hazards / Follow good housekeeping procedures/ Mark significant hazards

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
	3. Foot injuries 4. Back injuries 35. Traffic 36. Wildlife: Stray dogs, Mice/rats, Vectors (i.e. mosquitoes, bees, etc.) 37. High Noise levels 38. Overhead hazards 39. Heat Stress/ Cold Stress 40. Eye Injuries	2. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery or dirty objects before handling / Wear leather/ cut-resistant gloves 3. Wear Langan approved safety shoes 4. Use proper lifting techniques / Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift / Obtain assistance when possible 41. Wear high visibility clothing & vest / Use cones or signs to designate work area 42. Be aware of surroundings at all times, including the presence of wildlife/ Do not approach stray dogs / Carry/use dog/animal repellant / Use bug spray when needed 43. Wear hearing protection 44. Wear hard hat / Avoid areas were overhead hazards exist. 45. Wear proper attire for weather conditions (sunscreen or protective clothing in sunlight, layers for cold weather) / Drink plenty of fluids to avoid dehydration / Takes breaks as necessary to avoid heat/cold stress 46. Wear safety glasses
Additional items.		
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	**Sign Name**	**Date**
Prepared by:		
Reviewed by:		

LANGAN

Job Safety Analysis (JSA)
Health and Safety

JSA Title: **Equipment Transportation and Set-Up**

JSA Number: **JSA012-01**

A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions.

PERSONAL PROTECTIVE EQUIPMENT (Required or to be worn as needed):

☒ Safety Shoes	☒ Long Sleeves	☒ Safety Vest (Class 2)	☒ Hard Hat	☒ Hearing Protection
☒ Safety Glasses	☐ Safety Goggles	☐ Face Shield	☐ Nitrile Gloves	☐ PVC Gloves
☒ Leather Gloves	☐ Cut Resist. Gloves	☐ Fall Protection	☐ Fire Resistant Clothing	☐ Rubber Boots
☐ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☐ Traffic Cones/Signs	☐ Life Vest/Jacket	
☐ Other:				

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
21. Transport equipment to work area	14. Back Strain 15. Slips/ Trips/ Falls 16. Traffic 17. Cuts/abrasions from equipment 18. Contusions from dropped equipment	6. Use proper lifting techniques / Use wheeled transport 7. Minimize distance to work area / Have unobstructed path to work area / Follow good housekeeping procedures 8. Wear proper PPE (high visibility vest or clothing) 9. Wear proper PPE (leather gloves, long sleeves) 10. Wear proper PPE (safety shoes)
22. Moving equipment to its planned location	3. Pinch Hazard 4. Slips/ Trips/ Falls	4. Wear proper PPE (leather gloves) 5. Be aware of potential trip hazards / Practice good housekeeping procedures / Mark significant below-grade hazards (i.e. holes, trenches) with safety cones or spray paint
23. Equipment Set-up	8. Pinch Hazard 9. Cuts/abrasions to knuckles/hands 10. Back Strain	4. Wear proper PPE (leather gloves) 5. Wear proper PPE (leather gloves) 6. Use proper lifting techniques / Use wheeled transport
24. All activities	41. Slips/ Trips/ Falls 42. Hand injuries, cuts or lacerations during manual handling of materials 43. Foot injuries 44. Back injuries 45. Traffic 46. Wildlife: Stray dogs, Mice/rats, Vectors (i.e. mosquitoes, bees, etc.) 47. High Noise levels 48. Overhead hazards 49. Heat Stress/ Cold Stress	47. Be aware of potential trip hazards / Follow good housekeeping procedures/ Mark significant hazards 48. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery or dirty objects before handling / Wear leather/ cut-resistant gloves 49. Wear Langan approved safety shoes 50. Use proper lifting techniques / Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift / Obtain assistance when possible 51. Wear high visibility clothing & vest / Use cones or signs to designate work area

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
7. All activities (cont'd)	50. Eye Injuries	52. Be aware of surroundings at all times, including the presence of wildlife/ Do not approach stray dogs / Carry/use dog/animal repellant / Use bug spray when needed 53. Wear hearing protection 54. Wear hard hat / Avoid areas were overhead hazards exist. 55. Wear proper attire for weather conditions (sunscreen or protective clothing in sunlight, layers for cold weather) / Drink plenty of fluids to avoid dehydration / Takes breaks as necessary to avoid heat/cold stress 56. Wear safety glasses
Additional items.		
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	Sign Name	Date
Prepared by:		
Reviewed by:		

LANGAN

Job Safety Analysis (JSA)
Health and Safety

JSA Title: **55-gallon Drum Sampling**

JSA Number: **JSA043-01**

A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions.

PERSONAL PROTECTIVE EQUIPMENT (Required or to be worn as needed):

☒ Safety Shoes	☒ Long Sleeves	☒ Safety Vest (Class 2)	☒ Hard Hat	☐ Hearing Protection
☒ Safety Glasses	☒ Safety Goggles	☒ Face Shield	☒ Nitrile Gloves	☒ PVC Gloves
☒ Leather Gloves	☐ Cut Resist. Gloves	☐ Fall Protection	☐ Fire Resistant Clothing	☐ Rubber Boots
☐ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☐ Traffic Cones/Signs	☐ Life Vest/Jacket	

☒ Other: All Drums are required to be labeled. Langan employees do not open or move undocumented drums or unlabeled drums without proper project manager authorization.

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
25. Unpack/Transport equipment to work area.	19. Back Strains 20. Slip/Trips/Falls 21. Cuts/Abrasions from equipment 4. Contusions from dropped equipment	14. Use proper lifting techniques/Use wheeled transport 15. Minimize distance to work area/Unobstructed path to work area/follow good housekeeping procedures. Mark slip/trip/fall hazards with orange safety cones. 16. Wear proper PPE (leather gloves, long sleeves). 4. Wear proper PPE (Langan approved safety shoes).
26. Open Drums	1. Hand Injuries, cuts or lacerations when untightening drum locking bolt, removing drum lid strap, or removing lid. 2. Pressure from drums.	1. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery or dirty objects before handling / Wear leather/ cut-resistant gloves. Use non-metallic mallet and non-sparking tools/wrenches. 2. Open drum slowly to relieve pressure. Wear proper PPE: face shield and goggles; correct gloves; and over garments.
27. Collecting Soil/Fluid Sample	5. Irritation to eye from vapor, soil dust, or splashing 6. Irritation to exposed skin	4. Wear proper eye protection including safety glasses/ face shield/googles and when necessary, splash guard. If dust or vapor phase is present, wear appropriate safety breathing gear (1/2 mask or full face mask with correct filter) 5. Wear proper skin protection including nitrile gloves.
28. Closing Drums	1. Hand Injuries, cuts or lacerations when untightening drum locking bolt, removing drum lid strap, or removing lid.	5. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery or dirty objects before handling / Wear leather/ cut-resistant gloves. Use non-metallic mallet and non-sparking tools/wrenches.
29. Moving Drums	2. Hand Injuries, cuts or lacerations when untightening drum locking bolt, removing drum lid strap, or removing lid. 3. Back Strains	2. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery or dirty objects before handling / Wear leather/ cut-resistant gloves. Use non-metallic mallet and non-sparking tools/wrenches. 3. Use proper lifting techniques/Use wheeled transport

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
30. All activities	51. Slips/ Trips/ Falls 52. Hand injuries, cuts or lacerations during manual handling of materials 53. Foot injuries 54. Back injuries 55. Traffic 56. Wildlife: Stray dogs, Mice/rats, Vectors (i.e. mosquitoes, bees, etc.) 57. High Noise levels 58. Overhead hazards 59. Heat Stress/ Cold Stress 60. Eye Injuries	57. Be aware of potential trip hazards / Follow good housekeeping procedures/ Mark significant hazards 58. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery or dirty objects before handling / Wear leather/ cut-resistant gloves 59. Wear Langan approved safety shoes 60. Use proper lifting techniques / Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift / Obtain assistance when possible 61. Wear high visibility clothing & vest / Use cones or signs to designate work area 62. Be aware of surroundings at all times, including the presence of wildlife/ Do not approach stray dogs / Carry/use dog/animal repellant / Use bug spray when needed 63. Wear hearing protection 64. Wear hard hat / Avoid areas were overhead hazards exist. 65. Wear proper attire for weather conditions (sunscreen or protective clothing in sunlight, layers for cold weather) / Drink plenty of fluids to avoid dehydration / Takes breaks as necessary to avoid heat/cold stress 66. Wear safety glasses
Additional items.		
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	Sign Name	Date
Prepared by:		
Reviewed by:		

LANGAN

Job Safety Analysis (JSA)
Health and Safety

JSA Title: Site Inspection

JSA Number: JSA024-01

A Job Safety Analysis (JSA) must identify all job steps required to complete the task, the potential hazards employees could be exposed to while performing the job step and the preventative/corrective actions required to reduce/mitigate the identified potential hazards. Employees must certify that they have either prepared the JSA or have reviewed the JSA and are aware of the potential hazards associated with this task and will follow the provided preventive/corrective actions.

PERSONAL PROTECTIVE EQUIPMENT (Required or to be worn as needed):				
☒ Safety Shoes	☒ Long Sleeves	☒ Safety Vest (Class 2)	☒ Hard Hat	☒ Hearing Protection
☒ Safety Glasses	☐ Safety Goggles	☐ Face Shield	☒ Nitrile Gloves	☐ PVC Gloves
☒ Leather Gloves	☐ Cut Resist. Gloves	☐ Fall Protection	☐ Fire Resistant Clothing	☒ Rubber Boots
☒ Insect/Animal Repellent	☐ Ivy Blocker/Cleaner	☒ Traffic Cones/Signs	☐ Life Vest/Jacket	
☐ Other:				

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
31.Jobsite Pre-briefing	22.None	17. Review JSA, SOP's, and discuss hazards that may be present and control measures for present hazards while on-site.
2. Working near railroads	1. Passing Trains. 2. Slip/Trips/Falls.	1. Wear reflective vest/ Stay away from tracks/ Do not cross tracks within 10 ft. of train car or when there is a train within view/listen for train horn. 2. Be aware of tripping hazards/ Follow good housekeeping procedures/ Mark significant hazards with spray paint or cones.
3. Walking around site	4. Uneven terrain 5. Wildlife: Stray animals, mice/rats, vectors (i.e. mosquitoes, bees, etc.) 6. Weather: Heat/cold stress 7. Slip/Trips/Falls 8. Foot injuries 9. Eye injuries	4. Pay attention to surrounding area (puddles, wet, frozen, uneven areas); Mark with cones or spray paint. 5. Use bug spray/ Avoid stray animals/Use repellant when needed. 6. Dress for the correct weather situation/ Use sunscreen or protective clothing in sunlight, layers in cold weather/ Drink plenty of fluids/ Take breaks when needed. 4. Be aware of tripping hazards/ Follow good housekeeping procedures/ Mark significant hazards with spray paint or cones. 5. Wear proper PPE (Langan approved safety shoes)/ Change wet socks during cold weather. 6. Wear proper PPE (safety glasses/goggles).
4. Working near road	1. Passing vehicles 2. Slip/Trips/Falls	1. Wear reflective vest/ Stay away from roadway/ Use buddy system/ Place signage or cones when needed. 2. Be aware of tripping hazards/ Follow good housekeeping procedures/ Mark significant hazards with spray paint or cones.
5. All activities	61. Slips/ Trips/ Falls 62. Hand injuries, cuts or lacerations during manual handling of materials 63. Foot injuries 64. Back injuries 65. Traffic	67. Be aware of potential trip hazards / Follow good housekeeping procedures/ Mark significant hazards 68. Inspect for jagged/sharp edges, and rough or slippery surfaces / Keep fingers away from pinch points / Wipe off greasy, wet, slippery or dirty objects before handling / Wear leather/ cut-resistant gloves 69. Wear Langan approved safety shoes

JOB STEPS	POTENTIAL HAZARDS	PREVENTATIVE / CORRECTIVE ACTION
	66. Wildlife: Stray dogs, Mice/rats, Vectors (i.e. mosquitoes, bees, etc.) 67. High Noise levels 68. Overhead hazards 69. Heat Stress/ Cold Stress 70. Eye Injuries	70. Use proper lifting techniques / Consider load location, task repetition, and load weigh when evaluating what is safe or unsafe to lift / Obtain assistance when possible 71. Wear high visibility clothing & vest / Use cones or signs to designate work area 72. Be aware of surroundings at all times, including the presence of wildlife/ Do not approach stray dogs / Carry/use dog/animal repellant / Use bug spray when needed 73. Wear hearing protection 74. Wear hard hat / Avoid areas were overhead hazards exist. 75. Wear proper attire for weather conditions (sunscreen or protective clothing in sunlight, layers for cold weather) / Drink plenty of fluids to avoid dehydration / Takes breaks as necessary to avoid heat/cold stress 76. Wear safety glasses
Additional items.		
Additional Items identified while in the field. (Delete row if not needed.)		

Print Name	Sign Name	Date
Prepared by:		
Reviewed by:		

ATTACHMENT H

TAILGATE SAFETY BRIEFING FORM

LANGAN TAILGATE SAFETY BRIEFING

Date:_____ Time: _____

Leader:_____ Location:_____

Work Task:

_____

_____

SAFETY TOPICS (*provide some detail of discussion points*)

Chemical Exposure Hazards and Control:_____

_____

Physical Hazards and Control: _____

Air Monitoring: _____

PPE: _____

_____

Communications:_____

Safe Work Practices: _____

_____

Emergency Response: _____

Hospital/Medical Center Location: _____

Phone Nos.: _____

Other: _____

FOR FOLLOW-UP (the issues, responsibilities, due dates, etc.**)**

_____

_____

_____

ATTENDEES

PRINT NAME	COMPANY	SIGNATURE

APPENDIX E

CITIZEN PARTICIPATION PLAN

NEW YORK STATE OF OPPORTUNITY. Department of Environmental Conservation

Brownfield Cleanup Program

Citizen Participation Plan
for
159 Boerum Street

August 14, 2019

BCP Site No. C224291
159 Boerum Street
Brooklyn, NY 11206

Contents

* * * * *

Note: The information presented in this Citizen Participation Plan was current as of the date of its approval by the New York State Department of Environmental Conservation. Portions of this Citizen Participation Plan may be revised during the site's investigation and cleanup process.

Applicant: **SPG Boerum LLC ("Applicant")**
Site Name: **159 Boerum Street ("Site")**
Site Address: **159 Boerum Street, Brooklyn, NY, 11206**
Site County: **Kings**
Site Number: **C224291**

1. What is New York's Brownfield Cleanup Program?

New York's Brownfield Cleanup Program (BCP) works with private developers to encourage the voluntary cleanup of contaminated properties known as "brownfields" so that they can be reused and developed. These uses include recreation, housing, and business.

A *brownfield* is any real property that is difficult to reuse or redevelop because of the presence or potential presence of contamination. A brownfield typically is a former industrial or commercial property where operations may have resulted in environmental contamination. A brownfield can pose environmental, legal, and financial burdens on a community. If a brownfield is not addressed, it can reduce property values in the area and affect economic development of nearby properties.

The BCP is administered by the New York State Department of Environmental Conservation (NYSDEC) which oversees Applicants who conduct brownfield site investigation and cleanup activities. An Applicant is a person who has requested to participate in the BCP and has been accepted by NYSDEC. The BCP contains investigation and cleanup requirements, ensuring that cleanups protect public health and the environment. When NYSDEC certifies that these requirements have been met, the property can be reused or redeveloped for the intended use.

For more information about the BCP, go online at: http://www.dec.ny.gov/chemical/8450.html .

2. Citizen Participation Activities

Why NYSDEC Involves the Public and Why It Is Important

NYSDEC involves the public to improve the process of investigating and cleaning up contaminated sites, and to enable citizens to participate more fully in decisions that affect their health, environment, and social well-being. NYSDEC provides opportunities for citizen involvement and encourages early two-way communication with citizens before decision-makers form or adopt final positions.

Involving citizens affected and interested in site investigation and cleanup programs is important for many reasons. These include:

- Promoting the development of timely, effective site investigation and cleanup programs that protect public health and the environment

- Improving public access to, and understanding of, issues and information related to a particular site and that site's investigation and cleanup process

- Providing citizens with early and continuing opportunities to participate in NYSDEC's site investigation and cleanup process

- Ensuring that NYSDEC makes site investigation and cleanup decisions that benefit from input that reflects the interests and perspectives found within the affected community

- Encouraging dialogue to promote the exchange of information among the affected/interested public, State agencies, and other interested parties that strengthens trust among the parties, increases understanding of site and community issues and concerns, and improves decision making.

This Citizen Participation (CP) Plan provides information about how NYSDEC will inform and involve the public during the investigation and cleanup of the site identified above. The public information and involvement program will be carried out with assistance, as appropriate, from the Applicant.

Project Contacts

Appendix A identifies NYSDEC project contact(s) to whom the public should address questions or request information about the site's investigation and cleanup program. The public's suggestions about this CP Plan and the CP program for the site are always welcome. Interested people are encouraged to share their ideas and suggestions with the project contacts at any time.

Locations of Reports and Information

The locations of the reports and information related to the site's investigation and cleanup program also are identified in Appendix A. These locations provide convenient access to important project documents for public review and comment. Some documents may be placed on the NYSDEC web site. If this occurs, NYSDEC will inform the public in fact sheets distributed about the site and by other means, as appropriate.

Site Contact List

Appendix B contains the site contact list. This list has been developed to keep the community informed about, and involved in, the site's investigation and cleanup process. The site contact list will be used periodically to distribute fact sheets that provide updates about the status of the project. These will include notifications of upcoming activities at the site (such as fieldwork), as well as availability of project documents and announcements about public comment periods.
The site contact list includes, at a minimum:

- Chief executive officer and planning board chairperson of each county, city, town and village in which the site is located;
- Residents, owners, and occupants of the site and properties adjacent to the site;
- The public water supplier which services the area in which the site is located;
- Any person who has requested to be placed on the site contact list;
- The administrator of any school or day care facility located on or near the site for purposes of posting and/or dissemination of information at the facility;
- Location(s) of reports and information.

The site contact list will be reviewed periodically and updated as appropriate. Individuals and organizations will be added to the site contact list upon request. Such requests should be submitted to the NYSDEC project contact(s) identified in Appendix A. Other additions to the site contact list may be made at the discretion of the NYSDEC project manager, in consultation with other NYSDEC staff as appropriate.

Note: The first site fact sheet (usually related to the draft Remedial Investigation Work Plan) is distributed both by paper mailing through the postal service and through DEC Delivers, its email listserv service. The fact sheet includes instructions for signing up with the appropriate county listserv to receive future notifications about the site. See http://www.dec.ny.gov/chemical/61092.html .

Subsequent fact sheets about the site will be distributed exclusively through the listserv, except for households without internet access that have indicated the need to continue to receive site information in paper form. Please advise the NYSDEC site project manager identified in Appendix A if that is the case. Paper mailings may continue during the investigation and cleanup process for some sites, based on public interest and need.

Citizen Participation Activities

The table at the end of this section identifies the CP activities, at a minimum, that have been and will be conducted during the site's investigation and cleanup program. The flowchart in Appendix D shows how these CP activities integrate with the site investigation

and cleanup process. The public is informed about these CP activities through fact sheets and notices distributed at significant points during the program. Elements of the investigation and cleanup process that match up with the CP activities are explained briefly in Section 5.

- **Notices and fact sheets** help the interested and affected public to understand contamination issues related to a site, and the nature and progress of efforts to investigate and clean up a site.

- **Public forums, comment periods and contact with project managers** provide opportunities for the public to contribute information, opinions and perspectives that have potential to influence decisions about a site's investigation and cleanup.

The public is encouraged to contact project staff at any time during the site's investigation and cleanup process with questions, comments, or requests for information.

This CP Plan may be revised due to changes in major issues of public concern identified in Section 3 or in the nature and scope of investigation and cleanup activities. Modifications may include additions to the site contact list and changes in planned citizen participation activities.

Technical Assistance Grant

NYSDEC must determine if the site poses a significant threat to public health or the environment. This determination generally is made using information developed during the investigation of the site, as described in Section 5.

If the site is determined to be a significant threat, a qualifying community group may apply for a Technical Assistance Grant (TAG). The purpose of a TAG is to provide funds to the qualifying group to obtain independent technical assistance. This assistance helps the TAG recipient to interpret and understand existing environmental information about the nature and extent of contamination related to the site and the development/implementation of a remedy.

An eligible community group must certify that its membership represents the interests of the community affected by the site, and that its members' health, economic well-being or enjoyment of the environment may be affected by a release or threatened release of contamination at the site.

As of the date the declaration (page 2) was signed by the NYSDEC project manager, the significant threat determination for the site had not yet been made.

To verify the significant threat status of the site, the interested public may contact the NYSDEC project manager identified in Appendix A.

For more information about TAGs, go online at http://www.dec.ny.gov/regulations/2590.html

Note: The table identifying the citizen participation activities related to the site's investigation and cleanup program follows on the next page:

Citizen Participation Activities	Timing of CP Activity(ies)
Application Process:	
• Prepare site contact list • Establish document repository(ies)	At time of preparation of application to participate in the BCP.
• Publish notice in Environmental Notice Bulletin (ENB) announcing receipt of application and 30-day public comment period • Publish above ENB content in local newspaper • Mail above ENB content to site contact list • Conduct 30-day public comment period	When NYSDEC determines that BCP application is complete. The 30-day public comment period begins on date of publication of notice in ENB. End date of public comment period is as stated in ENB notice. Therefore, ENB notice, newspaper notice, and notice to the site contact list should be provided to the public at the same time.
After Execution of Brownfield Site Cleanup Agreement (BCA):	
• Prepare Citizen Participation (CP) Plan	Before start of Remedial Investigation **Note:** Applicant must submit CP Plan to NYSDEC for review and approval within 20 days of the effective date of the BCA.
Before NYSDEC Approves Remedial Investigation (RI) Work Plan:	
• Distribute fact sheet to site contact list about proposed RI activities and announcing 30-day public comment period about draft RI Work Plan • Conduct 30-day public comment period	Before NYSDEC approves RI Work Plan. If RI Work Plan is submitted with application, public comment periods will be combined and public notice will include fact sheet. Thirty-day public comment period begins/ends as per dates identified in fact sheet.
After Applicant Completes Remedial Investigation:	
• Distribute fact sheet to site contact list that describes RI results	Before NYSDEC approves RI Report
Before NYSDEC Approves Remedial Work Plan (RWP):	
• Distribute fact sheet to site contact list about draft RWP and announcing 45-day public comment period • Public meeting by NYSDEC about proposed RWP (if requested by affected community or at discretion of NYSDEC project manager) • Conduct 45-day public comment period	Before NYSDEC approves RWP. Forty-five day public comment period begins/ends as per dates identified in fact sheet. Public meeting would be held within the 45-day public comment period.
Before Applicant Starts Cleanup Action:	
• Distribute fact sheet to site contact list that describes upcoming cleanup action	Before the start of cleanup action.
After Applicant Completes Cleanup Action:	
• Distribute fact sheet to site contact list that announces that cleanup action has been completed and that NYSDEC is reviewing the Final Engineering Report • Distribute fact sheet to site contact list announcing NYSDEC approval of Final Engineering Report and issuance of Certificate of Completion (COC)	At the time the cleanup action has been completed. **Note:** The two fact sheets are combined when possible if there is not a delay in issuing the COC.

3. Major Issues of Public Concern

This section of the CP Plan identifies major issues of public concern that relate to the site. Additional major issues of public concern may be identified during the course of the site's investigation and cleanup process.

After a review of previous environmental reports, the following potential issues of public concern were identified: air quality, health of the community, nuisance odors, noise, and construction-related traffic. These issues are of the most concern to adjacent property businesses and residents. These issues will be addressed in the Remedial Action Work Plan (RAWP), a Community Air Monitoring Program (CAMP), and a site-specific Health and Safety Plan (HASP) for the project, to be approved by NYSDEC prior to work.

The site was developed as early as 1887 with four multi-story commercial/residential buildings (labeled as tailor shop, synagogue, candy packaging, and warehouse), parking, and residential dwellings around 1974, and the site was used as an open-air parking lot as early as 1981. Test pits excavated on-site revealed buried solid waste, including glass, organic fibers, fabric, plastic, automobile tires, coal, ceramics, metal, brick, and concrete as deep as 7.5 feet below grade surface, suggesting that undocumented dumping occurred at some point after the buildings were demolished in 1974.

Contaminants of concern at the property, discussed in more detail in Section 4, include Semi-volatile Organic Compounds (SVOC), polychlorinated biphenyls (PCBs), and metals. The contaminants will be remediated to support the redevelopment of the site for restricted residential use under a NYSDEC-approved RAWP.

Site information is available through Project Contacts mentioned in Section 2 and detailed in Appendix A. The BCP Application, which includes the previous investigations at the site and future reports prepared for NYSDEC, will be available in the document repository discussed above in Section 2 and detailed in Appendix A. The RAWP will include schedules for the planned work to make Citizen Participation Plans (CPPs) as consistent as possible with DER's CP Handbook, Region 2.

The Site is located in an Environmental Justice Area. Environmental justice is defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

Environmental justice efforts focus on improving the environment in communities, specifically minority and low-income communities, and addressing disproportionate adverse environmental impacts that may exist in those communities.

The Site is located in an area with a large Hispanic-American population nearby. Therefore, all future fact sheets will be translated into Spanish. For additional information, visit: https://statisticalatlas.com/tract/New-York/Kings-County/049300/Race-and-Ethnicity.

4. Site Information

Appendix C contains a map identifying the location of the site.

Site Description

The site is located at 159 Boerum Street, in the East Williamsburg neighborhood of Brooklyn, NY, and is identified as Tax Block 3071, Lot 40 on the Brooklyn Borough Tax Map. A site location map is provided as Figure 1. The site encompasses an area of about 11,180 square-feet (0.26 acres) and is occupied by occupied by an open air asphalt parking lot surrounded by landscaped areas to the north and south. The site is situated on the south-central part of the tax block and is bound by Johnson Avenue to the north, Humboldt Street to the east, Boerum Street to the south, and Graham Avenue (Avenue of Puerto Rico) to the west. A site plan is provided as Appendix C.

History of Site Use, Investigation, and Cleanup

The site encompasses an area of about 11,180 square-feet (0.26 acres) and is occupied by occupied by an open air asphalt parking lot surrounded by landscaped areas to the north and south within the property.

Prior to entry into the BCP, the site was the subject of three environmental investigations, which are documented in the following reports:

- *May 22, 2015 Phase I Environmental Site Assessment (ESA), prepared by Hydro Tech Environmental, Corp. (Hydro Tech)*
- *October 5, 2018 Test Pit Sampling – Test Pit Location Plan and Analytical Results, prepared by Langan*
- *January 2019 Phase I Environmental Site Assessment, prepared by Langan*
- *May 3, 2019 Limited Subsurface Investigation and Analytical Results, prepared by Langan*

Below is a summary of each report:

May 22, 2015 Phase I ESA, prepared by Hydro Tech Environmental, Corp. (Hydro Tech)

Hydro Tech prepared a Phase I ESA in April 2015 in general conformance with ASTM International's Standard Practice for Environmental Site Assessments E1527-13 and the USEPA AAI Rule, for the purpose of identifying RECs in connection with the site. The Phase I ESA was prepared for two parking lots associated with 198 Johnson Avenue (Block 3072, Lot 1) and 157 Boerum Street (Block 3071, Lot 10).

The following REC was identified in the Phase I:

REC 1 – Historic Heating Oil Tanks: A review of available NYC Department of Business (NYCDOB) records identified oil burner permits associated with Block 3071, Lot 10. The suspect presence of heating oil tanks may indicate an adverse environmental impact.

Following further review of the May 22, 2015 Phase I ESA and NYCDOB online query system, the suspected heating oil tanks are likely associated with the properties adjoining the site to the north and east (Block 3071, Lot 10).

October 5, 2018 Test Pit Sampling – Test Pit Location Plan and Analytical Results, prepared by Langan

Langan completed a limited sampling event to investigate soil quality in conjunction with a geotechnical investigation. The investigation was conducted on October 5, 2018, and included excavation of two test pits to about 8 feet below grade surface (bgs) and collection of soil samples. A total of five soil samples were collected from the test pits. Field observations and laboratory analytical results are summarized below:

- Site Geology and Hydrogeology: Beneath the landscaped areas observed throughout the west and northern portions of the site, fill material consisting of buried solid waste within a brown, fine to medium sand and gravel matrix was identified. Solid waste material was heterogeneous and consisted of random distributions of glass, organic fibers, fabric, plastic, automobile tires, coal, ceramics, metal, brick and concrete was observed from surface grade to about 7.5 feet bgs. Groundwater was not encountered during the test pit excavation,but was identified between about 7 to 10 feet bgs at a property located 400 feet southeast of the site during a subsurface investigation performed by Langan.
- Soil: Metals including barium, cadmium, mercury, lead, and zinc were detected at concentrations above Title 6 New York Codes, Rules, and Regulations (NYCRR) Part 375 Unrestricted Use (UU) Soil Cleanup Objectives (SCOs) in soil, with barium, cadmium, lead and mercury exceeding the Restricted Use Restricted-Residential (RRU) SCOs. Barium concentrations also exceeded the Commercial Use SCOs in three soil samples collected from Test Pit 1.

Several semi-volatile organic compounds (SVOC) exceeded the RRU and UU SCOs in soil samples collected from surface grade to 7.5 feet bgs in Test Pit 1. In addition, concentrations of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene were detected in Test Pit 1 at concentrations exceeding both Commercial and Industrial Use SCOs from about 4 to 7.5 feet bgs.

Total polychlorinated biphenyls (PCBs) in two samples collected from shallow fill (Test Pit 1) exceeded UU SCOs. In addition, several pesticides exceeded the UU SCOs in all soil samples collected from the two test pits.

While these detected contaminants are typical of historic fill material, the concentrations at which they were detected are not. The source of contaminant concentrations identified within the soil appears to be the buried solid waste.

<u>January 2019 Phase I Environmental Site Assessment, prepared by Langan</u>

Langan completed a Phase I ESA in January 2019 in general conformance with ASTM International's Standard Practice for Environmental Site Assessments E1527-13 and the USEPA AAI Rule, for the purpose of identifying RECs in connection with the site. The Phase I ESA was prepared 159 Boerum Street (Block 3071, Lot 40).

The following RECs were identified in the Phase I:

REC 1 – SVOC-Impacted Fill at the Subject Property

Langan's October 2018 test pit sampling within the western part of the Subject Property identified fill material consisting of buried solid waste within a brown, fine to medium sand and gravel matrix. Solid waste material was heterogeneous and consisted of random distributions of glass, organic fibers, fabric, plastic, automobile tires, coal, ceramics, metal, brick and concrete. The fill contained SVOCs, pesticides, PCBs, and metals at concentrations above the NYSDEC Part 375 UU and RRU SCOs.

REC 2 – Historical Use of Surrounding Properties

One dry cleaner, Top Hat Cleaners, was identified as a New York State Hazardous Waste Site (SHWS) about 200 feet north and hydraulically upgradient of the Subject Property. The site previously operated as a dry-cleaning facility from as early as 1969. Chlorinated volatile organic compounds (CVOCs) were identified in soil and groundwater at the site and in sub-slab soil vapor samples collected at an off-site property. Impacted groundwater and/or soil vapor may have migrated to the Subject Property.

<u>May 3, 2019 Limited Subsurface Investigation and Analytical Results, prepared by Langan</u>

Langan completed a limited subsurface sampling event to investigate potential soil and groundwater impacts present at the site. The investigation was conducted on May 3, 2019, and included the advancement of 10 soil boings to depths ranging between 12 and 32 feet bgs, installation of one temporary monitoring well at soil boring SB-01, and

collection of soil and groundwater samples. A total of four soil samples and one groundwater sample were submitted for laboratory analysis to Alpha Analytical Inc., an NYSDOH Environmental Laboratory Approval Program (ELAP)-certified laboratory located in Westborough, Massachusetts. Field observations and laboratory analytical results are summarized below:

- Site Geology and Hydrogeology: Historic fill material was encountered beneath the site cover consisting of landscaped areas and/or asphalt and extends to depths varying from about 5 to 9 feet bgs. The historic fill material predominantly consists of gray, black, and brown to dark brown, fine to medium sand with varying amounts of brick, concrete, and silt. The fill layer is underlain by native soils typically consisting of tan to brown, fine- to coarse-grained sand with varying amounts of silt. Organic-like odors and elevated photoionization detector (PID) readings (maximum 72.1 parts per million [ppm]) were observed in SB-06 from 1.5 to 2 feet bgs. Groundwater was encountered in soil boring SB-01 at about 23.5 feet bgs in the northeast portion of the site.

- Soil: Metals including barium, copper, lead, mercury, and zinc were detected at concentrations above UU SCOs in soil samples collected from historic fill, with barium and lead exceeding the RRU SCOs. Barium and lead concentrations also exceeded the Commercial Use SCOs in two samples collected from SB-06 and SB-07. Several SVOCs exceeded the RRU and UU SCOs in soil samples collected from 2 to 4 feet bgs in borings SB-03, SB-06 and SB-07. Concentrations of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene exceeded both the Commercial and Industrial Use SCOs from about 2 to 4 feet bgs. In addition, benzo(k)fluoranthene, fluoranthene, and phenanthrene were detected at concentrations exceeding Commercial Use SCOs from about 2 to 4 feet bgs.

  VOCs including 1,2,4-trimethylbenzene, benzene, ethylbenzene, naphthalene, toluene, and total xylenes exceeded the UU SCOs in soil samples collected from shallow fill (2 to 4 feet bgs) in the northern portion of the site. Concentrations of naphthalene were detected in borings SB-06 and SB-07 (maximum concentration of 3,400 mg/kg in SB-06) above the Commercial and Industrial Use SCOs from about 2 to 4 feet bgs. While these detected contaminants are typical of historic fill material, the concentrations at which they were detected are not. The source of contaminant concentrations identified within the soil are indicative of contamination from historic site uses and/or buried solid waste.

- Groundwater Quality: Dissolved metals including barium, beryllium, chromium, copper, iron, lead, magnesium, manganese, nickel, selenium, and sodium were detected at concentrations above the NYSDEC Title 6 of the Official Part 703.5 and the NYSDEC Technical Operational Guidance Series (TOGS) 1.1.1 Ambient

Water Quality Standards and Guidance Values for Class GA Water (NYSDEC SGV).

5. Investigation and Cleanup Process

Application

The Applicant has applied for and been accepted into New York's Brownfield Cleanup Program as a Volunteer. This means that the Applicant was not responsible for the disposal or discharge of the contaminants or whose ownership or operation of the site took place after the discharge or disposal of contaminants. The Volunteer must fully characterize the nature and extent of contamination onsite, and must conduct a "qualitative exposure assessment," a process that characterizes the actual or potential exposures of people, fish and wildlife to contaminants on the site and to contamination that has migrated from the site.

The Applicant in its Application proposes that the site will be used for restricted residential purposes.

To achieve this goal, the Applicant will conduct investigation and cleanup activities at the site with oversight provided by NYSDEC. The Brownfield Cleanup Agreement executed by NYSDEC and the Applicant sets forth the responsibilities of each party in conducting these activities at the site.

Investigation

The Applicant will conduct an investigation of the site officially called a "remedial investigation" (RI). This investigation will be performed with NYSDEC oversight.

The site investigation has several goals:

1) Define the nature and extent of contamination in soil, surface water, groundwater and any other parts of the environment that may be affected;
2) Identify the source(s) of the contamination;
3) Assess the impact of the contamination on public health and the environment; and
4) Provide information to support the development of a proposed remedy to address the contamination or the determination that cleanup is not necessary.

The Applicant has submitted a draft "Remedial Investigation Work Plan" to NYSDEC for review and approval. NYSDEC made the draft plan available to the public review during a 30-day public comment period.

When the investigation is complete, a Remedial Investigation Report (RIR) will be

prepared and submitted to NYSDEC, which will determine if the investigation goals and requirements of the BCP have been met or if additional work is needed before a remedy can be selected. This report also will recommend whether cleanup action is needed to address site-related contamination. The investigation report is subject to review and approval by NYSDEC.

NYSDEC will use the information in the RIR to determine if the site poses a significant threat to public health or the environment. If the site is a "significant threat," it must be cleaned up using a remedy selected by NYSDEC from an analysis of alternatives prepared by the Applicant and approved by NYSDEC. If the site does not pose a significant threat, the Applicant may select the remedy from the approved analysis of alternatives.

Interim Remedial Measures

An Interim Remedial Measure (IRM) is an action that can be undertaken at a site when a source of contamination or exposure pathway can be effectively addressed before the site investigation and analysis of alternatives are completed. If an IRM is likely to represent all or a significant part of the final remedy, NYSDEC will require a 30-day public comment period.

Remedy Selection

When the investigation of the site has been determined to be complete, the project likely would proceed in one of two directions:

1. The Applicant may recommend in its investigation report that no action is necessary at the site. In this case, NYSDEC would make the investigation report available for public comment for 45 days. NYSDEC then would complete its review, make any necessary revisions, and, if appropriate, approve the investigation report. NYSDEC would then issue a "Certificate of Completion" (described below) to the Applicant.

or

2. The Applicant may recommend in its investigation report that action needs to be taken to address site contamination. After NYSDEC approves the investigation report, the Applicant may then develop a cleanup plan, officially called a "Remedial Work Plan". The Remedial Work Plan describes the Applicant's proposed remedy for addressing contamination related to the site.

When the Applicant submits a draft Remedial Work Plan for approval, NYSDEC would announce the availability of the draft plan for public review during a 45-day public comment period.

Cleanup Action

NYSDEC will consider public comments, and revise the draft cleanup plan if necessary, before approving the proposed remedy. The New York State Department of Health (NYSDOH) must concur with the proposed remedy. After approval, the proposed remedy becomes the selected remedy. The selected remedy is formalized in the site Decision Document.

The Applicant may then design and perform the cleanup action to address the site contamination. NYSDEC and NYSDOH oversee the activities. When the Applicant completes cleanup activities, it will prepare a Final Engineering Report (FER) that certifies that cleanup requirements have been achieved or will be achieved within a specific time frame. NYSDEC will review the report to be certain that the cleanup is protective of public health and the environment for the intended use of the site.

Certificate of Completion

When NYSDEC is satisfied that cleanup requirements have been achieved or will be achieved for the site, it will approve the FER. NYSDEC then will issue a Certificate of Completion (COC) to the Applicant. The COC states that cleanup goals have been achieved,and relieves the Applicant from future liability for site-related contamination, subject to certain conditions. The Applicant would be eligible to redevelop the site after it receives a COC.

Site Management

The purpose of site management is to ensure the safe reuse of the property if contamination will remain in place. Site management is the last phase of the site cleanup program. This phase begins when the COC is issued. Site management incorporates any institutional and engineering controls required to ensure that the remedy implemented for the site remains protective of public health and the environment. All significant activities are detailed in a Site Management Plan.

An *institutional control* is a non-physical restriction on use of the site, such as a deed restriction that would prevent or restrict certain uses of the property. An institutional control may be used when the cleanup action leaves some contamination that makes the site suitable for some, but not all uses.

An *engineering control* is a physical barrier or method to manage contamination. Examples include: caps, covers, barriers, fences, and treatment of water supplies.

Site management also may include the operation and maintenance of a component of the remedy, such as a system that pumps and treats groundwater. Site management continues until NYSDEC determines that it is no longer needed.

Appendix A -
Project Contacts and Locations of Reports and Information

Project Contacts

For information about the site's investigation and cleanup program, the public may contact any of the following project staff:

New York State Department of Environmental Conservation (NYSDEC):

Rafi Alam
Project Manager
NYSDEC Section A, Remedial Bureau B
Division of Environmental Remediation
625 Broadway
Albany, New York 12233
Phone: (518)-402-8606
Email: Rafi.Alam@dec.ny.gov

New York State Department of Health (NYSDOH):

Mark S Sergott
Project Manager
NYSDOH
Empire State Plaza
Corning Tower Room 1787
Albany, NY 12237
Phone: (518) 402-7860
Email: beei@health.ny.gov

Remedial Engineer and Volunteer's Representative

Jason Hayes, P.E.
Langan Engineering
21 Penn Plaza
360 W 31st Street, 8th Floor
New York, New York 10001
Phone: 212-479-5427
Email: jahayes@langan.com

Locations of Reports and Information

The facilities identified below are being used to provide the public with convenient access to important project documents:

Brooklyn Public Library - Bushwick Branch
340 Bushwick Avenue
Brooklyn, NY 11206
(718) 602-1348

Hours

Monday, Tuesday, and Friday:	10 AM – 6 PM
Wednesday:	10 AM – 8 PM
Thursday:	1 PM – 8 PM
Saturday:	10 AM – 5 PM

Brooklyn Community Board 1
435 Graham Avenue
Brooklyn, NY 11211
(718) 389-0009
Email: bk01@cb.nyc.gov
Website: www.nyc.gov/html/bkncb1

Appendix B - Site Contact List

Chief Executive Officer
Mayor Bill de Blasio
City Hall
260 Broadway Avenue
New York, NY 10007

NYC Comptroller
Hon. Scott Stringer
NYC Comptroller
1 Centre Street
New York, NY 10007

NYC Public Advocate
Hon. Jumaane Williams
1 Centre Street
New York, NY 10007

NYC Council
Hon. Antonio Reynoso
NYC Councilmember
244 Union Avenue
Brooklyn, NY 11211

NYS Senator
Hon. Julia Salazaar
NYS Senator
249 South 1st Street
Brooklyn, NY 11237

NYS Assembly Member
Hon. Maritza Davila
NYS Assembly Member
249 Wilson Avenue
Brooklyn, NY 11237

U.S. Senators
Hon. Charles Schumer
780 Third Avenue, Suite 2301
New York, NY 10017

Hon. Kirsten Gillibrand
U.S. Senator
780 Third Avenue, Suite 2601
New York, NY 10017

U.S. House of Representative
Hon. Nydia Velazquez
266 Broadway, Suite 201
Brooklyn, NY 11211

New York City Planning Commission
Marisa Lago, Commissioner
NYC Department of City Planning
120 Broadway, 31st Floor
New York, NY 10271

Borough of Brooklyn, Borough President
Hon. Eric L. Adams
209 Joralemon Street
Brooklyn, NY 11201
(718) 802-3700

Borough of Brooklyn, Department of City Planning
16 Court Street, 7th Floor
Brooklyn, NY 11241

(718) 780-8280

NYC Office of Environmental Remediation
Mark McIntyre, Director
100 Gold Street – 2nd Floor
New York, NY 10038

NYC Department of Environmental Protection
Julie Stein
Office of Environmental Assessment & Planning
NYC Dept. of Environmental Protection
96-05 Horace Harding Expressway
Flushing. NY 11373

Brooklyn Community Board 1
Dealice Fuller, Chairperson
435 Graham Avenue
Brooklyn, NY 11211
(718) 389-0009
Email: bk01@cb.nyc.gov

Nancy T. Sunshine
Kings County Clerk
360 Adams Street – Room 189
Brooklyn, NY 11201

Local news media from which the community typically obtains information:

The Brooklyn Paper
1 Metrotech Center, Suite 1001
Brooklyn, NY 11201
(718) 260-2500

New York Daily News
4 New York Plaza
New York, NY 10004
(212) 210-2100

NY 1 Spectrum News
75 Ninth Avenue
New York, NY 10011
(212) 379-3311

New York Post
1211 Avenue of the Americas
New York, NY 10036

Courier-Life Publications
1 Metrotech Center #10T
Brooklyn, NY 11201

Brooklyn Daily Eagle
16 Court Street, Suite 1208
Brooklyn, NY 11241

The Brooklyn Papers
1 Metrotech Center, Suite 1001
Brooklyn, NY 11201

The public water supplier which services the area in which the property is located:

The responsibility for supplying water in New York City is shared between the NYCDEP, the Municipal Water Finance Authority, and the New York City Water Board:

NYCDEP – Public Water Supplier
Vincent Sapienza, Commissioner
59-17 Junction Boulevard
Flushing, NY 11373

New York City Municipal Water Finance Authority
255 Greenwich Street, 6th Floor
New York, NY 10007

New York City Water Board
NYC Department of Environmental Protection
59-17 Junction Boulevard, 8th Floor
Flushing, NY 11373

Any person who has requested to be placed on the contact list:
No requests have been made by individuals for inclusion on the contact list.

Local Daycare Facilities and Schools:

P.S. 147 Isaac Remsen
(about 0.2 miles east of the site)
Sandra Noyola, Principal
325 Bushwick Avenue
Brooklyn, NY 11206
(718) 497-0326

P.S. 257 John F. Hylan
(about 0.1 miles southeast of the site)
Brian De Vale, Principal
60 Cook Street
Brooklyn, NY 11206
(718) 384-7128

P.S. 250 George H. Lyndsay
(about 0.2 miles northwest of the site)
Roseann Lacioppa, Principal
108 Montrose Avenue
Brooklyn, NY 11206
(718) 384-0889

P.S. 196 Ten Eyck
(about 0.2 miles east of the site)
Janine Santaromita, Principal
207 Bushwick Avenue
Brooklyn, NY 11206
(718) 497-0139

The Williamsburg High School of Art and Technology
(about 0.3 miles north of the site)
Cara Tait, Principal
223 Graham Avenue
Brooklyn, NY 11206
(718) 599-1207

PROGRESS High School for Professional Careers
(about 0.5 miles northeast of the site)
Jasmin Pena, Principal
850 Grand Street
Brooklyn, NY 11211
(718) 387-0228

East Williamsburg Academy
(about 0.5 miles northeast of the site)
Rosemary Vega, Principal
850 Grand Street
Brooklyn, NY 11211
(718) 387-2800

P.S. 018 Edward Bush
(about 0.5 miles northwest of the site)
Alison Alexander, Principal
101 Maujer Street
Brooklyn, NY 11206
(718) 387-3241

The High School for Enterprise, Business and Technology
(about 0.5 miles northeast of the site)
Holger Carillo, Principal
850 Grand Street

The Brooklyn Latin School
(about 0.3 miles northwest of the site)
Gina Mautschke, Principal
223 Graham Avenue
Brooklyn, NY 11206

Brooklyn, NY 11211
(718) 387-2800

P.S. 120 Carlos Tapia
(about 0.4 miles southeast of the site)
Lizabeth Caraballo, Principal
18 Beaver Street
Brooklyn, NY 11206
(718) 455-1000

Bushwick United HDFC 9
(about 0.4 miles south of the site)
741 Flushing Avenue
Brooklyn, NY 11206
(347) 497-3676

Stagg Street Center for Children
(about 0.3 miles northwest of the site)
Ms. Webb, Executive Director
77 Stagg Street
Brooklyn, NY 11206
(718) 338-1395

Creative Academy of NY LLC
(about 0.3 miles northeast of the site)
228 Bushwick Avenue
Brooklyn, NY 11206
(347) 689-2222

Graham Child Care Center
(about 0.3 miles north of the site)
222 Graham Avenue
Brooklyn, NY 11206
(718) 387-9482

Young Women's Leadership School of Brooklyn
(about 0.2 miles east of the site)
(718) 366-0154

Lyons Community School
(about 0.3 miles north of the site)
Karon Onishi, Principal
223 Graham Avenue
Brooklyn, NY 11206
(718) 782-0918

Bushwick United HDFC 4
(about 0.4 miles north of the site)
178 Leonard Street
Brooklyn, NY 11206
(347) 331-0470

Williamsburg Charter High School
(about 0.4 miles southeast of the site)
Tanisha Williams, Principal
198 Varet Street
Brooklyn, NY 11206
(718) 782-9830

Young Garden Day Care
(about 0.5 miles west of the site)
11 Meserole Street
Brooklyn, NY 11206
(347) 987-4720

I.S. 318 Eugenio Maria De Hostos
(about 0.4 miles southwest of the site)
Leander Windley, Principal
101 Walton Street
Brooklyn, NY 11206
(718) 782-0589

Tender Tots Day Care, Preschool & After School Programs
(about 0.4 miles south of the site)

Catherine Mitchell, Principal
325 Bushwick Avenue
Brooklyn, NY 11206
(718) 387-5641

Jenny Nearchou, Director
810 Flushing Avenue
Brooklyn, NY 11206
(718) 298-3944

M.S. 582
(about 0.2 miles northeast of the site)
Jeffrey Merced, Principal
207 Bushwick Avenue
Brooklyn, NY 11206
(718) 456-8218

Acorn Community High School
(about 0.35 miles north of the site)
Andrea Piper, Principal
561 Grand Street
Brooklyn, NY 11211
(718) 455-4635

Central Brooklyn Seventh Day Adventist School
(about 0.07 miles west of the site)
Berlin Pena, Pastor
130 Boerum Street
Brooklyn, NY 11206
(718) 388-9338

BWCCS2 Middle School
(about 0.25 miles southwest of the site)
Joan Walrond, Chair
11 Bartlett Street
Brooklyn, NY 11206
(718) 302-7700

Residents, owners, and occupants of the site:

The site is located at 159 Boerum Street and is identified on New York City Kings County tax maps as Block 3071, Lot 40. The about 11,180-square-foot site is situated on the south-central part of the tax block and is occupied by an open air asphalt parking lot owned by LB II Associates LLC and is surrounded by landscaped areas to the north and south within the property. The Applicant, SPG Boerum LLC, operates the site.

Adjacent properties include:

132 Graham Realty Corp.
131 Graham Avenue
Brooklyn, NY 11206

Jenny Yoo
134 Graham Avenue
Brooklyn, NY 11206

Domenech Nickomedes
136 Graham Avenue
Brooklyn, NY 11206

Dev Realty, LLC
138 Graham Avenue
Brooklyn, NY 11206

Lindsay Bushwick Association
170 Johnson Avenue
Brooklyn, NY 11206

64 Pulaski Equities LLC
130 Graham Avenue
Brooklyn, NY 11206

NYC Housing Authority
125 Humboldt Street
Brooklyn, NY 11206

NYC Housing Authority
160 Boerum Street
Brooklyn, NY 11206

SURCE Corporation
140 Graham Avenue
Brooklyn, NY 11206

64 Pulaski Equities LLC
130 Graham Avenue
Brooklyn, NY 11206

Community, Civic, Religious and Other Environmental Organizations:

Eastern District YMCA
125 Humboldt St
Brooklyn, NY 11206

Central Brooklyn Spanish SDA Church
130 Boerum St
Brooklyn, NY 11206

Antonia Yuille - Director
Consolidated Edison Corporate Affairs
30 Flatbush Avenue
Brooklyn, NY 11217

Raquel Queme - President
90th Police Precinct
211 Union Avenue
Brooklyn, NY 11211

St Nicholas NPC
108 Montrose Ave
Brooklyn, NY 11206

Battalion 35 Engine 216 Ladder 108
187 UNION AVENUE
Brooklyn, NY 11211

NYCHA Borinquen II
Management Development Office
130 Humboldt Street
Brooklyn, NY 11206

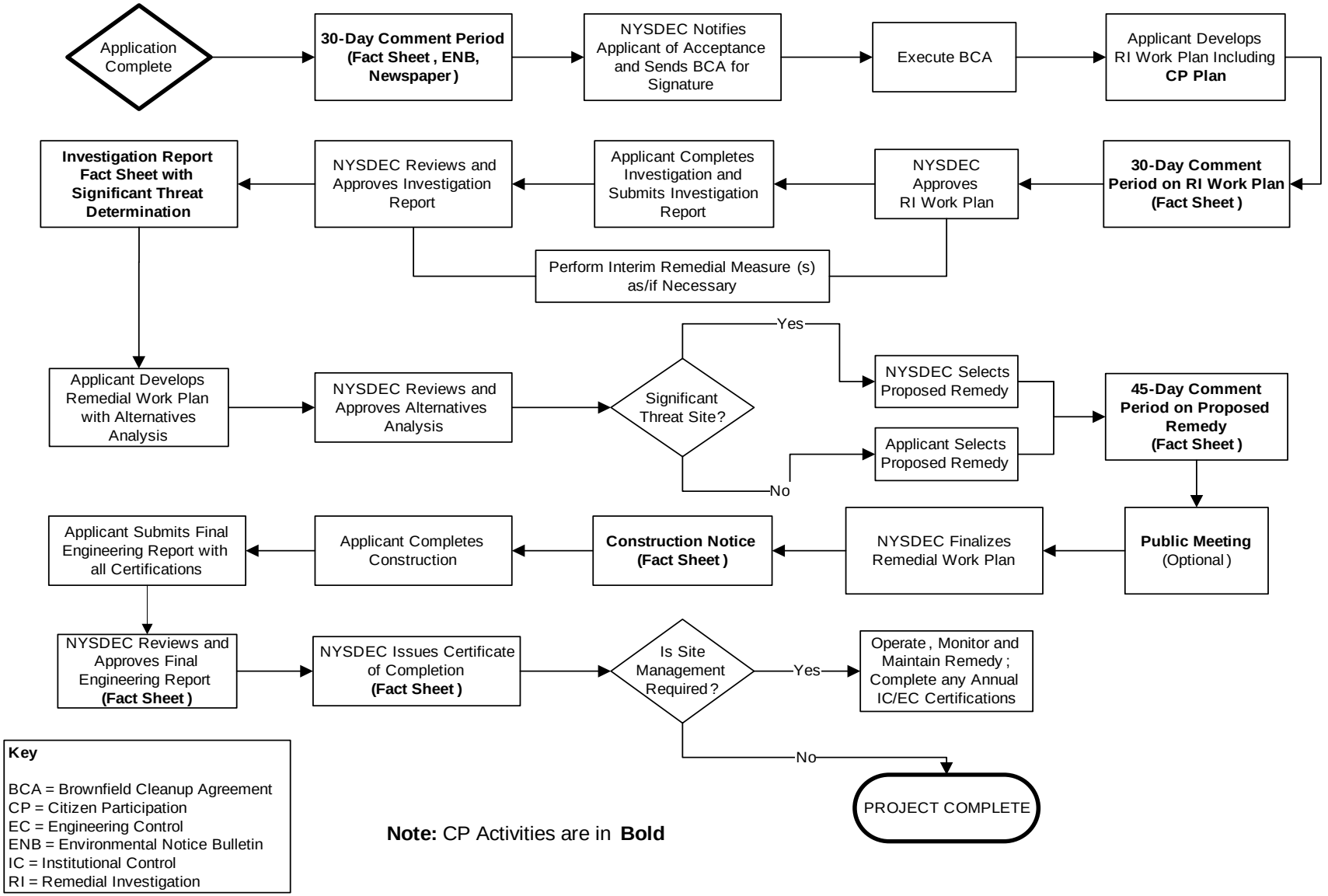
NYCHA Borinquen II
President – Resident Association
130 Humboldt Street
Brooklyn, NY 11206

Eastern District YMCA
Attn: Executive Director
125 Humboldt St
Brooklyn, NY 11206

Lindsay Park Housing Corp
202 Union Ave
Brooklyn, NY 11211

Appendix C - Site Location Map

Appendix D– Brownfield Cleanup Program Process



Key

BCA = Brownfield Cleanup Agreement
CP = Citizen Participation
EC = Engineering Control
ENB = Environmental Notice Bulletin
IC = Institutional Control
RI = Remedial Investigation

Note: CP Activities are in **Bold**

Division of Environmental Remediation

Remedial Programs
Scoping Sheet for Major Issues of Public Concern (see instructions)

Site Name: 159 Boerum Street

Site Number: C224291

Site Address and County: 159 Boerum Street, Brooklyn, NY, 11206

Remedial Party(ies): SPG Boerum LLC

Note: For Parts 1. – 3. the individuals, groups, organizations, businesses and units of government identified should be added to the site contact list as appropriate.

Part 1. List major issues of public concern and information the community wants. Identify individuals, groups, organizations, businesses and/or units of government related to the issue(s) and information needs. **Use this information as an aid to prepare or update the Major Issues of Public Concern section of the site Citizen Participation Plan.**
After a review of previous environmental reports, potential issues of environmental and public concern were identified as: air quality, soil quality, health of workers and community, nuisance odors, noise, and construction-related traffic. These issues will be addressed in the Remedial Action Work Plan (RAWP), a Community Air Monitoring Program (CAMP) and/or a site-specific Health and Safety Plan (HASP) for the project to be approved by the New York State Department of Environmental Conservation (NYSDEC) prior to work. Air monitoring and site controls will be in place, in accordance with NYSDEC and NYSDOH regulations, to minimize the environmental impacts referenced above. In order to inform the public of ongoing environmental investigation and remediation efforts and to help alleviate associated environmental and public health concerns, all reports issued in relation to this project will be stored in the two document repositories for easy public access.

How were these issues and/or information needs identified?
The site was subject to limited-scope environmental investigations in October 2018. The investigations identified soil contamination, including historic fill and metals-impacted soil. Other concerns, such as worker and community health and safety, nuisance odors, noise and construction-related traffic, are predicted to be of concern during remediation of the site.

Part 2. List important information needed **from** the community, if applicable. Identify individuals, groups, organizations, businesses and/or units of government related to the information needed.
No additional information is needed from the community at this time.

How were these information needs identified?
N/A

Part 3. List major issues and information that need to be communicated **to** the community. Identify individuals, groups, organizations, businesses and/or units of government related to the issue(s) and/or information.
The community has been and will continue to be made aware of the following issues and information:

- *Contaminants of concern related to historic site use;*
- *Project contacts and ways to get information;*
- *Components of the selected remedy;*

• *Progress and major project milestones; and*
• *Remediation and construction schedule.*

Information will be communicated to the public as outlined in the Citizen Participation Plan. NYSDEC and NYSDOH contacts are provided in this CPP. Two repositories exist for the public to review documentation.

How were these issues and/or information needs identified?
They were identified through a review of media coverage, public concerns that arose during the BCP application process, available project information, and experience on similar projects.

Part 4. Identify the following characteristics of the affected/interested community. This knowledge will help to identify and understand issues and information important to the community, and ways to effectively develop and implement the site citizen participation plan (mark all that apply):

a. Land use/zoning at and around site:
☒ **Residential** ☐ **Agricultural** ☐ **Recreational** ☒ **Commercial** ☒ **Industrial**

b. Residential type around site:
☒ **Urban** ☐ **Suburban** ☐ **Rural**

c. Population density around site:
☒ **High** ☐ **Medium** ☐ **Low**

d. Water supply of nearby residences:
☒ **Public** ☐ **Private Wells** ☐ **Mixed**

e. Is part or all of the water supply of the affected/interested community currently impacted by the site?
☐ **Yes** ☒ **No**

Provide details if appropriate:
Click here to enter text.

f. Other environmental issues significantly impacted/impacting the affected community?
☐ **Yes** ☒ **No**

Provide details if appropriate:
Not required

g. Is the site and/or the affected/interested community wholly or partly in an Environmental Justice Area?
☒ **Yes** ☐ **No**

h. Special considerations:
☒ **Language** ☐ **Age** ☐ **Transportation** ☐ **Other**

Explain any marked categories in **h:**
All future fact sheets will be translated into Spanish.

Part 5. The site contact list must include, at a minimum, the individuals, groups, and organizations identified in Part 2. of the Citizen Participation Plan under 'Site Contact List'. Are *other* individuals, groups, organizations, and units of government affected by, or interested in, the site, or its remedial program? (Mark and identify all that apply, then adjust the site contact list as appropriate.)

☒ **Non-Adjacent Residents/Property Owners:** See Contact List

☒ **Local Officials:** See Contact List

☒ **Media:** See Contact List

☒ **Business/Commercial Interests:** See Contact List

☐ **Labor Group(s)/Employees:** Click here to enter text.

☐ **Indian Nation:** Click here to enter text.

☒ **Citizens/Community Group(s):** See Contact List

☐ **Environmental Justice Group(s):** Click here to enter text.

☐ **Environmental Group(s):** Click here to enter text.

☒ **Civic Group(s):** See Contact List

☐ **Recreational Group(s):** Click here to enter text.

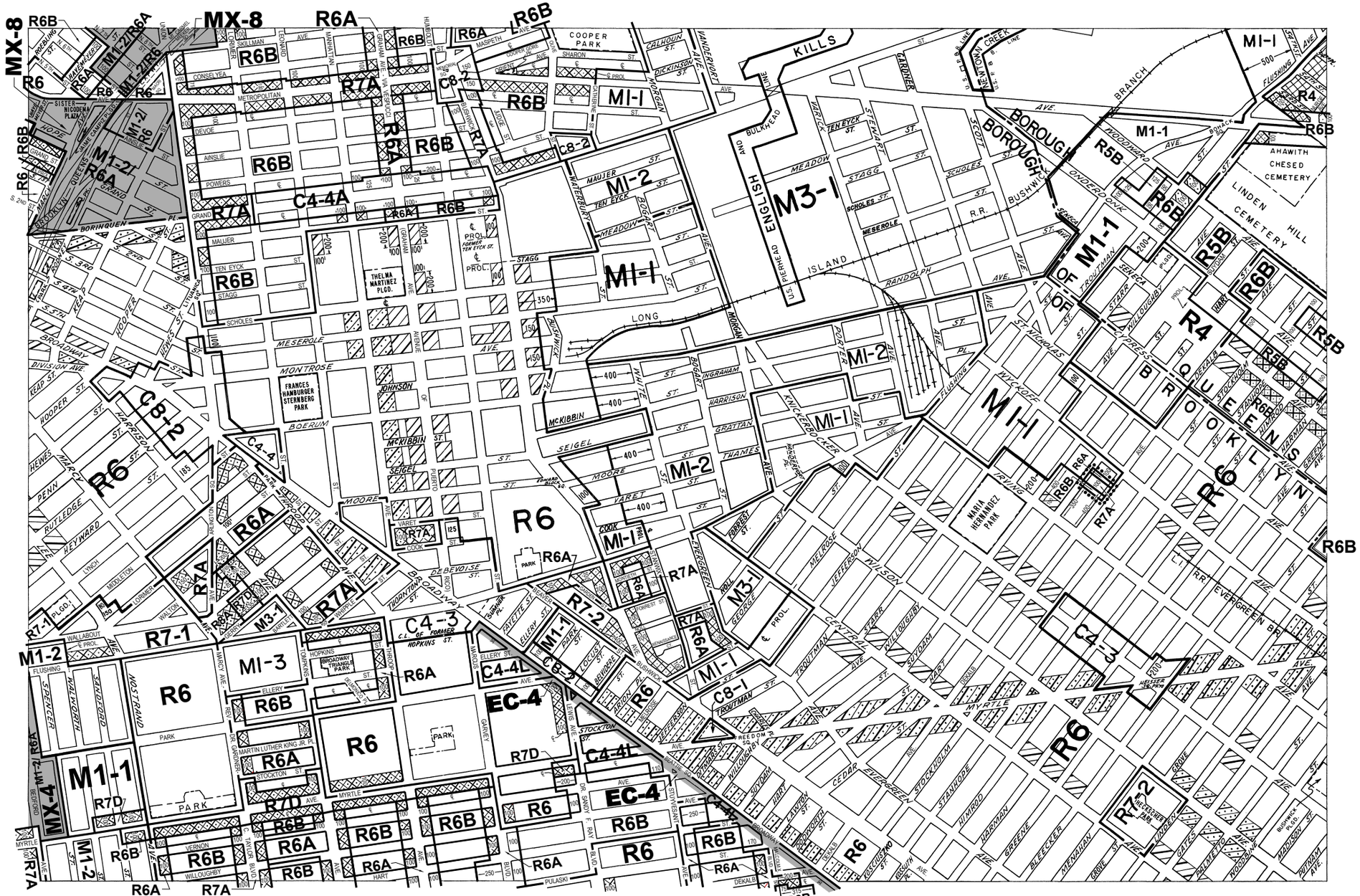
☐ **Other(s):** Click here to enter text.

Prepared/Updated By: Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C — **Date:** July 24, 2019

Reviewed/Approved By: Thomas V. Panzone — **Date:** 8-12-19

APPENDIX F

New York City Planning Commission Zoning Map



C1-1 C1-2 C1-3 C1-4 C1-5 C2-1 C2-2 C2-3 C2-4 C2-5

NOTE: Where no dimensions for zoning district boundaries appear on the zoning maps, such dimensions are determined in Article VII, Chapter 6 (Location of District Boundaries) of the Zoning Resolution.

ZONING MAP

THE NEW YORK CITY PLANNING COMMISSION

Major Zoning Classifications:

The number(s) and/or letter(s) that follows an R, C or M District designation indicates use, bulk and other controls as described in the text of the Zoning Resolution.

R – RESIDENTIAL DISTRICT

C – COMMERCIAL DISTRICT

M – MANUFACTURING DISTRICT

SPECIAL PURPOSE DISTRICT
The letter(s) within the shaded area designates the special purpose district as described in the text of the Zoning Resolution.

AREA(S) REZONED

Effective Date(s) of Rezoning:

09–12–2018 C 180148 ZMK

Special Requirements:

For a list of lots subject to CEQR environmental requirements, see APPENDIX C.

For a list of lots subject to "D" restrictive declarations, see APPENDIX D.

For Inclusionary Housing designated areas and Mandatory Inclusionary Housing areas on this map, see APPENDIX F.

N

MAP KEY

12c	13a	13c
12d	**13b**	13d
16c	17a	17c

ZONING MAP **13b**

NOTE: Zoning information as shown on this map is subject to change. For the most up-to-date zoning information for this map, visit the Zoning section of the Department of City Planning website: **www.nyc.gov/planning** or contact the Zoning Information Desk at (212) 720-3291.

APPENDIX G

PROJECT PERSONNEL RESUMES

JASON J. HAYES, PE, LEED AP

PRINCIPAL/VICE PRESIDENT

ENVIRONMENTAL ENGINEERING

Mr. Hayes has experience in New York, New Jersey, Washington D.C., California, Washington, Oregon, Alaska, and Internationally. His experience includes Environmental Protection Agency (EPA), New York State (NYS) Brownfields applications, investigation, and remediation; New York City Department of Environmental Protection (NYCDEP) and New York City Office of Environmental Remediation (OER) E-designated site applications, investigations, and remediation. His expertise also includes Phase I and II Environmental Site Investigations and Assessments; contaminated building cleanup and demolition; Underground Storage Tank (UST) permitting, removal specifications, and closure reporting; soil vapor intrusion investigation and mitigation system design (depressurization systems, etc.); development of groundwater contaminant plume migration models; environmental analysis; and oversight, design and specification generation for remediation operations with contaminants of concern to include polychlorinated biphenyls (PCBs), solvents, mercury, arsenic, petroleum products, asbestos, mold and lead.

SELECTED PROJECTS

- Confidential Location (Remediation for Mercury-Contaminated Site), New York, NY
- Confidential Location (Phase II ESI and Remedial Design for Mercury Impacted Site), Brooklyn, NY
- NYC School Construction Authority (PCB Remediation), Various Locations, New York, NY
- 28-29 High Line (Phase I ESA, Phase II ESI, and Environmental Remediation), New York, NY
- Georgetown Heating Plant (Phase II ESI and Remedial Design for Mercury Impacted Site), Washington D.C.
- 268 West Street (BCP Application, RI and RIWP), New York, NY
- Confidential Multiple Mixed-Use Tower Location (BCP Application, RI, Phase I ESA, and Phase II ESI), New York, NY
- Dock 72 at Brooklyn Navy Yard, (NYS Voluntary Cleanup Program), Brooklyn, NY
- 27-21 44th Drive (BCP Application, Remedial Investigation Phase I ESA, and Phase II ESI), Long Island City, NY
- Purves Street Development, BCP Application, RAWP, and Phase II ESI, Long Island City, NY
- 267-273 West 87th Street (BCP Application, Remedial Investigation, RIWP, RAWP), New York, NY
- New York Aquarium, Shark Tank and Animal Care Facility (Environmental Remediation), Coney Island, NY
- International Leadership Charter School (Environmental Remediation), Bronx, NY
- West & Watts (BCP Application), New York, NY
- Hudson Yards Redevelopment (Phase I ESA and Phase II ESI), New York, NY

EDUCATION

M.S., Environmental Engineering Columbia University

B.S., Chemistry, Environmental Toxicology Humboldt State University

Business Administration (minor) Humboldt State University

PROFESSIONAL REGISTRATION

Professional Engineer (PE) in NY

LEED Accredited Professional (LEED AP)

Troxler Certification for Nuclear Densometer Training

CPR and First Aid Certification

OSHA 40-Hour HAZWOPER

OSHA HAZWOPER Site Supervisor

AFFILIATIONS

US Green Building Council, NYC Chapter (USGBC), Communications Committee

- 627 Smith Street (RI and Report), Brooklyn, NY
- Gateway Center II Retail (Phase I ESA and Phase II ESI), Brooklyn, NY
- 261 Hudson Street (Phase I ESA, Phase II ESI, BCP, and RAWP), New York, NY
- Riverside Center, Building 2 (BCP, Phase I ESA and Phase II ESI), New York, NY
- New York Police Academy, (Sub-Slab Depressurization and Vapor Barrier System), College Point, NY
- Bronx Terminal Market (BCP, RIWP, RAWP, Phase I ESA and Phase II ESI), Bronx, NY
- Jacob Javits Convention Center (Phase I ESA and Phase II ESI), New York, NY
- Yankee Stadium Development Waterfront Park (NYSDEC Spill Sites), Bronx, NY
- Bushwick Inlet Park (Phase I ESA, Approvals for NYC E-Designation), Brooklyn, NY
- Silvercup West (BCP, RIWP, RIR, RAWP, and RAA), Long Island City, NY
- 29 Flatbush, Tall Residential Building (Groundwater Studies, RIR and RAWP), Brooklyn, NY
- Gowanus Village I (BCP, RIWP and RIR), Brooklyn, NY
- Sullivan Street Hotel (Site Characterization Study and Owner Representation), New York, NY
- Riker's Island Co-Generation Plant (Soil and Soil Vapor Quality Investigations), Bronx, NY
- The Shops at Atlas Park (Sub-Slab Depressurization and Vapor Barrier Design), Glendale, NY
- Memorial Sloan-Kettering Cancer Center (Subsurface and Soil Vapor Intrusion Investigations), New York, NY
- Element West 59th Street (Oversight and Monitoring of Sub-Slab Depressurization and Vapor Barrier Systems), New York, NY
- Teterboro Airport (Delineation and Remedial Oversight of Petroleum-Contaminated Soils), Teterboro, NJ
- Proposed New York JETS Stadium (Phase I ESA), New York, NY
- Former Con Edison Manufactured Gas Plant Sites (Research Reports), New York, NY
- 7 World Trade Center (Endpoint Sampling and Final Closure Report), New York, NY
- Peter Cooper Village, Environmental Subsurface Investigations, New York, NY

Urban Land Institute (ULI), member

Commercial Real Estate Development Associations (NAIOP), member

NYC Brownfield Partnership, member

SELECTED PUBLICATIONS, REPORTS, AND PRESENTATIONS

NYC Mayor's Office of Environmental Remediation – Big Apple Brownfield Workshop – Presented on Soil Vapor Intrusion Remedies (e.g., SSD Systems, Vapor Barriers, Modified HVAC)

New York City Brownfield Partnership – Presented on environmental considerations and complications of the Hudson Yards Development

Waterfront Development Technical Course – Presented on Impacted Waterfront Planning Considerations

MICHAEL D. BURKE, PG, CHMM, LEED AP

PRINCIPAL/VICE PRESIDENT

ENVIRONMENTAL ENGINEERING AND REMEDIATION

Mr. Burke is a geologist/environmental scientist whose practice involves site investigation and remediation, transactional due diligence, environmental site assessments, in-situ remedial technology, and manufactured gas plant (MGP) site characterization and remediation. His additional services include multi-media compliance audits, sub-slab depressurization system design, non-hazardous and hazardous waste management, emergency response, community air monitoring programs, environmental and geotechnical site investigations, and health and safety monitoring. He has experience with projects in the New York State Department of Environmental Conservation (NYSDEC) and New York State Brownfield Cleanup (NYS BCP) Programs; Inactive Hazardous Waste, and Spill Programs, and New York City Office of Environmental Remediation (OER) e-designated and New York City Voluntary Cleanup Program (NYC VCP) sites.

SELECTED PROJECTS

- 227-14 North Conduit Avenue, Industrial Wastewater Compliance, Jamaica, NY
- 420 Kent Avenue, NYS Brownfield Cleanup Program, Brooklyn, NY
- 572 Eleventh Avenue, NYC VCP, New York, NY
- Monian Site A, OER E-Designated Site, New York, NY
- 537 Sackett Street, Gowanus Canal Due Diligence/MGP Site, Brooklyn, NY
- ABC Blocks 25, 26 and 27, NYS Brownfield Cleanup Program Sites, Long Island City, NY
- 432 Rodney Street, NYS Brownfield Cleanup Program, Petroleum and Chlorinated Volatile Organic Compound Investigation and Remediation, Brooklyn, NY
- 787 Eleventh Avenue, NYS Brownfield Cleanup Program Site, New York, NY
- President Street at Gowanus Canal, NYS Brownfield Cleanup Program Site, Brooklyn, NY
- 22-36 Second Avenue at Gowanus Canal, NYS Brownfield Cleanup Program Site, Brooklyn, NY
- 563 Sacket Street, NYS Brownfield Cleanup Program Site, MGP Investigation, and Remediation, Brooklyn, NY
- 156-162 Perry Street, NYS Brownfield Cleanup Program Site, New York, NY
- Christopher and Weehawken Streets, NYS Brownfield Cleanup Program, New York, NY
- Phelps Dodge Block 2529 (Lots 40, 50, and 45), Inactive Hazardous Waste Disposal Site, Maspeth NY
- 42-50 24th Street, NYS Brownfield Cleanup Program Site, Long Island City, NY
- Storage Deluxe (163 6th Street), OER E-Designation Site, New York, NY

EDUCATION

M.S., Environmental Geology
Rutgers University

B.S., Geological Sciences
Rutgers University

B.S., Environmental Science
Rutgers University

PROFESSIONAL REGISTRATION

Professional Geologist (PG) in NY

Certified Hazardous Materials Manager – CHMM No. 15998

LEED Accredited Professional (LEED AP)

OSHA Certification for Hazardous Waste Site Supervisor

OSHA 29 CFR 1910.120 Certification for Hazardous Waste Operations and Emergency Response

NJDEP Certification for Community Noise Enforcement

Troxler Certification for Nuclear Densometer Training

- Prospect Park Redevelopment, Landfill Reclamation, Prospect Park, NJ
- 431 Carroll Street, Gowanus Canal Due Diligence, Brooklyn, NY
- 76 4th Street Property, Gowanus Due Diligence, Brooklyn, NY
- Foxgate/MREC, Due Diligence and Solid Waste Compliance, Central Islip, NY
- 175-225 3rd Street at Gowanus Canal, NYS Brownfield Cleanup Program, Brooklyn, NY
- New York University Tandon School of Engineering, Spill Investigation/Remediation Dual Phase Recovery, and Laser Fluorescence Investigation, Brooklyn, NY
- 2420-2430 Amsterdam Avenue, NYS Brownfield Cleanup Program/Board of Standards and Appeals Variance, New York, NY
- 170 Amsterdam Avenue, NYC VCP, New York, NY
- 538-540 Hudson Street, NYS Brownfield Cleanup Program (Former Gas Station), New York, NY
- 234 Butler Street, Gowanus Canal Due Diligence, Brooklyn, NY
- 550 Clinton Street, NYS Brownfield Cleanup Program E-Designation, Brooklyn, NY
- 111 Leroy Street, OER E-Designation Site, New York, NY
- 335 Bond Street, NYS Brownfield Cleanup Program, New York, NY
- Gowanus Canal Northside, NYS BCP Former Fuel Oil Terminal, Brooklyn, NY
- Multiple Buildings, Major Oil Storage Facility, Gowanus Canal Location, Brooklyn, NY
- 197-205 Smith Street at Gowanus Canal, MGP Due Diligence, Brooklyn, NY
- 450 Union Street at Gowanus Canal, NYS Brownfield Cleanup Program, Brooklyn, NY
- 86 Fleet Place, NYC VCP E-Designation, Brooklyn, NY
- New York University College of Nursing at 433 1st Avenue, NYS BCP, Bronx, NY
- Retail Building at 225 3rd Street, Brooklyn, NY
- 29-37 41st Avenue, NYS Brownfield Cleanup Program, Long Island City, NY
- 43-01 22nd Street, NYS Brownfield Cleanup Program, Long Island City, NY
- Compliance Audit for NYU at Washington Square Park, New York, NY
- Former Watermark Locations, NYS Brownfield Cleanup Program, Chlorinated Volatile Organic Compound Investigation and Remediation; AS/SVE, Brooklyn, NY
- Former Gas Station (1525 Bedford Avenue), Brooklyn, NY
- NYS Brownfield Cleanup Program at 514 West 24th Street, New York, NY
- Gowanus Canal Due Diligence at 76 4th Street, Brooklyn, NY
- Urban Health Plan, Medical Building, NYS Brownfield Cleanup Program CVOC Investigation and Remediation, Bronx, NY
- 420 East 54th Street, NYS Spill Closure, New York, NY
- Equity Residential at 160 Riverside Boulevard, NYS Spill Closure, New York, NY
- 357-359 West Street and 156 Leroy Street, NYC VCP, New York, NY
- Emergency Spill Response at 322 West 57th Street, Investigation and Closure, New York, NY

- Hurricane Sandy, Emergency Response at 21 West Street, New York, NY
- Hurricane Sandy, Emergency Response at 71 Pine Street, New York, NY
- Greenpoint Landing, NYC E-Designation, Brooklyn, NY
- 23-01 42nd Road, NYS Brownfield Cleanup Program, Long Island City, NY
- Greenpoint Waterfront Development, NYS Brownfield Cleanup Program, Brooklyn, NY
- 125th Street and Lenox Avenue, NYC VCP, New York, NY
- Whitehead Realty Solvent Site, Inactive Hazardous Waste site, CVOC
  Investigation and Remediation, Brooklyn, NY
- SunCap Property Group Environmental On-Call Consulting,
  Various Locations, Nationwide
- Consolidated Edison Company of New York, Underground Storage Tank On-Call Contract, Five Boroughs of New York City, NY
- Consolidated Edison Company of New York, Appendix B Spill Sites On-Call Contract, Five Boroughs of New York City, NY
- Meeker Avenue Plume Trackdown Site, Brooklyn, NY
- Distribution Facility, Superfund Redevelopment, Long Island City, NY
- Edison Properties, West 17th Street Development Site (Former MGP Site), New York, NY
- Con Edison on Governors Island, Dielectric Fluid Spill, Investigation and Remediation, New York, NY
- 144-150 Barrow Street, NYS Brownfield Cleanup Program, New York, NY
- West 17th Street Development, NYS Brownfield Cleanup Program, MGP Investigation and Remediation, New York, NY
- Montefiore Medical Center, Emergency Response, PCB Remediation, Bronx, NY
- New York University, 4 Washington Square Village Fuel Oil Remediation, New York, NY
- NYCSCA, Proposed New York City School Construction Sites,
  Five Boroughs of New York City, NY
- Con Edison, East 60th Street Generating Station, New York, NY
- Residential Building at 82 Irving Place, Environmental Remediation, New York, NY
- 1113 York Avenue, Storage Tank Closures, New York, NY
- Peter Cooper Village/Stuyvesant Town, Phase I ESA, New York, NY
- Superior Ink, Waste Characterization and Remedial Action Plans, New York, NY
- Bronx Mental Health Redevelopment Project, Phase I ESA, Bronx, NY
- 2950 Atlantic Avenue, Site Characterization Investigation, Brooklyn, NY
- Con Edison, East 74th Street Generating Station, Sediment Investigation, New York, NY
- Con Edison, First Avenue Properties, New York, NY
- Queens West Development Corp. Stage II, Long Island City, NY
- Article X Project Environmental Reviews, Various New York State Electrical Generation Sites, NY
- Poletti Generating Station, Astoria, NY
- Arthur Kill Generating Station, Staten Island, NY

- Distribution Facility, Phase I & Phase II ESA and Regulatory Compliance, Bohemia, NY
- Huntington Station Superfund Due Diligence, Huntington Station, NY
- Garvies Point Bulkhead, Glen Cove, NY
- Johnson & Hoffman Metal Stamping Facility, Environmental Compliance, Carle Place, NY
- Floral Park Storage Facility, Phase I and Phase II ESA
- Garden City Phase I ESAs at two sites, including part of a Superfund Site, Garden City, NY
- Huntington Station Storage Facility, Phase I and II ESA, Huntington Station, NY

BRIAN GOCHENAUR, QEP

SENIOR PROJECT MANAGER

ENVIRONMENTAL SCIENTIST

Mr. Gochenaur is an environmental project manager whose experience includes environmental due diligence, site investigation and remediation, fuel oil storage tank investigation and removal, soil vapor intrusion assessments, in-situ remedial technology, spill closure, vapor barrier and sub-slab depressurization system design and construction, emergency response, environmental and geotechnical site investigations, and health and safety monitoring. He has extensive experience with the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup, Voluntary Cleanup and Spill Programs and New York City Department of Environmental Protection (NYCDEP) "E" Designated and New York City Voluntary Cleanup Program (BCP) sites. His areas of expertise include Phase I Environmental Site Assessments, Phase II Site Investigations, and environmental consulting and oversight on large scale construction projects.

EDUCATION

B.S., Environmental Science
University of Florida

PROFESSIONAL REGISTRATION

Qualified Environmental Professional (QEP) certified by the Institute of Professional Environmental Practice

40-Hour OSHA (HAZWOPER)

SELECTED PROJECTS

- 440 Washington Street, E-Designated services, New York, NY
- 3514 Surf Avenue, Tall Residential and Retail Building, Brooklyn, NY
- ARO 242 West 53, Tall Residential Building, New York, NY
- NY Aquarium Shark Exhibit, Soil Characterization and Excavation Oversight, Coney Island Neighborhood, Brooklyn, NY
- 60 West Street, Site Investigation and Redevelopment, Brooklyn, NY
- 535 4th Avenue, BCP Auto Repair Cleanup and Redevelopment, Brooklyn, NY
- 1525 Bedford Avenue, BCP Gas Station Cleanup and Redevelopment, Brooklyn, NY
- 220 Eleventh Avenue, Residential Building, New York, NY
- 432 Rodney Street, Residential Building, Brooklyn, NY
- 563 Sackett Street, Brooklyn, NY
- 362 West 125th Street, Residential Building, New York, NY
- Bedford Armory Redevelopment, Brooklyn, NY
- 268 West Street, BCP Redevelopment of Former Commercial and Industrial Site, New York, NY
- 110 125th Street, Soil Excavation and Remediation, New York, NY
- Former Roseland Ballroom Redevelopment, Soil Characterization and Excavation Oversight, New York, NY
- 42 Crosby Street, "E" Designated Site Investigation and Remediation, New York, NY
- New York School Construction Authority, Various Locations, In-House Environmental Consulting, Five Boroughs of New York City
- EZ Serve Portfolio, GE Capital, Various Phase II Site Investigations, FL, GA, LA, and MS
- Beth Elohim Child Daycare Center, Lead Based Paint Abatement, Brooklyn, NY
- Price Battery, Environmental Protection Agency (EPA) Lead Fallout Superfund Site, Hamburg, PA

- Clark Portfolio, GE Capital, Various Phase II Locations, MI, IL, ID, and OH
- Tops Plaza Portfolio, Prudential Real Estate Investors, Various Phase II Locations, NY
- Cingular Wireless Portfolio, Cingular Wireless, Various Locations Phase I and II Locations, WA
- Queens Center Mall Expansion, Remedial Oversight, Elmhurst, NY
- Soka Gakkai International-USA, Cultural Center, Brooklyn, NY

WILLIAM BOHRER, PG

PROJECT GEOLOGIST

GEOLOGIST

Mr. Bohrer is an experienced geologist responsible for managing Langan's environmental standards and Health and Safety compliance for projects throughout New York City. His services include dissemination of environmental protocols, troubleshooting at project sites, in-house/field training, and maintenance of quality standards across the environmental discipline. Mr. Bohrer has a diverse and extensive background in geophysics, hydrogeology, mining and petroleum, and geotechnical engineering. He has developed conceptual site models for public, industrial and commercial facilities nationwide.

SELECTED PROJECTS

- NYU Poly – 122 Johnson Street, Brooklyn, NY
- Con Edison of New York at Governor's Island, NY, NY
- 535 4th Avenue, Brooklyn, NY
- 27 Wooster Street, New York, NY
- 42 West Street, Brooklyn, NY
- 455 West 19th Street, New York, NY
- Kings Plaza Mall, Brooklyn, NY
- Hudson Yards "Terra Firma", New York, NY
- Hudson Yards, Platform Special Inspection, New York, NY
- PSAC II, Bronx, NY
- 595-647 Smith Street, Brooklyn, NY
- New York University, 7-13 Washington Square North Investigation, New York, NY
- NYU 4 Washington Square Village, New York, NY
- 125th Street and Lenox Avenue, New York, NY
- Sullivan Street Development, New York, NY
- Hudson Crossing II, New York, NY
- New York Aquarium, Shark Tank & Animal Care Facility, Brooklyn, NY
- 209-219 Sullivan Street, New York, NY
- 261 Hudson Street, New York, NY
- 460 Washington Street, New York, NY
- 552 West 24th Street, New York, NY
- Brooklyn Bridge Park Pier 1, New York, NY
- International Leadership Bronx Charter School, Bronx, NY
- 203 East 92nd Street, New York, NY
- HighLine 28-29, New York, NY
- 539 Smith Street Bulkhead, Brooklyn, NY
- Willets Point, Corona, NY
- Plume Migration and Fracture Flow Aquifer Investigation, Brunswick, MD
- Plume Migration and Fracture Flow Aquifer Investigation, Fallston, MD
- Emergency Response Site Investigation & Remediation, Wappingers Falls, NY
- Emergency Response Site Investigation & Remediation, Allentown, PA

EDUCATION

Post Graduate Studies in Geophysics
Cornell University

B.S., Geology
Tufts University

PROFESSIONAL REGISTRATION

Professional Geologist (PG) in NY

40 Hour OSHA HazWOPER

OSHA Construction Safety & Health

OSHA Supervisory Certification Credential (TWIC)

Transportation Worker Identification

NYS DEC- Protecting New York's Natural Resources with Better Construction Site Management

AFFILIATIONS

American Association of Petroleum Geologists

National Groundwater Association

Geological Society of America

- Emergency Response Site Investigation & Remediation, Shamokin, PA
- Bermuda International Airport, Jet Fuel Release Investigation, Bermuda
- Little Missouri River Basin, Geotechnical Site Evaluation (Horizontal Drilling Pipeline Install), ND
- Seismic Susceptibility Evaluation (Class 2 Injection Wells), Litchfield, OH
- Bedrock Mapping, Bradford and Sullivan Counties, PA
- Soil Solidification, Carteret, NJ

PA Council of Professional Geologists

EMILY L. SNEAD, PG

PROJECT SCIENTIST

ENVIRONMENTAL ENGINEERING

Ms. Snead brings field experience and technical expertise to environmental investigations and remediation projects. She has independently performed Phase I and Phase II assessments and investigations, UST removals and closures, remedial excavations, vapor extractions, and ISCO injections. She excels at project research, environmental sampling, remedial oversight, proposal and report preparation. Her projects have included hospital centers, day care facilities, residential buildings, chemical plants, and commercial/industrial sites throughout New York City and the Tri-State area. Prior to her career in Environmental Consulting, Ms. Snead conducted research with NASA and performed construction oversight management in the Cayman Islands.

SELECTED PROJECTS

- Silvercup West, Brownfield Cleanup Site, Long Island City, NY
- Highline 28-29 Development, PCE-Contaminated Soil Delineation and Implementation of Bioaugmentation Remediation, New York, NY
- 295 Locust Avenue, Soil Excavation/Trucking, Monitoring Well Decommissioning, Groundwater Sampling and SMP inspections, Bronx, NY
- Hotel Trades Union (620 Fulton Street), Hazardous Lead Soil removal, UST closure and Soil Management Report Brooklyn, NY
- 743 Fifth Avenue, Soil Management Report, New York, NY
- Suncap Facility, UST Investigations and Test Pit Explorations, Yonkers, NY
- New York University (383 Lafayette Street), Hazardous Lead Soil Removal and UST Closure New York, NY
- 601 Washington Street, Remedial Excavation, Groundwater ISCO Treatment, and Installation of an Active SMD System, New York, NY
- NYC OER E-Designated site (50 Hudson Yards/2 Hudson Boulevard), Remedial Investigation, Remedial Excavation Oversight, and Closure Reporting, New York, NY
- Riverside Center Parcel 1, VCP Site Remedial Excavation, UST Closure, Spill Investigation and Closure, and Reporting, New York, NY
- Riverside Center Parcels 3 and 4, VCP Site Remedial Excavation, UST Closure, New York, NY
- Bronx Terminal Market, Triennial SMP Reporting and Annual Inspections, Bronx, NY
- 616 First Avenue, VCP Program Includes Remedial Excavation Oversight, SMP Annual Inspections, Reporting, New York, NY
- Luxury Car Dealership (787 Eleventh Avenue), Spill Investigation and UST Closure, New York, NY
- 335 Bold Street, Phase II and BCP Application, Brooklyn, NY
- President Street Properties, Phase II Investigation and BCP Application, Brooklyn, NY
- 38-01 Queens Boulevard Due Diligence, Long Island City, NY

EDUCATION

B.S., Environmental Science & Geology
Northeastern University

PROFESSIONAL REGISTRATION

Professional Geologist (PG) in NY

40-Hour OSHA HAZWOPER

8-Hour OSHA HAZWOPER Refresher

10-Hour OSHA Construction Safety Training

DOT Hazardous Materials Shipping Training

First Aid/ CPR Training

AFFILIATIONS

NAIOP New York City Chapter, member

Urban Land Institute (ULI), Member

- 250 Water Street, Phase II Investigation, New York, NY
- 139 East 56th Street, Joint Geotechnical and Environmental Waste Characterization, New York, NY
- Le Soleil d'Or Boutique Hotel, Cayman Brac, Cayman Islands
- Columbia University Medical Center, Phase I and II Environmental Site Investigation Nursing School, New York, NY
- Consolidated Edison of NY, Remedial Investigation and RIR Investigation, New York, NY
- 11-09 Borden Avenue, MTA Bridges and Tunnels/Borden Avenue ISCO Remediation, Disposal of Petroleum-Impacted Soil, Long Island City, NY
- Columbia University Medical Center, Removal of a 1,000-gal UST and Closure Report, New York, NY
- Children's Aid Society (910 East 172nd Street), Oversight of the VEFR and Collection of Groundwater Samples New York, NY
- New York City Housing Authority, Community Air Monitoring Program and Environmental Oversight, Bronx, NY
- YRC Freight Newtown Creek EPA RFI, Brooklyn, NY
- 522-532 West 29th Street Redevelopment, Phase II Site Investigation and RAWP New York, NY
- Memorial Sloan-Kettering Cancer Center Ambulatory Surgery Building, Community Air Monitoring Program, New York, NY
- Keith Hilltop Terrace Apartments, Phase I and II Environmental Site Assessment, Altoona, PA
- Southern Boulevard Phase II ESA, Bronx, NY
- Former Auto Dealership, Remedial Investigation and Delineation of Polycyclic Aromatic Hydrocarbons (PAHs), Paramus, NJ
- 711 11th Avenue, Former Auto Dealership, Chrysler Group LLC, Phase I and Limited Phase II Due Diligence Investigation, New York, NY
- 37-14 36th Street, Field Investigations Silver Star-Mercedes Benz, Long Island City, NY
- Otto Pehle Park, Bergen County Health Department, Groundwater Sampling and Ecological Surveys, Paramus, NJ
- Bay Park Brownfield Redevelopment, Installation of Sub-Slab Depressurization System, Coney Island, Brooklyn, NY
- PQ Corporation, Oversight of Remedial Action Field Activities, Rahway, NJ
- Post-Graduate Center for Mental Health (304 Echo Place), Phase I and Limited Phase II Due Diligence Investigation, Bronx, NY
- Air Quality Monitoring, Sweeny & Conroy, Inc., New York, NY
- Former Auto Dealership, Chrysler Group LLC, Phase I and Limited Phase II Due Diligence Investigation, New York, NY
- New York Life Investment Management, Phase II Environmental Site Assessment, Jessup, MD
- 366 Broadway, Former Brunswick Hospital Campus, 25,000-Gallon UST Removal, Amityville, NY

EMILY G. STRAKE

PROJECT CHEMIST / RISK ASSESSOR

ENVIRONMENTAL ENGINEERING

Ms. Strake has 17 years of environmental chemistry, risk assessment, auditing, and quality assurance experience. Most recently, she has focused her efforts on human health risk assessment, and has been the primary author or key contributor of risk assessment reports and screening evaluations for projects governed under RCRA, CERCLA, NJDEP, DNREC, SWRCB, DTSC, PADEP, CTDEEP, ODEQ, NYSDEC and MDE. She has experience in site-specific strategy development, which has enabled her to perform assessments to focus areas of investigation and identify risk-based alternatives for reducing remediation costs. Ms. Strake is a member of the Interstate Technology and Regulatory Council Risk Assessment Team responsible for the development and review of organizational risk assessment guidance documents and serves as a National Trainer in risk assessment for the organization.

Ms. Strake has extensive experience in environmental data validation, focused on ensuring laboratory deliverables follow specific guidelines as described by regulatory agencies and the analytical methods employed. In addition, she has experience in EQuIS chemical database management. She also has a broad range of environmental field experience and maintains current OSHA HAZWOPER certification. Ms. Strake is experienced in auditing laboratory and field-sampling activities for compliance with Quality Assurance Project Plans (QAPPs), the National Environmental Laboratory Accreditation Conference Standards Quality Systems manual, and applicable USEPA Guidance. Ms. Strake has also audited on-site laboratories in support of groundwater treatment operations and implemented corrective actions. Her responsibilities include writing reports on the value of laboratory work, writing/editing QAPPs for clients and project-specific sites, peer reviewing colleague's work, and mentoring staff within the office. She has also served as the Quality Assurance officer for several long-term projects, responsible for the achievement of all forms of Quality Control/Quality Assurance by onsite personnel relating to sampling, analysis, and data evaluation.

SELECTED PROJECTS

- Sunoco Refineries, Various Locations
- PECO/Exelon, Various Locations
- Avon, Rye, NY
- Honeywell, Highland Park, NJ
- Delaware City Refinery, DE
- Major League Soccer's San Jose Earthquakes Stadium, Santa Clara, CA
- DuPont, Waynesboro, VA
- Texas Instruments, San Francisco, CA
- Regency, Philadelphia, PA
- Veteran's Affairs, Palo Alto, CA
- DOW Chemical, Various Locations
- Golden Gate National Parks Conservancy, San Francisco, CA
- Occidental Chemical, Bakersfield, CA

EDUCATION

MBA
The University of Scranton

B.S., Chemistry
Cedar Crest College

PROFESSIONAL REGISTRATION

Board Certified Environmental Professional (CEP)

TRAINING

40 HR OSHA HAZWOPER Training/Nov 2002

8 HR HAZWOPER Supervisor/June 2004

8 HR OSHA HAZWOPER Refresher/2013

AFFILIATIONS

The Society for Risk Analysis

Interstate Technology and Regulatory Council

- Floreffe Terminal, Pittsburgh, PA
- Ryder, Hartford, CT
- Rohm and Haas, Philadelphia, PA

Anthony Moffa, Jr., ASP, CHMM, COSS

Associate/Corporate Health and Safety Manager

20 years in the industry

Mr. Moffa is Langan's Corporate Health & Safety Manager and is responsible for managing health and safety compliance in all Langan office locations. He has over 20 years' experience in the health and safety field. He is responsible for ensuring compliance with all federal and state occupational health and safety laws and development and implementation of corporate health and safety policies. Responsibilities include reviewing and updating Langan's Corporate Health and Safety Program and assisting employees in the development of site specific Health & Safety Plans. He maintains and manages health and safety records for employees in all Langan office locations including medical evaluations, respirator fit testing, and Hazardous Waste Operations and Emergency Response training. He is also responsible for documentation and investigation of work-related injuries and incidents and sharing this information with employees to assist in the prevention of future incidents. He is also the chairman of the Corporate Health & Safety Committee and Health & Safety Leadership Team that meet periodically throughout the year. He is responsible for coordinating and providing health and safe training to Langan employees. He was formerly the Environmental, Health and Safety Coordinator at a chemical manufacturer. His experience included employee hazard communications, development of material safety data sheets for developed products, respirator fit testing and conducting required Occupational Health & Safety Association and Department of Transportation training.

Selected Projects

Verizon - Pennsylvania, Inc. Philadelphia Naval Yard, PA
Confidential Client, Philadelphia, PA
Penn Color, Doylestown, PA
Verizon - Pennsylvania, Inc., Phase I Environmental Assessment, Lansdowne, PA
Verizon - Pennsylvania, Inc. (formerly Bell Atlantic Corporation), Various Locations, PA
Kinder Morgan Bulk Terminals, Inc. Fairless Hills, PA
PP&L – Martins Creek, Bangor, PA
Concord Beverage Company, Concordville, PA
Penn Color, Hatfield, PA
National Starch & Chemical Company, Bloomfield, NJ
Air Products and Chemicals, Inc.., Middlesex, NJ
PSEG Services Corporation, Jersey City, NJ
Sampson Coatings, Richmond, VA
Custom Chemicals Corporation, Elmwood Park, NJ

Education

B.S., Physics
West Chester University

Professional Registration

Associate Safety Professional (ASP)

Certified Hazardous Material Manager (CHMM)

Certified Occupational Safety Specialist (COSS)

Affiliations

Pennsylvania Chamber of Business & Industry

Chemical Council of New Jersey

New Jersey Business & Industry Association

Geoprofessional Business Association

Certifications and Training

Hazardous Waste Operations and Emergency Response Training

OSHA Site Supervisor Training

10 & 30-Hour Construction Safety & Health Training

30-Hour Construction Safety & Health Training

10-Hour Industry Safety & Health Training

Confined Space Awareness & Entry

Competent Person in Excavations

Hazard Communications

Defensive Driving Training

LANGAN

APPENDIX H

QUALITY ASSURANCE PROJECT PLAN

QUALITY ASSURANCE PROJECT PLAN

159 Boerum Street

Brooklyn, New York

Prepared For:

SPG Boerum LLC
c/o Slate Property Group
38 East 29th Street, 9th Floor
New York, New York

Prepared By:

Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
21 Penn Plaza
360 West 31st Street, 8th Floor
New York, New York 10001

November 8, 2019
Langan Project No. 170552901

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FIGURES

ATTACHMENTS

1.0 PROJECT DESCRIPTION

1.1 INTRODUCTION

This Quality Assurance Project Plan (QAPP) is for the property located at 159 Boerum Street in the East Williamsburg neighborhood of Brooklyn, New York (the site), and is identified as Tax Block 3071, Lot 40, on the Brooklyn Borough Tax Map . The about 11,180-square-foot subject property is situated on the south-central part of the tax block and is occupied by an open air asphalt parking lot surrounded by landscaped areas to the north and south within the property. The tax block is bound by Johnson Avenue to the north, Humboldt Street to the east, Boerum Street to the south, and Avenue of Puerto Rico (Graham Avenue) to the west. Additional site information, including site maps, is provided in the NYSDEC-approved August 29, 2019 Remedial Investigation Work Plan (RIWP) and Remedial Action Work Plan (RAWP).

This QAPP specifies analytical methods to be used to ensure that data from the proposed Remedial Action (RA) at the Site are precise, accurate, representative, comparable, and complete.

1.2 PROJECT OBJECTIVES

The environmental objectives of this RAWP are to achieve a Track 1 cleanup under the New York State Brownfield Cleanup Program which includes the following:

- Excavation as described herein and off-site disposal of soil/fill to about 16 feet below grade surface (bgs) site-wide and disposal of a hazardous lead hot-spot area.
- Prevent ingestion and direct contact with contaminated soil.
- Prevent impacts to biota from ingestion and direct contact with the contaminated soil.

These objectives have been established in order to protect public health and the environment for the anticipated residential use development at the Site.

1.3 SCOPE OF WORK

Implementation of the Remedial Action (RA) is described in detail in the RAWP. All remedial work will be overseen by Langan on behalf of SPG Boerum, LLC. The Proposed RA consists of the following:

- Development and implementation of a Construction Health and Safety Plan (CHASP) and Community Air Monitoring Plan (CAMP) for the protection of on-site workers, community/residents, and environment during remediation and construction activities.
- Construction of the support of excavation (SOE) system to facilitate the Track 1 remediation.
- Implementation of soil erosion, pollution and sediment control measures in compliance with applicable laws and regulations.
- Excavation, stockpiling, off-site transport, and disposal of about 7,000 cubic yards of historic fill and native soil that exceeds Unrestricted Use (UU) Soil Cleanup Objectives (SCOs) as defined by 6 NYCRR Part 375-6.8.
- Excavation and disposal of lead chromium hotspot, to a depth of up to eight feet bgs. This area covers a roughly 18-foot by 15-foot area.
- Removal of any encountered USTs and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) and decommissioning/ disposal off-site during site redevelopment in accordance with DER-10, 6 NYCRR Part 613.9, NYSDEC CP-51, and other applicable NYSDEC UST closure requirements.
- Screening for indications of contamination (by visual means, odor, and monitoring PIDs) of excavated material during intrusive site work.
- Appropriate off-site disposal of material removed from the site in accordance with federal, state and local rules and regulations for handling, transport, and disposal.
- Backfilling of remediated areas to development sub-grade with certified-clean material (i.e., material meeting UU SCOs), virgin stone, or recycled concrete aggregate (RCA).
- Collection and analysis of documentation soil samples in accordance with DER-10 to confirm a Track 1 remedy was achieved; over-excavation would be required as necessary to meet Track SCOs.
- Development and execution of plans for the protection of on-site workers, the community, and the environment during the remediation phase of development.

2.0 DATA QUALITY OBJECTIVES AND PROCESS

Data Quality Objectives (DQOs) are qualitative and quantitative statements to help ensure that data of known and appropriate quality are obtained during the project. The quality of the data must be sufficient to fulfill the overall objective of the RA.

The DQO process is an iterative process where various options for implementing a project are explored, dissected, and recombined. The feasibility and costs of various options are estimated, and then the most advantageous option is selected and developed into project work plans that will be implemented.

DQOs for sampling activities are determined by evaluating five factors:

- Data needs and uses: The types of data required and how the data will be used after it is obtained.
- Parameters of Interest: The types of chemical or physical parameters required for the intended use.
- Level of Concern: Levels of constituents, which may require remedial actions or further investigations, based on comparison to Title 6 of the Official Compilation of New York Codes, Rules and Regulations Part 375 NYSDEC Unrestricted Use Soil Cleanup Objectives for soil samples and to the October 2006 (updated in May 2017) New York State Department of Health (NYSDOH) Guidance for Evaluating Soil Vapor Intrusion in the State of New York Air Guideline Values and Decision Matrices for soil vapor samples.
- Required Analytical Level: The level of data quality, data precision, and QA/QC documentation required for chemical analysis.
- Required Detection Limits: The detection limits necessary based on the above information.

The investigation will be evaluated using the DQO process on an individual, task-specific basis. DQOs and the required level of review will be determined during this process.

3.0 PROJECT ORGANIZATION

Lagan will arrange data analysis and reporting tasks related to the site sampling. The analytical services will be performed by an Environmental Laboratory Approval Program (ELAP)-certified laboratory. Data validation services will be performed by approved data validation contractor(s).

The required sampling will be conducted by Langan; the analytical services will be performed by Alpha Analytical, Inc. of Westborough, Massachusetts (NYSDOH ELAP certification number 11148). Data validation services will be performed by Emily Strake of Langan.

Resumes for Langan personnel can be found in Attachment A; key contacts for this project are as follows:

SPG Boerum LLC	Jeff Knecht, P.E. Telephone: (646) 439-4000 x207
Langan Project Manager:	Brian Gochenaur, QEP Telephone: (212) 479-5479
Langan Field Team Leader:	Emily Snead, P.G. Telephone: (212) 479-5432
Langan Health & Safety Officer:	Tony Moffa, CHMM Telephone: (215) 491-6500
Langan Quality Assurance Manager:	Michael Burke, PG, CHMM Telephone: (212) 479-5413
Langan Data Validator:	Emily Strake, CEP Telephone: (215) 491-6526
Laboratory Representative:	Alpha Analytical, Inc. Ben Rao Telephone: (201) 812-2633

4.0 QUALITY ASSURANCE OBJECTIVES FOR COLLECTION OF DATA

The overall quality assurance objective is to develop and implement procedures for sampling, laboratory analysis, field measurements, and reporting that will provide data of sufficient quality to evaluate the engineering controls on the Site. The sample set, chemical analysis results, and interpretations must be based on data that meet or exceed quality assurance objectives established for the Site. Quality assurance objectives are usually expressed in terms of precision, accuracy or bias, representativeness, completeness, comparability, and sensitivity of analysis. Variances from the quality assurance objectives at any stage of the investigation will result in the implementation of appropriate corrective measures and an assessment of the impact of corrective measures on the usability of the data.

4.1 PRECISION

Precision is a measure of the degree to which two or more measurements are in agreement. Field precision is assessed through the collection and measurement of field duplicates. Laboratory precision and sample heterogeneity also contribute to the uncertainty of field duplicate measurements. This uncertainty is taken into account during the data assessment process. The following field duplicate precision criteria will be applied:

Soil Samples

- Results greater than 5 times the laboratory RL must have a RPD $\leq$ 50%.
- Results less than 5 times the RL must have an absolute difference $\leq 2\times \pm$RL.

RLs and method detection limits (MDL) are provided in Attachment B.

Laboratory precision is assessed through the analysis of matrix spike/matrix spike duplicates (MS/MSD), laboratory control sample/laboratory control sample duplicates (LCS/LCSD) and subsequent calculation of RPD. For outliers, if additional sample volume is present, the MS/MSD should be reanalyzed and the RPD recomputed. If additional volume is not present, an evaluation will be performed to determine the extent of potential matrix interference.

4.2 ACCURACY

Accuracy is the measurement of the reproducibility of the sampling and analytical methodology. It should be noted that precise data may not be accurate data. For the purpose of this QAPP, bias is defined as the constant or systematic distortion of a measurement process, which manifests itself as a persistent positive or negative deviation from the known or true value. This may be due to (but not limited to) improper sample collection, sample matrix, poorly calibrated analytical or sampling equipment, or limitations or errors in analytical methods and techniques.

Accuracy in the field is assessed through the use of field and trip blanks and through compliance to all sample handling, preservation, and holding time requirements. All field and trip blanks should be non-detect when analyzed by the laboratory. Any contaminant detected in an associated field blank will be evaluated against laboratory blanks (preparation or method) and evaluated against field samples collected on the same day to determine potential for bias.

Laboratory accuracy is assessed by evaluating the percent recoveries of MS/MSD samples, LCS/LCSD, surrogate compound recoveries, internal standard area counts, initial and continuing calibrations, and the results of method, initial and continuing calibration blanks. MS/MSD, LCS/LCSD, and surrogate percent recoveries will be compared to either method-specific control limits or laboratory-derived control limits. Sample volume permitting, samples displaying outliers should be reanalyzed. All associated method blanks should be non-detect when analyzed by the laboratory.

4.3 REPRESENTATIVENESS

Representativeness expresses the degree to which data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition within a defined spatial and/or temporal boundary. Representativeness is dependent upon the adequate design of the sampling program and will be satisfied by ensuring that the scope of work is followed and that specified sampling and analysis techniques are used. This is performed by following applicable standard operating procedures (SOPs) and this QAPP. All field technicians will be given copies of appropriate documents prior to sampling events and are required to read, understand, and follow each document as it pertains to the tasks at hand.

Representativeness in the laboratory is ensured by compliance with nationally-recognized analytical methods, meeting sample holding times, and maintaining sample integrity while the samples are in the laboratory's possession. This is performed by following all applicable analytical methods, laboratory-issued SOPs, the laboratory's Quality Assurance Manual, and this QAPP. The laboratory is required to be properly certified and accredited.

4.4 COMPLETENESS

Laboratory completeness is the ratio of total number of samples analyzed and verified as acceptable compared to the number of samples submitted to the fixed-base laboratory for analysis, expressed as a percent. Three measures of completeness are defined:

- Sampling completeness, defined as the number of valid samples collected relative to the number of samples planned for collection;

- Analytical completeness, defined as the number of valid sample measurements relative to the number of valid samples collected; and

- Overall completeness, defined as the number of valid sample measurements relative to the number of samples planned for collection.

Soil data will meet a 90% completeness criterion. If the criterion is not met, sample results will be evaluated for trends in rejected and unusable data. The effect of unusable data required for a determination of compliance will also be evaluated.

4.5 COMPARABILITY

Comparability is an expression of the confidence with which one data set can be compared to another. Comparability is dependent upon the proper design of the sampling program and will be satisfied by ensuring that the sampling plan is followed and that sampling is performed according to the SOPs or other project-specific procedures. Analytical data will be comparable when similar sampling and analytical methods are used as documented in the QAPP. Comparability will be controlled by requiring the use of specific nationally-recognized analytical methods and requiring consistent method performance criteria. Comparability is also dependent on similar quality assurance objectives. Previously collected data will be evaluated to determine whether they may be combined with contemporary data sets.

4.6 SENSITIVITY

Sensitivity is the ability of the instrument or method to detect target analytes at the levels of interest. The project manager will select, with input from the laboratory and QA personnel, sampling and analytical procedures that achieve the required levels of detection and QC acceptance limits that meet established performance criteria. Concurrently, the project manager will select the level of data assessment to ensure that only data meeting the project DQOs are used in decision-making.

Field equipment will be used that can achieve the required levels of detection for analytical measurements in the field. In addition, the field sampling staff will collect and submit full volumes of samples as required by the laboratory for analysis, whenever possible. Full volume aliquots will help ensure achievement of the required limits of detection and allow for reanalysis if necessary.

Analytical methods and quality assurance parameters associated with the sampling program are presented in Attachment C. The frequency of associated field blanks, trip blanks and duplicate samples will be based on the recommendations listed in DER-10, and as described in Section 5.3.

Site-specific MS and MSD samples will be prepared and analyzed by the analytical laboratory by spiking an aliquot of submitted sample volume with analytes of interest. An MS/MSD analysis

will be analyzed at a rate of 1 out of every 20 samples, or one per analytical batch. MS/MSD samples are only required for soil samples.

5.0 SAMPLE COLLECTION AND FIELD DATA ACQUISITION PROCEDURES

Soil sampling will be conducted in accordance with the established NYSDEC protocols contained in DER-10/Technical Guidance for Site Investigation and Remediation (May 2010). Soil vapor sampling will be conducted in accordance with NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006). The following sections describe procedures to be followed for specific tasks.

5.1 FIELD DOCUMENTATION PROCEDURES

Field documentation procedures will include summarizing field data in field books and proper sample labeling. These procedures are described in the following sections.

5.1.1 Field Data and Notes

Field notebooks contain the documentary evidence regarding procedures conducted by field personnel. Hard cover, bound field notebooks will be used because of their compact size, durability, and secure page binding. The pages of the notebook will not be removed.

Entries will be made in waterproof, permanent blue or black ink. No erasures will be allowed. If an incorrect entry is made, the information will be crossed out with a single strike mark and the change initialed and dated by the team member making the change. Each entry will be dated. Entries will be legible and contain accurate and complete documentation of the individual or sampling team's activities or observations made. The level of detail will be sufficient to explain and reconstruct the activity conducted. Each entry will be signed by the person(s) making the entry.

The following types of information will be provided for each sampling task, as appropriate:

- Project name and number
- Reasons for being on-site or taking the sample(s)
- Date and time of activity
- Sample identification number(s)
- Geographical location of sampling points with references to the Site, other facilities or a map coordinate system; sketches will be made in the field logbook when appropriate
- Physical location of sampling locations such as depth below ground surface

- Description of the method of sampling including procedures followed, equipment used and any departure from the specified procedures
- Description of the sample including physical characteristics, odor, etc.
- Readings obtained from health and safety equipment
- Weather conditions at the time of sampling and previous meteorological events that may affect the representative nature of a sample
- Photographic information including a brief description of what was photographed, the date and time, the compass direction of the picture and the number of the picture on the camera
- Other pertinent observations such as the presence of other persons on the Site, actions by others that may affect performance of site tasks, etc.
- Names of sampling personnel and signature of persons making entries

Field records will also be collected on field data sheets including boring logs, which will be used for geologic and drilling data during soil boring activities. Field data sheets will include the project-specific number and stored in the field project files when not in use. At the completion of the field activities, the field data sheets will be maintained in the central project file.

5.1.2 Sample Labeling

Each sample collected will be assigned a unique identification number in accordance with the sample nomenclature guidance included in Attachment D, and placed in an appropriate sample container. Each sample container will have a sample label affixed to the outside with the date and time of sample collection and project name. In addition, the label will contain the sample identification number, analysis required and chemical preservatives added, if any. All documentation will be completed in waterproof ink.

5.2 EQUIPMENT CALIBRATION AND PREVENTATIVE MAINTENANCE

A PID will be used during the sampling activities to evaluate work zone action levels, screen soil samples, and collect monitoring well headspace readings. Field calibration and/or field checking of the PID will be the responsibility of the field team leader and the Site Health & Safety Officer, and will be accomplished by following the procedures outlined in the operating manual for the instrument. At a minimum, field calibration and/or field equipment checking will be performed once daily, prior to use. Field calibration will be documented in the field notebook. Entries made into the logbook regarding the status of field equipment will include the following information:

- Date and time of calibration
- Type of equipment serviced and identification number (such as serial number)
- Reference standard used for calibration
- Calibration and/or maintenance procedure used
- Other pertinent information

Equipment that fails calibration or becomes inoperable during use will be removed from service and segregated to prevent inadvertent utilization. The equipment will be properly tagged to indicate that it is out of calibration. Such equipment will be repaired and recalibrated to the manufacturer's specifications by qualified personnel. Equipment that cannot be repaired will be replaced.

Off-site calibration and maintenance of field instruments will be conducted as appropriate throughout the duration of project activities. All field instrumentation, sampling equipment and accessories will be maintained in accordance with the manufacturer's recommendations and specifications and established field equipment practice. Off-site calibration and maintenance will be performed by qualified personnel. A logbook will be kept to document that established calibration and maintenance procedures have been followed. Documentation will include both scheduled and unscheduled maintenance.

5.3 SAMPLE COLLECTION

Soil Samples

Soil samples will be visually classified and field screened using a PID to assess potential impacts from VOCs and for health and safety monitoring. Soil samples collected for analysis of VOCs will be collected using either En Core® or Terra Core® sampling equipment. For analysis of non-volatile parameters, samples will be homogenized and placed into glass jars. Samples will be collected with unused sterile sampling scoops or spoons and homogenized in unused sterile polyethylene zipper bags. After collection, all sample jars will be capped and securely tightened, and placed in iced coolers and maintained at 4°C ±2°C until they are transferred to the laboratory for analysis, in accordance with the procedures outlined in Sections 5.4 and 5.6. Analysis and/or extraction and digestion of collected soil samples will meet the holding times required for each analyte as specified in Attachment C. In addition, analysis of collected soil samples will meet all quality assurance criteria set forth by this QAPP and DER-10.

Sample Field Blanks, Trip Blanks and Duplicates

Field blanks will be collected for quality assurance purposes at a rate of one per 20 investigative samples per matrix (soil only). Field blanks will be obtained by pouring laboratory-demonstrated analyte-free water on or through a decontaminated sampling device following use and implementation of decontamination protocols. The water will be collected off of the sampling device into a laboratory-provided sample container for analysis. Field blank samples will be analyzed for the complete list of analytes on the day of sampling. To assess contamination resulting from sample transport, trip blanks will be collected at a rate of one per day if soil samples are analyzed for VOCs during that day.

Duplicate soil samples will be collected and analyzed for quality assurance purposes. Duplicate samples will be collected at a frequency of 1 per 20 investigative samples per matrix and will be submitted to the laboratory as "blind" samples. If less than 20 samples are collected during a particular sampling event, one duplicate sample will be collected.

5.4 SAMPLE CONTAINERS AND HANDLING

Certified, commercially clean sample containers will be obtained from the analytical laboratory. If soil samples are being collected, the laboratory will also prepare and supply the required trip blanks and field blank sample containers and reagent preservatives. Sample bottle containers, including the field blank containers, will be placed into plastic coolers by the laboratory. These coolers will be received by the field sampling team within 24 hours of their preparation in the laboratory. Prior to the commencement of field work, Langan field personnel will fill the plastic coolers with ice in Ziploc® bags (or equivalent) to maintain a temperature of 4° ±2° C.

Soil samples collected in the field for laboratory analysis will be placed directly into the laboratory-supplied sample containers. Samples will then be placed and stored on-ice in laboratory provided coolers until shipment to the laboratory. The temperature in the coolers containing samples and associated field blanks will be maintained at a temperature of 4°±2°C while on-site and during sample shipment to the analytical laboratory.

Possession of samples collected in the field will be traceable from the time of collection until they are analyzed by the analytical laboratory or are properly disposed. Chain-of-custody procedures, described in Section 5.9, will be followed to maintain and document sample possession. Samples will be packaged and shipped as described in Section 5.6.

5.5 SAMPLE PRESERVATION

Sample preservation measures will be used in an attempt to prevent sample decomposition by contamination, degradation, biological transformation, chemical interactions and other factors during the time between sample collection and analysis. Preservation will commence at the time

of sample collection and will continue until analyses are performed. Should chemical preservation be required, the analytical laboratory will add the preservatives to the appropriate sample containers before shipment to the office or field. Samples will be preserved according to the requirements of the specific analytical method selected, as shown in Attachment C.

5.6 SAMPLE SHIPMENT

5.6.1 Packaging

Soil sample containers will be placed in plastic coolers. Ice in Ziploc® bags (or equivalent) will be placed around sample containers. Cushioning material will be added around the sample containers if necessary. Chains-of-custody and other paperwork will be placed in a Ziploc® bag (or equivalent) and placed inside the cooler. The cooler will be taped closed and custody seals will be affixed to one side of the cooler at a minimum. If the samples are being shipped by an express delivery company (e.g. FedEx) then laboratory address labels will be placed on top of the cooler.

5.6.2 Shipping

Standard procedures to be followed for shipping environmental samples to the analytical laboratory are outlined below.

- All environmental samples will be transported to the laboratory by a laboratory-provided courier under the chain-of-custody protocols described in Section 5.9.

- Prior notice will be provided to the laboratory regarding when to expect shipped samples. If the number, type or date of shipment changes due to site constraints or program changes, the laboratory will be informed.

5.7 DECONTAMINATION PROCEDURES

Decontamination procedures will be used for non-dedicated sampling equipment. Decontamination of field personnel is discussed in the site-specific sample Health and Safety Plan (HASP) included in Appendix A of the RIWP. Field sampling equipment that is to be reused will be decontaminated in the field in accordance with the following procedures:

1. Laboratory-grade glassware detergent and tap water scrub to remove visual contamination
2. Generous tap water rinse
3. Distilled/de-ionized water rinse

5.8 RESIDUALS MANAGEMENT

Debris (e.g., paper, plastic and disposable personal protective equipment) will be collected in plastic garbage bags and disposed of as non-hazardous industrial waste. Soil cuttings with no apparent staining, odors, or elevated PID readings will be used to backfill boring holes. Soil to be disposed off-site will be placed in 55-gallon, UN/Department of Transportation (DOT) approved drums. All drums will be properly labeled, sealed, and characterized as necessary. It is anticipated that all drummed material will be transported off-site and disposed of at a permitted facility.

5.9 CHAIN OF CUSTODY PROCEDURES

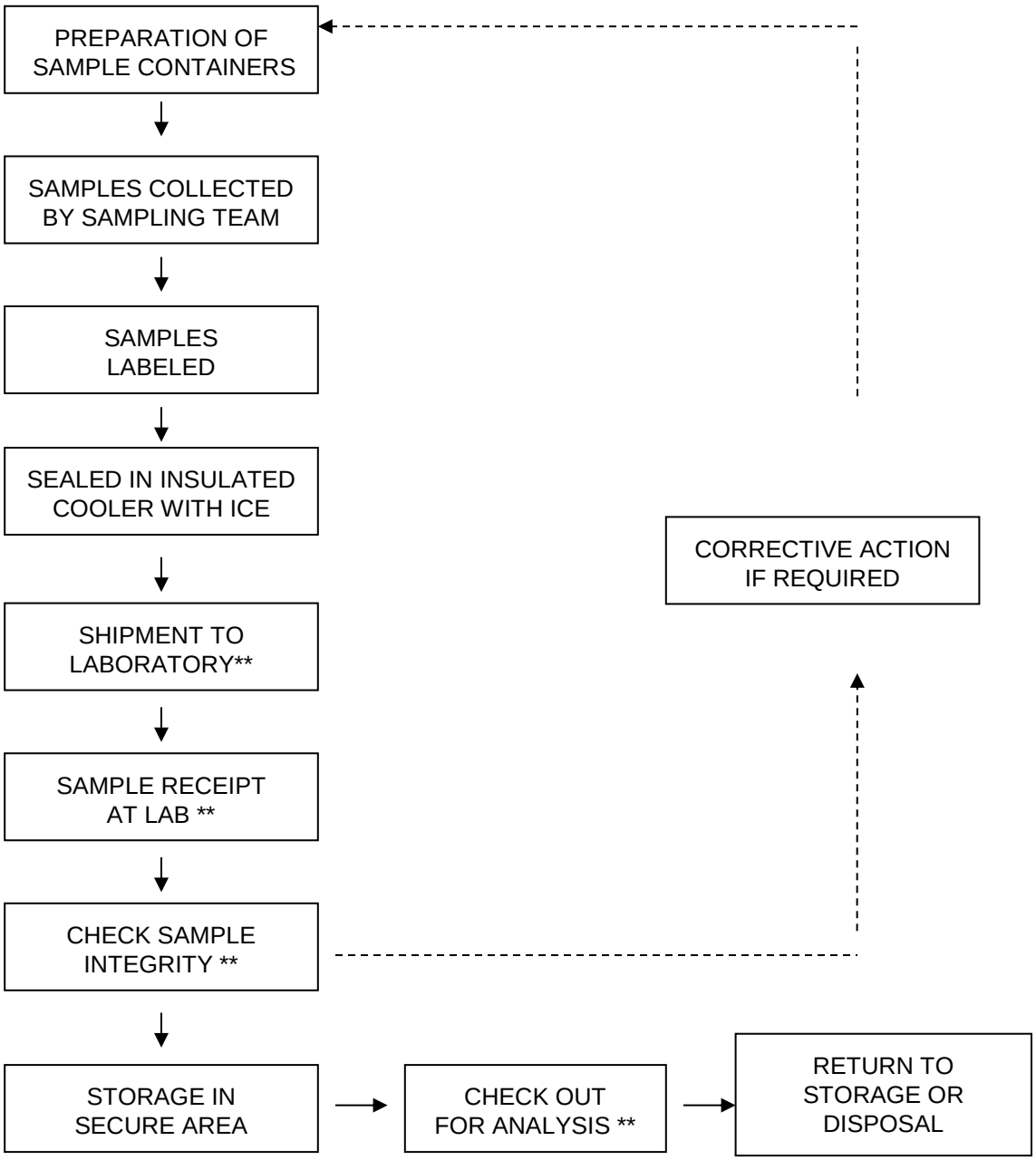
A chain-of-custody protocol has been established for collected samples that will be followed during sample handling activities in both field and laboratory operations. The primary purpose of the chain-of-custody procedures is to document the possession of the samples from collection through shipping, storage and analysis to data reporting and disposal. Chain-of-custody refers to actual possession of the samples. Samples are considered to be in custody if they are within sight of the individual responsible for their security or locked in a secure location. Each person who takes possession of the samples, except the shipping courier, is responsible for sample integrity and safe keeping. Chain-of-custody procedures are provided below:

- Chain-of-custody will be initiated by the laboratory supplying the pre-cleaned and prepared sample containers. Chain-of-custody forms will accompany the sample containers.
- Following sample collection, the chain-of-custody form will be completed for the sample collected. The sample identification number, date and time of sample collection, analysis requested and other pertinent information (e.g., preservatives) will be recorded on the form. All entries will be made in waterproof, permanent blue or black ink.
- Langan field personnel will be responsible for the care and custody of the samples collected until the samples are transferred to another party, dispatched to the laboratory, or disposed. The sampling team leader will be responsible for enforcing chain-of-custody procedures during field work.
- When the form is full or when all samples have been collected that will fit in a single cooler, the sampling team leader will check the form for possible errors and sign the chain-of-custody form. Any necessary corrections will be made to the record with a single strike mark, dated, and initialed.

When soil samples are collected, sample coolers will be accompanied by the chain-of-custody form, sealed in a Ziploc® bag (or equivalent) and placed on top of the samples or taped to the inside of the cooler lid. If applicable, a shipping bill will be completed for each cooler and the shipping bill number recorded on the chain-of-custody form.

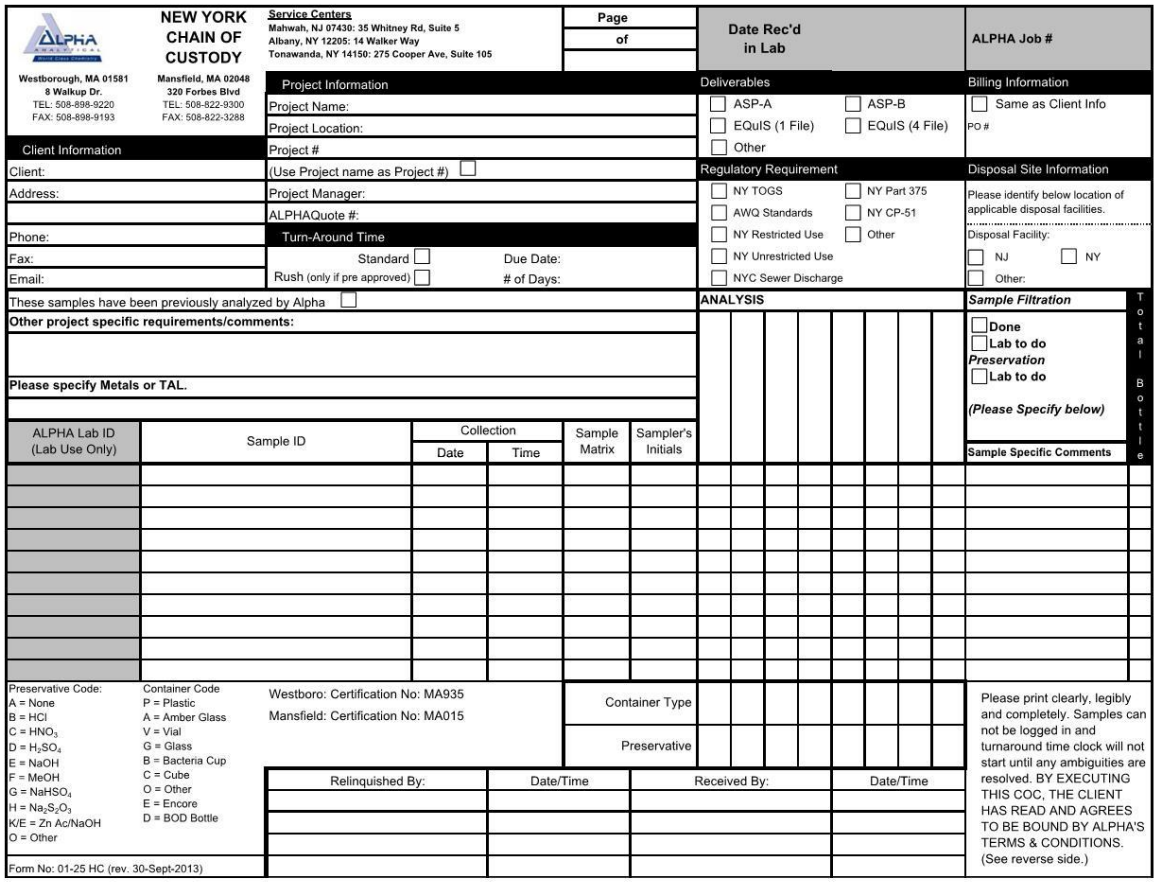
Samples will be packaged for shipment to the laboratory with the appropriate chain-of-custody form. A copy of the form will be retained by the sampling team for the project file and the original will be sent to the laboratory with the samples. Bills of lading will also be retained as part of the documentation for the chain-of-custody records, if applicable. When transferring custody of the samples, the individuals relinquishing and receiving custody of the samples will verify sample numbers and condition and will document the sample acquisition and transfer by signing and dating the chain-of-custody form. This process documents sample custody transfer from the sampler to the analytical laboratory. A flow chart showing a sample custody process is included as Figure 5.1, and an example chain-of-custody form for soil samples is included as Figure 5.2.

Figure 5.1 Sample Custody



** REQUIRES SIGN-OFF ON CHAIN-OF-CUSTODY FORM

Figure 5.2 Sample Chain-of-Custody Form – Soil Samples



NEW YORK CHAIN OF CUSTODY

Westborough, MA 01581 — 8 Walkup Dr. — TEL: 508-898-9220 — FAX: 508-898-9193
Mansfield, MA 02048 — 320 Forbes Blvd — TEL: 508-822-9300 — FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page of

Date Rec'd in Lab

ALPHA Job #

Project Information
Project Name:
Project Location:
Project #
(Use Project name as Project #)
Project Manager:
ALPHAQuote #:

Turn-Around Time
Standard
Rush (only if pre approved)
Due Date:
# of Days:

Deliverables
ASP-A ASP-B
EQuIS (1 File) EQuIS (4 File)
Other

Regulatory Requirement
NY TOGS NY Part 375
AWQ Standards NY CP-51
NY Restricted Use Other
NY Unrestricted Use
NYC Sewer Discharge

Billing Information
Same as Client Info
PO #

Disposal Site Information
Please identify below location of applicable disposal facilities.
Disposal Facility:
NJ NY
Other:

Client Information
Client:
Address:
Phone:
Fax:
Email:

These samples have been previously analyzed by Alpha

Other project specific requirements/comments:

Please specify Metals or TAL.

ANALYSIS

Sample Filtration
Done
Lab to do
Preservation
Lab to do
(Please Specify below)

Total Bottle

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Sample Specific Comments

Container Type
Preservative

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

Laboratory chain-of-custody will be maintained throughout the analytical processes as described in the laboratory's Quality Assurance Manual. The analytical laboratory will provide a copy of the chain-of-custody in the analytical data deliverable package. The chain-of-custody becomes the permanent record of sample handling and shipment.

5.10 LABORATORY SAMPLE STORAGE PROCEDURES

The subcontracted laboratory will use a laboratory information management system to track and schedule samples upon receipt by the analytical laboratories. Any sample anomalies identified during sample log-in must be evaluated on individual merit for the impact upon the results and the data quality objectives of the project. When irregularities do exist, the environmental consultant must be notified to discuss recommended courses of action and documentation of the issue must be included in the project file.

For samples requiring thermal preservation, the temperature of each cooler will be immediately recorded. Each sample and container will be will be assigned a unique laboratory identification number and secured within the custody room walk-in coolers designated for new samples. Samples will be, as soon as practical, disbursed in a manner that is functional for the operational team. The temperature of all coolers and freezers will be monitored and recorded using a certified temperature sensor. Any temperature excursions outside of acceptance criteria (i.e., below 2°C or above 6°C) will initiate an investigation to determine whether any samples may have been affected. Samples for VOCs will be maintained in satellite storage areas within the VOC laboratory. Following analysis, the laboratory's specific procedures for retention and disposal will be followed as specified in the laboratory's SOPs and/or QA manual.

6.0 DATA REDUCTION, VALIDATION, AND REPORTING

6.1 INTRODUCTION

Data collected during the field investigation will be reduced and reviewed by the laboratory QA personnel, and a report on the findings will be tabulated in a standard format. The criteria used to identify and quantify the analytes will be those specified for the applicable methods in the USEPA SW-846 and subsequent updates. The data package provided by the laboratory will contain all items specified in the USEPA SW-846 methodology appropriate for the analyses to be performed, and be reported in standard format.

The completed copies of the chain-of-custody records (both external and internal) accompanying each sample from time of initial bottle preparation to completion of analysis shall be attached to the analytical reports.

6.2 DATA REDUCTION

The Analytical Services Protocol (ASP) Category B data packages and an electronic data deliverable (EDD) will be provided by the laboratory after receipt of a complete sample delivery group. The Project Manager will immediately arrange for archiving the results and preparation of result tables. These tables will form the database for assessment of the site contamination condition.

Each EDD deliverable must be formatted using a Microsoft Windows operating system and the NYSDEC data deliverable format for EQuIS. To avoid transcription errors, data will be loaded directly into the ASCII format from the laboratory information management system. If this cannot be accomplished, the consultant should be notified via letter of transmittal indicating that manual entry of data is required for a particular method of analysis. All EDDs must also undergo a QC check by the laboratory before delivery. The original data, tabulations, and electronic media are stored in a secure and retrievable fashion.

The Project Manager or Task Manager will maintain close contact with the QA reviewer to ensure all non-conformance issues are acted upon prior to data manipulation and assessment routines. Once the QA review has been completed, the Project Manager may direct the Team Leaders or others to initiate and finalize the analytical data assessment.

6.3 DATA VALIDATION

Data validation will be performed in accordance with the USEPA Region 2 validation guidelines for organic and inorganic data review. Validation will include the following:

- Verification of the QC sample results;
- Verification of the identification of sample results (both positive hits and non-detects);
- Recalculation of 10% of all investigative sample results; and
- Preparation of Data Usability Summary Reports (DUSR).

A DUSR will be prepared by the data validator and reviewed by the QAM before issuance. The DUSR will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and chain-of-custody procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method. A detailed assessment of each sample delivery group will follow. For each of the organic analytical methods, the following will be assessed:

- Holding times;
- Instrument tuning;
- Instrument calibrations;
- Blank results;
- System monitoring compounds or surrogate recovery compounds (as applicable);
- Internal standard area counts (if applicable);
- MS and MSD recoveries and RPDs
- LCS and LCSD recoveries and RPDs
- Endrin/DDT Breakdown (if applicable);
- Dual Column Analysis (if applicable);
- Isotope Dilution Recoveries (if applicable)
- Target compound identification;
- Chromatogram quality;
- Pesticide cleanup (if applicable);
- Compound quantitation and reported detection limits;
- Overall system performance; and

- Results verification.

For each of the inorganic compounds, the following will be assessed:

- Holding times;
- Calibrations;
- Blank results;
- Interference check sample;
- Laboratory control samples;
- Laboratory Duplicates;
- Matrix Spike;
- Furnace atomic absorption analysis QC;
- Contract Required Detection Limit standards;
- ICP serial dilutions; and
- Results verification and reported detection limits.

Based on the results of data validation, the validated analytical results reported by the laboratory will be assigned one of the following usability flags:

- "U" - Not detected. The associated number indicates the approximate sample concentration necessary to be detected significantly greater than the level of the highest associated blank;
- "UJ" - Not detected. Quantitation limit may be inaccurate or imprecise;
- "J" - Analyte is present. Reported value may be associated with a higher level of uncertainty than is normally expected with the analytical method
- "R" – Unreliable result; data is rejected or unusable. Analyte may or may not be present in the sample; and
- No Flag - Result accepted without qualification.

7.0 QUALITY ASSURANCE PERFORMANCE AUDITS AND SYSTEM AUDITS

7.1 INTRODUCTION

Quality assurance audits may be performed by the project quality assurance group under the direction and approval of the Quality Assurance Manager (QAM). These audits will be implemented to evaluate the capability and performance of project and subcontractor personnel, items, activities, and documentation of the measurement system(s). Functioning as an independent body and reporting directly to corporate quality assurance management, the QAM may plan, schedule, and approve system and performance audits based upon procedures customized to the project requirements. At times, the QAM may request additional personnel with specific expertise from company and/or project groups to assist in conducting performance audits. However, these personnel will not have responsibility for the project work associated with the performance audit.

7.2 SYSTEM AUDITS

System audits may be performed by the QAM or designated auditors, and encompass a qualitative evaluation of measurement system components to ascertain their appropriate selection and application. In addition, field and laboratory quality control procedures and associated documentation may be system audited. These audits may be performed once during the performance of the project. Additional audits may occur if conditions adverse to quality are detected or at the request of the Project Manager.

7.3 PERFORMANCE AUDITS

The laboratory may be required to conduct an analysis of Performance Evaluation samples or provide proof that Performance Evaluation samples submitted by USEPA or a state agency have been analyzed within the past twelve months.

7.4 FORMAL AUDITS

Formal audits refer to any system or performance audit that is documented and implemented by the QA group. These audits encompass documented activities performed by qualified lead auditors to a written procedure or checklists to objectively verify that quality assurance requirements have been developed, documented, and instituted in accordance with contractual and project criteria. Formal audits may be performed on project and subcontractor work at various locations.

Audit reports will be written by auditors who have performed the site audit after gathering and evaluating all data. Items, activities, and documents determined by lead auditors to be in noncompliance shall be identified at exit interviews conducted with the involved management.

Non-compliances will be logged, and documented through audit findings, which are attached to and are a part of the integral audit report. These audit-finding forms are directed to management to satisfactorily resolve the noncompliance in a specified and timely manner.

The Project Manager has overall responsibility to ensure that all corrective actions necessary to resolve audit findings are acted upon promptly and satisfactorily. Audit reports must be submitted to the Project Manager within fifteen days of completion of the audit. Serious deficiencies will be reported to the Project Manager within 24 hours. All audit checklists, audit reports, audit findings, and acceptable resolutions are approved by the QAM prior to issue. Verification of acceptable resolutions may be determined by re-audit or documented surveillance of the item or activity. Upon verification acceptance, the QAM will close out the audit report and findings.

8.0 CORRECTIVE ACTION

8.1 INTRODUCTION

The following procedures have been established to ensure that conditions adverse to quality, such as malfunctions, deficiencies, deviations, and errors, are promptly investigated, documented, evaluated, and corrected.

8.2 PROCEDURE DESCRIPTION

When a significant condition adverse to quality is noted at a site, laboratory, or subcontractor location, the cause of the condition will be determined and corrective action will be taken to preclude repetition. Condition identification, cause, reference documents, and corrective action planned to be taken will be documented and reported to the QAM, Project Manager, Field Team Leader and involved contractor management, at a minimum. Implementation of corrective action is verified by documented follow-up action.

All project personnel have the responsibility, as part of the normal work duties, to promptly identify, solicit approved correction, and report conditions adverse to quality. Corrective actions will be initiated as follows:

- When predetermined acceptance standards are not attained;
- When procedure or data compiled are determined to be deficient;
- When equipment or instrumentation is found to be faulty;
- When samples and analytical test results are not clearly traceable;
- When quality assurance requirements have been violated;
- When designated approvals have been circumvented;
- As a result of system and performance audits;
- As a result of a management assessment;
- As a result of laboratory/field comparison studies; and
- As required by USEPA SW-846, and subsequent updates, or by the NYSDEC ASP.

Project management personnel, field investigation teams, remedial response planning personnel, and laboratory groups monitor ongoing work performance during the normal course of daily responsibilities. Work may be audited at project sites, laboratories, or contractor locations. Activities, or documents ascertained to be noncompliant with quality assurance requirements will be documented. Corrective actions will be mandated through audit finding sheets attached to the audit report. Audit findings are logged, maintained, and controlled by the Task Manager.

Personnel assigned to quality assurance functions will have the responsibility to issue and control Corrective Action Request (CAR) Forms (Figure 8.1 or similar by email). The CAR identifies the out-of-compliance condition, reference document(s), and recommended corrective action(s) to be administered. The CAR is issued to the personnel responsible for the affected item or activity. A copy is also submitted to the Project Manager. The individual to whom the CAR is addressed returns the requested response promptly to the QA personnel, affixing his/her signature and date to the corrective action block, after stating the cause of the conditions and corrective action to be taken. The QA personnel maintain the log for status of CARs, confirms the adequacy of the intended corrective action, and verifies its implementation. CARs will be retained in the project file for the records.

Any project personnel may identify noncompliance issues; however, the designated QA personnel are responsible for documenting, numbering, logging, and verifying the close out action. The Project Manager will be responsible for ensuring that all recommended corrective actions are implemented, documented, and approved.

Figure 8.1 Corrective Action Request

CORRECTIVE ACTION REQUEST
Number: _____ Date: _____
TO: _____ You are hereby requested to take corrective actions indicated below and as otherwise determined by you to (a) resolve the noted condition and (b) to prevent it from recurring. Your written response is to be returned to the project quality assurance manager by _____
CONDITION:
REFERENCE DOCUMENTS:
RECOMMENDED CORRECTIVE ACTIONS:
_____ _____ _____ _____ _____ _____ Originator Date Approval Date Approval Date
RESPONSE
CAUSE OF CONDITION
CORRECTIVE ACTION (A) RESOLUTION (B) PREVENTION (C) AFFECTED DOCUMENTS
C.A. FOLLOWUP: CORRECTIVE ACTION VERIFIED BY: _____ DATE:_____

9.0 REFERENCES

NYSDEC. Division of Environmental Remediation. DER-10/Technical Guidance for Site Investigation and Remediation, dated May 3, 2010.

USEPA, 2016. Low/Medium Volatile Data Validation. SOP No. HW-33A, Revision 1, dated September 2016. USEPA Region II.

USEPA, 2015. PCB Aroclor Data Validation. SOP No. HW-37A, Revision 0, dated July 2015. USEPA Region II.

USEPA, 2016. ICP-AES Data Validation. SOP No. HW-3a, Revision 1, dated September 2016. USEPA Region II.

USEPA, 2016. Mercury and Cyanide Data Validation. SOP No. HW-3c, Revision 1, dated September 2016. USEPA Region II.

USEPA, 2016. Pesticide Data Validation. SOP No. HW-36A, Revision 1, dated October 2016. USEPA Region II.

USEPA, 2016. Semivolatile Data Validation. SOP No. HW-35A, Revision 1, dated September 2016. USEPA Region II.

USEPA, 2016. Analysis of Volatile Organic Compounds in Air Contained in Canisters by Method TO-15, Revision 6, dated September 2016. USEPA Region II.

USEPA 2017. National Functional Guidelines for Superfund Organic Methods Data Review, Office of Superfund Remediation and Technology Innovation, EPA-540-R-2017-002, January 2017.

USEPA 2017b. National Functional Guidelines for Superfund Inorganic Methods Data Review, Office of Superfund Remediation and Technology Innovation, EPA-540-R-201 7-001, January 2017.

ATTACHMENT A

RESUMES

MICHAEL D. BURKE, PG, CHMM, LEED AP

PRINCIPAL/VICE PRESIDENT

ENVIRONMENTAL ENGINEERING AND REMEDIATION

Mr. Burke is a geologist/environmental scientist whose practice involves site investigation and remediation, transactional due diligence, environmental site assessments, in-situ remedial technology, and manufactured gas plant (MGP) site characterization and remediation. His additional services include multi-media compliance audits, sub-slab depressurization system design, non-hazardous and hazardous waste management, emergency response, community air monitoring programs, environmental and geotechnical site investigations, and health and safety monitoring. He has experience with projects in the New York State Department of Environmental Conservation (NYSDEC) and New York State Brownfield Cleanup (NYS BCP) Programs; Inactive Hazardous Waste, and Spill Programs, and New York City Office of Environmental Remediation (OER) e-designated and New York City Voluntary Cleanup Program (NYC VCP) sites.

SELECTED PROJECTS

- 227-14 North Conduit Avenue, Industrial Wastewater Compliance, Jamaica, NY
- 420 Kent Avenue, NYS Brownfield Cleanup Program, Brooklyn, NY
- 572 Eleventh Avenue, NYC VCP, New York, NY
- Monian Site A, OER E-Designated Site, New York, NY
- 537 Sackett Street, Gowanus Canal Due Diligence/MGP Site, Brooklyn, NY
- ABC Blocks 25, 26 and 27, NYS Brownfield Cleanup Program Sites, Long Island City, NY
- 432 Rodney Street, NYS Brownfield Cleanup Program, Petroleum and Chlorinated Volatile Organic Compound Investigation and Remediation, Brooklyn, NY
- 787 Eleventh Avenue, NYS Brownfield Cleanup Program Site, New York, NY
- President Street at Gowanus Canal, NYS Brownfield Cleanup Program Site, Brooklyn, NY
- 22-36 Second Avenue at Gowanus Canal, NYS Brownfield Cleanup Program Site, Brooklyn, NY
- 563 Sacket Street, NYS Brownfield Cleanup Program Site, MGP Investigation, and Remediation, Brooklyn, NY
- 156-162 Perry Street, NYS Brownfield Cleanup Program Site, New York, NY
- Christopher and Weehawken Streets, NYS Brownfield Cleanup Program, New York, NY
- Phelps Dodge Block 2529 (Lots 40, 50, and 45), Inactive Hazardous Waste Disposal Site, Maspeth NY
- 42-50 24th Street, NYS Brownfield Cleanup Program Site, Long Island City, NY
- Storage Deluxe (163 6th Street), OER E-Designation Site, New York, NY

EDUCATION

M.S., Environmental Geology
Rutgers University

B.S., Geological Sciences
Rutgers University

B.S., Environmental Science
Rutgers University

PROFESSIONAL REGISTRATION

Professional Geologist (PG) in NY

Certified Hazardous Materials Manager – CHMM No. 15998

LEED Accredited Professional (LEED AP)

OSHA Certification for Hazardous Waste Site Supervisor

OSHA 29 CFR 1910.120 Certification for Hazardous Waste Operations and Emergency Response

NJDEP Certification for Community Noise Enforcement

Troxler Certification for Nuclear Densometer Training

- Prospect Park Redevelopment, Landfill Reclamation, Prospect Park, NJ
- 431 Carroll Street, Gowanus Canal Due Diligence, Brooklyn, NY
- 76 4th Street Property, Gowanus Due Diligence, Brooklyn, NY
- Foxgate/MREC, Due Diligence and Solid Waste Compliance, Central Islip, NY
- 175-225 3rd Street at Gowanus Canal, NYS Brownfield Cleanup Program, Brooklyn, NY
- New York University Tandon School of Engineering, Spill Investigation/Remediation Dual Phase Recovery, and Laser Fluorescence Investigation, Brooklyn, NY
- 2420-2430 Amsterdam Avenue, NYS Brownfield Cleanup Program/Board of Standards and Appeals Variance, New York, NY
- 170 Amsterdam Avenue, NYC VCP, New York, NY
- 538-540 Hudson Street, NYS Brownfield Cleanup Program (Former Gas Station), New York, NY
- 234 Butler Street, Gowanus Canal Due Diligence, Brooklyn, NY
- 550 Clinton Street, NYS Brownfield Cleanup Program E-Designation, Brooklyn, NY
- 111 Leroy Street, OER E-Designation Site, New York, NY
- 335 Bond Street, NYS Brownfield Cleanup Program, New York, NY
- Gowanus Canal Northside, NYS BCP Former Fuel Oil Terminal, Brooklyn, NY
- Multiple Buildings, Major Oil Storage Facility, Gowanus Canal Location, Brooklyn, NY
- 197-205 Smith Street at Gowanus Canal, MGP Due Diligence, Brooklyn, NY
- 450 Union Street at Gowanus Canal, NYS Brownfield Cleanup Program, Brooklyn, NY
- 86 Fleet Place, NYC VCP E-Designation, Brooklyn, NY
- New York University College of Nursing at 433 1st Avenue, NYS BCP, Bronx, NY
- Retail Building at 225 3rd Street, Brooklyn, NY
- 29-37 41st Avenue, NYS Brownfield Cleanup Program, Long Island City, NY
- 43-01 22nd Street, NYS Brownfield Cleanup Program, Long Island City, NY
- Compliance Audit for NYU at Washington Square Park, New York, NY
- Former Watermark Locations, NYS Brownfield Cleanup Program, Chlorinated Volatile Organic Compound Investigation and Remediation; AS/SVE, Brooklyn, NY
- Former Gas Station (1525 Bedford Avenue), Brooklyn, NY
- NYS Brownfield Cleanup Program at 514 West 24th Street, New York, NY
- Gowanus Canal Due Diligence at 76 4th Street, Brooklyn, NY
- Urban Health Plan, Medical Building, NYS Brownfield Cleanup Program CVOC Investigation and Remediation, Bronx, NY
- 420 East 54th Street, NYS Spill Closure, New York, NY
- Equity Residential at 160 Riverside Boulevard, NYS Spill Closure, New York, NY
- 357-359 West Street and 156 Leroy Street, NYC VCP, New York, NY
- Emergency Spill Response at 322 West 57th Street, Investigation and Closure, New York, NY

- Hurricane Sandy, Emergency Response at 21 West Street, New York, NY
- Hurricane Sandy, Emergency Response at 71 Pine Street, New York, NY
- Greenpoint Landing, NYC E-Designation, Brooklyn, NY
- 23-01 42nd Road, NYS Brownfield Cleanup Program, Long Island City, NY
- Greenpoint Waterfront Development, NYS Brownfield Cleanup Program, Brooklyn, NY
- 125th Street and Lenox Avenue, NYC VCP, New York, NY
- Whitehead Realty Solvent Site, Inactive Hazardous Waste site, CVOC Investigation and Remediation, Brooklyn, NY
- SunCap Property Group Environmental On-Call Consulting, Various Locations, Nationwide
- Consolidated Edison Company of New York, Underground Storage Tank On-Call Contract, Five Boroughs of New York City, NY
- Consolidated Edison Company of New York, Appendix B Spill Sites On-Call Contract, Five Boroughs of New York City, NY
- Meeker Avenue Plume Trackdown Site, Brooklyn, NY
- Distribution Facility, Superfund Redevelopment, Long Island City, NY
- Edison Properties, West 17th Street Development Site (Former MGP Site), New York, NY
- Con Edison on Governors Island, Dielectric Fluid Spill, Investigation and Remediation, New York, NY
- 144-150 Barrow Street, NYS Brownfield Cleanup Program, New York, NY
- West 17th Street Development, NYS Brownfield Cleanup Program, MGP Investigation and Remediation, New York, NY
- Montefiore Medical Center, Emergency Response, PCB Remediation, Bronx, NY
- New York University, 4 Washington Square Village Fuel Oil Remediation, New York, NY
- NYCSCA, Proposed New York City School Construction Sites, Five Boroughs of New York City, NY
- Con Edison, East 60th Street Generating Station, New York, NY
- Residential Building at 82 Irving Place, Environmental Remediation, New York, NY
- 1113 York Avenue, Storage Tank Closures, New York, NY
- Peter Cooper Village/Stuyvesant Town, Phase I ESA, New York, NY
- Superior Ink, Waste Characterization and Remedial Action Plans, New York, NY
- Bronx Mental Health Redevelopment Project, Phase I ESA, Bronx, NY
- 2950 Atlantic Avenue, Site Characterization Investigation, Brooklyn, NY
- Con Edison, East 74th Street Generating Station, Sediment Investigation, New York, NY
- Con Edison, First Avenue Properties, New York, NY
- Queens West Development Corp. Stage II, Long Island City, NY
- Article X Project Environmental Reviews, Various New York State Electrical Generation Sites, NY
- Poletti Generating Station, Astoria, NY
- Arthur Kill Generating Station, Staten Island, NY

- Distribution Facility, Phase I & Phase II ESA and Regulatory Compliance, Bohemia, NY
- Huntington Station Superfund Due Diligence, Huntington Station, NY
- Garvies Point Bulkhead, Glen Cove, NY
- Johnson & Hoffman Metal Stamping Facility, Environmental Compliance, Carle Place, NY
- Floral Park Storage Facility, Phase I and Phase II ESA
- Garden City Phase I ESAs at two sites, including part of a Superfund Site, Garden City, NY
- Huntington Station Storage Facility, Phase I and II ESA, Huntington Station, NY

BRIAN GOCHENAUR, QEP

SENIOR PROJECT MANAGER

ENVIRONMENTAL SCIENTIST

Mr. Gochenaur is an environmental project manager whose experience includes environmental due diligence, site investigation and remediation, fuel oil storage tank investigation and removal, soil vapor intrusion assessments, in-situ remedial technology, spill closure, vapor barrier and sub-slab depressurization system design and construction, emergency response, environmental and geotechnical site investigations, and health and safety monitoring. He has extensive experience with the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup, Voluntary Cleanup and Spill Programs and New York City Department of Environmental Protection (NYCDEP) "E" Designated and New York City Voluntary Cleanup Program (BCP) sites. His areas of expertise include Phase I Environmental Site Assessments, Phase II Site Investigations, and environmental consulting and oversight on large scale construction projects.

EDUCATION

B.S., Environmental Science
University of Florida

PROFESSIONAL REGISTRATION

Qualified Environmental Professional (QEP) certified by the Institute of Professional Environmental Practice

40-Hour OSHA (HAZWOPER)

SELECTED PROJECTS

- 440 Washington Street, E-Designated services, New York, NY
- 3514 Surf Avenue, Tall Residential and Retail Building, Brooklyn, NY
- ARO 242 West 53, Tall Residential Building, New York, NY
- NY Aquarium Shark Exhibit, Soil Characterization and Excavation Oversight, Coney Island Neighborhood, Brooklyn, NY
- 60 West Street, Site Investigation and Redevelopment, Brooklyn, NY
- 535 4th Avenue, BCP Auto Repair Cleanup and Redevelopment, Brooklyn, NY
- 1525 Bedford Avenue, BCP Gas Station Cleanup and Redevelopment, Brooklyn, NY
- 220 Eleventh Avenue, Residential Building, New York, NY
- 432 Rodney Street, Residential Building, Brooklyn, NY
- 563 Sackett Street, Brooklyn, NY
- 362 West 125th Street, Residential Building, New York, NY
- Bedford Armory Redevelopment, Brooklyn, NY
- 268 West Street, BCP Redevelopment of Former Commercial and Industrial Site, New York, NY
- 110 125th Street, Soil Excavation and Remediation, New York, NY
- Former Roseland Ballroom Redevelopment, Soil Characterization and Excavation Oversight, New York, NY
- 42 Crosby Street, "E" Designated Site Investigation and Remediation, New York, NY
- New York School Construction Authority, Various Locations, In-House Environmental Consulting, Five Boroughs of New York City
- EZ Serve Portfolio, GE Capital, Various Phase II Site Investigations, FL, GA, LA, and MS
- Beth Elohim Child Daycare Center, Lead Based Paint Abatement, Brooklyn, NY
- Price Battery, Environmental Protection Agency (EPA) Lead Fallout Superfund Site, Hamburg, PA

- Clark Portfolio, GE Capital, Various Phase II Locations, MI, IL, ID, and OH
- Tops Plaza Portfolio, Prudential Real Estate Investors, Various Phase II Locations, NY
- Cingular Wireless Portfolio, Cingular Wireless, Various Locations Phase I and II Locations, WA
- Queens Center Mall Expansion, Remedial Oversight, Elmhurst, NY
- Soka Gakkai International-USA, Cultural Center, Brooklyn, NY

EMILY L. SNEAD, PG

PROJECT SCIENTIST

ENVIRONMENTAL ENGINEERING

Ms. Snead brings field experience and technical expertise to environmental investigations and remediation projects. She has independently performed Phase I and Phase II assessments and investigations, UST removals and closures, remedial excavations, vapor extractions, and ISCO injections. She excels at project research, environmental sampling, remedial oversight, proposal and report preparation. Her projects have included hospital centers, day care facilities, residential buildings, chemical plants, and commercial/industrial sites throughout New York City and the Tri-State area. Prior to her career in Environmental Consulting, Ms. Snead conducted research with NASA and performed construction oversight management in the Cayman Islands.

SELECTED PROJECTS

- Silvercup West, Brownfield Cleanup Site, Long Island City, NY
- Highline 28-29 Development, PCE-Contaminated Soil Delineation and Implementation of Bioaugmentation Remediation, New York, NY
- 295 Locust Avenue, Soil Excavation/Trucking, Monitoring Well Decommissioning, Groundwater Sampling and SMP inspections, Bronx, NY
- Hotel Trades Union (620 Fulton Street), Hazardous Lead Soil removal, UST closure and Soil Management Report Brooklyn, NY
- 743 Fifth Avenue, Soil Management Report, New York, NY
- Suncap Facility, UST Investigations and Test Pit Explorations, Yonkers, NY
- New York University (383 Lafayette Street), Hazardous Lead Soil Removal and UST Closure New York, NY
- 601 Washington Street, Remedial Excavation, Groundwater ISCO Treatment, and Installation of an Active SMD System, New York, NY
- NYC OER E-Designated site (50 Hudson Yards/2 Hudson Boulevard), Remedial Investigation, Remedial Excavation Oversight, and Closure Reporting, New York, NY
- Riverside Center Parcel 1, VCP Site Remedial Excavation, UST Closure, Spill Investigation and Closure, and Reporting, New York, NY
- Riverside Center Parcels 3 and 4, VCP Site Remedial Excavation, UST Closure, New York, NY
- Bronx Terminal Market, Triennial SMP Reporting and Annual Inspections, Bronx, NY
- 616 First Avenue, VCP Program Includes Remedial Excavation Oversight, SMP Annual Inspections, Reporting, New York, NY
- Luxury Car Dealership (787 Eleventh Avenue), Spill Investigation and UST Closure, New York, NY
- 335 Bold Street, Phase II and BCP Application, Brooklyn, NY
- President Street Properties, Phase II Investigation and BCP Application, Brooklyn, NY
- 38-01 Queens Boulevard Due Diligence, Long Island City, NY

EDUCATION

B.S., Environmental Science & Geology
Northeastern University

PROFESSIONAL REGISTRATION

Professional Geologist (PG) in NY

40-Hour OSHA HAZWOPER

8-Hour OSHA HAZWOPER Refresher

10-Hour OSHA Construction Safety Training

DOT Hazardous Materials Shipping Training

First Aid/ CPR Training

AFFILIATIONS

NAIOP New York City Chapter, member

Urban Land Institute (ULI), Member

- 250 Water Street, Phase II Investigation, New York, NY
- 139 East 56th Street, Joint Geotechnical and Environmental Waste Characterization, New York, NY
- Le Soleil d'Or Boutique Hotel, Cayman Brac, Cayman Islands
- Columbia University Medical Center, Phase I and II Environmental Site Investigation Nursing School, New York, NY
- Consolidated Edison of NY, Remedial Investigation and RIR Investigation, New York, NY
- 11-09 Borden Avenue, MTA Bridges and Tunnels/Borden Avenue ISCO Remediation, Disposal of Petroleum-Impacted Soil, Long Island City, NY
- Columbia University Medical Center, Removal of a 1,000-gal UST and Closure Report, New York, NY
- Children's Aid Society (910 East 172nd Street), Oversight of the VEFR and Collection of Groundwater Samples New York, NY
- New York City Housing Authority, Community Air Monitoring Program and Environmental Oversight, Bronx, NY
- YRC Freight Newtown Creek EPA RFI, Brooklyn, NY
- 522-532 West 29th Street Redevelopment, Phase II Site Investigation and RAWP New York, NY
- Memorial Sloan-Kettering Cancer Center Ambulatory Surgery Building, Community Air Monitoring Program, New York, NY
- Keith Hilltop Terrace Apartments, Phase I and II Environmental Site Assessment, Altoona, PA
- Southern Boulevard Phase II ESA, Bronx, NY
- Former Auto Dealership, Remedial Investigation and Delineation of Polycyclic Aromatic Hydrocarbons (PAHs), Paramus, NJ
- 711 11th Avenue, Former Auto Dealership, Chrysler Group LLC, Phase I and Limited Phase II Due Diligence Investigation, New York, NY
- 37-14 36th Street, Field Investigations Silver Star-Mercedes Benz, Long Island City, NY
- Otto Pehle Park, Bergen County Health Department, Groundwater Sampling and Ecological Surveys, Paramus, NJ
- Bay Park Brownfield Redevelopment, Installation of Sub-Slab Depressurization System, Coney Island, Brooklyn, NY
- PQ Corporation, Oversight of Remedial Action Field Activities, Rahway, NJ
- Post-Graduate Center for Mental Health (304 Echo Place), Phase I and Limited Phase II Due Diligence Investigation, Bronx, NY
- Air Quality Monitoring, Sweeny & Conroy, Inc., New York, NY
- Former Auto Dealership, Chrysler Group LLC, Phase I and Limited Phase II Due Diligence Investigation, New York, NY
- New York Life Investment Management, Phase II Environmental Site Assessment, Jessup, MD
- 366 Broadway, Former Brunswick Hospital Campus, 25,000-Gallon UST Removal, Amityville, NY

Emily G. Strake

Project Chemist/ Risk Assessor
Human Health Risk Assessment
Chemical Data Validation

15 years in the industry ~ 2 years with Langan

Ms. Strake has fifteen years of environmental chemistry, risk assessment, auditing, and quality assurance experience. Most recently, she has focused her efforts on human health risk assessment, and has been the primary author or key contributor of risk assessment reports and screening evaluations for projects governed under RCRA, CERCLA, SWRCB, DTSC, DNREC, PADEP, NJDEP, CTDEEP, ODEQ, NYSDEC and MDE. She has experience in site-specific strategy development, which has enabled her to perform assessments to focus areas of investigation and identify risk-based alternatives for reducing remediation costs. Ms. Strake is a member of the Interstate Technology and Regulatory Council Risk Assessment Team responsible for the development and review of organizational risk assessment guidance documents and serves as a National Trainer in risk assessment for the organization.

Ms. Strake has over nine years of experience assessing potential adverse health effect to humans from exposure to hazardous contaminants in soil, sediment, groundwater, surface water, ambient and indoor air, and various types of animal, fish, and plant materials. She understands and applies environmental cleanup guidance and policies associated with multiple federal and state agencies. Additionally, she has broad experience in the development of preliminary remediation goals and site-specific action levels. She is proficient with the USEPA and Cal/EPA Johnson and Ettinger Model for Subsurface Vapor Intrusion into Buildings, USEPA's Adult Lead Methodology, DTSC's Leadspread 7 and 8, and statistical evaluation of data using USEPA's ProUCL software.

Ms. Strake has extensive experience in environmental data validation, focused on ensuring laboratory deliverables follow specific guidelines as described by regulatory agencies and the analytical methods employed. In addition, she has experience in EQuIS chemical database management. She also has a broad range of environmental field experience and maintains current OSHA HAZWOPER certification.

Ms. Strake is experienced in auditing laboratory and field-sampling activities for compliance with Quality Assurance Project Plans (QAPPs), the National Environmental Laboratory Accreditation Conference Standards Quality Systems manual, and applicable USEPA Guidance. Ms. Strake has also audited on-site laboratories in support of groundwater treatment operations and implemented corrective actions. Her responsibilities include writing reports on the value of laboratory work, writing/editing QAPPs for clients and project-specific sites, peer reviewing colleague's work, and mentoring staff within the office. She has also served as the Quality Assurance officer for several long-term projects, responsible for the achievement of all forms of Quality Control/Quality Assurance by onsite personnel relating to sampling, analysis, and data evaluation.

Ms. Strake has several years' experience analyzing investigative samples, writing laboratory Standard Operating Procedures (SOPs), and managing all

Education

M.B.A., Business Administration
The University of Scranton

B.S., Chemistry
Cedar Crest College

Memberships

Interstate Technology and Regulatory Council

Society for Risk Analysis

Training

Candidate, Certified Industrial Environmental Toxicologist. National Registry of Environmental Professionals.

40 hr. OSHA HAZWOPER Training/Nov 2002

8 hr. HAZWOPER Supervisor/June 2004

8 hr. OSHA HAZWOPER Refresher/Oct 2012

American Red Cross First Aid & CPR certified

Publications/Presentations

Decision Making at Contaminated Sites: Issues and Options in Human Health Risk Assessment. Interstate Technology and Regulatory Council

Alternate Approaches for Act 2 Risk Assessments Using Site-Specific Information. Pennsylvania Brownfields Conference

Tools from NJDEP's Attainment Guidance to Support Site Closure
LSRP Summit V

EPA Region IX Vapor Intrusion Policy for Silicon Valley
2014 Environmental Workshop

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aspects of procedures and analyses for Optical Emission Spectrometry, X-Ray Fluorescence, Ignition analysis, and Atomic Absorption. Her experience also includes operating and performing routine instrument maintenance for GC/MS and IR. Ms. Strake has worked extensively on developing rapid soil characterization programs for PCB and pesticide analyses utilizing enzyme-linked immunosorbent assays, and was also involved in efforts to develop new instrumentation to quantify microbial nitrification of ammonium.

Selected Project Experience

Human Health Risk Assessment

- Major League Soccer's San Jose Earthquakes Stadium – Utilized the Johnson and Ettinger advanced soil gas model to calculate risk and hazard associated with inhalation of chlorinated solvents for the redevelopment of a public soccer stadium. Soil gas data was modeled assuming three soil stratum and site-specific soil, building, and exposure parameters. The Earthquakes' stadium is set to open in 2015.
- Exelon - Developed a human health risk assessment for a utility-owned former Manufactured Gas Plant (MGP) site in Pennsylvania, under Pennsylvania's Act 2 Program. Used ProUCL 4.0 statistical software to determine upper limits for full data sets and non-detect data. Conducted vapor intrusion modeling (via the Johnson & Ettinger model) and prepared vapor intrusion reports showing that risks to volatile organic compounds in soils and groundwater were not impacting indoor air quality.
- Texas Instruments – Participated in a collaboration with Robert Ettinger and Geosyntec Consulting to develop comments to USEPA Region IX and the San Francisco Regional Water Quality Control Board regarding vapor intrusion at South Bay Superfund Sites. The focus of the response was to outline scientific and policy objections to EPA's recommended TCE interim short-term indoor air response action levels and guidelines, and to clarify the use of California-modified indoor air screening levels for assessing and responding to TCE and PCE subsurface vapor intrusion into indoor air.
- DuPont - Worked as a key participant in the human health risk evaluation of mercury associated with legacy contamination of the South River located in Waynesboro, Virginia.
- Veteran's Affairs - Completed a human health risk evaluation of the potential future risk associated with inhalation of indoor air for the Veteran's Administration. Soil, soil gas, and groundwater samples were collected as part of the site characterization. Achieved DTSC approval of the risk assessment approach and conclusions.
- Santa Clara Landfill – Developed a human health risk assessment to characterize risk associated with exposure to landfill gas at the Santa Clara All Purpose Landfill. The risk assessment evaluated specific compounds in landfill gas, their concentrations, spatial patterns, and extent throughout the site, and assessed the potential for vapor intrusion associated with a proposed future redevelopment.
- Avon - Completed a human health risk assessment in accordance with NYSDEC guidance for a redevelopment property located in Rye, New York. The objective of the evaluation was to characterize the risks associated with potential future human

exposures to soil and groundwater affected by a release from the Site's former No. 2 fuel oil UST. The intended future use of the Site was a playground to be utilized by the general public for open play on commercial recreational equipment.

- Golden Gate National Parks Conservancy – Peer reviewed a Preliminary Endangerment Assessment Report for the Battery East Trail. The assessment included a human health risk evaluation that estimated carcinogenic risk from exposure to PAHs and dioxin/furans in soil using toxic equivalency to benzo(a)pyrene and 2,3,7,8-TCDD.
- Sunoco Refineries – Derived site-specific soil PRGs for lead using the EPA's adult lead model for two former Sunoco refineries. Completed receptor evaluations in accordance with USEPA risk assessment guidance to develop exposure parameters under current and reasonably anticipated future land use scenarios.
- Honeywell - Completed a focused human health risk evaluation of PAH contaminants for under NJDEP's Site Remediation Program. Applied a blended approach of qualitative risk characterization and quantitative risk calculation to propose closure of AOCs following the remedial investigation.
- Delaware City Refinery - Performed comprehensive human health risk assessment for a petroleum refinery in Delaware City, Delaware. The risk assessment was the basis for a thorough characterization and assessment of potential risks posed by site-specific conditions. Developed various human exposure scenarios by using both Federal and State-Specific guidance for soil, groundwater, and surface water exposure.
- Occidental Chemical - Completed multiple AOC-specific risk assessments utilizing and applying the guidance set forth by the DTSC's Human Health Risk Assessment Note 1 (Default Exposure Factors for Use in Risk Assessment), Note 3 (Recommended Methodology for Use of USEPA Regional Screening Levels, and Note 4 (Screening Level Human Health Risk Assessments).
- Floreffe Terminal - Performed human health risk assessment for contamination resulting from a 3.9 million gallon diesel oil tank collapse along the Monongahela River. Evaluated potential impacts to human health via exposure to soil, groundwater, and surface water. Calculated site-specific standards for soil remediation.
- DOW Chemical - Calculated Medium Specific Concentrations (MSCs) for unregulated contaminants using the PADEP protocols to assist in the clean-up of a monomer tank explosion in Bristol, Pennsylvania. Selected appropriate surrogate toxicity data and evaluated novel on-site constituents by analogy.
- Ryder – Developed Alternative Direct Exposure Criteria for PAH-impacted fill material at a commercial facility. Site-specific soil screening levels for incidental ingestion of soil were calculated following a forward risk evaluation for current on-site receptors.
- Rohm and Haas - Prepared an Act 2 site-specific human health risk assessment for the oldest industrial facility in the United States, located in southeast Philadelphia. The objective of the risk assessment was to determine achievable possible future land-use options under Pennsylvania's Land Recycling Program. The risk assessment included evolution of multiple site-COPCs and constituent suites: VOCs, SVOCs, PCBs, pesticides, and metals

(including lead). Evaluated the potential for indoor air inhalation through J&E modeling of soil gas and groundwater.

- Regency - Conducted vapor intrusion modeling for a dry cleaning facility in the Philadelphia area. Predictive modeling using the Johnson and Ettinger approach indicated that estimated contaminant levels would not adversely affect human receptors.

Chemical Data Quality

- Audited multiple accredited laboratories in New Jersey and Pennsylvania on behalf of clients using USEPA Guidance on Technical Audits and Related Assessments for Environmental Data Operations. The audits included full-suite USEPA and SW-846 methodology; and included reviewing staff experience and training records, equipment and facilities, policies, practices, procedures, and documentation for sample receipt, analysis, instrument maintenance, standard preparation, calibration and traceability, control charting, corrective actions, data reduction and review, report generation, and waste disposal.
- Reviewed and validated data packages for RCRA Facilities Investigation at a Philadelphia-area chemical site; issued data validation reports to project personnel and regulatory agencies. The reviews included evaluation of quarterly groundwater, soil, and soil vapor matrices. Participated in RCRA groundwater sampling, developed and executed the investigation's QAPP, and coordinated with the laboratory to schedule and perform field-sampling events.
- Completed Data Usability Summary Reports in accordance with NYSDEC DER-10 guidance for soil, groundwater, sediment surface water, soil gas, ambient air and indoor air analytical results.
- Acted as the Quality Assurance Officer for several long-term projects in Pennsylvania, Maryland, and New Jersey, Delaware, responsible for the achievement of all forms of QA/QC as it related to sampling, analysis, and data evaluation.
- Participated in a CERCLA site investigation; assessed the usability of sample results for numerous matrices including dust, sediment, soils, and various aqueous matrices for a remedial investigation under the Contract Laboratory Program. Implemented an on-site pesticide immunoassay program to delineate soil contamination in real-time.
- EQuIS data manager for database migration of historical groundwater results associated with remediation activities; assisted with natural attenuation data evaluation and gained experience in geochemical trends associated with intrinsic biodegradation.
- Coordinated the collection of fish tissue samples and determined the validity of the analytical results associated with CERCLA and RCRA site characterizations. Assessed duck blood analytical results for the Connecticut Department of Energy and Environmental Protection Bureau of Natural Resources.

Anthony Moffa Jr, CHMM

Corporate Health and Safety Manager

Health & Safety Coordinator, Contingency Planning, Compliance Auditing

19 years in the industry ~ 12 years with Langan

Mr. Moffa has over nineteen years experience in providing environmental compliance assistance to both commercial and industrial facilities. His compliance auditing experience includes facility and process specific including the areas of waste management, stormwater and wastewater issues and air emissions. He has an extensive background in the areas of hazardous, non-hazardous and universal waste management. His level of experience includes working with federal, state and local authorities to ensure clients environmental compliance status on all levels. His compliance reporting includes federal and state specific reports. Completed federal reports include the Tier II, Toxic Chemical Release Inventories under SARA Title III and Biennial Hazardous Waste Reporting. Completed state specific reporting includes the Pennsylvania Form 26R and the New Jersey Release Pollution Prevention Report. He is experienced in the preparation, submittal and compliance monitoring of NPDES & stormwater applications and permits. He has developed site specific contingency plans for both industrial and commercial facilities for facilities throughout Pennsylvania and New Jersey.

Selected Projects

Verizon - Pennsylvania, Inc. Philadelphia Naval Yard, PA
Confidential Client, Philadelphia, PA
Penn Color, Doylestown, PA
Verizon - Pennsylvania, Inc., Phase I Environmental Assessment, Lansdowne, PA
Verizon - Pennsylvania, Inc. (formerly Bell Atlantic Corporation), Various Locations, PA
Kinder Morgan Bulk Terminals, Inc. Fairless Hills, PA
PP&L – Martins Creek, Bangor, PA
Concord Beverage Company, Concordville, PA
Penn Color, Hatfield, PA
National Starch & Chemical Company, Bloomfield, NJ
Air Products and Chemicals, Inc.., Middlesex, NJ
PSEG Services Corporation, Jersey City, NJ
Sampson Coatings, Richmond, VA
Custom Chemicals Corporation, Elmwood Park, NJ

Education

M.E., Science
Penn State University

B.S., Physics
West Chester University

Professional Registration

Certified Hazardous Material Manager (CHMM)

Professional Affiliations

Pennsylvania Chamber of Business & Industry

Chemical Council of New Jersey

New Jersey Business & Industry Association

Professional Training

OSHA 40-Hour Hazardous Waste Site Training Course

National Safety Council – CPR, Bloodborne Pathogen and First Aid Training

Steel Tank Institute Certified AST Inspector

PADEP Pollution Prevention & Energy Efficiency Qualified Assessor

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ATTACHMENT B

LABORATORY REPORTING LIMITS AND METHOD DETECTION LIMITS

Date Created: 07/27/18
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File: PM5251-1
Page: 1

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TCL Volatiles - EPA 8260C/5035 High&Low (SOIL)

Holding Time: 14 days
Container/Sample Preservation: 1 - 1 Vial MeOH/2 Vial Water

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Methylene chloride	75-09-2	5	2.29	ug/kg	70-130	30	70-130	30	30			
1,1-Dichloroethane	75-34-3	1	0.145	ug/kg	70-130	30	70-130	30	30			
Chloroform	67-66-3	1.5	0.14	ug/kg	70-130	30	70-130	30	30			
Carbon tetrachloride	56-23-5	1	0.23	ug/kg	70-130	30	70-130	30	30			
1,2-Dichloropropane	78-87-5	1	0.125	ug/kg	70-130	30	70-130	30	30			
Dibromochloromethane	124-48-1	1	0.14	ug/kg	70-130	30	70-130	30	30			
1,1,2-Trichloroethane	79-00-5	1	0.267	ug/kg	70-130	30	70-130	30	30			
Tetrachloroethene	127-18-4	0.5	0.196	ug/kg	70-130	30	70-130	30	30			
Chlorobenzene	108-90-7	0.5	0.127	ug/kg	70-130	30	70-130	30	30			
Trichlorofluoromethane	75-69-4	4	0.695	ug/kg	70-139	30	70-139	30	30			
1,2-Dichloroethane	107-06-2	1	0.257	ug/kg	70-130	30	70-130	30	30			
1,1,1-Trichloroethane	71-55-6	0.5	0.167	ug/kg	70-130	30	70-130	30	30			
Bromodichloromethane	75-27-4	0.5	0.109	ug/kg	70-130	30	70-130	30	30			
trans-1,3-Dichloropropene	10061-02-6	1	0.273	ug/kg	70-130	30	70-130	30	30			
cis-1,3-Dichloropropene	10061-01-5	0.5	0.158	ug/kg	70-130	30	70-130	30	30			
1,3-Dichloropropene, Total	542-75-6	0.5	0.158	ug/kg				30	30			
1,3-Dichloropropene, Total	542-75-6	0.5	0.158	ug/kg				30	30			
1,1-Dichloropropene	563-58-6	0.5	0.159	ug/kg	70-130	30	70-130	30	30			
Bromoform	75-25-2	4	0.246	ug/kg	70-130	30	70-130	30	30			
1,1,2,2-Tetrachloroethane	79-34-5	0.5	0.166	ug/kg	70-130	30	70-130	30	30			
Benzene	71-43-2	0.5	0.166	ug/kg	70-130	30	70-130	30	30			
Toluene	108-88-3	1	0.543	ug/kg	70-130	30	70-130	30	30			
Ethylbenzene	100-41-4	1	0.141	ug/kg	70-130	30	70-130	30	30			
Chloromethane	74-87-3	4	0.932	ug/kg	52-130	30	52-130	30	30			
Bromomethane	74-83-9	2	0.581	ug/kg	57-147	30	57-147	30	30			
Vinyl chloride	75-01-4	1	0.335	ug/kg	67-130	30	67-130	30	30			
Chloroethane	75-00-3	2	0.452	ug/kg	50-151	30	50-151	30	30			
1,1-Dichloroethene	75-35-4	1	0.238	ug/kg	65-135	30	65-135	30	30			
trans-1,2-Dichloroethene	156-60-5	1.5	0.137	ug/kg	70-130	30	70-130	30	30			
Trichloroethene	79-01-6	0.5	0.137	ug/kg	70-130	30	70-130	30	30			
1,2-Dichlorobenzene	95-50-1	2	0.144	ug/kg	70-130	30	70-130	30	30			
1,3-Dichlorobenzene	541-73-1	2	0.148	ug/kg	70-130	30	70-130	30	30			
1,4-Dichlorobenzene	106-46-7	2	0.171	ug/kg	70-130	30	70-130	30	30			
Methyl tert butyl ether	1634-04-4	2	0.201	ug/kg	66-130	30	66-130	30	30			
p/m-Xylene	179601-23-1	2	0.56	ug/kg	70-130	30	70-130	30	30			
o-Xylene	95-47-6	1	0.291	ug/kg	70-130	30	70-130	30	30			
Xylene (Total)	1330-20-7	1	0.291	ug/kg				30	30			
Xylene (Total)	1330-20-7	1	0.291	ug/kg				30	30			
cis-1,2-Dichloroethene	156-59-2	1	0.175	ug/kg	70-130	30	70-130	30	30			
1,2-Dichloroethene (total)	540-59-0	1	0.137	ug/kg				30	30			
1,2-Dichloroethene (total)	540-59-0	1	0.137	ug/kg				30	30			
Dibromomethane	74-95-3	2	0.238	ug/kg	70-130	30	70-130	30	30			

Please Note that the RL information provided in this table is calculated using a 100% Solids factor (Soil/Solids only)
Please Note that the information provided in this table is subject to change at anytime at the discretion of Alpha Analytical, In

Langan Engineering & Environmental

TCL Volatiles - EPA 8260C/5035 High&Low (SOIL)

Holding Time: 14 days
Container/Sample Preservation: 1 - 1 Vial MeOH/2 Vial Water

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Styrene	100-42-5	1	0.196	ug/kg	70-130	30	70-130	30	30			
Dichlorodifluoromethane	75-71-8	10	0.915	ug/kg	30-146	30	30-146	30	30			
Acetone	67-64-1	10	4.811	ug/kg	54-140	30	54-140	30	30			
Carbon disulfide	75-15-0	10	4.55	ug/kg	59-130	30	59-130	30	30			
2-Butanone	78-93-3	10	2.22	ug/kg	70-130	30	70-130	30	30			
Vinyl acetate	108-05-4	10	2.15	ug/kg	70-130	30	70-130	30	30			
4-Methyl-2-pentanone	108-10-1	10	1.28	ug/kg	70-130	30	70-130	30	30			
1,2,3-Trichloropropane	96-18-4	2	0.127	ug/kg	68-130	30	68-130	30	30			
2-Hexanone	591-78-6	10	1.18	ug/kg	70-130	30	70-130	30	30			
Bromochloromethane	74-97-5	2	0.205	ug/kg	70-130	30	70-130	30	30			
2,2-Dichloropropane	594-20-7	2	0.202	ug/kg	70-130	30	70-130	30	30			
1,2-Dibromoethane	106-93-4	1	0.279	ug/kg	70-130	30	70-130	30	30			
1,3-Dichloropropane	142-28-9	2	0.167	ug/kg	69-130	30	69-130	30	30			
1,1,1,2-Tetrachloroethane	630-20-6	0.5	0.132	ug/kg	70-130	30	70-130	30	30			
Bromobenzene	108-86-1	2	0.145	ug/kg	70-130	30	70-130	30	30			
n-Butylbenzene	104-51-8	1	0.167	ug/kg	70-130	30	70-130	30	30			
sec-Butylbenzene	135-98-8	1	0.146	ug/kg	70-130	30	70-130	30	30			
tert-Butylbenzene	98-06-6	2	0.118	ug/kg	70-130	30	70-130	30	30			
o-Chlorotoluene	95-49-8	2	0.191	ug/kg	70-130	30	70-130	30	30			
p-Chlorotoluene	106-43-4	2	0.108	ug/kg	70-130	30	70-130	30	30			
1,2-Dibromo-3-chloropropane	96-12-8	3	0.998	ug/kg	68-130	30	68-130	30	30			
Hexachlorobutadiene	87-68-3	4	0.169	ug/kg	67-130	30	67-130	30	30			
Isopropylbenzene	98-82-8	1	0.109	ug/kg	70-130	30	70-130	30	30			
p-Isopropyltoluene	99-87-6	1	0.109	ug/kg	70-130	30	70-130	30	30			
Naphthalene	91-20-3	4	0.65	ug/kg	70-130	30	70-130	30	30			
Acrylonitrile	107-13-1	4	1.15	ug/kg	70-130	30	70-130	30	30			
n-Propylbenzene	103-65-1	1	0.171	ug/kg	70-130	30	70-130	30	30			
1,2,3-Trichlorobenzene	87-61-6	2	0.322	ug/kg	70-130	30	70-130	30	30			
1,2,4-Trichlorobenzene	120-82-1	2	0.272	ug/kg	70-130	30	70-130	30	30			
1,3,5-Trimethylbenzene	108-67-8	2	0.193	ug/kg	70-130	30	70-130	30	30			
1,2,4-Trimethylbenzene	95-63-6	2	0.334	ug/kg	70-130	30	70-130	30	30			
1,4-Dioxane	123-91-1	100	35.1	ug/kg	65-136	30	65-136	30	30			
1,4-Diethylbenzene	105-05-5	2	0.177	ug/kg	70-130	30	70-130	30	30			
4-Ethyltoluene	622-96-8	2	0.384	ug/kg	70-130	30	70-130	30	30			
1,2,4,5-Tetramethylbenzene	95-93-2	2	0.191	ug/kg	70-130	30	70-130	30	30			
Ethyl ether	60-29-7	2	0.341	ug/kg	67-130	30	67-130	30	30			
trans-1,4-Dichloro-2-butene	110-57-6	5	1.42	ug/kg	70-130	30	70-130	30	30			
1,2-Dichloroethane-d4	*17060-07-0*									*70-130*		
2-Chloroethoxyethane												
Toluene-d8	*2037-26-5*									*70-130*		
4-Bromofluorobenzene	*460-00-4*									*70-130*		
Dibromofluoromethane	*1868-53-7*									*70-130*		

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NYTCL Semivolatiles - EPA 8270D (SOIL)

Holding Time: 14 days
Container/Sample Preservation: 1 - Glass 250ml/8oz unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Acenaphthene	83-32-9	133.6	17.3012	ug/kg	31-137	50	31-137	50	50			
1,2,4-Trichlorobenzene	120-82-1	167	19.1048	ug/kg	38-107	50	38-107	50	50			
Hexachlorobenzene	118-74-1	100.2	18.704	ug/kg	40-140	50	40-140	50	50			
Bis(2-chloroethyl)ether	111-44-4	150.3	22.6452	ug/kg	40-140	50	40-140	50	50			
2-Chloronaphthalene	91-58-7	167	16.5664	ug/kg	40-140	50	40-140	50	50			
1,2-Dichlorobenzene	95-50-1	167	29.9932	ug/kg	40-140	50	40-140	50	50			
1,3-Dichlorobenzene	541-73-1	167	28.724	ug/kg	40-140	50	40-140	50	50			
1,4-Dichlorobenzene	106-46-7	167	29.1582	ug/kg	28-104	50	28-104	50	50			
3,3'-Dichlorobenzidine	91-94-1	167	44.422	ug/kg	40-140	50	40-140	50	50			
2,4-Dinitrotoluene	121-14-2	167	33.4	ug/kg	40-132	50	40-132	50	50			
2,6-Dinitrotoluene	606-20-2	167	28.6572	ug/kg	40-140	50	40-140	50	50			
Fluoranthene	206-44-0	100.2	19.1716	ug/kg	40-140	50	40-140	50	50			
4-Chlorophenyl phenyl ether	7005-72-3	167	17.869	ug/kg	40-140	50	40-140	50	50			
4-Bromophenyl phenyl ether	101-55-3	167	25.4842	ug/kg	40-140	50	40-140	50	50			
Bis(2-chloroisopropyl)ether	108-60-1	200.4	28.5236	ug/kg	40-140	50	40-140	50	50			
Bis(2-chloroethoxy)methane	111-91-1	180.36	16.7334	ug/kg	40-117	50	40-117	50	50			
Hexachlorobutadiene	87-68-3	167	24.4488	ug/kg	40-140	50	40-140	50	50			
Hexachlorocyclopentadiene	77-47-4	477.62	151.302	ug/kg	40-140	50	40-140	50	50			
Hexachloroethane	67-72-1	133.6	27.0206	ug/kg	40-140	50	40-140	50	50			
Isophorone	78-59-1	150.3	21.6766	ug/kg	40-140	50	40-140	50	50			
Naphthalene	91-20-3	167	20.3406	ug/kg	40-140	50	40-140	50	50			
Nitrobenzene	98-95-3	150.3	24.716	ug/kg	40-140	50	40-140	50	50			
NitrosoDiPhenylAmine(NDPA)/DPA	86-30-6	133.6	19.0046	ug/kg	36-157	50	36-157	50	50			
n-Nitrosodi-n-propylamine	621-64-7	167	25.7848	ug/kg	32-121	50	32-121	50	50			
Bis(2-Ethylhexyl)phthalate	117-81-7	167	57.782	ug/kg	40-140	50	40-140	50	50			
Butyl benzyl phthalate	85-68-7	167	42.084	ug/kg	40-140	50	40-140	50	50			
Di-n-butylphthalate	84-74-2	167	31.6632	ug/kg	40-140	50	40-140	50	50			
Di-n-octylphthalate	117-84-0	167	56.78	ug/kg	40-140	50	40-140	50	50			
Diethyl phthalate	84-66-2	167	15.4642	ug/kg	40-140	50	40-140	50	50			
Dimethyl phthalate	131-11-3	167	35.07	ug/kg	40-140	50	40-140	50	50			
Benzo(a)anthracene	56-55-3	100.2	18.8042	ug/kg	40-140	50	40-140	50	50			
Benzo(a)pyrene	50-32-8	133.6	40.748	ug/kg	40-140	50	40-140	50	50			
Benzo(b)fluoranthene	205-99-2	100.2	28.1228	ug/kg	40-140	50	40-140	50	50			
Benzo(k)fluoranthene	207-08-9	100.2	26.72	ug/kg	40-140	50	40-140	50	50			
Chrysene	218-01-9	100.2	17.368	ug/kg	40-140	50	40-140	50	50			
Acenaphthylene	208-96-8	133.6	25.7848	ug/kg	40-140	50	40-140	50	50			
Anthracene	120-12-7	100.2	32.565	ug/kg	40-140	50	40-140	50	50			
Benzo(ghi)perylene	191-24-2	133.6	19.6392	ug/kg	40-140	50	40-140	50	50			
Fluorene	86-73-7	167	16.2324	ug/kg	40-140	50	40-140	50	50			
Phenanthrene	85-01-8	100.2	20.3072	ug/kg	40-140	50	40-140	50	50			
Dibenzo(a,h)anthracene	53-70-3	100.2	19.3052	ug/kg	40-140	50	40-140	50	50			
Indeno(1,2,3-cd)Pyrene	193-39-5	133.6	23.2798	ug/kg	40-140	50	40-140	50	50			

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NYTCL Semivolatiles - EPA 8270D (SOIL)

Holding Time: 14 days
Container/Sample Preservation: 1 - Glass 250ml/8oz unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Pyrene	129-00-0	100.2	16.5998	ug/kg	35-142	50	35-142	50	50			
Biphenyl	92-52-4	380.76	38.744	ug/kg	54-104	50	54-104	50	50			
4-Chloroaniline	106-47-8	167	30.394	ug/kg	40-140	50	40-140	50	50			
2-Nitroaniline	88-74-4	167	32.1976	ug/kg	47-134	50	47-134	50	50			
3-Nitroaniline	99-09-2	167	31.4962	ug/kg	26-129	50	26-129	50	50			
4-Nitroaniline	100-01-6	167	69.138	ug/kg	41-125	50	41-125	50	50			
Dibenzofuran	132-64-9	167	15.7982	ug/kg	40-140	50	40-140	50	50			
2-Methylnaphthalene	91-57-6	200.4	20.1736	ug/kg	40-140	50	40-140	50	50			
Acetophenone	98-86-2	167	20.6746	ug/kg	14-144	50	14-144	50	50			
2,4,6-Trichlorophenol	88-06-2	100.2	31.6632	ug/kg	30-130	50	30-130	50	50			
P-Chloro-M-Cresol	59-50-7	167	24.883	ug/kg	26-103	50	26-103	50	50			
2-Chlorophenol	95-57-8	167	19.7394	ug/kg	25-102	50	25-102	50	50			
2,4-Dichlorophenol	120-83-2	150.3	26.8536	ug/kg	30-130	50	30-130	50	50			
2,4-Dimethylphenol	105-67-9	167	55.11	ug/kg	30-130	50	30-130	50	50			
2-Nitrophenol	88-75-5	360.72	62.792	ug/kg	30-130	50	30-130	50	50			
4-Nitrophenol	100-02-7	233.8	68.136	ug/kg	11-114	50	11-114	50	50			
2,4-Dinitrophenol	51-28-5	801.6	77.822	ug/kg	4-130	50	4-130	50	50			
4,6-Dinitro-o-cresol	534-52-1	434.2	80.16	ug/kg	10-130	50	10-130	50	50			
Pentachlorophenol	87-86-5	133.6	36.74	ug/kg	17-109	50	17-109	50	50			
Phenol	108-95-2	167	25.217	ug/kg	26-90	50	26-90	50	50			
2-Methylphenol	95-48-7	167	25.885	ug/kg	30-130.	50	30-130.	50	50			
3-Methylphenol/4-Methylphenol	106-44-5	240.48	26.1522	ug/kg	30-130	50	30-130	50	50			
2,4,5-Trichlorophenol	95-95-4	167	31.9972	ug/kg	30-130	50	30-130	50	50			
Benzoic Acid	65-85-0	541.08	169.004	ug/kg	10-110	50	10-110	50	50			
Benzyl Alcohol	100-51-6	167	51.102	ug/kg	40-140	50	40-140	50	50			
Carbazole	86-74-8	167	16.2324	ug/kg	54-128	50	54-128	50	50			
2-Fluorophenol	*367-12-4*									*25-120*		
Phenol-d6	*13127-88-3*									*10-120*		
Nitrobenzene-d5	*4165-60-0*									*23-120*		
2-Fluorobiphenyl	*321-60-8*									*30-120*		
2,4,6-Tribromophenol	*118-79-6*									*10-136*		
4-Terphenyl-d14	*1718-51-0*									*18-120*		

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TCL Pesticides - EPA 8081B (SOIL)

Holding Time: 14 days
Container/Sample Preservation: 1 - Glass 250ml/8oz unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Delta-BHC	319-86-8	7.992	1.5651	ug/kg	30-150	30	30-150	50	50			
Lindane	58-89-9	3.33	1.48851	ug/kg	30-150	30	30-150	50	50			
Alpha-BHC	319-84-6	3.33	0.94572	ug/kg	30-150	30	30-150	50	50			
Beta-BHC	319-85-7	7.992	3.0303	ug/kg	30-150	30	30-150	50	50			
Heptachlor	76-44-8	3.996	1.79154	ug/kg	30-150	30	30-150	50	50			
Aldrin	309-00-2	7.992	2.81385	ug/kg	30-150	30	30-150	50	50			
Heptachlor epoxide	1024-57-3	14.985	4.4955	ug/kg	30-150	30	30-150	50	50			
Endrin	72-20-8	3.33	1.3653	ug/kg	30-150	30	30-150	50	50			
Endrin aldehyde	7421-93-4	9.99	3.4965	ug/kg	30-150	30	30-150	50	50			
Endrin ketone	53494-70-5	7.992	2.05794	ug/kg	30-150	30	30-150	50	50			
Dieldrin	60-57-1	4.995	2.4975	ug/kg	30-150	30	30-150	50	50			
4,4'-DDE	72-55-9	7.992	1.84815	ug/kg	30-150	30	30-150	50	50			
4,4'-DDD	72-54-8	7.992	2.85048	ug/kg	30-150	30	30-150	50	50			
4,4'-DDT	50-29-3	14.985	6.4269	ug/kg	30-150	30	30-150	50	50			
Endosulfan I	959-98-8	7.992	1.88811	ug/kg	30-150	30	30-150	50	50			
Endosulfan II	33213-65-9	7.992	2.67066	ug/kg	30-150	30	30-150	50	50			
Endosulfan sulfate	1031-07-8	3.33	1.58508	ug/kg	30-150	30	30-150	50	50			
Methoxychlor	72-43-5	14.985	4.662	ug/kg	30-150	30	30-150	50	50			
Toxaphene	8001-35-2	149.85	41.958	ug/kg	30-150	30	30-150	50	50			
cis-Chlordane	5103-71-9	9.99	2.78388	ug/kg	30-150	30	30-150	50	50			
trans-Chlordane	5103-74-2	9.99	2.63736	ug/kg	30-150	30	30-150	50	50			
Chlordane	57-74-9	64.935	26.4735	ug/kg	30-150	30	30-150	50	50			
2,4,5,6-Tetrachloro-m-xylene	*877-09-8*									*30-150*		
Decachlorobiphenyl	*2051-24-3*									*30-150*		

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Herbicides -EPA 8151A (SOIL)

Holding Time: 14 days
Container/Sample Preservation: 1 - Glass 250ml/8oz unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
2,4-D	94-75-7	0.1665	0.0104895	mg/kg	30-150	30	30-150	30	30			
2,4,5-T	93-76-5	0.1665	0.0051615	mg/kg	30-150	30	30-150	30	30			
2,4,5-TP (Silvex)	93-72-1	0.1665	0.0044289	mg/kg	30-150	30	30-150	30	30			
DCAA	*19719-28-9*									*30-150*		

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TCL PCBs - EPA 8082A (SOIL)

Holding Time: 14 days
Container/Sample Preservation: 1 - Glass 250ml/8oz unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Aroclor 1016	12674-11-2	33.5	3.7989	ug/kg	40-140	50	40-140	50	50			
Aroclor 1221	11104-28-2	33.5	5.0987	ug/kg	40-140	50	40-140	50	50			
Aroclor 1232	11141-16-5	33.5	3.2964	ug/kg	40-140	50	40-140	50	50			
Aroclor 1242	53469-21-9	33.5	4.1004	ug/kg	40-140	50	40-140	50	50			
Aroclor 1248	12672-29-6	33.5	3.7587	ug/kg	40-140	50	40-140	50	50			
Aroclor 1254	11097-69-1	33.5	2.7336	ug/kg	40-140	50	40-140	50	50			
Aroclor 1260	11096-82-5	33.5	3.4974	ug/kg	40-140	50	40-140	50	50			
Aroclor 1262	37324-23-5	33.5	2.7537	ug/kg	40-140	50	40-140	50	50			
Aroclor 1268	11100-14-4	33.5	2.3718	ug/kg	40-140	50	40-140	50	50			
PCBs, Total	1336-36-3	33.5	1.541	ug/kg				50	50			
PCBs, Total	1336-36-3	33.5	1.541	ug/kg				50	50			
2,4,5,6-Tetrachloro-m-xylene	*877-09-8*									*30-150*		
Decachlorobiphenyl	*2051-24-3*									*30-150*		

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METALS by 6010D (SOIL)

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria	Holding Time	Container/Sample Preservation
Aluminum, Total	7429-90-5	4	1.08	mg/kg	48-151		75-125	20	20		180 days	Metals Only-Glass 60mL/2oz unpreserved
Antimony, Total	7440-36-0	2	0.152	mg/kg	1-208		75-125	20	20		180 days	Metals Only-Glass 60mL/2oz unpreserved
Arsenic, Total	7440-38-2	0.4	0.0832	mg/kg	79-121		75-125	20	20		180 days	Metals Only-Glass 60mL/2oz unpreserved
Barium, Total	7440-39-3	0.4	0.0696	mg/kg	83-117		75-125	20	20		180 days	Metals Only-Glass 60mL/2oz unpreserved
Beryllium, Total	7440-41-7	0.2	0.0132	mg/kg	83-117		75-125	20	20		180 days	Metals Only-Glass 60mL/2oz unpreserved
Cadmium, Total	7440-43-9	0.4	0.0392	mg/kg	83-117		75-125	20	20		180 days	Metals Only-Glass 60mL/2oz unpreserved
Calcium, Total	7440-70-2	4	1.4	mg/kg	81-119		75-125	20	20		180 days	Metals Only-Glass 60mL/2oz unpreserved
Chromium, Total	7440-47-3	0.4	0.0384	mg/kg	80-120		75-125	20	20		180 days	Metals Only-Glass 60mL/2oz unpreserved
Cobalt, Total	7440-48-4	0.8	0.0664	mg/kg	84-115		75-125	20	20		180 days	Metals Only-Glass 60mL/2oz unpreserved
Copper, Total	7440-50-8	0.4	0.1032	mg/kg	81-118		75-125	20	20		180 days	Metals Only-Glass 60mL/2oz unpreserved
Iron, Total	7439-89-6	2	0.3612	mg/kg	45-155		75-125	20	20		180 days	Metals Only-Glass 60mL/2oz unpreserved
Lead, Total	7439-92-1	2	0.1072	mg/kg	81-117		75-125	20	20		180 days	Metals Only-Glass 60mL/2oz unpreserved
Magnesium, Total	7439-95-4	4	0.616	mg/kg	76-124		75-125	20	20		180 days	Metals Only-Glass 60mL/2oz unpreserved
Manganese, Total	7439-96-5	0.4	0.0636	mg/kg	81-117		75-125	20	20		180 days	Metals Only-Glass 60mL/2oz unpreserved
Nickel, Total	7440-02-0	1	0.0968	mg/kg	83-117		75-125	20	20		180 days	Metals Only-Glass 60mL/2oz unpreserved
Potassium, Total	7440-09-7	100	5.76	mg/kg	71-129		75-125	20	20		180 days	Metals Only-Glass 60mL/2oz unpreserved
Selenium, Total	7782-49-2	0.8	0.1032	mg/kg	78-122		75-125	20	20		180 days	Metals Only-Glass 60mL/2oz unpreserved
Silver, Total	7440-22-4	0.4	0.1132	mg/kg	75-124		75-125	20	20		180 days	Metals Only-Glass 60mL/2oz unpreserved
Sodium, Total	7440-23-5	80	1.26	mg/kg	72-127		75-125	20	20		180 days	Metals Only-Glass 60mL/2oz unpreserved
Thallium, Total	7440-28-0	0.8	0.126	mg/kg	80-120		75-125	20	20		180 days	Metals Only-Glass 60mL/2oz unpreserved
Vanadium, Total	7440-62-2	0.4	0.0812	mg/kg	78-122		75-125	20	20		180 days	Metals Only-Glass 60mL/2oz unpreserved
Zinc, Total	7440-66-6	2	0.1172	mg/kg	82-118		75-125	20	20		180 days	Metals Only-Glass 60mL/2oz unpreserved

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METALS by 7471B (SOIL)

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria	Holding Time	Container/Sample Preservation
Mercury, Total	7439-97-6	0.08	0.016896	mg/kg	72-128		80-120	20	20		28 days	Metals Only-Glass 60mL/2oz unpreserved

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WETCHEM (SOIL)

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Method	Holding Time	Container/Sample Preservation
Cyanide, Reactive	57-12-5	10	10	mg/kg	30-125	40		40	40	7.3	14 days	1 - Glass 250ml/8oz unpreserved
Sulfide, Reactive	NONE	10	10	mg/kg	60-125	40		40	40	7.3	14 days	1 - Glass 250ml/8oz unpreserved
Chromium, Hexavalent	18540-29-9	0.8	0.16	mg/kg	80-120	20	75-125	20	20	7196A	30 days	1 - Glass 120ml/4oz unpreserved
Cyanide, Total	57-12-5	1	0.212	mg/kg	80-120	35	75-125	35	35	9010C/9012B	14 days	1 - Glass 250ml/8oz unpreserved
pH	12408-02-5	0		SU	99-101			5	5	9045D	24 hours	1 - Glass 250ml/8oz unpreserved

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TPH by GC-FID Quantitation Only (SOIL)

Holding Time: 14 days
Container/Sample Preservation: 1 - Glass 250ml/8oz unpreserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
TPH	NONE	33350	3835.25	ug/kg	40-140	40	40-140	40	40			
Total Petroleum Hydrocarbons (C9-C44)	NONE	33350	3341.67	ug/kg	40-140	40	40-140	40	40			
o-Terphenyl	*84-15-1*									*40-140*		

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Please Note that the information provided in this table is subject to change at anytime at the discretion of Alpha Analytical, In

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Langan Engineering & Environmental

TPH - Gasoline Range Organics (SOIL)

Holding Time: 14 days
Container/Sample Preservation: 1 - Vial MeOH preserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Gasoline Range Organics	NONE	2500	48.15	ug/kg	80-120	20	80-120	20	20			
1,1,1-Trifluorotoluene	*98-08-8*									*70-130*		
4-Bromofluorobenzene	*460-00-4*									*70-130*		

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Langan Engineering & Environmental

TCL Volatiles - EPA 8260C (WATER)

Holding Time: 14 days
Container/Sample Preservation: 3 - Vial HCl preserved

Analyte	CAS #	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Methylene chloride	75-09-2	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,1-Dichloroethane	75-34-3	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Chloroform	67-66-3	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Carbon tetrachloride	56-23-5	0.5	0.134	ug/l	63-132	20	63-132	20	20			
1,2-Dichloropropane	78-87-5	1	0.137	ug/l	70-130	20	70-130	20	20			
Dibromochloromethane	124-48-1	0.5	0.149	ug/l	63-130	20	63-130	20	20			
1,1,2-Trichloroethane	79-00-5	1.5	0.5	ug/l	70-130	20	70-130	20	20			
Tetrachloroethene	127-18-4	0.5	0.181	ug/l	70-130	20	70-130	20	20			
Chlorobenzene	108-90-7	2.5	0.7	ug/l	75-130	20	75-130	20	20			
Trichlorofluoromethane	75-69-4	2.5	0.7	ug/l	62-150	20	62-150	20	20			
1,2-Dichloroethane	107-06-2	0.5	0.132	ug/l	70-130	20	70-130	20	20			
1,1,1-Trichloroethane	71-55-6	2.5	0.7	ug/l	67-130	20	67-130	20	20			
Bromodichloromethane	75-27-4	0.5	0.192	ug/l	67-130	20	67-130	20	20			
trans-1,3-Dichloropropene	10061-02-6	0.5	0.164	ug/l	70-130	20	70-130	20	20			
cis-1,3-Dichloropropene	10061-01-5	0.5	0.144	ug/l	70-130	20	70-130	20	20			
1,3-Dichloropropene, Total	542-75-6	0.5	0.144	ug/l				20	20			
1,3-Dichloropropene, Total	542-75-6	0.5	0.144	ug/l				20	20			
1,1-Dichloropropene	563-58-6	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Bromoform	75-25-2	2	0.65	ug/l	54-136	20	54-136	20	20			
1,1,2,2-Tetrachloroethane	79-34-5	0.5	0.167	ug/l	67-130	20	67-130	20	20			
Benzene	71-43-2	0.5	0.159	ug/l	70-130	20	70-130	20	20			
Toluene	108-88-3	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Ethylbenzene	100-41-4	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Chloromethane	74-87-3	2.5	0.7	ug/l	64-130	20	64-130	20	20			
Bromomethane	74-83-9	2.5	0.7	ug/l	39-139	20	39-139	20	20			
Vinyl chloride	75-01-4	1	0.0714	ug/l	55-140	20	55-140	20	20			
Chloroethane	75-00-3	2.5	0.7	ug/l	55-138	20	55-138	20	20			
1,1-Dichloroethene	75-35-4	0.5	0.169	ug/l	61-145	20	61-145	20	20			
trans-1,2-Dichloroethene	156-60-5	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Trichloroethene	79-01-6	0.5	0.175	ug/l	70-130	20	70-130	20	20			
1,2-Dichlorobenzene	95-50-1	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,3-Dichlorobenzene	541-73-1	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,4-Dichlorobenzene	106-46-7	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Methyl tert butyl ether	1634-04-4	2.5	0.7	ug/l	63-130	20	63-130	20	20			
p/m-Xylene	179601-23-1	2.5	0.7	ug/l	70-130	20	70-130	20	20			
o-Xylene	95-47-6	2.5	0.7	ug/l	70-130	20	70-130	20	20			
Xylene (Total)	1330-20-7	2.5	0.7	ug/l				20	20			
Xylene (Total)	1330-20-7	2.5	0.7	ug/l				20	20			
cis-1,2-Dichloroethene	156-59-2	2.5	0.7	ug/l	70-130	20	70-130	20	20			
1,2-Dichloroethene (total)	540-59-0	2.5	0.7	ug/l				20	20			
1,2-Dichloroethene (total)	540-59-0	2.5	0.7	ug/l				20	20			
Dibromomethane	74-95-3	5	1	ug/l	70-130	20	70-130	20	20			

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Please Note that the information provided in this table is subject to change at anytime at the discretion of Alpha Analytical, In

ATTACHMENT C

ANALYTICAL METHODS/
QUALITY ASSURANCE SUMMARY TABLE

ATTACHMENT C

ANALYTICAL METHODS/QUALITY ASSURANCE SUMMARY TABLE

Matrix Type	Field Parameters	Laboratory Parameters	Analytical Methods	Sample Preservation	Sample Container Volume and Type	Sample Hold Time	Field Duplicate Samples	Field Blank Samples	Trip Blank Samples	Ambient Air Samples	MS/MSD Samples
Soil	Total VOCs via PID	Part 375 + TCL VOCs	EPA 8260C	Cool to 4°C	Two 40-ml VOC vials with 5ml H_2O, one with MeOH or 3 En Core Samplers (separate container for % solids)	14 days if froze to -7 C° or extruded into methanol (vials); 48 hours otherwise (En Cores)	1 per 20 samples (minimum 1)	1 per 20 samples (minimum 1)	1 per Shipment of VOC samples	NA	1 per 20 samples
		Part 375 + TCL SVOCs	EPA 8270D	Cool to 4°C	4 oz. amber glass jar	14 days extract, 40 days after extraction to analysis			NA		
		Part 375 + TAL Metals	EPA 6010D, EPA 7471B, EPA 7196A	Cool to 4°C	2 oz. amber glass jar	6 months, except mercury 28 days					
		Hexavalent Chromium	EPA 7196A	Cool to 4°C	4 oz. amber glass jar	30 days					
		Cyanide	EPA 9010C/9012B	Cool to 4°C	8 oz. amber glass jar	14 days					
		Part 375 + TCL Pesticides	EPA 8081B	Cool to 4°C	4 oz. amber glass jar	14 days extract, 40 days after extraction to analysis					
		Part 375 + TCL Herbicides	EPA 8151A	Cool to 4°C	8 oz. amber glass jar	14 days					
		Part 375 + TCL PCBs	EPA 8082A	Cool to 4°C	4 oz. amber glass jar	14 days extract, 40 days after extraction to analysis					

Notes:

1. PID - Photoionization Detector
2. VOC - Volatile organic compound
3. EPA - Environmental Protection Agency
4. TCL - Target compound list
5. TAL - Target analyte list
6. NA - Not applicable

ATTACHMENT D

SAMPLE NOMENCLATURE STANDARD OPERATING PROCEDURE

SOP #01 – Sample Nomenclature

INTRODUCTION

The Langan Environmental Group conducts an assortment of site investigations where samples (Vapor, Solids, and Aqueous) are collected and submitted to analytical laboratories for analysis. The results of which are then evaluated and entered into a data base allowing quick submittal to the state regulatory authority (New York State Division of Environmental Conservation [NYSDEC]). In addition, Langan is linking their data management system to graphic and analytical software to enable efficient evaluation of the data as well as creating client-ready presentational material.

SCOPE AND APPLICATION

This Standard Operating Procedure (SOP) is applicable to the general framework for labeling vapor, solid (soil) and aqueous (groundwater) samples that will be submitted for laboratory analysis. The nomenclature being introduced is designed to meet the NYSDEC EQuIS standard and has been incorporated into Langan software scripts to assist project personnel in processing the data. While this SOP is applicable to all site investigation; unanticipated conditions may arise which may require considerable flexibility in complying with this SOP. Therefore, guidance provided in this SOP is presented in terms of general steps and strategies that should be applied; but deviation from this SOP must be reported to the Project Manager (PM) immediately.

GENERAL SAMPLE IDENTIFICATION CONSIDERATIONS

Sample Labels

All sample ware must have a label. Recall that when you are using the Encore™ samples (see below); they are delivered in plastic lined foil bags. You are to label the bags[1]:

All other samples containers including Terra Cores™ must be labeled with laboratory provided self-adhesive labels.

Quick Breakdown of Sample Format

The general format for sample nomenclature is:

[1]Both Alpha and York laboratories permit the combining of the three Encore™ into a single bag. This may not be appropriate for all laboratories so please confirm with the labs themselves

LLNN_ID

Where

LL is a grouping of two (2) to four (4) letters signifying the sample media source. In older nomenclature SOPs this portion of the sample identification is commonly referred to as the *Sample Investigation Code*

NN represents a two digit number identifying the specific sample location or sample sequence number

_ ***(underscore)*** is required between the sample lettering and numeric identification and additional modifying data that determines the date of sampling or the depth of the sample interval

ID is a modifier specific to the sample type media (depth of soil sample or date of groundwater sample)

LL – Sample Investigation Code

Langan has devised a list of two to four letters to insure a quick ability to identify the sample investigation.

Code	Investigation
AA	Ambient Air
DS	Drum
EPB	Endpoint Location - Bottom (Excavation)
EPSW	Endpoint Location - Sidewall (Excavation)
FP	Free Product
IA	Indoor Air
IDW	Investigation Derived Waste (Soil Pile)
MW	Monitoring Well (Permanent)
SB	Soil Boring
SG	Staff Gauge (Stream Gauging)
SL	Sludge
SV	Soil Vapor Point
SVE	Soil Vapor Extraction Well
SW	Surface Water
TMW	Temporary Monitoring Well
TP	Test Pit (Excavated Material from Test Pit Not Associated With Sidewall or Bottom Samples)
WC	Waste Characterization Boring
COMP	Composite Sample
TB	Trip Blank (QA/QC Sampling – All Investigations)
FB	Field Blank (QA/QC Sampling – All Investigations)
DUP	Duplicate (QA/QC Sampling – All Investigations)

NN – Numeric Identifier

The two digit number that follows the sample investigation code (LL) identifies the specific sample based on the soil boring, monitoring well, endpoint or other location identification. For a subset of samples

where there is no specific location identifier, the two digit number is the sequence number for the sample submitted. For example, an aqueous sample from a monitoring well identified as MW-1 would have the sample investigation code of MW and the numeric identifier as 01. Note there is no hyphen. The same can be done for soil borings, a soil sample collected from soil boring 9 (SB-9) would be have the LLNN identification of SB09 (again, no hyphen).

Note however that there is a subset of samples related to laboratory analytical quality assurance, among these includes TB, FB, and DUP. On many investigations, the Scope will require multiple collections of these types of samples, therefore the numerical number represents the sequence sample count where the first sample is 01, the second sample is 02, and the third sample is 03 and so on.

_ Underscore
The underscore is required. It separates the investigation code and numeric identifier from the modifier specific to the sample itself. Note that every effort should be made to insure that the underscore is clear on the sample label and chain of custody (COC).

ID – Modifier Specific to Type Media
Each sample investigation code and numeric identifier is further modified by an ID specific to the sample type media. In general, soil samples (soil borings or endpoint samples) use an ID that indicates the depth at which the sample was taken. Aqueous samples (groundwater or surface water samples) are identified by the date the sample was collected. Other types of samples including quality control (TB, FB, and DUP), Vapor samples (AA, IA, SV or SVE), other soil type samples (IDW, sludge, free product, drum, and others) are also identified by a date. The following rules apply to the ID when using sample depth or sample date.

Sample Depth
The sample depth must be whole numbers (no fractions) separated by a hyphen. Thus for a soil sample collected from the soil boring SB-1 from a depth of 6 feet to 8 feet, the sample would be identified as:

SB01_6-8

Unfortunately, the NYSDEC EQuIS system does not accept fractions. Therefore, if your sample interval is a fraction of a foot (6.5-7.5), round up to the larger interval (6-8).

Sample Date
The sample date is always in the format of MMDDYY. Note that the year is two digits. Thus for a groundwater sample collected on July 1, 2015 from the monitoring well MW-1, the sample would be identified as:

MW01_070115

Special Cases
There are a couple of specific sample types that require further explanation.

Endpoint Sampling
End point sidewall samples are sometimes modified by magnetic direction (N, S, E, and W). For example, the first sidewall endpoint sample from the north wall of an excavation at a depth of 5 feet would be written as:

EPSW01_N_5

Again, note that the N in the identification refers to north and is separated from the prefix investigation code/numeric identifier and ID modifier suffix by underscores.

Vapor Extraction Well Sample
As with the sidewall endpoint samples, the sample name is altered by inserting a middle modifier between the prefix and suffix of the sample name. The middle modifier is used to identify the source of the sample (inlet sample port, midpoint sample port or outlet sample port). For example the midpoint port of the vapor extraction well number 1 sampled on July 1, 2015 would be written as;

SVE01_MID_070115

Matrix Spike and Matrix Spike Duplicate
On occasion, a Langan investigation will collect a sample to be used to provide the lab with a site specific medium to spike to determine the quality of the analytical method. This special case of sampling requires additional information to be used in the sample name, specifically, a suffix specifying whether the sample is the matrix spike (MS) or the matrix spike duplicate (MSD). In the following example, the sample is collected from soil boring number 1 at a depth of 2-4 feet. For the matrix spike sample:

SB01_2-4_MS

and for the matrix spike duplicate sample:

SB01_2-4_MSD

Multiple Interval Groundwater Sampling
Although not currently a common practice, low flow sampling facilitates stratigraphic sampling of a monitoring well. If the scope requires stratigraphic sampling then groundwater samples will be labeled with a lower case letter following the well number. For example, placing the pump or sampling tube at 10 feet below surface in MW01 on July 1, 2015 would require the sample to be labeled as:

MW01a_070115

While a second sample where the pump or tubing intake is placed at 20 feet would be labeled as:

MW01b_070115

Note that it is important that you record what depth the intake for each sample represents in your field notes; as this information is going to be critical to interpreting the results.

APPENDIX I

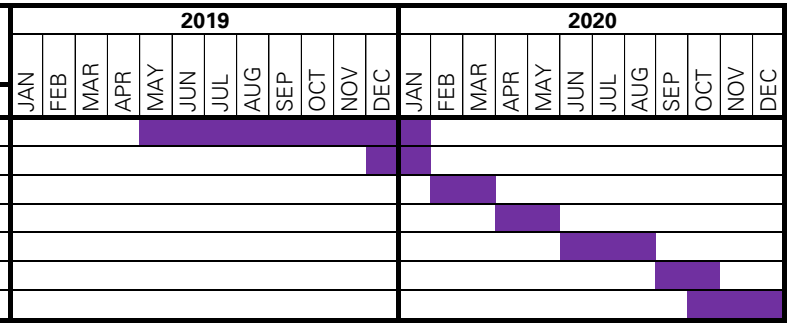
REMEDIAL ACTION CONSTRUCTION SCHEDULE

Appendix I
Remediation Schedule
Remedial Action Work Plan

159 Boerum Street
Brooklyn, NY
BCP Site No. C224291
Langan Project No. 170552901

Estimated Project Schedule

Item	Action
1	Design, Investigation, and Permitting
2	NYSDEC Review of BCP RAWP
3	45-Day Public Comment Period for RAWP and Issuance of Decision Document
4	Implementation of RAWP with Engineering Oversight
5	Preparation of an Environmental Easement, FER, and SMP (if required)
6	NYSDEC & NYSDOH Review of FER (and SMP, if required)
7	NYSDEC Issues COC (12/31/2020)



Notes:

a) This is an estimated schedule; all items are subject to change.
b) Completion of Item 4 refers to the completion of remediation and not the end of overall construction.
c) BCP = Brownfield Cleanup Program
d) NYSDEC = New York State Department of Environmental Conservation
e) NYSDOH = New York State Department of Health
f) RAWP = Remedial Action Work Plan
g) FER = Final Engineering Report
h) SMP = Site Management Plan
i) COC = Certificate of Completion